वार्षिक प्रतिवेदन

ANNUAL REPORT

2017-18

RAJMATA VIJAYARAJE SCINDIA KRISHI VISHWA VIDYALAYA
RAJA PANCHAM SINGH MARG, GWALIOR-474002 (M.P.)

Mission

To impart education, conduct research and extension activities for enhancing productivity, optimization of profit, sustainability of agriculture and allied sectors and improving rural livelihood in the state of Madhya Pradesh.

Vision

To transform the Agricultural landscape of Madhya Pradesh by producing excellent dynamic and result oriented skilled human resource in modern Agriculture, thereby creating higher income, employment, gender equity, accessibility, sustainable production system and achieving social welfare for all.

Mandate

- *To serve as a centre of higher education in the field of agriculture and allied sciences.*
- *To conduct basic, strategic, applied and anticipatory research in the field of agriculture and allied sciences.*
- *To disseminate technologies to farmers, extension personnel and organizations engaged in agricultural development through various extension programmes.*
- *To produce and supply of genuine and quality seed/planting material to the farmers.*

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Prof. S.K. Rao
Vice-Chancellor

FOREWORD

It gives me an immense pleasure to present the Annual Report of the Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya (RVSKVV) for the year 2016-17 to the end users. This report highlights the activities related to education, research and extension carried out by the University staff in the field of agricultural and allied sciences with a focus on enhancing livelihood status of the farming community. The University has developed credible technology in the field of agriculture and Horticulture. Farmers of the State are being benefited through its network of five colleges (four Agriculture and one Horticulture), five Zonal Agricultural Research Stations (ZARS), four Regional Agricultural Research Stations (RARS), six Special Research Stations (SRS), nineteen Krishi Vigyan Kendras (KVKs) and twenty-eight All India Coordinated Research Projects (AICRPs).

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya has grown into a diverse innovative institution of higher education, pursuing excellence in the fields of teaching, research and extension in agricultural sciences. Over the years, the University has sought to make a major contribution in improving the quality of human life in the region through its research-led initiatives in agriculture, environmental related issues and a host of other modern-day challenges including the production of quality seed and genuine planting material. The structure of its activities is rationalized, with emphasis on its distinguished strengths, management of education and development of quality man power and in this direction notable success has been achieved. In addition to the diverse activities related to agricultural sciences, RVSKVV has a strong emphases on farmers skills improvement and empowerment through the nineteen KVKs in the various districts. Teaching and learning quality has been steadily improving in recent years and a large number of capable man powers has been trained here.

In case of research programme, University finds a very special place in NARS through the coordinated projects in pulses, oil seeds, cotton, cereals, horticulture and natural recourses management. Exceptional research work on chickpea improvement, CMS based pigeon pea hybrid, efficient water management for boosting the productivity of other major crops like

cotton, soybean, mustard, wheat, medicinal and aromatic plants are some of the noteworthy contributions of the University. RVSKVV is also making sincere efforts to generate cutting edge technologies for enhancing crop productivity was done by the University. Thrust is also given on seed replacement in the state by producing quality seeds of important crops.

The Extension activities viz., trainings, demonstrations, field days, study tours, Kishan Mela, Krishi Goshtis and other farm advisory services were carried out to help the farming community of the region to solve their farm related problems. Biodiversity fair cum exhibition and awareness programme was one of the mega event which served as a platform for integration of farmers and Scientist on bio diversity conservation and display the biodiversity available in the M.P. and Chhattisgarh.

The students' performance in academic, sports and cultural events was impressive. The faculty of teaching, non-teaching and farm laborers joined their hands in fulfilling the mandate of the University.

I express my sincere gratitude to the Government of Madhya Pradesh, the ICAR and Government of India for their continued financial support. The contribution of the Members of the statutory bodies like the Board, the Academic Council and the Administrative Council in smooth functioning of the University has been praise worthy. The contribution of all the Deans, Directors, Heads, Registrar and Comptroller of the University in providing relevant information for the Annual Report is acknowledged.

Present Annual Report 2017-18, brought out by the University, covers the development and progress made in the areas of teaching, research & extension and seed production. It is my firm belief that this Annual Report will aptly serve as a show case of the activities of the University. It will be a good reference for administrators, policy makers, staff, students and even the farming community. I would like to thank all the contributors, members of the Editorial Board and Compilation Committee for compiling and editing this report in a comprehensive and presentable form.

(S.K. Rao)

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EXECUTIVE SUMMARY

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, (RVSKVV) Gwalior (MP) was established on August 19, 2008. The University has been since then, catering to the multi farming needs of farming community Agriculture Development, ICAR and other stockholders. It is a new, but fast emerging promising University in the field of agriculture and allied sciences.

The mandate of the University is teaching, research and extension with a view to evolve appropriate solutions and technologies in the field of agriculture. It has a network of five colleges (four Agriculture and one Horticulture), five Zonal Agricultural Research Stations (ZARS), four Regional Agricultural Research Stations (RARS), six Special Research Stations (SRS), twenty one Krishi Vigyan Kendras (KVKs) and twenty-eight All India Coordinated Research Projects (AICRPs) spread across six agro-climatic zones in twenty-six districts of Madhya Pradesh. In addition to this, other ongoing projects/schemes *i.e*. non-plan, plan, tribal sub-plan and adhoc projects are also in operation.

During the year 2017-18, the University has undertaken a number of initiatives for the promotion of quality in its mandated areas. The major activities and achievements of the University are as follows:

TEACHING:

- The University offers two Under Graduate Courses *i.e*. B.Sc. (Ag.) and B.Sc. (Hort.), 13 Post Graduate degree and 9 Ph.D. degree programmes in the different disciplines of Agriculture and Horticulture. The total intake capacity was 696 out of which, 364 were in undergraduate (UG), 269 in postgraduate (PG) and 63 in Ph.D. degree programme. At the undergraduate level, out of 364 total seats, 308 seats were in B.Sc. (Ag.) and 56 in B.Sc. (Hort.) degree programme. In the post graduate level, out of 269 seats, 197 seats were in M.Sc. (Ag.) and 72 in M.Sc. (Hort.). Similarly, in Ph.D. programme, out of 63 total seats, 49 seats were in Agriculture and 14 were in Horticulture discipline.
- During the year 2017-18, a total of 1290 boys and 639 girls' students were on the roll of the University, out of which, 897 boys and 428 girls were in UG, 342 boys and 173 girls in PG, and 51 boys and 38 girls were in Ph.D. degree programmes.
- In Ph.D., 18 students submitted their thesis to the Director Instructions for evaluation. Out of which, 01 were in Estension Eduaction, 01 in Entomology, 01 in Genetics Plant Breeding, 01 in Soil Science, 03 in Plant Pathology, 05 in Agronomy and 06 in Horticulture discipline.
- In PG, 197 students submitted their thesis to the Director Instructions for evaluation. Out of which, 145 thesis were in M.Sc. (Ag.) and 52 in M.Sc. (Hort.)
- In Experiential Learning programme, 354 students of fourth year (B.Sc. Ag. and B.Sc. Hort.) have taken adequate hands-on experience on different aspects of Agriculture/Horticulture to cultivate capabilities suitable to the emerging job markets and build entrepreneurship spirit and business management competence in a way that they will be able to generate employment for themselves and for others.
- The modules of experiential learning programme namely Crop Production, Crop Protection, Horticulture, Nursery Production and Management, Protected cultivation of high value vegetable crops, Floriculture & Landscape Gardening and Value addition in horticultural crops are running successfully.

- Under Rural Agriculture/Horticulture Work Experience 365 students of Fourth Year were placed in different villages of Research Stations/KVKs to learn and solve the practical problems of the farmers of adopted villages.
- 11 students of the University qualified the JRF examination.
- 24 Students of the University received National Talent Scholarship (NTS) 04 students received scholarship under Vikramaditya Scholarship Yojna and 02 students received scholarship under Gaon Ki Beti Yojna.
- During the year, 713 students of the University have received State Government Scholarship, out of which 360 students belonged to OBC, 161 SC and 192 ST categories.
- 680 students were enrolled in NSS (National Services Scheme) programme. Total out of 680 students, 76 students were awarded "B" and 08 student was awarded "C" Certificate examination of NSS.
- Under NSS (National Service Scheme) programme, different activities like blood donation camp, Beti Bachao Abhiyan, Social Awareness Camp, Awareness about AIDS, Literacy, Pulse Polio Abhiyan, Mera Gaon Mera Gourav and Environment Day were organized.
- Under National Cadet Corps (NCC) programme, 57 Cadets passed "B" certificate examination and 33 cadets cleared "C" certificate examination.
- During 2017-18, the Youth festival of the University was held at College of Agriculture, Indore. A large number of students from the 5 constituent colleges of the University participated in this festival.
- Through campus interviews, 126 students have been placed in jobs in leading private sectors, 72 students in Government/public sector and 03 self employed.
- Through different libraries of the constituent Colleges, 1,42,723 books were procured and available to the students out of which 7723 books have been purchased during the reporting year. Apart from that, reports, thesis, CDs, 139 *e*-books, periodicals etc. are also available in the library of constituent Colleges of the University.
- Total 12557 books were also made available to the students, teachers and scientists in the newly established Central library of the University.
- During the year (2017-18), 02 Scientists of the University went to abroad to participate in various Conferences/ Meetings.
- 142 research papers were published in peer reviewed journals of national and international repute.

RESEARCH:

- In pearlmillet crop under pearlmillet-mustard-green gram cropping system IWM practices (atrazine 500 g/ha PE + 1 HW) significantly reduced the weed population and dry weight of weeds and resulted in significant higher yield (2.61 t/ha) followed by atrazine + 2, 4-D (2.26 t/ha). The highest B:C ratio was obtained in treatment atrazine + 2,4-D (2.15). Under conservation tillage practices highest grain yield (2.36 t/ha) was obtained in conventional tillage T_2 (CT-ZT-ZT) followed by T_1 (CT-CT-ZT) while B:C ratio (2.25) was highest in T_2 (CT-ZT-ZT) followed by(2.24) in T_4 (ZT-ZT+R-ZT) and 2.20 in T_5 (ZT+R-ZT+R-ZT).
- **Potato:** Two hand weeding at 20 and 40 DAS gave highest yield (14.58 t/ha) followed by recommended herbicide metribuzin 0.5 kg/ha + one hand weeding. Among organic weed management practices one hand weeding at 20 DAS with straw mulch 5 t/ha controlled the weeds with 74.65% WCE as well as gave higher yield of potato (13.89 t/ha) followed by one hand hoeing at 20 DAS + one hand weeding at 40 DAS (13.72 t/ha) with 71.83% WCE.
- **Studies of herbicide residue in post harvest soil of blackgram in farmer's field :**Post emergence application of herbicides imazethapyr + imazamox (RM) 80 g/ha, imazethapyr 80 g/ha and quizalofop ethyl 50 g/ha applied to blackgram in farmers' fields do not persist in post harvest soil as per bioassay study using maize as test plant.
- Fourteen genotypes were tested in IVT, out of these, variety X-10 gave maximum seed yield (1250 kg/ha), net monetary return (` 46,879/-ha) and BCR (3.57) of Clusterbean, over all the varieties. The lowest seed yield (844.91) was recorded by GAUG 1304 variety
- **In Clusterbean:** The results revealed that the significantly highest clusterbean grain yield (1192 kg/ha), net return (Rs.30422 /ha)and B.C.ratio (2.52) were obtained with Conventional Tillage + residue retention @ 3 t/ha but at par with Minimum Tillage + residue retention @ 3 t/ha and Conventional Tillage. Whereas nutrient management, the higher clusterbean grain yield (1120 kg/ha), net return (Rs.29521 /ha) and B.C.ratio (2.65) were recorded with the application of 75% RDF, which was at par with rest over all the treatments.
- **Effect of Land Configuration, Seed Rate and Variety on Productivity of Soybean under Vertisols**

  Among different land configuration treatments 90 cm raised bed and furrow with 3 rows of 30 cm recorded the highest mean seed yield of 954 kg/ha and it was significantly more compared to Flat bed sowing at 45 cm, open furrow after 10 row of 45cm and open furrow after 05 row of 45cm but at par with 60 cm raised bed and furrow, 2 row of 30 cm (927 kg/ha). The treatment 90 cm raised bed and furrow with 3 rows of 30 cm recorded 16.6 % higher seed yield than Flat bed sowing at 45 cm.
- **Evaluation of doses of Nutrient Loaded Nano Clay Polymer Composite (NCPC) on resource use efficiency:** It was concluded that application of higher dose of nutrient loaded NCPC, 75% of RDF+NCPC+S @ 10 kg/ha in soybean recorded higher seed yield 1478 kg/ha followed by treatment 75% of RDF + NCPC + Mo @ 10 kg/ha (1476 kg/ ha) and 75% of RDF + NCPC + Zn @ 10 kg/ha (1472 kg/ha).The increase in seed yield due to treatments were 10.77 10.63 and 10.36 % as compared to 100 % of RDF. The application of different doses of nutrient loaded NCPC recorded significantly higher higher leaf area index (3.23), Relative water content (51.47%), Root weight density 1.33 g cm^{-3}, Number of nodules per plant

(54.7), Nodule dry weight (338 mg) and 100 seed weight (15.4 g) recorded by 75 % of RDF + NCPC + S @ 10.0 kg/ha. seed yield 1478 kg/ha as well as net income Rs 51,723/- /ha with maximum benefit cost ratio of 2:64.

- **Long Term Manurial Trial in *Vertisols:*** Based on the average of last 25 years, treatments T_6 (FYM 6 t ha^{-1} + N20 P13) gave highest seed yield of 1988 kg $ha^{-1}$and was found significantly superior with regards to seed productivity.The treatment T_6 was also found superior to rest of the treatments with regards to improvement in physical and chemical properties of the soil. The treatment T_1*i.e.,* control was found statistically inferior to all the treatments in respect of yield and soil improvemnet.
- **Evaluate the Bio-efficacy and phytotoxicity of *Stance 110 SC* in soybean (*Glycine max* (L) *Merrill*).**
  Experiment was conducted during *kharif* season 2016 on soybean crop. It was concluded that spray of Cyclanilide 22 + Mepiquat chloride 88 SC with a dose of 150 ml/ha is beneficial to increase seed yield of soybean as received 14.3 % higher than untreated (Control).The treatment also recorded higher number of branches, pod numbers, pod weight/plant and seed index as compared to untreated.
- **Evaluation of Chickpea varieties for dryland conditions through farmers' participation**
  During *Rabi* 2016-17, eight chickpea varieties *viz.,*JG-16,JG-6, Jaki-9218, Kak-2, IG-593,Ujjain-21, JG-11 and JG-130 were planted just after harvest of soybean on residual moisture. Chickpea variety Jaki-9218 recorded higher yield of 1838 kg/ha and higher gross return (Rs. 98916 per ha), net return (Rs. 85916 per ha) and B: C ratio (7.60) followed by IG-593, JG 130, JG-11 and JG-6 Yield ranged between (1786 to 1726 kg/ha) as compared to check variety Ujjain 21 (1673 kg/ha). During growth period 17.1 mm rains were received in 2 days in the month of October, 2016.
- **Mitigation of drought effect through foliar spray of chemicals:** Foliar sprays of 1% KNO_3 solution, 2% KCl and spray of thiourea @ 250 g/ha alone and tank mix Trizophos @ 600 ml/ha integrated with each treatment at the vegetative and reproductive stages (25-30 and 55-60 DAS) were studied to combat the abiotic and biotic stresses on soybean under aberrant weather conditions. Results revealed that the treatment foliar spray of thiourea, KNO_3 KCl alone or mixed with trizophos @ 600 ml/ha of soybean crop were found equally effective to combat the drought situation.The significantly higher seed yield (1294 kg/ha)of soybean recorded by the treatment T_6- spray of 1% KNO_3 + Trizophos @ 600 ml/ha, followed by the treatment T_8 Foliar Spray of thiourea @ 250g/ha + Trizophos @ 600 ml/ha (1219 kg/ha) spraying at 25-30 and 55-60 DAS as compared to control. The control treatment recorded lowest seed yield 900 kg/ha. The foliar spray of 1% KNO_3, 2% KCl and thiourea @ 250g/ha alone resultant lower seed yield (1102 to1185 kg/ha) of soybean as compared to spray with trizophos (1198 to1294 kg/ha).
- Agronomy for Bt. Hybrids of the region have been evaluated. Use of Bt. Hybrid + Closer spacing (25 % less than recommended) + 125% RDN + recommended foliar spray was obtained highest seed cotton yield result into maximum boll weight, sympodia per plant and final plant population. Technologies for organic cotton production have been worked out. It was concluded that application of RDN through inorganic obtained the highest seed cotton yield because of maximum yield attributing characters. Higher yielder genotypes have been screened under water stress condition. Out of 21 genotypes tested genotypes T SH-327, TCH-1199, AR-9108 and RCH-1217 were found better under water stress condition.Seven

genotypes were screened for climate change. Normal sowing date (DI = 26-6-16) gave maximum yield, while the genotypes G.I (Rasi – 659 BG II) and G-4 (JK-5) were recorded maximum yield among interaction DIGI and DIG4 were recorded maximum yield of cotton.

- In Initial Hybrid Trial of Medium Duration, 9 hybrids were tested. The maturity of hybrids ranged from 168 (BRGH 15-1) to 185 (ICPH 3494) day. The Sehore station maturity also matches with zonal maturity. Significantly highest yielding hybrid at Sehore centre was ICPH 3474 (2039 kg/ha). It was closely followed by GRPH 2751 (2012 kg/ha). At zonal level also these two hybrids ranked I and II giving yield of 1347 and 1377 kg/ha yield which are at par in yield.
- In ICRISAT short duration hybrid trial, 12 hybrids were evaluated. The overall maturity of the hybrids was 150 days. Most of the hybrids matured in the same range. MN 5 was found to be of shortest stature among the tested genotypes having plant height of 84.5 cm. The highest yielding hybrid was ICPH 3683 (1205 kg/ha) giving 87.4% higher yield than the check ICP 88039 (643.2 kg/ha), followed by ICPH 3674 (1048.4 kg/ha). Both of these hybrids matured in 149 days.

SEED PRODUCTION:

- The University is producing breeder and nucleus seeds of several crops, which in contributing significant is enhancing seed replacement and increasing productivity of crops.
- The seed production in the University is carried out with the help of twenty seven seed production farms. The total farm area is 1210.85 ha., out of which 64.45 per cent (780.37 ha.) is under cultivation. Among the cultivated area, 13.39, 34.59 and 52.02 per cent are covered under irrigated, partially irrigated and rain fed farming, respectively.
- The university produced 7191.16 quintal seed of different crops. During Kharif 2017-18 total production of 2018.60 q. seed different crop like – Soybean, Green gram, Black gram, Paddy, Cotton, pigeonpea and during Rabi 2017-18 total productions of 5172.56 q. seed of different Rabi season crops like Wheat, Chickpea, Lentil, Mustered and Safflower etc.

EXTENSION ACTIVITIES:

- For the assessment of latest technologies generated by RVSKVV, other universities or ICAR institutes of ICAR, 276 On Farm Trials (OFTs) were conducted at farmers' field on various thematic areas related to crops, animals, machineries, post harvest management etc. that benefitted 2531 farmers.
- For the purpose of popularizing new technologies**,** Front Line Demonstrations (FLDs) were carried out on various crops in area of 1953.29 ha on the fields of 85558 farmers. In addition to these demonstrations, 315 FLDs on different enterprises like fisheries, live stock management, vermicompost, value addition, post harvest management, malnutrition, farm machinery etc. were also conducted.
- During the year, total 1176 trainings were imparted, which benefited 29914 participants including farmers and farm women, rural youth, extension personnel and government officials.
- In order to create awareness among farmers of the region, 28019 extension activities were conducted by the KVKs including Farmers' fairs, Farmers meeting, Field days, Exhibitions, Special days celebration were organized which benefited 991763farmers. Among live stock based activities 59 AHC and 3 AVC were organised.
- A total number of 75 Folders, 16 Booklets, 18 Books, 56 Newsletters, 05 Training Manuals and 78 Research Papers in Journal were prepared by Krishi Vigyan Kendras. KVK Scientists also published 69 popular articles in various agriculture magazine and news papers.
- Total 3794.13 quintals seed of oilseed, pulses, vegetables, spices and cereals and 438192 seedlings and saplings were produced and supplied to the 7970 famers, government agencies and co-operative agencies.
- A total number of 37549 soil samples were analysed by different KVKs and 75351soil health cards were prepared and distributed to farmers of the region.
- Under Kisan Mobile Advisory Services, 1409 messages related to new technologies were sent to 1063722 beneficiaries of 10162 villages of 119 blocks.
- 48 meetings of Scientific Advisory Committee of 24 KVKs were conducted during the last year before rabi and kharif seasons to review the previous activities and formulate the action plan of for the next season.
- Directorate of Extension organized 02 Krishak Sangosthi, 03 workshops and 04 Capacity Building programme on different themes in which scientists from different Krishi Vigyan Kendras participated.
- '*Mera Gaon Mera Gaurav*' programme is being implemented by the Vishwa Vidyalaya through its five colleges and three Zonal Agricultural Research Stations. In this programme, the scientists regularly organizing Krishak Sangoshthies, Demonstrations and advising farmers abut recent agricultural technologies in the selected villages.

कार्यकारी सारांश

राजमाता विजयाराजे सिंधिया कृषि विश्वविद्यालय, ग्वालियर (म.प्र.) की स्थापना 19 अगस्त 2008 को हुई। विश्वविद्यालय प्रारम्भ से ही कृषि समुदाय की शिक्षा संबंधी आवष्यकताओं की पूर्ति हेतु कार्यरत है। यह विश्वविद्यालय नवीन होने के बावजूद कृषि एवं कृषि संबधी विज्ञानों के क्षेत्रों में अपनी दुतगामी आशाजनक पहचान बना रहा है।

विश्वविद्यालय का उद्देश्य कृषि क्षेत्र में शैक्षणिक, अनुसंधान एवं प्रसार कार्य, उचित समाधान एवं तकनीक को ध्यान में रखते हुए करना है। विश्वविद्यालय के अन्तर्गत पॉच महाविद्यालय (चार कृषि एवं एक उद्यानिकी महाविद्यालय), पॉच आंचलिक कृषि अनुसंधान केन्द्र, चार क्षेत्रीय अनुसंधान केन्द्र, छः विषेश अनुसंधान केन्द्र, उन्नीस कृषि विज्ञान केन्द्र एवं अठाईस अखिल भारतीय समन्वित अनुसंधान परियोजनायें शामिल हैं जो कि म.प्र. के छः कृषि जलवायुवीय क्षेत्रों एवं छब्बीस जिलों में फैले हुये हैं। इसके साथ ही दूसरी परियोजनायें जैसे गैर–योजनाकृत, योजनाकृत, आदिवासी उप–योजना एवं अनौपचारिक परियोजनायें भी क्रियाशील हैं।

वर्ष 2017–18 के दौरान विश्वविद्यालय द्वारा गुणवत्ता बढाने एवं उद्देश्यों की पूर्ति हेतु नये कदम उठायें गये है, जो इस प्रकार हैः–

शिक्षणः–

- विश्वविद्यालय द्वारा कृषि एवं उद्यानिकी के विभिन्न विषयों में दो स्नातक पाठ्यक्रम, बी.एससी. (कृषि) एवं बी.एस.सी. (उद्यानिकी), ग्यारह स्नातकोत्तर (एम.एससी.) पाठ्यक्रम तथा नौ विद्या वाचस्पिती (पीएच.डी.) विषयों में उपाधि प्रदान की जाती है। कुल 696 सीटों में से स्नातक की 364, स्नातकोत्तर की 269 एवं विद्या वाचस्पति की 63 सीटों पर नये विद्यार्थियों को प्रवेश दिया जाता है। स्नातक स्तर की 364 सीटों में से, 308 सीटें बी.एससी. (कृषि) एवं 56 सीटें बी.एससी. (उद्यानिकी) उपाधि पाठ्यक्रम की हैं। स्नातकोत्तर स्तर की 269 सीटों में से, 197 सीटें एम.एससी. (कृषि) एवं 72 सीटें एम.एससी. (उद्यानिकी) उपाधि पाठ्यक्रम की हैं। समान रूप से विद्या वाचस्पति की कुल 63 सीटों में से 49 सीटें कृषि की एवं 14 सीटें उद्यानिकी पाठ्यक्रम पर आधारित है।
- वर्ष 2017–18 में विश्वविद्यालय के अन्तर्गत कुल 1,929 विद्यार्थियों (1290 छात्र एवं 639 छात्रायें) ने प्रवेश लिया, इनमें से, 1,328 विद्यार्थी (897 छात्र एवं 428 छात्राऐं) स्नातक पाठ्यक्रम में, 515 विद्यार्थी (342 छात्र एवं 173 छात्रायें) स्नातकोत्तर पाठ्यक्रम में तथा 89 विद्यार्थी (51 छात्र एवं 38 छात्रायें) विद्या वाचस्पति पाठ्यक्रमों में अध्ययनरत हैं।
- विद्या वाचस्पति उपाधि पाठ्यक्रम के विद्यार्थियों द्वारा 18 शोध प्रबंध (थीसिस) मूल्यांकन हेतु प्रस्तुत की गई जिसमें से 05 सस्य विज्ञान, 01 विस्तार शिक्षा, 01 कीट शास्त्र, 01 मृदा विज्ञान, 03 पौध रोग विज्ञान, 01 पौध प्रजनन एवं 06 उद्यानिकी पाठ्यक्रम की हैं।
- स्नातकोत्तर विद्यार्थियों द्वारा 197 थीसिस मूल्यांकन हेतु प्रस्तुत की गई, जिसमें से 145 थीसिस एम.एससी. (कृषि) तथा 52 एम.एससी. (उद्यानिकी) पाठ्यक्रमों की है।
- अनुभव जन्य अधिगम कार्यक्रम के अन्तर्गत चतुर्थ वर्ष के 354 छात्र (स्नातक कृषि एवं स्नातक उद्यानिकी) पंजीकृत हुये। कार्यक्रम के अन्तर्गत विद्यार्थियों में वर्तमान प्रतिस्पर्धी युग में कृषि एवं उधानिकी के क्षेत्र में स्वयं एवं अन्य जनो हेतु व्यवसाय प्रबंध एवं उद्यमिता के द्वारा रोजगार के अवसर पैदा करने की क्षमता का विकास तथा छात्रों में बाजार के अन्दर टिक सकने की क्षमता विकसित की जाती है।

- अनुभव जन्य अधिगम कार्यक्रम के अनुखण्ड नामतः फसल उत्पादन, फसल संरक्षण, बागवानी, पौधशाला उत्पादन एवं प्रबंधन, उच्च मूल्य वाली सब्जियों की संरक्षित खेती, फूलो की खेती और भू–दृश्य वास्तुकला एवं उद्यानिकी फसलों में मूल्य संवर्धन सफलतापूर्वक चल रहें हैं।
- ग्रामीण कृषि/उद्यानिकी कार्यानुभव कार्यक्रम के अन्तर्गत चतुर्थ वर्ष के 365 विद्यार्थियों को विभिन्न गांवो, अनुसंधान केन्द्रों एवं कृषि विज्ञान केन्द्रों पर किसानों की समस्याओं को समझने एवं समाधान करने के लिये भेजा गया।
- विश्वविद्यालय के 11 विद्यार्थियों ने कनिष्ठ अनुसंधान अध्येतावृत्ति परीक्षा में अहर्ता प्राप्त की।
- विश्वविद्यालय में 24 विद्यार्थियों ने राष्ट्रीय प्रतिभा छात्रवृत्ति (एन.टी.एस.), 04 विद्यार्थियों ने विक्रमादित्य छात्रवृत्ति योजना एवं 02 विद्यार्थियों ने गॉव की बेटी योजना में छात्रवृत्ति प्राप्त की।
- इस वर्ष विश्वविद्यालय के 713 विद्यार्थियों को राज्य सरकार छात्रवृत्ति प्राप्त हुई जिनमे से 360 छात्र अन्य पिछड़ा वर्ग, 161 अनुसूचित जाति एवं 192 अनुसूचित जनजाति वर्ग के है।
- राष्ट्रीय सेवा योजना के अन्तर्गत–680 विद्यार्थी शामिल हुये। 680 विद्यार्थियों में से 76 विद्यार्थी "बी" प्रमाण पत्र एवं 08 विद्यार्थी "सी" प्रमाण पत्र से पुरस्कृत हुये।
- राष्ट्रीय सेवा योजना के अन्तर्गत विद्यार्थियों द्वारा विभिन्न गतिविधियों जैसे रक्तदान शिविर, बेटी बचाओं अभियान, सामाजिक जागरूकता अभियान, एड्स जागरूकता अभियान, शिक्षा, पल्स पोलियो अभियान, मेरा गांव मेरा गौरव एवं पर्यावरण दिवस आदि आयोजित की गई
- राष्ट्रीय केडेट कोर के अन्तर्गत 57 छात्रों ने "बी" प्रमाण पत्र एवं 33 छात्रों ने "सी" प्रमाण पत्र परीक्षा उतीर्ण की।
- विश्वविद्यालय का युवा महोत्सव **यूथ फेस्टिवल–2017–18** कृषि महाविद्यालय, इन्दौर में आयोजित किया गया। इसमें विश्वविद्यालय के पॉचों महाविद्यालयों के छात्र–छात्राओं ने इस उत्सव में भाग लिया।
- विश्वविद्यालयीन परिसर साक्षात्कारों के द्वारा 126 विद्यार्थियों ने निजी, 72 विद्यार्थियों ने सरकारी संस्थानों में और 03 विद्यार्थियों ने स्वरोजगार प्राप्त किया।
- विश्वविद्यालय के विभिन्न महाविद्यालयों के पुस्तकालयों द्वारा विद्यार्थियों को 1,42,723 पुस्तकें उपलब्ध कराई गई, जिसमें से 7723 पुस्तकें एवं 139 ई–पुस्तके इस वर्ष क्रय की गई। इसके अलावा शोधग्रंथ अध्यापन, सघन संग्रहण इकाई, ई–पुस्तक एवं नियतकालिक पत्रिकायें भी सम्बन्धित महाविद्यालयों के पुस्तकालयों में उपलब्ध कराई गई।
- विश्वविद्यालय के नवस्थापित केन्द्रीय पुस्तकालय द्वारा छात्रों, शिक्षको और वैज्ञानिकों को कुल 12557 पुस्तकें उपलब्ध कराई गई ।
- विश्वविद्यालय के 02 वैज्ञानिक, सेमीनार/परिचर्चा में शामिल होने के लिये विदेश गये।
- 142 शोध पत्र विभिन्न राष्ट्रीय एवं अर्न्तराष्ट्रीय शोध पत्रिकाओं में प्रकाशित किये गये।

अनुसंधानः–

- **बाजरा :** बाजरा–सरसो–मूंग फसल चक्र में बाजरा फसल में एकीकृत खरपतवार प्रबंधन (एट्राजिन 0.5 कि.ग्रा/है. + हाथ से निदाई–गुडाई 30 दिन की फसल अवस्था) से सबसे कम खरपतवार संख्या तथा शुष्क भार एवं सर्वाधिक उपज (2.61 टन/है.) प्राप्त हुई। खरपवतार प्रबंधन एट्राजिन 500 ग्रा/है. + 2,4–डी 500 ग्रा/है. से भी समकक्ष उपज लेकिन सबसे अधिक आर्थिक लाभ (लाभःलागत अनुपात 2.15) प्राप्त हुआ। बाजरा फसल में संरक्षित जुताई क्रियाओं में पारंपरिक जुताई $ज_2$ (पारंपरिक –शून्य) उत्पादन की दृष्टि से सर्वश्रेष्ठ (2.36 टन/है.) पाई गई साथ ही आर्थिक दृष्टि से भी यह पद्धति सर्वश्रेष्ठ (लाभ : लागत अनुपात 2.25) साबित हुई। इसके पश्चात् आर्थिक दृष्टि से $ज_4$ (षून्य जुताई–शून्य जुताई +फसल अवषेष–शून्य जुताई पद्धति) एवं $ज_5$ (शून्य जुताई + फसल अवषेष–शून्य जुताई + फसल अवषेष–शून्य जुताई पद्धति) श्रेष्ठ रहीं (लाभ : लागत अनुपात क्रमषः 2.24 तथा 2.20)।
- **आलू में खरपतवार प्रबंधन** दो बार हाथ से निदाई–गुडाई क्रमषः बुवाई के 20 व 40 दिन पष्चात् के उपयोग से सर्वाधिक उपज (14.58 टन/है.) जिसके पष्चात् अनुसंषित नीदांनाषक + एक निदाई–गुडाई के साथ प्राप्त हुई। जैविक उपचारों के प्रयोग में हाथ से एक निदाई गुड़ाई के 20 दिन पष्चात तथा स्ट्रॉ मल्च 5 टन/है. प्रयोग करके 74.65ः तक खरपतवार नियंत्रण किया जा सका। साथ ही इस उपचार से 13.89 टन/है. की दर से उपज प्राप्त हुई। इसके पष्चात एक यंत्र द्वारा परिश्करण + एक निदाई गुड़ाई करके 71.83ः तक खरपतवार नियंत्रण किया जा सका। साथ ही इस उपचार से 13.72 टन/है. की दर से उपज प्राप्त हुई।
- **उड़द :** किसानों के खेतों में उड़द पर छिड़के गये मिश्रित नीदानाषक इमेजाथाइपर+इमेजामोक्स 80 ग्राम/है. इमेजाथाइपर 80 ग्राम/हे. तथा क्वीजेलोफाप 50 ग्राम/हे. का फसल की कटाई के बाद मिट्टी में अवषेष नहीं पाया गया।
- प्रारम्भिक जातीय परीक्षण के अन्तर्गत मध्यम अवधि में पकने वाली ग्वार की 14 किस्मों को बोया गया थाए उसमें चार राश्ट्रीय चैक भी थे । इन सभी जातियों में से एक्स–10 प्रजाति ने अधिकतम दाना उपज (1250 कि.ग्रा./हे.)ए षुद्ध लाभ (46,879 /हे.) एवं लाभ लागत अनुपात (3.57) दिया। जो कि अन्य सभी किस्मों की अपेक्षा अधिकतम पाया गया। लेकिन जी.ए.यू.जी. किस्म से सबसे कम दाना उपज (844.91 कि.ग्रा/हे.) प्राप्त हुई।
- ग्वार फसल में विभिन्न भूपरश्किरण एवं पोशक तत्व प्रबंधन हेतु प्रक्षेत्र प्रयोग किया गया प्राप्त परिणामों से ज्ञात हुआ कि पारम्परिक भूपरश्किरण उपचार + 3 टन/हे. गेहूँ भूसा अवषेश अवधारण उपचार से सांख्यिकीय तौर पर सर्वाधिक सार्थक ग्वार दाना उपज (1192 कि.ग्रा/हे.), षुद्ध लाभ (30,422 /हे.) एवं लाभ लागत अनुपात (2.52) प्राप्त हुआ। जो कि अन्य सभी उपचारो से गौरव पूर्ण अन्तर पाया गया। परन्तु कम से कम भूपरश्किरण + 3 टन/हे. गेहूँ भूसा अवषेश अवधारण उपचार सांख्यिकीय तौर पर दाना उपज में समकक्ष पाया गया। पोशक तत्व प्रबंधन में 75ः अनुषंसित उर्वरक उपचार से सांख्यिकीय तौर पर सर्वाधिक सार्थक दाना उपज (1120 कि.ग्रा/हे.) एवं षुद्ध लाभ (29,521 /हे.) प्राप्त हुआ। लेकिन लाभ : लागत अनुपात सबसे अधिक (2.84) 50ः अनुषंसित उर्वरक उपचार से प्राप्त हुआ।
- **भूमि विन्यास का बीज दर एवं सोयाबीन जातियों के उत्पादन पर प्रभाव** –इस परिक्षण में भूमि विन्यास उपचार में 90 से.मी. की ऊॅची क्यारी पद्धति (3 कतार प्रति क्यारी), 60 से.मी. की ऊॅची क्यारी पद्धति (2 कतार प्रति क्यारी), समतल बोनी पद्धति एवं समतल बोनी कर 5 कतारों व 10 कतारों के पश्चात् क्रमशः नाली पद्धति के अध्ययन में पाया गया की 90 से.मी. की ऊॅची क्यारी पद्धति से अधिकतम कुल उपज 954 कि.ग्रा./हे. पाई गई जो की समतल बोनी पद्धति (927 कि. ग्रा./हे. उपज) व अन्य पद्धति की तुलना में 16.6 प्रतिषत अधिक थी।

- **संसाधन उपयोग दक्षता पर न्यूट्रींट लोडेड नैनो क्ले पॉलीमर कंपोजिट (एनसीपीसी) की खुराक का सोयाबीन उपज पर मूल्यांकन –**प्रयोग से प्राप्त परिणाम दर्शाते है कि उपचार – 75 :अनुशंसित उर्वरक की मात्रा +छब्ब्ब + सल्फर 10 कि. ग्रा./हे. से अधिकतम उपज 1478 कि. ग्रा./हे., एवं क्रमशः उपचार– 75 : अनुशंसित उर्वरक की मात्रा +NCPC + मोंलिबिडनम 10 कि. ग्रा./हे. (1476 कि. ग्रा./हे). एवं उपचार– 75 :अनुषंसित उर्वरक की मात्रा +छब्ब्ब + जिंक 10 कि. ग्रा./हे. (1472 कि. ग्रा./हे.) उपज प्राप्त हुई। जो कि क्रमशः 10.77, 10.63 और 10.36 :उपचार– 100 :अनुशंसित उर्वरक की मात्रा से अधिकतम पाई गई। उपचार– 75 :अनुशंसित उर्वरक की मात्रा +छब्ब्ब + सल्फर 10 कि. ग्रा./हे. से अधिकतम शुद्ध आर्थिक लाभ रू. 51723/– प्रति हे. एवं लाभ–लागत अनुपात 2.64 प्राप्त हुआ।
- **वर्टीसोल में दीर्घ अवधि खाद प्रयोग –** 25 वर्षो के सतत प्रयोग के आंकडे दर्शाते है कि सोयाबीन – चना फसल क्रम प्रयोग में उपचार एफ. वाई. एम. 6 टन/हे.+ 20 कि.ग्रा. नत्रजन + 13 कि.ग्रा. स्फुर प्रति हे. (उपज 1988 कि.ग्रा./हे.) देने पर सोयाबीन की अन्य उपचारों की तुलना में सार्थक रूप से अधिकतम पाई गई। उपचार एफ. वाई. एम. 6 टन/हे.+ 20 कि.ग्रा. नत्रजन + 13 कि.ग्रा. स्फुर प्रति हे. उपज एवं मृदा की भौतिक एवं रासायनिक दृष्टि से सर्वाधिक उपयुक्त पाया गया। सबसे कम उपज (1195 कि.ग्रा./हे.) नियंत्रित उपचार से प्राप्त हुई।
- **हार्मोन्स का प्रयोगः सोयाबीन फसल में स्टेन्स 110 एस.सी. का प्रयोग–**सोयाबीन के उत्पादन में साईक्लेनिलाईड़ 22 + मेंपीक्वॉट क्लोराईट 88 एस.सी. 150 एम.एल./हे. का छिड़काव 30 एवं 45 दिन की फसल अवस्था पर करने से 14.3: अधिक उपज, अन्य उपचार की तुलना में प्राप्त हुई।
- **शुष्क अवस्था में कृषकों को सहभागित द्वारा चने की प्रजातिओं का आकंलन –**रबी वर्ष 2016–17 में 8 चने की विभिन्न जतियों– जे.जी.–16, जे.जी. –6,जाकी –9218, काक–2, आई.जी.–593, उज्जैन – 21,आई.जी–11 व जे.जी. –130 के परिक्षण से प्राप्त आंकड़े दर्शाते है की चने की जाति जाकी–9218 से सर्वाधिक उपज 1838 कि.ग्रा/हे., शुद्ध लाभ रू. 98916/– और लाभ लागत अनुपात 7:60 प्राप्त हुआ जो कि अन्य प्रविश्ठीयों की तुलना में अधिक पाया गया।
- **मालवा क्षेत्र के मानसूनी विचलन की स्थिति में आकस्मिक फसल प्रयोग –** मालवा क्षेत्र के मानसूनी विचलन की स्थिति में सोयाबीन, फसल पर 1:पोटेशियम नाइट्रेट, 2: पोटेशियम क्लोराईड एवं थायोयूरिया 250 ग्राम/हे., अकेले एवं इन तीनों के साथ ट्रायजोफास 600 मी.ली./हे. टंकी में सीधे मिलाकर सोयाबीन की वानस्पतिक एवं फूल/फली बनने की अवस्था (25 से 30 एवं 55 से 60 दिन अवस्था) में पर्णीय छिड़काव किया गया । परिणाम से प्राप्त आंकड़ों में पाया गया कि सोयाबीन पर अकेले 1: पोटेशियम नाइट्रेड या 2: पोटेशियम क्लोराईट या थायोयूरिया 250ग्राम/हे. तथा ट्रायजोफास 600 मी.ली./हे. टंकी में सीधे मिलाकर छिड़काव करने से कोई सार्थक अंतर नही पाया गया। सोयाबीन की अधिकतम उपज 1294 कि.ग्रा./हें. उपचार 1:पोटेशियम नाइट्रेट + ट्रायजोफास 600 मी. ली./हे. प्राप्त हुई। जो कि अन्य उपचारो की तुलना में अधिकतम पायी गयी। जबकि नियंत्रित उपचार से 900 कि. ग्रा./हे. उपज प्राप्त हुई।
- बी.टी. कपास की सस्य आवश्यकताएँ परखी गई। बी.टी.कपास सँकर + निकट दूरी (अनुशंषित से 25% कम) अनुशंषित से 125 % नत्रजन एवं पर्णीय छिड़काव उपयुक्त पाए गए। जैविक कपास की उत्पादन तकनीक ज्ञात की गई। अनुशंषित नत्रजन अकार्बनिक स्त्रोत से देना सर्वाधिक उपयुक्त पाया गया।अधिक उपज देने वाली प्रजातियों का परीक्षण जल अल्पता की परिस्थिति में किया गया। परीक्षण की गई 21 प्रजातियों मे से टी एस एच – 327, टी सी एच–1199 ए आर – 9108 एवं आर सी एच–1217 जल अल्पता की परिस्थिति में बेहतर पायी गई।

मौसम परिवर्तन के लिए सात जातियों का परीक्षण किया गया। सामान्य बुवाई तिथि (डी–1 26.6.16), प्रजाति जी–1 (राशि–659 बी जी प) एवं जी–4 (जे.के.5) में अधिकतम उपज पायी गई। पारस्परिक क्रिया अंतर्गत डी 1 जी 1 एवं डी 1 जी 4 ने बेहतर परिणाम दिए।

- मध्यम अवधि की अरहर संकर किस्मों के परिक्षण में 9 संकर किस्मों का परिक्षण किया गया, जिनकी पकने की अवधि 168 से 185 दिन थी। सीहोर केन्द्र एवं झोनल स्तर की पक्वता अवधि लगभग बराबर थी। सीहोर केन्द्र पर संकर आय.सी.पी.एच. 3474 ने सर्वाधिक अधिक उपज (2039 कि./हे) प्राप्त की। इसके पश्चात संकर जी.आर..पी. एच. 2751 ने द्वितीय स्थन पर 2012 कि.ग्रा./हे. प्राप्त की।झोनल स्तर पर भी दोनो संकर क्रमशः प्रथम एवं द्वितीय स्थान पर रहे।
- इक्सिेट की कम अवधि की 12 अरहर संकर किस्मों का परिक्षण सीहोर केन्द्र पर किया गया.। इनकी औसतन परिपक्वता अवधि 150 दिन रही। एम.एन. 5 सर्वाधिक बौनी किस्म पाई गई, जिसकी उंचाई केवल 84.5 से.मी. थी। इनमे सर्वाधिक उपज आय.सी.पी.एच. 3683 ने (1205 कि./है) प्राप्त की, जो कि चेक आय.सी.पी. 88039 (643.2 कि. /है) से 87.4 प्रतिशत अधिक थी।इसके पश्चात आय.सी.पी.एच. 3674 ने द्वितीय स्थान पर 1048.74 कि.ग्राम/हे. उपज प्राप्त की। इन दोनो संकर की पक्वता अवधि 149 दिन रही।

बीज उत्पादन–

- विश्वविद्यालय के 27 बीज उत्पादन प्रक्षेत्रों के माध्यम से बीज उत्पादन का कार्य चल रहा है। प्रक्षेत्रों का कुल क्षेत्र 1210.85 हेक्टेयर है जिसमें से 64.45 प्रतिशत (780.37 हेक्टेयर) में बोआई की जाती है। बोआई क्षेत्र क्रमशः 13.39 प्रतिशत, 34.59 प्रतिशत और 52.02 प्रतिशत क्षेत्र सिंचित आंशिक सींचित एवं वर्षा अधारित क्षेत्र के अंर्तगत आता है।
- कृषकों को बीज बदलने में मद्द हेतु विश्वविद्यालय विभिन्न फसलों का बीजोत्पादन कर रहा है ताकि फसलों की उत्पादकता को बढ़ाया जा सके।
- विश्वविद्यालय द्वारा वर्ष 2016–17 में 11724.41 क्विंटल बीज का उत्पादन किया गया। इसके अंतर्गत खरीफ 2016 में कुल बीज का उत्पादन 5011.42 क्विंटल प्रप्त हुआ जिसमें सोयाबीन, मूंग, उड़द, धान, कपास,एवं आधार फसलों का बीज है। इसी प्रकार सीजन रबी 2016–17 में कुल बीज का उत्पादन 6712.99 क्विंटल प्राप्त हुआ। जिसमें गेहूं, चना, सरसों, मसूर, तोरिया, एवं कुसुम फसलों का बीज है।

प्रसार –

- कृषि विज्ञान केन्द्रों द्वारा आर.वी.एस.के.वी.वी, अन्य कृषि विश्वविद्यालयों एवं अन्य संस्थाओं द्वारा विकसित नवीन तकनीकों के प्रभाव का आंकलन करने के लिए विभिन्न क्षेत्रों जैसे फसलोत्पादन, पशुपालन, कृषिअभियांत्रिकी, कटाई उपरान्त प्रबन्धन पर आधारित 276 प्रक्षेत्र परीक्षण आयोजित किये गये, जिससे 2531 कृषक लाभान्वित हुए।
- नवीन तकनीकों को कृषकों तक पँहुचाने के उद्देश्य से 1953.29 हे. क्षेत्रफल में फसलों पर 85558 कृषकों के यहाँ अग्रिम पंक्ति प्रदर्शन आयोजित किये गये। इनके अतिरिक्त मछली पालन, पशुपालन, केचुंआ खाद, मूल्य संवर्धन, कटाई उपरान्त प्रबन्धन आदि उद्यमों तथा कुपोषण एवं अभियंत्रण पर 310 अग्रिम पंक्ति प्रदर्शन भी आयोजित किये गये।
- इस वर्ष 1176 प्रशिक्षण आयोजित किये गये, जिससें 29914 किसान, ग्रामीण युवा, महिलायें, प्रसार कार्यकर्ता एवं सरकारी कर्मचारी लाभान्वित हुये ।
- क्षेत्र के किसानों में जागरूकता लाने के उद्देश्य से, किसान मेले, बैठक, कृषक दिवस, प्रदर्शनी आदि सहित 28019 विस्तार गतिविधियां आयोजित की गई, जिनमें 991763 कृषक लाभान्वित हुये।
- कृषि विज्ञान केन्द्रों के वैज्ञानिकों द्वारा में 75 फोल्डर्स, 16 पुस्तिकाएं, 18 बुक्स, 56 न्यूजलेटर, 5 प्रशिक्षण मैन्युअल एवं 78 अनुसंधान प्रपत्र तैयार किये गये। इनके अतिरिक्त विभिन्न कृषि पत्रिकाओं तथा समाचार पत्रों में कृषि विज्ञान केन्द्रों के वैज्ञानिकों के 69 आलेख भी प्रकाशित हुए।
- तिलहन, दलहन, सब्जियों, मसालें एवं खाद्यान फसलों के 3794.13 क्विंटल बीज, 438192 पौध तथा विभिन्न फल वृक्षों पौधे उत्पादित कर 7970 कृषकों, शासकीय विभागों एवं सहकारी संस्थाओं को उपलब्ध कराये गये।
- कृषि विज्ञान केन्द्रों द्वारा 37549 मृदा नमूनों का विश्लेषण कर एवं इनका 75351 मृदा स्वास्थ्य पत्रक तैयार कर कृषकों को वितरित किये गये।
- किसान मोबाईल सलाह सेवा के द्वारा नवीन कृषि तकनीक से संबन्धित 1409 संदेश भेजे गये, जिसमें 119 विकासखण्डों के 10162 ग्रामों के 1063722 कृषक लाभान्वित हुए।
- इस वर्ष 24 कृषि विज्ञान केन्द्रों में 40 वैज्ञानिक सलाहकार समिति की बैठकें रबी एवं खरीफ की फसल की बुवाई के पूर्व आयोजित की गई, इनमें कृषि विज्ञान केन्द्रों की गतिविधियों का प्रगति प्रतिवेदन प्रस्तुत किया गया तथा आगामी मौसम हेतु कार्ययोजना पर चर्चा की गई।
- निदेशालय विस्तार सेवायें द्वारा इस वर्ष विभिन्न विषयों पर 02 कृषि संगोष्ठी, 03 कार्यशालायें एवं 4 केपेसिटी कार्यक्रम आयोजित की गई, जिसमें विभिन्न कृषि विज्ञान केन्द्रों के वैज्ञानिकों ने भाग लिया।
- विश्वविद्यालय द्वारा 05 महाविद्यालयों तथा 03 आंचलिक कृषि अनुसंधान केन्द्रों के माध्यम से 'मेरा गांव मेरा गौरव' कार्यक्रम संचालित किया जा रहा है। इस कार्यक्रम में विश्वविद्यालय के वैज्ञानिकों द्वारा विभिन्न ग्रामों में नियमित रूप से संगोष्ठी तथा प्रदर्शन आयोजित किये जा रहे है तथा कृषकों को नवीन कृषि तकनीकों पर सलाह दी जा रही है।

1. INTRODUCTION

1. Mission:

- To impart education, conduct research and extension activities for enhancing productivity, optimization of profit, sustainability of agriculture and allied sectors and improving rural livelihood in the state of Madhya Pradesh.

2. Mandate:

- To serve as a centre of higher education in the field of agriculture and allied sciences.
- To conduct basic, strategic, applied and anticipatory research in the field of agriculture and allied sciences.
- To disseminate technologies to farmers, extension personnel and organizations engaged in agricultural development through various extension programmes.
- To produce and supply of genuine seed and planting material to the farmers.

3. Area of Jurisdiction:

RVSKVV, Gwalior is responsible for Agricultural Education, Research and Extension in following 26 revenue districts of the state:

Sheopur, Morena, Bhind, Gwalior, Shivpuri, Guna, Ashoknagar, Datia, Dewas, Shajapur, Agar Malwa, Ujjain, Indore, Dhar, Jhabua, Alirajpur, Ratlam, Mandsaur, Neemuch, Khargone, Badwani, Khandwa, Burhanpur, Bhopal, Sehore and Rajgarh.

The area under University jurisdiction is a part of the Deccan Plateau and comprises plateaus with mean elevation of 1600 feet above mean sea level; inter spread with the mountains of the Vindhya and Satpura ranges. The maximum height of 1350 m is recorded in Satpura range on the other hand 150 m height is found in Chambal Valley. The main river systems are the Betwa, Chambal, Narmada, Sindh and Tapti. Nearly one third of the state area is covered with tropical forest. The area contains three types of soils, varying from alluvial to medium and heavy black Vertisols with six agro climatic zones.

The geographical area of the state under the University jurisdiction is 137.16 lakh hectares out of this, 74.72 lakh hectares is under cultivation, 24.51 lakh hectares under Kharif and 36.45 lakh hectare under rabi fallow. Out of the total cultivated area,

49.42% is irrigated. However, the area under irrigation varies from as low as 18.85% in Jhabua district to as high as 75.63% in Datia district.

The economy of the area is primarily agriculture based. Nearly 75% population is engaged in agriculture. The Malwa region abounds in rich black cotton soil. The low lying areas of Gwalior and Bundelkhand have light soils, whereas the Narmada Valley is formed by deep rich alluvial deposits.

4. Climatic Conditions:

The overall climate varies from semiarid to sub humid with hot summer; cool and dry winter with an average annual rainfall ranging from 600 to1000 mm. Mean annual rainfall is 1029.21mm.

In general, aberrant monsoon behavior is a common feature in the region that usually creates abnormal weather conditions including long dry spells of 8-20 days duration in the middle of the season.

5. Agro Climatic Zones

Out of 11 agro climatic zones of the state, following six are under the jurisdiction of RVSKVV, Gwalior:

- Gird Zone
- Malwa Plateau
- Nimar Valley
- Jhabua Hills
- Vindhya Plateau (Partial)
- Bundelkhand Zone (Partial)

6. Major Crops and Cropping Pattern

- The main food crops of the area are wheat, rice, mustard, lentil and millets. Important among commercial crops grown in the area are pulses, oil seeds and medicinal crops. The state is poised for a breakthrough in soybean cultivation.
- The area coverage of soybean, groundnut and cotton under the jurisdiction of the University is 69, 66 and 55 per cent, which contributes to about 68, 67 and 56 per cent in total production of these crops in the state respectively. Chickpea, pea, black gram and wheat contributes about 35, 24, 54 and 48 per cent of the total state production from an area of only 20, 05, 46 and 40 per cent, respectively. The productivity of these crops in the region is higher than the state average.
- Area under horticultural crops is showing an increasing trend under the University jurisdiction. Mandarin, sweet oranges and limes under assured irrigation and guava, ber, aonla and custard apple without irrigation in Gird region, orange, grape, chiku, mosambi and acid lime in Malwa plateau; banana, papaya, lime and chiku in Nimar valley and lime, ber, guava, aonla and custard apple in Jhabua hills bloom well. Vegetables like Tomato, Potato, Sweet potato, Brinjal, Okra, Cole crops (Cabbage, Cauliflower), Drumstick, Radish, Carrot, Cucurbits, Arbi, Beans and Leafy vegetables etc. are grown in large acrage. Among the spice crops, turmeric, corriander, ajwain, chillies, garlic, fenugreek and fennel have their own specialties in different agro-climatic zones. The area coverage under seasonal flowers is also showing an increasing trend.

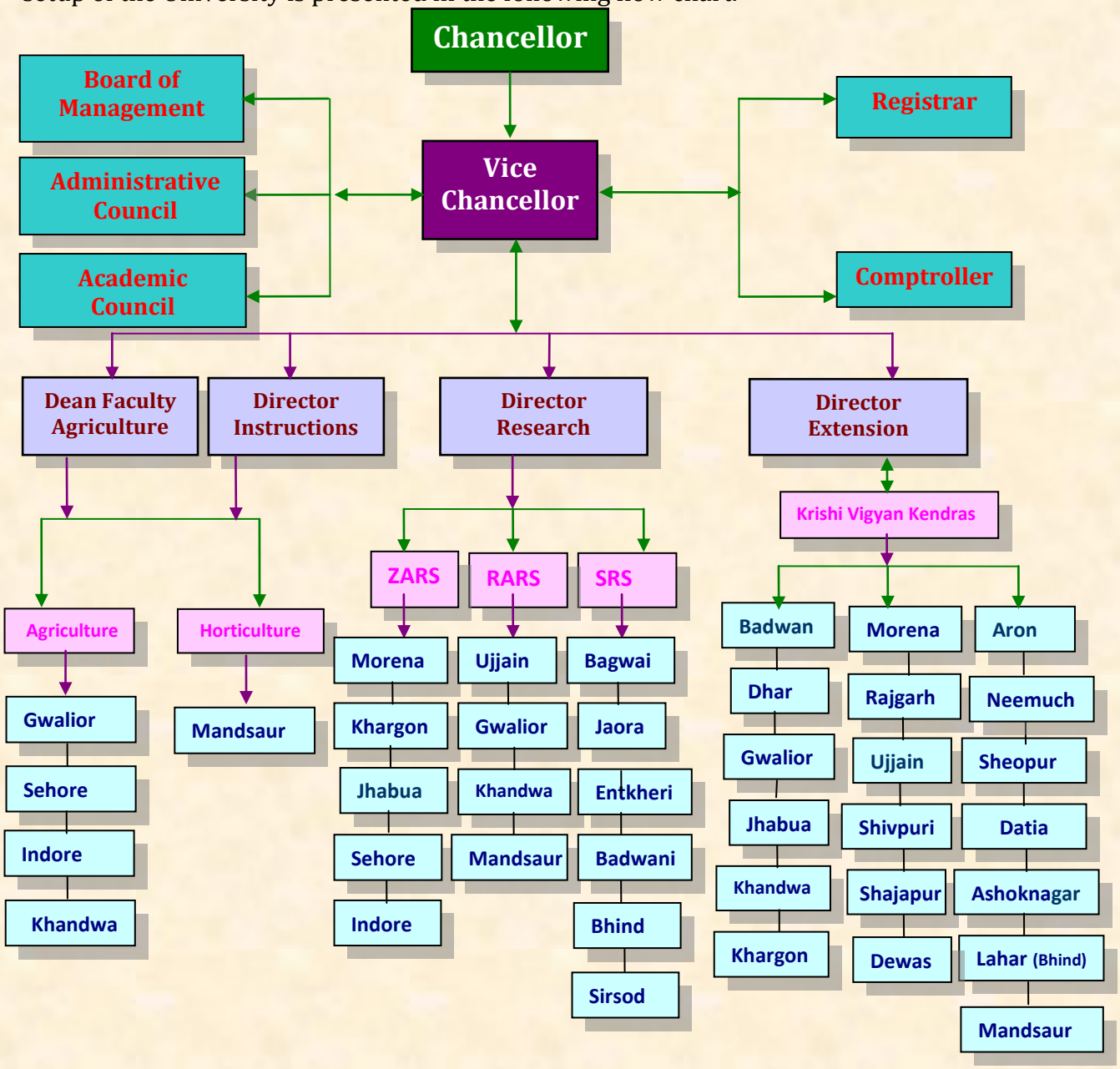
7. Organizational Setup:

Hon'ble Governor of Madhya Pradesh is the Chancellor of the University, and Vice-Chancellor is the Academic Head and Chief Executive of the University, who is supported by the following authorities:

- *Board of Management*
- *Academic Council*
- *Administrative Council*

The University comprises of Faculty of Agriculture headed by Faculty Dean. The constituent colleges are headed by respective Deans. Heads of the Departments are the key persons for teaching, research and extension of the respective discipline/department. Committee of Faculty of Agriculture and Extension Council are also constituted by Vishwa Vidyalaya.

Director Instructions, Director Research Services and Director Extension Services are responsible University authorities for human resource development, research activities and extension activities, respectively. Registrar and Comptroller support the Vice-Chancellor in administration and financial matters. The organizational setup of the University is presented in the following flow chart.



2. ACADEMIC HIGHLIGHTS:

Academic excellence is the backbone of every institute of higher learning. The responsibility increases many folds when the institute aspires for generating world class graduates with the competence to stand tall as a nation builder. It is through the dissemination of latest technologies and changing knowledge from the global prospective to grass root level that the desirable development in the broad area of agriculture can be attained. The demanding trends in Agriculture/Horticulture need an increase in faculties in such fields and disciplines which have a tremendous market value so that the products of the University are not inclined to government jobs only but would be able to involve themselves in a variety of fields that can boost economy at the State and National level. Therefore resident instruction programme is carried out in the areas of Agriculture and Horticulture in four Agriculture colleges and one Horticulture College in the University.

2.1 Profile of the Colleges:

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya offers undergraduate, post graduate and Ph.D. programmes in the faculty of Agriculture. At present, the University has four Colleges of Agriculture and one college of Horticulture under the faculty of Agriculture. Four constituent Colleges of Agriculture are located at Gwalior, Indore, Sehore and Khandwa and one College of Horticulture is located at Mandsaur. All these colleges offer Under Graduate and Masters Degree Programmes in different disciplines. Ph.D. programme is offered only at College of Agriculture, Gwalior. The list of colleges with their location, year of establishment and degree programmes offered is given below.

RAJMATA VIJAYARAJE SCINDIA KRISHI VISHWA VIDYALAYA, GWALIOR (2008)

CoA, Gwalior (1950)

CoA, Sehore (1952)

CoA, Indore (1959)

CoA, Khandwa (1987)

CoH, Mandsaur (2002)

2.1.1 Details of the Colleges:

S. No.	Name of College with location	Year of Establishment	Degree Programme Offered
I	**Faculty of Agriculture**		
1.	**College of Agriculture, Gwalior**	1950	**(i) B.Sc. (Ag.)** **(ii) M.Sc. (Ag.)** (1) Agronomy (2) Entomology (3) Extension Education (4) Agriculture Economics & Farm Management (5) Plant Breeding and Genetics (6) Plant Pathology (7) Soil Science & Agricultural Chemistry (8) Environmental Science (9) Plant molecular biology & Biotechnology (10) Fruit Science (11) Vegetable Science **(iii) Ph.D.** (1) Agronomy (2) Entomology (3) Extension Education (4) Agriculture Economics & Farm Management (5) Plant Breeding and Genetics (6) Plant Pathology (7) Soil Science & Agricultural Chemistry (8) Fruit Science (9) Vegetable Science
2.	**RAK, College of Agriculture, Sehore**	1952	**(i) B.Sc. (Ag.)** **(ii) M.Sc. (Ag.)** (1) Agronomy (2) Entomology (3) Extension Education (4) Agriculture Economics & Farm Management (5) Plant Breeding and Genetics (6) Plant Pathology (7) Soil Science & Agricultural Chemistry (8) Vegetable Science
3.	**College of Agriculture, Indore**	1959	**(i) B.Sc. (Ag.)** **(ii) M.Sc. (Ag.)** (1) Agronomy (2) Entomology (3) Extension Education (4) Agriculture Economics & Farm Management (5) Plant Breeding and Genetics (6) Plant Pathology (7) Soil Science & Agricultural Chemistry (8) Vegetable Science
4.	**BM, College of Agriculture, Khandwa**	1987	**(i) B.Sc. (Ag.)** **(ii) M.Sc. (Ag.)** Plant Pathology
5.	**KNK, College of Horticulture, Mandsaur**	2002	**(i) B.Sc. (Hort.)** **(ii) M.Sc. (Hort.)** (1) Fruit Science (2) Vegetable Science (3) Plantation, Spices, Medicinal & Aromatic Crops (4) Floriculture & Landscape Architecture

Resident instruction programme is one of the mandates of the University *i.e.* impart education in Agriculture and Horticulture to produce graduates and post graduates ready to face the existing and new challenges in agriculture sector.

The University follows the semester system of education. Completion of a degree programme requires successful study of prescribed courses as approved by the Academic Council of the University. Course contents of all subjects are periodically updated and new courses are occasionally added to the degree requirement to cope up with the challenges of upcoming technologies. The University follows 10 point scale evaluation system approved by ICAR. Individual attention of each and every student is ensured through the advisory system. At Under graduate level, for a group of 5-10 students, one faculty advisor is appointed for each class and at Post-Graduate level, for each student, an advisory committee consisting of 3-4 faculty members is appointed. The teacher/ advisory guide, supervises and monitors the academic performance of his/her advises besides helping them in their personal problems. The advisor also maintains a close contact with parents/guardians of the students and informs them about the progress of their works/performance.

2.2 Admission Procedure

2.2.1 Undergraduate Programmes

Admission in first year of B.Sc. (Ag.) and B.Sc. (Hort.) is done on the basis of the merit list provided by the Professional Examination Board of the State Government, located at Bhopal. The board conducts a Pre-Agriculture Test (PAT) for B.Sc. (Ag.) and B.Sc. (Hort.). The roster for reservation of seats for UG and for PG as per provisions made by the State Government for different categories is strictly followed. All possible efforts are made to fill up all seats of different categories by repeated counseling of the students.

2.2.2 Postgraduate Programmes

Admissions in post graduate programmes are made by the University through joint entrance examination basis. As per merit list, admissions are given to the students in the subject of their choice; subject to the availability of seats. The roster of reservation is also followed for these admissions.

2.2.3 Ph.D. Programmes

Similarly, in Ph.D. programme admission is made through joint entrance examination basis.

2.3 Allocation of Seats and Roster:

During the academic year 2017-18, the total intake capacity was 709 out of which 364 were in undergraduate (UG), 282 in postgraduate (PG) and 63 in Ph.D. degree programme. In the undergraduate level, out of 364 total seats, 308 seats were in B.Sc. (Ag.) and 56 in B.Sc. (Hort.) degree programme. In the post graduate level, out of 282 seats, 210 seats were in M.Sc. (Ag.) and 72 in M.Sc. (Hort.). Similarly, in Ph.D. programme, out of 63 total seats, 49 seats were in agriculture and 14 were in Horticulture discipline.

2.3.1 Intake Capacity (Degree wise):

S.No.	Faculty	Intake Capacity				Total
		Free seats	Payment seats	NRI	ICAR	
Degree Programmes						
1.	B.Sc. (Ag.)	220	44	11	33	308
2.	B.Sc. (Hort.)	40	08	02	06	56
	Total	**260**	**52**	**13**	**39**	**364**
1.	M.Sc. (Ag.)	94	94	-	22	210
2.	M.Sc. (Hort.)	32	32	-	08	72
	Total	**126**	**126**	**-**	**30**	**282**
1.	Ph.D. Agriculture	28	14	**-**	07	49
2.	Ph.D. Horticulture	08	04	**-**	02	14
	Total	**36**	**18**	**-**	**09**	**63**
	Grand Total	**422**	**196**	**13**	**78**	**709**

2.3.2 Under Graduate: B.Sc. (Ag. /Hort.)

(A) B.Sc. (Ag.)

Allocation of Seats		Boys	Girls	Total
Roster				
Free Seats	General	50	31	**81**
	ST	36	14	**50**
	SC	24	11	**35**
	OBC	44	13	**57**
Payment Seats		48	02	**50**
NRI Seats		-	-	**06**
Nominee/Fellow	ICAR	25	04	**29**
Total		**227**	**75**	**308**

(B.) B.Sc. (Hort.)

Allocation of Seats		Boys	Girls	Total
Roster				
Free Seats	Gen.	14	06	20
	ST	05	03	08
	SC	05	02	07
	OBC	03	02	05
Payment Seats		06	02	08
NRI Seats		-	-	02
Nominee/Fellow	ICAR	04	02	06
Total		**37**	**17**	**56**

2.3.3 Post Graduate: M.Sc. (Ag. /Hort.):

(A) M.Sc. (Ag.)

S. No.	Department	Campus wise seats for PG programmes (Masters degree)											GRAND TOTAL
		Gwalior		Indore		Sehore		Khandwa		Total			
		F	P	F	P	F	P	F	P	ICAR	F	P	
1.	Agronomy	4	4	4	4	4	4	-	-	3	12	12	27
2.	Agril. Eco. & FM	4	4	4	4	4	4	-	-	3	12	12	27
3.	Entomology	4	4	4	4	4	4	-	-	3	12	12	27
4.	Extension Education	4	4	4	4	4	4	-	-	3	12	12	27
5.	Plant Breeding & Genetics	4	4	4	4	4	4	-	-	3	12	12	27
6.	Plant Pathology	4	4	4	4	4	4	4	4	4	16	16	36
7.	Soil Science & Agril. Chemistry	4	4	4	4	4	4	-	-	3	12	12	27
8.	Plant Molecular Biology & Biotechnology	4	4	-	-	-	-	-	-	-	4	4	8
9.	Enviornmental Science	2	2	-	-	-	-	-	-	-	2	2	4
Total		**34**	**34**	**28**	**28**	**28**	**28**	**4**	**4**	**22**	**94**	**94**	**210**

(B) M.Sc. (Hort.)

S. No.	Department	Campus wise seats for PG programmes (Master degree)											Total
		Gwalior		Indore		Sehore		Mandsaur		Total			
										ICAR	TOTAL		
		F	P	F	P	F	P	F	P	F	F	P	
1.	Fruit Science	4	4	-	-	-	-	4	4	2	8	8	18
2.	Vegetable Science	4	4	4	4	4	4	4	4	4	16	16	36
3.	Plantation, Spices, Medicinal & Aromatic Crops	-	-	-	-	-	-	4	4	1	4	4	9
4.	Floriculture & Landscape Architecture	-	-	-	-	-	-	4	4	1	4	4	9
Total		**8**	**8**	**4**	**4**	**4**	**4**	**16**	**16**	**8**	**32**	**32**	**72**

2.3.4 Ph.D. (Ag./Hort.):

(A) Agriculture:

S.No.	Faculty	Intake Capacity				Total
		Free seats	Payment seats	NRI	ICAR	
1.	Ph.D. Agriculture	28	14	**-**	7	49

(B) Horticulture:

S.No.	Faculty	Intake Capacity				Total
		Free seats	Payment seats	NRI	ICAR	
1.	Ph.D. Horticulture	08	04	**-**	2	14

2.4 Students Strength:

2.4.1 Students Admitted:

S. No.	Degree Programme	No. of Students
1.	B.Sc. (Ag.)	309
2.	B.Sc. (Hort.)	49
	Total	**358**
1.	M.Sc. (Ag.)	217
2.	M.Sc. (Hort.)	33
	Total	**250**
1.	Ph.D. (Ag. /Hort.)	-
	Total	**-**
	Grand Total	**608**

2.4.2 **Students Strength at a Glance:** During the year 2017-18, total 1929 students were on the roll of the University, out of which 1325 in UG, 515 in PG and 89 in Ph.D. degree programmes.

S.No.	Degree Programme	No. of Students
1.	B.Sc. (Ag.)	1138
2.	B.Sc. (Hort.)	187
	Total	**1325**
1.	M.Sc. (Ag.)	468
2.	M.Sc. (Hort.)	45
	Total	**515**
1.	Ph.D. (Agri. /Hort.)	**89**
	G. Total	**1929**

2.4.3 Gender Wise Students Strength:

During the year 2017-18, a total of 1361 boys and 637 girls' students were on the roll of the University, out of which, 952 boys and 424 girls were in UG, 356 boys and 185 girls in PG, and 53 boys and 28 girls were in Ph.D. degree programmes.

S.No.	Degree Programme	Gender Wise Students Strength		Total
		Boys	Girls	
1.	B.Sc. (Ag.)	775	363	1138
2.	B.Sc. (Hort.)	122	65	187
	Total	**897**	**428**	**1325**
1.	M.Sc. (Ag.)	306	162	468
2.	M.Sc. (Hort.)	36	11	47
	Total	**342**	**173**	**515**
1.	Ph.D. Agri./Hort.	51	38	89
	Total	**51**	**38**	**89**
	Grand Total	**1290**	**639**	**1929**

2.5 Teaching Status:

Completion of a degree programme requires successful study of the courses as approved by the Academic Council. Every student has to study a set of prescribed courses per semester. The semester wise courses offered and total credits covered in different undergraduate and postgraduate degree programmes are given below:

2.5.1 Under Graduate: B.Sc. (Ag. /Hort.)

(A) B.Sc. (Ag.)

B.Sc. (Ag.)	Courses offered (No.)		Total Credits	
	I Sem.	II Sem.	I Sem.	II Sem.
I Year	8	9	20 (14+6)	22 (14+8)
II Year	10	9	26 (15+11)	23 (13+10)
III Year	8	9	20 (13+7)	18 (10+8)
VI Year	5*	6**	20 (0+20)	20 (6+14)
Total	**26**	**33**	**86 (42+45)**	**83 (43+40)**

RAWE/RHWE*, ELP**

(B) B.Sc. (Hort.)

B.Sc. (Hort.)	Courses offered (No.)		Total Credits	
	I Sem.	II Sem.	I Sem.	II Sem.
I Year	11	09	21(13+8)	21(12+9)
II Year	10	09	25(14+11)	23(13+10)
III Year	08	08	19(11+8)	20(12+8)
VI Year	02	02	20(5+15)	20(5+15)
Total	**31**	**28**	**85**(43+42)	**84**(42+42)

2.5.2 Post Graduate: M.Sc. (Ag. /Hort.):

S. No.	Subject/Department	Courses offered (No.)		Total Credits	
		I Sem.	II Sem.	I Sem.	II Sem.
1.	Agronomy	11	09	21 (16+5)	19 (13+6)
2.	Agricultural Economics & Farm Management	10	11	17 (13+4)	22 (14+8)
3.	Entomology	10	11	16 (9+7)	21(13+8)
4.	Extension Education	10	09	18 (12+6)	18 (12+6)
5.	Plant Breeding & Genetics	10	09	20 (13+7)	16 (10+6)
6.	Plant Pathology	11	10	21 (14+7)	19 (12+7)
7.	Soil Science & Agricultural Chemistry	10	09	21 (14+7)	19(13+6)
8.	Fruit Science	10	09	22 (15+7)	16 (10+6)
9.	Vegetable Science	10	09	22 (15+7)	17 (11+6)
10.	Plantation, Spices, Medicinal & Aromatic Crops	10	09	22 (15+7)	17 (11+6)
11.	Floriculture & Landscape Architecture	10	09	22 (15+7)	18 (12+6)

2.5.3 Ph. D. (Ag. /Hort.):

(A) Agriculture:

S. No.	Department	Course offered (No)		Total credits	
		I Sem	II Sem	I Sem	II Sem
1.	Agronomy	09	09	17(13+4)	14 (12+2)
2.	Agricultural Economics & FM	09	09	16 (11+5)	17 (11+6)
3.	Entomology	10	10	15 (11+4)	14 (10+4)
4.	Extension Education	09	09	16 (11+5)	18 (12+6)
5.	Plant Breeding & Genetics	09	09	12 (10+3)	16 (12+4)
6.	Plant Pathology	09	09	17 (11+6)	13 (10+3)
7.	Soil Science & Agricultural Chemistry	09	10	15 (12+3)	17 (14+3)

(B) Horticulture:

S. No.	Department	Course offered (No)		Total credits	
		I Sem	II Sem	I Sem	II Sem
1.	Fruit Science	09	08	17 (11+6)	13 (10+3)
2.	Vegetable Science	10	08	19 (12+7)	13 (10+3)

2.6 Experiential Learning Programme: As per the recommendations of Fifth Dean's Committee that the B.Sc. (Ag.)/B.Sc. (Hort.) graduates must have adequate hands on experience on different aspects of agriculture/horticulture. For this purpose, the experiential learning programme has been introduced in the final year that includes different aspects of horticulture and agriculture.

Modules of Experiential learning programme	Nos. of students
A. B.Sc. (Ag.)	**306**
Module – I Crop Production	
Seed Production Technology	
Remote Sensing, GIS & Land Use Planning	
Integrated Farming System	
Water Management	
Soil Management	
Management of Post Harvest Insect Pests & Diseases	
Module – II Crop Protection	
Integrated Pest & Disease Management	
Management of Post Harvest Insect Pests & Diseases	
Non Insect Pest Management	
Pesticides and Plant Protection Equipments	
Nursery Management of Horticultural Crops	
Integrated Farming System	
Module – III Horticulture	
Commercial Vegetable Production	
Commercial Floriculture	
Nursery Management of Horticultural Crops	
Processing & Value Addition of Horticultural Crops	
Integrated Pest & Disease Management	
Management of Post Harvest Insect Pests & Diseases	
Module IV	
Commercial Vegetable Production	
Nursery Management of Horticulture crops	
Protected cultivation of Horticultural crops and seed production of vegetable and flowers	
Processing and value addition of horticultural and crops	
Integrated Pest and Disease Management	
Mushroom cultivation	
Module V	
Nursery Production and management	
Module VI	
Protected cultivation of high value vegetable crops	
Module VII	
Floriculture & Landscape Gardening	
Module VIII	
Value addition in horticultural crops	
B. B.Sc. (Hort.)	48
Module I	
Nursery production and management	
Module II	
Protected Cultivation of High value horticultural crops	
Module III	
Floriculture and Landscape Gardening	
Module IV	
Post harvest technology and value addition	

GLIMPSES OF EXPERIENTIAL LEARNING PROGRAMME

2.7 Rural Agricultural/Horticultural Work Experience (RAWE/RHWE): As a part of regular curriculum, the final year students of B.Sc. (Ag.) and B.Sc. (Hort.) are placed in rural areas for one semester in selected villages through Krishi Vigyan Kendras (KVKs) working in the region, where each student is attached to one host farmer for practical training with regards to crop production, crop protection, economics and also dynamics of the rural society. Further, some social activities were also performed by the students like sanitation in the village, plantation in the premises of primary and middle schools.

RAWE/RHWE AT A GLANCE

S.No.	Particular	Gwalior	Sehore
1.	**No. of student**	Boys 54 +Girls 21 **Total 75**	Boys 59+Girls27 **Total 92**
2.	**Adopted villages/ KVKs**	**KVK, Aron:-** Sarkho, Araskheda **KVK, Seopur: -** Indrapura, Lalitpura, Galmania, Baroda, Dharampura	**KVK,** Dewas **KVK,** Shajapur
3.	**Technologies Dessimenated**	1. Hybrid Verities of vegetable crops 2. Water conservation Technology 3. Seed treatment in Kharif and rabi crops 4. Spacing, 5. Plant protection in soybean, ground nut, pigeon pea. and mustard 6. Soil sampling, 7. Application of Micro-nutrients 8. Management Practices of animal husbandry	Soil testing Demonstration on seed treatment and other new agriculture technology. Use of improved seed Seed treatment of different crops. Increase the use of organic manures. Water Harvesting. Biogas plant Proposed improved cultural practices for Agricultural crops, vegetables and fruit crops. Mushroom production. Method and Result Demonstration of different agri.practices Participation in Blood Donation Camp, Health Care Camp& Animal care Camp. Cleaning of Drinking Water Giving Information about the cleanliness of Teeth, Cloths & Hand. Establishing a library in a village with the help of Sarpanch and young people of the village. Organizing Games, Sports, Social Service Clubs, Recreation clubs, kisan mandal, yuva mandal ,mahila mandal. & Bhajan mandals. Providing information through Bulletins, Charts, Graphs and samples. Repairing village Roads. Construction of soak pits and cleaning of drainage channels. The Case study of the beneficiaries of the various agricultural Development programmes like DPAP, IRDP, ATMA, TRYSEM, JRY, INDIRA AWAS YOJNA etc.

S.No.	Particular	Indore	Khandwa	Mandsaur
1.	**No. of student**	Boys59+Girls31 **Total 90**	Boys42+Girls13 **Total 55**	Boys 35**+** Girls 18 **Total 53**
2.	**Adopted villages/KVKs**	**KVK,** Ujjain **KVK,** Dhar	**KVK Badwani -** Lonsara, Taloon, Balkunwa and Kalivedi **KVK Khargone-** Baijapur, Dhibgaon	**I Semester :-** Boys 17- KVK, Ratlam (Village- Maota, Bhimakheda, Sukheda and Ranayara) Girls 07– KVK, Neemuch (Village-, Malkheda and Jaysinghpura) **II Semester :-** Boys 17– KVK, Neemuch (Village-, Jaisinghpura, Hanumantiya panwar and Malkheda) Girls - 07- KVK, Ratlam (Village- Talidana and Riyawan)
3.	**Technologies Dessimenated**	**Social Activity-** Parthanium, Eradication, Mid Day Meal Program, Vaccination Camp Plantation Artificial Jewelry Making, Festival celebration as, Navratri mandal **PRA Exercise** Social Mapping Farm Mapping Wealth Ranking Venn diagram preparation Discussion of Rural Problem Demonstration of Water Harvesting Tank Organizing Krishak Sangoshthi **Other Activities** Fruit Preservation Participation in Krishi Mahotsav Participation in Krishi Mela Awareness towards the farmers for the program of Mera Goan Mera Gourav **Agricultural Activities** Germ Plasm Collection Economic Budgeting for the rural family Farmers Meeting Field Meeting Exhibition	Drip irrigation system Strategy for cost of cultivation Application of PRA technique for the identification of agricultural problem and planning Nursery management Fruit and vegetable preservation Value addition of crops INM IPM Sampling of soil for testing Marketing strategies Demonstration and improved varieties of Soyabean, chilly, cotton etc.	INM in Guava GA3 treatment in Grape Seed treatment in Garlic Drip irrigation system in onion. Harvesting and grading of onion, garlic, bottle gourd and fenugreek. Insect pest and disease management in Marigold, Guava, Grape, Garlic, Cucumber, Brinjal, Tomato, Cabbage, Cauliflower, Chilli etc. Insect pest and disease management in onion, Garlic, Bottle gourd,fenugreek etc.Chrysanthemum, Fenugreek etc. Production in Chrysanthemum and strawberry Ring budding in ber Use and importance of blue Sticky trap in onion and garlic. Use and importance of pheromone traps in Guava and other field crops. Use and importance of yellow sticky trap in bottle gourd and fenugreek Use of blue, yellow, orange, sticky traps in various crops

GLIMPSES OF READY (RAWE/RHWE) PROGRAMME






2.8 Thesis Submitted:

2.8.1 M.Sc. (Agriculture/Horticulture):

S. No.	Title of the Thesis	Name of the Student
(I) Department of Agronomy		
1.	Effect of weed management practices on weeds, growth and yield of potato (Solanumtuberosum L.) under organic farming	Dharmendra Singh Kushwah
2.	Evaluation of advanced hybrid p-21 for nutrient and water use efficiency in potato (Solanumtuberosum L.)	Rahul Patidar
3.	Effect of chemical weed control practices on growth and yield of cowpea (Vignaunguiculata L.)	Sarika Mahor
4.	Agronomic performance of new wheat varieties on different dates of sowing in Northern Madhya Pradesh	Reena Sisodiya
5.	Effect of weed management practices on growth and yield of blackgram	Sudarshan Chicham
6.	Efficacy of pre and post emergence herbicide on weed flora & productivity of green gram.	ShriramOsari
7.	Response of potato (Solanumtuberosum L.)to nitrogen levels under different cultural practices	Roop Singh Dangi
8.	Effect of agronomic practices on growth and yield of clusterbean [Cyamopsistetragonoloba (L.) Taub]	Neha Singh Kirar
9.	Response of varieties and date of sowing on growth and yield of pearlmillet under Gird Zone.	BhavnaTomar
10.	To assess the bio-efficasy of newly developed herbicides control of weeds in Green gram	Ku. Aakansha Lanjewar
11.	Mitigation of drought stress by folior application of chemical fertilizer onsoybean under malwa agro climatic zone of M.P.	Ku. Lalita bhayal
12.	Effect of integrated weed management practices on controlling weeds and productivity of Bt. cotton	Ravindra Patel
13.	Effect of fertility levels and genotypes on growth and yield of sorghum under rainfed condition	Ku.Bandana Solanki
14.	Evaluation of growth hormones for yield enhancement in soybean (*Glycine max* (L) merr.	Sanjay Rawat
15.	Effect of plant growth hormones on morphological, physiology characters and yield of soybean (*Glycine max* (L) merr.	Sanjay Yaduwanshi
16.	Land configuration with methods of sowing on major cropping sequences of malwa region in vertisols of mp	Sachin Bhaskale
17.	To assess the bio- efficacy of newly developed herbicide for control of weeds in Blsck grsm	Vikash Choudhary
18.	Evaluation of Tillage and Nutrient Management Option for Maize (*zea mays*)- Chickpea(*Cicer arietinum*) Cropping System in Central India	Ambika Patidar
19.	Impact of Row Spacing in Chickpea (*Cicer arietinum* L.) genotypes	Usha Waskle

20.	Weed control efficacy of different of soybean (*Glycine* max (L.) Merril.) under conservation Agriculture	Rahul Chandel
21.	Efficacy of pre and post emergence herbicides on weed control and productivity of *kharif* black gram (*Vigna mungao*(L.) Hepper)	Rupali Dhote
22.	Response of *Kabuli* chickpea (*Cicer kabulium* L.) varieties to seed inoculation with Bio-fertilizers and supplementation with molybdenum	Mukesh Barfa
23.	Evaluation of Pre and Post Emergence Herbicides for weed control in soybean (*Glycine max*(L.)Merrill) + Pigeon pea (*Cajanas cajan*(L.) Millsp)(4:2) Intercropping System in rainfed situation	M. Chouhan
24.	Effect of Foliar Nutrition on Growth and yield of soybean [*Glycine max* (L.) Merrill]	Shobha Bhida
(II) Department of Horticulture (1.Fruit Science 2. Vegetable Science 3. Plantation, Spices, Medicinal & Aromatic Crops 4. Floriculture & Landscape Architecture)		
25.	Effect of foliar spray of urea and zinc sulphate on growth yield and quality of guava (Psidium guajava L.) cv. Lucknow-49	Kailash Solanki
26.	Effect of foliar application of Boron and GA3 on growth, yield and quality of guava (Psidium guajava L.)	Surbhi Goyal
27.	Effect of different concentration of NAA (foliar spray) and different colour polywrapper on air layering on guava (Psidium guajava L.) cv. Gwalior 27".	Vikas Mandloi
28.	Effect of different concentration of IBA and NAA on rooting and growth of air layers in guava (Psidium guajava L.)	Bhuriya Verma
29.	Impact of indole butyric acid and bioinoculant on survivability of transplanted air layered plants of guava (Psidium guajava L.)	Kanchan Bhandulkar
30.	Effect of foliar application of borax and zinc sulphate on growth, yield and quality of guava (Psidium guajava L.) cv. Gwalior 27	Komal Yadav
31.	Evaluation of rooting media and colour wrappers on air layers of guava (Psidiumguajava L.) cv. Gwalior 27	Jyoti Raghuwanshi
32.	Effect of different level of potassium with and without vermicompost in potato variety kufri chipsona-1	Priyanka Gangele
33.	Effect of INM in Brinjal (Solanum melongena L.) cv. NDBH-6	Payal Patidar
34.	Studies on the establishment of the most ideal media for germination, vigor, growth and survivability of different varieties of drumstick (*Moringa oleifera.L)* under net house condition.	Nimisha Raj Jain
35.	Effect of plant growth regulator and their application method on growth, quality and yield of kharif onion cv. Agrifound dark Red.	Bhanuja Dwivedi
36.	Studies on the effect of plant growth regulator and micronutrient on groth, yield and quality of okra.	Ajay Kumawat
37.	Effect of different spacing and nitrogen level on growth , yield and quality of kharif onion (Allium cepa L)cv. Agrifound Dark Red	Upasana Parmar
38.	Studies on the impact of priming techniques on	Dharmendra

	germination, vigor, growth and survivability of drumstick (Moringa oleifera . L) var. PKM-1 under open and protected condition.	Singh Dodiyar
39.	Effect of different organic manure on growth , yield and quality of kharif onion (Allium cepa L)cv. Agrifound Dark Red	Hari om Raghuwanshi
40.	Response of staggered planting and cutting frequency on growth, yield and quality of coriander under malwa region.	Rajesh Bhuriya
41.	Effect of organic manure fertilizer and their combination on growth , yield and quality of Radish (Raphanus sativus L)	Kaluram Khede
42.	Studies on Genetic variability in okra	Sunil Baghel
43.	Evaluation of Different Varieties of Garden pea growth and yield Attributes for Green pod production	Kamlesh Patidar
44.	Response of fenugreek to Different Micronutrient used as Basal and foliar spray	V. Mahobiya
45.	Response of *Rabi* Onion to Macronutrient in Vlindhyan Plateau	Ishwar Lal Veer
46.	Effect of Pre-emergence Herbicides on weed Control and Productivity of Kharif Onion (*Allium cepa* L.)	D. Vijayvergiya
47.	Effect of Micronutrients on Growth and Yield of Brinjal (*Solanum melongena* L.)	Suraksha Uikey
48.	Effect of Different Organic Manure on Growth and yield of Radish(*Raphanus* sativus.)	Satish Dhangar
49.	Study on Genetic Variability and inter relationship among fruit yield and its attributes in Germplasm of okra	Pragya Ramgiry
50.	Study on Growth yield and quality Parameters of Onion (*Allium cepa* L.) Varieties	M.P. Das
51.	Effect of Plant Growth Regulators on Growth Quality and Productivity of Brinjal (*Solanum* melongena L.)	S.C. Rathod
52.	Response of Different Varieties of Garlic (*Allium sativum*) under the Vindhyan Plateau Condition of Madhya Pradesh	Om Prakash
53.	Effect of Organic and Inorganic Nutrient Sources on Growth, Yield and quality of Acid lime (*Citrus aurantifolia* Swingle)	Jitendra Bhandari
54.	Effect of Pruning Intensity and Spraying of plant Growth Regulators on Growth, Yield and quality of Guava (*Psidium guajava* L.) cv. Sardar	Basavaraj Magadum
55.	Effect of Foliar Application of Urea,Zinc Sulphate and Borax on Growth, Yield and Quality of Acid Lime (*Citrus aurantifolia* Swingle) var. Kagzi Lime under Malwa Plateau Conditions	Alka Yadav
56.	Efficacy of Bio-Organic Sources on Pomegranate cv. Mridula	Rajni Solanki
57.	Study of genetic variability of different genotypes in Aonla (*Emblica officinalis* G.)	Reeta Nagendra
58.	Effect of varieties and nutrient levels on growth, yield and	Yogendra

	quality of cauliflower (*Brassica oleracea var. botrytis* L.)	Meena
59.	Effect of varieties and transplanting dates on growth, yield and quality of kharif onion (*Allium cepa* L.)	Mahesh Rugi
60.	Study on genetic variability, heritability and correlation in bottle gourd [*Lagenaria siceraria* (Mol.) Standl.]	G. S. Chauhan
61.	Effect of plant spacing on growth, yield and quality of different varieties of sprouting broccoli (*Brassica oleracea L. var.* italica*)*	Mukesh Malviya
62.	Effect of varieties, organic manures and inorganic fertilizers on growth, yield and quality of **okra** (*Abelmoschus esculentus* L.)	Usha Damar
63.	Effect of varieties and nutrient levels on growth, yield and quality of cabbage (*Brassica oleracea* var. *capitata* L.)	Pooja Mishra
64.	Effect of date of planting and gibberellic acid on yield and quality of seed in **carrot** (*Daucus carota* L.)	Kailash Umrathe
65.	Effect of boron on growth and yield of pea (*Pisum sativum* L.)	Mukesh Nagar
66.	Effect of INM on growth, yield and quality of Dill (*Anethum sowa* Roxa)	Pradip singh
67.	Effect of different levels of NPK on growth and yield of Isabgo (*Plantago ovata* forski)	Parmanand sahu
68.	Effect of different sources of Nitrogen and biofertilizers on growth, yield and quality of Isabgol.	Megha upadhyay
69.	Effect of plant geometry on growth, yield and quality of different varieties of Fenugreek.	Sharanya B. R
70.	Effect of PGR on growth, yield and quality of Coriander, (*Coriandrum sativum* L.) NRCSS-Acr-1	Amit Kumar Patel
71.	Response of standard chrysanthemum (*Dendranthema grandiflora* Tzvelev) to micronutrient sprays in the Malwa region of Madhya Pradesh	Manish Kumar Verma
72.	Effect of bio-fertilizers on growth and flowering of standard chrysanthemum (*Dendranthema grandiflora* Tzvelev) in the Malwa region of Madhya Pradesh	Ram Krishna Yadav
73.	Studies on vase life of different cultivars of tuberose (*Polianthes tuberosa* Linn.)-	Suresh Kumar
74.	Effect of potash on growth and flowering of French marigold (*Tagetes patula* L.) cv. Pusa Arpita under Malwa Region of Madhya Pradesh	Anil Kumar Meena
75.	Effect of packaging materials on vase life of tuberose (*Polianthes tuberosa* Linn.)	Pushpa Gwade
76.	Post harvest studies of different varieties of gladiolus (*Gladiolus grandiflorus* L.)	Hemant K umar
(III) Department of Entomology		
77.	Bioefficacy of newer insecticides against insect pests of okra [Abelmoschus esculentus (L.)]	Noone Manoj Kumar

78.	Studies on the incidence of different insect pests of Aonla [Phyllanthus embica (L.)]	Neelesh Kumar Dhanoliya
79.	Reaction of Sorghum genotypes against shoot fly (Atherigona soccata Rondani) & Stem borer (chilo partellus swinhoe)	Sitaram Karoria
80.	Varietal resistance against major insect pest of okra [Abelmoschus esculentus (L.)]	Yogita Dawar
81.	Studies on the management of brinjal shoot and fruit borer Leucinodes orbonalis (Guen.).	Shatabdi Mandal
82.	Studies on the management of safflower (Carthamus tinctorius L.) aphid.	Komal Waskel
83.	Reaction of okra varieties against shoot and fruit borer Earias vitella (Guen.)	Remi Kumari
84.	Reaction of Genotypes Against Major Insect Pests of Sorghum [sorghum bicolor (L.) Meonch]	Kakara Jatin
85.	In vivo comparison of varieties and hybrid genotypes of sorghum (Sorghum bicolor (L) Moench) for their reaction to the pests and their natural enemies	Ku Bhagyashree Ojha
86.	Assessment of bio-efficacy of cyantraniliprole (7.3% SC+Diafenthioron (36.4% SC)) against cotton pests	Shri Hareram Birle
87.	Assessment of bio-efficacy of chlorfenapyr 240SC against insect pests of tomato	Ku. Mamta Solanki
88.	Bio-efficacy of newly evolved novel insecticides against cabbage insect pests	Shri Narendra Pandhurang Kamde
89.	Evaluation of bio-efficacy of chlorfenapyr 240 SC against insect pests of chili	Shri Prince Jain
90.	Evaluation of bio-efficacy of carboxamide 300 SC against insect pests of okara	Shri Virendra Uchware
91.	Evaluation of bio-efficacy of emamectin benzoate 3.7% + Difenthiuron 46.3% WP against fruit and shoot borer and sucking pests on egg plant	Shri Dinesh Pawar
92.	Incidence of Gram Pod borer *Helicoverpa armigera* (Hubner) in chickpea in Relation to Abiotic factors	Sunil Jat
93.	Seasonal Incidence and Efficacy of New Insecticides and bio pesticides Against Major Defoliators of Soybean	Mukesh Gaur
94.	Exploration on fecundity and development of *Callosobruchus chinensis* L. on different stored food legume seed	Y. Mahoviya
95.	Estimation of yield losses due to Gram pod Borer, Helicoverpa armigera (H) Chickpea (*C. arietinum*.) Varieties and Characterization of Tolerance	Sandhya Sinha
96.	Impact of climate change on incidence of soybean girdle beetle *Obereopsis brevis* (Sued) and stem fly *Melagromyza sojae* (Tryon)	M. Parmar
97.	Incidence of pod borer *Helicoverpa armigera* (Hubner) and management though newer insecticides on chickpea (*Cicer*	R. Rawaliya

	arietinum L.)	
98.	Environment friendly approach of gram pod borer *Helicoverpa armigera* (Hub.) management on chickpea (*Cicer arietinum* L.)	Sachin Khadse
99.	Studies of Seasonal incidence and relative toxicity of newer molecules against major stem borer of Soybean	S. Punasiya
100.	Impact of Climate Change on the Incidence of Soybean leaf feeders	Hemant Verma
101.	Reaction of Soybean Genotypes against major insect pests with Respect to their yield Potential and losses	L.N. Keshariya
(IV) Department of Plant Pathology		
102.	Studies on anthracnose of clusterbean [Cyamopsistetragonoloba (L.) Taub.] caused by Colletotrichumcapsici f. sp. cyamopsicola	Vijay Jat
103.	Studies on pearl millet blast [Pyriculariagrisea (Cooke) Sacc.] with special reference to its eco-friendly management	Ramkumar Meena
104.	Studies on Alternaria blight of Clusterbean [Cyamopsistetragonoloba(L.) Taub.] Caused by Alternariacyamopsidis.	Yedida Manasa
105.	Studies on stem rot of mustard (Brassica junecea)(L.) caused by Sclerotiniasclerotiorum (Lib.) de Bary.	Lokendara Singh Dhakar
106.	Studies on Alternaria blight (AlternariabrassicaeL.) of mustard (Brassica juncea (L.)Czern&Coss) (Lib.) De Bary with special reference to its management	Sarita Rajput
107.	Management of pearl millet downy mildew [Sclerosporagraminicola, (Sacc.) Schroet]	Mr. Ashwin Patidar
108.	Studies on Smut of pearl millet incited by TolyposporiumpenicillariaeBrefeld	Ravindra Kumar
109.	Studies on anthracnose of clusterbean [Cyamopsistetragonoloba (L.) Taub.] Caused by Colletotrichumcapsicif.sp. cyamopsicola	Anil Rangot
110.	Studies on downy mildew of pearl millet incited by Sclerosporagraminicola (sacc.) with special reference to its management.	Surpal Chauhan
111.	"Studies on leaf curl (Chili leaf curl virus of chili) "Capsicum *annum"*	K.P. Thriveni
112.	"Studies on bio-efficacy of Trichoderma strains against fusarium *oxysporum* f. sp. cicero and their compatibility with fungicides"	Tarachand Waskale
113.	"Studies on wilt of chili fusarium solani f. sp. capsica (mart.) sacc."	Ravi Kumar
114.	"Studies on correlation of development of yellow mosaic with population of white fly in mungbean"	Arvind Parmar
115.	"Compatibility of temperature and pH tolerant Trichoderma strains with herbicides and their bioefficacy against *Rhizoctonia* bataticola",	Swati Panwar
116.	"Characterization of prormsmg strains of Trichoderma against collar rot (Sclerotium rolfsiii of chickpea *(cicer* arietenum L.)"	Neha Barde

117.	"Studies on seed borne pathogens and seedling disease of chili and their management."	Mukesh Birla
118.	"Studies on anthracnose (colletotrichum *truncatum* schw.) of greengram *Vigna radiata* L.)"	Ankit Parihar
119.	"Studies on fusarium*oxysporum* f.sp. cicero inciting wilt in chickpea *(cicer* arietinumL.)"	Rahul Patidar
120.	Studies on bio-control and plant Growth promoting efficiency of *Trichodema* strains in chickpea (*Cicer arietinum* L.)	Santosh Nagar
121.	Studies on Variability and Management of *Rhjzoctonia bataticola* (Taub) Butler Causing dry Root rot of Chickpea	Jagdish Prasad
(V) Department of Soil Science and Agricultural Chemistry		
122.	Potassium fractions in soils of long term fertilizer experiment of pearl-millet mustards cropping sequence	Manoj Kumar
123.	Different form of potassium in soil of Ashoknagar District M.P.	Sonu Kori
124.	Status of different forms of Sulphur in the Soils of Ashoknagar district of Madhya Pradesh	Rahul Morya
125.	Effect of fertility levels and varieties on growth, forage yield and quality of cluster bean (Cyamopsis tetragonolobus L.)	Sulekha Keshri
126.	Pedological perspective of ravine erosion sites within gird region of Madhya Pradesh	Bharat Meena
127.	Nitrous oxide production from vertisol in response to conservation agriculture practices	Rakesh Parmar
128.	Effect of organic and inorganic amendments for enhancing health of ravinous soils	H.S. Raghuwanshi
129.	Evaluation of N-Losses and Nitrogen Use Efficiency in Maize, Fertilized with Resin Coated Urea	Priyanka Jadon
130.	Effect of different mulching practices on growth, productivity, nutrient content and uptake, water use efficiency of Bt cotton grown in vertisols, Typic Haplustelts	Deepak Yadav
131.	Effect of green manuring on soil properties, growth and productivity of soybean and maize under sole and intercropping systems in vertisols, typic haplusteuls	Divya Phayal
132.	Effect of tillage and crop residue management on soil properties, nutrient uptake, growth and productivity of cotton grown in typic haplustelts	Khusboo Chouhan
133.	Studies on comparative effects of gypsum and organic on soil reclamation and performance of paddy in black alkali soils	Latika Badole
134.	Effect of reduced tillage and organics on soil properties, growth and productivity of soybean grown in typic haplusterts	Rini Shrivas
135.	Nutrient management practices for enhancing soybean productivity and soil fertility	Shweta Pawar
136.	Growth of (*Spinach oleracea*) and enzymatic Activities in Lead and Nickel contaminated *vertisol* of central India	J.S. Pipalde

137.	Effect of Arbuscular Myrorrizal Fungi and PGPR on nodulation, Growth, Nutrient uptake and Yield of Soybean (*Gycine max* (L) Merril.) In Black Soil	Virendra
138.	Study on Temperature sensitivity a soil organic matter decomposition in Aggregate size classes under conservation tillage in *vertisol*	Sunil Kumar
139.	Land Configuration and Tillage Impacts on Soil Health and Productivity Under Maize-Chickpea Cropping System of Central India	R. Soliya
140.	Effect of sulpher micronutrients and Bio fertilizer on Growth Nodulation, Nutrient uptake and yield of soybean in *vertisol*	Smita Uikey
141.	Growth Symbiotic traits seed yield NPKS uptake and seed Quality of promising soybean[Genotypes (L.) Merrill] in Native Rbizospheric Conditions in *Vertisol*	Yogesh Baghel
142.	Effect of Integrated Nutrient Management on Nodulation Growth Nutrient uptake and yield of soybean [*Glycine max*(L.)Merrill] in *vertisol*	Vikram Singh
143.	Isolation characterization and Evaluation of Plant Growth Promoting Rhizobactria from Soil and plants for N supply to wheat crop	D. Vishwakarma
144.	Enhancing efficiency of fertilization in chickpea through PSB inoculation in vertisol	S.N. Gurjar
145.	Effect of micronutrients and Bio- Fertilizers Inoculation for Increasing Nutrient use efficiency in Lentil (*Lens culinaris* Medik	A.S. Ohari
(VI) Department of Plant Breeding & Genetics		
146.	Evaluation of advanced genotypes of chickpea for yield and its contributing characters (Cicer ariclimum.L)	Asha Kushwah
147.	Stability of grain yield and morphysiological characters in different irrigated and saving situation in Wheat.	Ragini Dolhey
148.	Genetic Evaluation of single cross hybrid for economic traits in Pearl Millet	Neha Kumari
149.	Genetic Divergence and Association Analysis in Sesame genotypes (Sesamum Indian .L)	Girdhari Parihar
150.	Exploitation of heterosis & combining ability analysis in Sesame (Sesamum Indian L.)	Kundan Muwel
151.	Character association and genetic divergence studies in sorghum	Anil Birla
152.	Character association and path analysis studies in grain sorghum	Devendra Mewada
153.	Study on genetic variability & character association for yield & its contributing traides in chickpea.	Diksha rathore
154.	Genetic divergence studies for yield and its attributes in safflower	Manoj Gurjar
155.	Character association of yield and genetic diversity and its	Sarita Mujalde

	attributes in black gram.	
156.	Evaluation of pigeonpea genotypes for morpho – physiological traits under rainfed condition.	Saroj Kumari
157.	Callusing and organogenesisin aparajita.	Parul Chourasiya
158.	Screening of chickpea genotypes for yield and its attributes under rainfed conditions.	Vandana Dagode
159.	Study of Heterosis and yield Attributes Assessment in Soybean Crosses [*Glycine max*(L.) Merrill.	R. Raghuwanshi
160.	Genetic Variability and Genetic Diversity Assessment in Genetic Stocks of Lentil	R.C. Patel
161.	Study of diversity for yield seed quality attributes in local germplasm of pigeonpea (*Cajanus cajan*) (L.) Millsp	D. Baraiya
162.	Genration mean Analysis for yield Traits in two crosses JS 93-05,X JS20-71 and JS20-69XB93-05of soybean[*Glycine max* (L.) Merrill]	Sidhnath Verma
163.	Assessment of Morpho Molecular Diversity in Hull-less Barley (*Hordeun vulgare* L.)	P. Banjarey
(VII) Department of Agricultural Economics and Farm Management		
164.	An economic analysis of marketing and processing of Mustard in Morena block of Morena District Madhya Pradesh	Preeti Yadav
165.	A Study on Economics of Production And Marketing of Paddy In Bhitarwar Block of Gwalior District M.P.	Donthireddy Lakshman Mohan Reddy
166.	Economics of Chili Production And Marketing In Khargone District of M.P.	Golu Nigawal
167.	Economics of buffalo milk production in Morena district of M.P.	Ravindra Kumar Rajput
168.	A study on cost and profitability of different varieties of chickpea in Betul district of Madhya Pradesh.	Devendra Pal
169.	An economic analysis of credit needs for crop production and repayment capacity of borrowers in Indore district of Madhya Pradesh	Ashwin Pal
170.	To analyze the benefit cost ratio of Chilli Khandwa district of Madhya Pradesh	Jitendra Patel
171.	A study on economic analysis of production and marketing of Garlic in Barwani district of Madhya Pradesh	Ku. Jyoti Solanki
172.	A study on profitability measures and resource use efficiency of Chickpea crop in Sehore district of Madhya Pradesh	Ku. Laxmi Jatav
173.	An economic analysis of production and marketing of Gur in Betul district of Madhya Pradesh	Rajkumar Yadav
174.	An economic analysis of production and resource use efficiency of Ginger in Barwani district of Madhya Pradesh	Rakesh Makwane
175.	A critical study of graded economics and ykield gap in Paddy cultivation with different technological status in	Sweety Singh

	district Bilaspur (Chattisgarh)	
176.	Comparative economics of Tomato production under organic and inorganic farming practices in Dhar district of Madhya Pradesh	Indersingh Jamod
177.	An Economic Efficiency of Various Marketing Channels of Guava in District Vidisha of Madhya Pradesh	Vinod Parihar
178.	An Economic Study of Production and Resource use Efficiency of Mustard Cultivation in Kota District Rajasthan	Dipika Meena
179.	Growth in area production and productivity of wheat in Sehore District of Madhya Pradesh	Sonika Verma
180.	Economic Analysis of commercial flower cultivation in Khandwa District of Madhya Pradesh	Vimal
181.	Economics of large scale poultry production in Sehore district of Madhya Pradesh	Arun Kumar
182.	Relative profitability of durum wheat and improved variety of wheat cultivation in Khargone district of Madhya Pradesh	Akhilesh Birla
183.	Comparative Economics of Tomato Production under Organic and Inorganic Farming Practices in Khargone District of M.P	Durgesh Yadav
184.	Economic Aspects of study on Financing of crop Production Finance Through Bank of India in Khargone District of Madhya Pradesh	N.K. Pawar
185.	Economics Analysis of Groundnut production under different technology status of farm in Khargone district Madhya Pradesh	M. Sawle
(VIII) Department of Extension Education		
186.	A study on Training need of Patato growers in Morar Block of Gwalior district (M.P.)	Darmendra Hawadiya
187.	A study on knowledge and adoption of recommended brinjal production technology among the farmers of Gohad block of Bhind district of Madhya Pradesh	Arvind Kumar Singh
188.	A study on Career Preferences of undergraduate students of RVSKVV, Gwalior Madhya Pradesh	Gude Vennela
189.	Impact assessment of kisan Mobile advisory services (KMAS) in Badwani district of Madhya Pradesh	Lalita Narwage
190.	Training need assessment for dairy farmers	Mona Raghuwanshi
191.	A study of Behavior of Trained and Untrained farmers in Relation to farm Innovation in Sehore District of Madhya Pradesh	Reena Jaiswal
192.	A study of training need as perceived by the tribal farmers with respect to improved soybean production technology in Icchawer Block of District Sehore	Roshni Saxena
193.	A Study on Payment Behavior of kisan credit card users of Shajapur block of Shajapur District (M.P)	Anil Malviya

194.	A Study on Adoption Behavior of Farmers Towards drip Irrigation system in Dhar block of Dhar district (M.P.)	Govind Parihar
195.	Impact Analysis of Through District Cooperative Bank on Agricultural Development of Beneficiary farmers in Ratlam District of M.P	Manish Patidar
196.	To study the Radio Listening Behavior of farmers Regarding Agriculture Technology in Satwas block of Dewas District(M.P.)	Anwar Khan
197.	To Study of farmers field school on chickpea management practices in Sehore Block of Sehore District of Madhya Pradesh	Angad Prajapati

2.8.2 Ph.D. thesis submitted to Director Instruction for evaluation:

S. No.	Title of Thesis	Name of Student
Agriculture Extension		
1	Impact of Front Line Demonstration (FLDs) on Pulse Growing Farmers in (M.P.)	Lakhan Singh Gurjar
Department of Entomology		
1	Management of mustard aphid [Lipaphis erysimi (Kalt.)] by different eco-friendly tactices	Shahin Khan
Department of Genetics and Plant Breeding		
1	Genetic analysis traits determing seed yield over environments in Soybean (Glycine max(L) merril)	Ms. Pooja Murlidharan
Department of Horticulture		
Ph.D. Horticulture (Old)		
1	Effect of inorganic fertilizers, vermicompost and bio-fertilizers on growth, flower yield and vase life of African marigold (Tagetes erecta L.) cv. Pusa Narangi	Pooja Dingrodiya
2	Studies on the integrated effect of organic manures, inorganic fertilizers and biofertilizer on growth, yield and quality of tomato (Lycopersicon esculentum L. Mill.)	Goldi Jain
Ph.D. (Horticulture Vegetable)		
1	Effect of foliar spray of boron, molybdenum and spacing on growth, yield and quality of cabbage (Brassica oleracea var. capitata L.) cv. Pusa drum head	Swetal Rana
2	Influence of gibberellic acid and Trichoderma viride on yield of Rabi onion (Allium cepa L.) cv. Agrifound Light Red	Jagati Yadagiri

Ph.D. (Horticulture Fruit)

3	Effect of foliar application of zinc, magnesium and boron on growth, yield and quality of guava (Psidium guajava L.) cv. G-27	Rahul Pippal
4	Effect of pre-harvest spray of plant growth regulators and nutrients on shelf life and post harvest quality of guava (Psidium guajava L.)	Rajesh Jatav

Department of Soil Science

1	Effect of organic and inorganic sources of plant nutrients on wheat production and soil health in Chambal ravine	Mohkam Singh Argal

Department of Plant Pathology

1	Studies on wilt (Fusariumoxysporum f. sp. Lentis) of lentil (Lens culinarisMedik)	O.P. Bharti
2	"Studies on smut of pearl millet incited by TolyposporiumpenicillariaeBrefield"	Omprakash Sharma
3	Studies on Alternaria blight of mustard (Brassica Juncea (L.) Czern&Coss) (Lib) de Bary.	Bhagyashree Singh

Department of Agronomy

1	Effect of various land configurations and weed management practices on growth and yield of soybean	Bhushan Lal Prajapati
2	Response of clusterbean [Cyamopsistetragonoloba (L.) Taub] varieties to weed management practices growth under different crop geometries.	Sourav Gupta
3	Performance of recent wheat [Triticumaestivum (L)] varieties in various fertility levels and seed rates under late sown condition.	Anil Kumar Rai
4	Effect of seedling age and geometry in transplanted pearlmillet [Pennisetumglaucam (L)] under late sown condition	Divya Singh
5	Weed management in maize-barseem cropping system under different tillage practices	Vinod Kumar Wasnik

2.9 Academic Excellence:

2.9.1 Student Performance in ICAR-JRF/SRF examination and other Scholarship/Stipends:

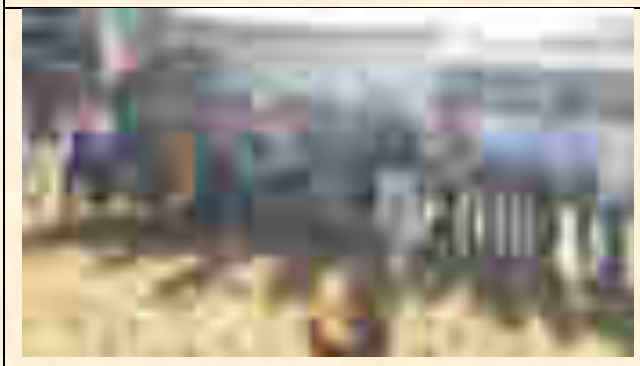
S. No.	Name of Fellowship/Scholarship	No. of Students
1.	Junior Research fellowship received	**-**
2.	JRF qualified and admitted in different Universities of India without fellowship	**11**
3.	SRF Qualified without fellowship	**3**
4.	National Talent Scholarship	**24**
5.	Scholarship of Vikramaditya Yojna	**04**
6.	Scholarship of Gaon Ki Beti Yojna	**02**
7.	Dr. Shyamaprasad Mukharji Scholarship	**03**
8.	Mukhyamantri Medhavi Vidyarthi Yojana	**07**
9.	Post Metric Scholarship	**713**
	State Government Scholarship (713)	
	(i) OBC	**360**
	(ii) SC	**161**
	(iii) ST	**192**

3. STUDENTS WELFARE ACTIVITIES:

3.1 National Service Scheme (NSS):

S. No.	Activity(s)	No. of volunteers participated					
		Gwalior	**Sehore**	**Indore**	**Khandwa**	**Mandsaur**	**Total**
1	No. of students enrolled	94	100	183	203	100	**680**
2	No. of students passed/cleared 'B' certificate examination	-	32	-	-	44	**76**
3	No. of students passed/cleared 'C' certificate examination	-	08	-	-	-	**08**
4	NSS day celebration/Camp	-	-	126	53	-	**179**
5	Blood donation camp	-	05	28	-	-	**33**
6	Pulse polio camp	-	-	75	-	-	**75**
7	AIDs awareness day	-	-	107	50	-	**157**
8	Beti Bachao Abhiyan	-	-	20	-	-	**20**
9	Malnutrition day	-	-	170	55	35	**260**
10	Parthenium eradication day	21	50	88	-	85	**244**
11	Special camp	-	-	50	-	50	**100**
12	Voter ID awareness camp	-	02	02	-	-	**04**
13	State level camp	-	-	44	-	-	**44**
14	Unit camp	-	-	-	-	-	**-**
15	Rastriya Yuva Day	-	-	68	-	-	**68**
16	Sensitization day	32	86	35	-	71	**224**
17	Environment day	-	-	109	-	-	**109**
18	Plantation day	41	33	75	-	122	**271**
19	International Woman's Day	-	-	-	-	-	**-**
20	Awareness Programme	-	42	-	-	-	**42**
21	Pre. RD Camp	-	-	-	-	-	**-**

Glimpses of NSS Activities

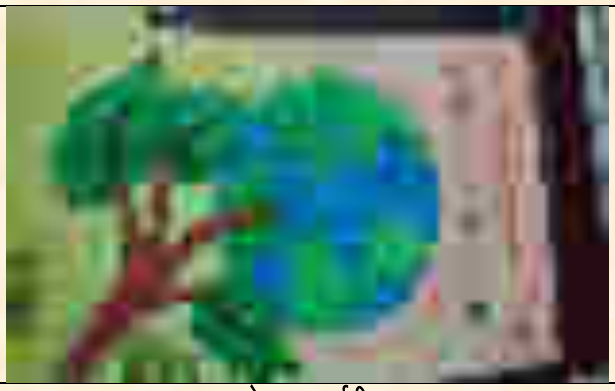
	
सदभावना दिवर्स	जागरूकता रैली
	
स्वच्छता अभियान	व्याख्यान
	
मुर्गी पालन का भ्रमण	श्रम दान
	
योगा दिवस	व्यक्तित्व विकास पर व्याख्यान

गौशाला भ्रमण

उच्च शिक्षा हेतु मार्गदर्शन

गेबर गैस प्लांट प्रदर्शन

जैविक कीट नियंत्रण का प्रदर्शन



पोस्टर प्रदर्शनी

मृदा रहित कृषि का प्रदर्शन

शारीरिक व्यायाम

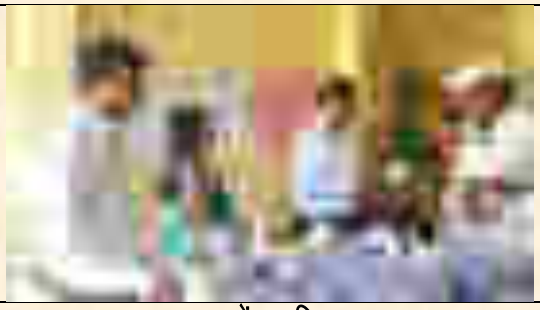
साबुन एवं शैम्पू निर्माण प्रदर्शन

एन.जी.ओ. भ्रमण

क्यारी निर्माण

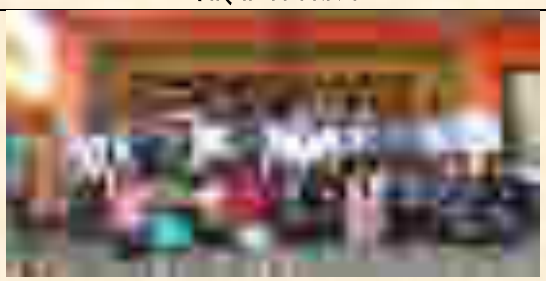
स्वयंसेवकों द्वारा शिक्षादान

स्वास्थ्य जांच



दवाइयों का वितरण

स्वागत समारोह



स्वास्थ्य टीम के साथ

एड्स प्रतीक निर्माण

एड्स जागरूकता रैली

स्वास्थ्य चर्चा

वृक्षा रोपण

स्वास्थ्य जांच शिविर

	
Plantation on 15th August at College campus by NSS Students and faculties.	Plantation on 15th August at College campus by NSS Students and faculties.
	
Plantation on 25th August at College campus by NSS Students and faculties.	Plantation on 25th August at College campus by NSS Students.
	
Debate Competition on Private job is better than Government Job at CoH, Mandsaur on 30.01.2018	Taking Voters Pledge on 24.1.2018 for voting.

Prize distribution on celebration of National Voters Day at CoH, Mandsaur on 25.01.2018

Orientation for District level NSS officers of District, Mandsaur and students of CoH, Mandsaur was organised on 18.09.2018 at CoH, Mandsaur

Dr. Ashok Krishna addressing on the occation of International Mother Language Day on 21.02.2018 at CoH, Mandsaur

Prize distribution to Winner of Internation Mother Language Day on 21.02.2018 at CoH, Mandsaur

Dr. Ashok Krishna addressing on the occation of Surya Nameskar Programme (Youth Day) on 12.01.2018 at CoH, Mandsaur

Surya Nameskar by the Faculty members and students of this College on the occation of National Youth Day on 12.01.2018 at CoH, Mandsaur

Blood donated by NSS student at Hospital during 11 May 2017

Aforestation programe by NSS student & college staff at College campus dated 02 July 2017

Apriciation certificate received by NSS student for exellence work of NSS social work During 15 August 2017

Gajar Ghaas eridication programe by NSS student at college campus & near Hostel during 26 August 2017

International Yog Diwas 21 June 2017

Rally by NSS students for awareness of world literacy Day dated 08 September 2017

3.2 National Cadet Corps (NCC):

S. No.	Activity(s)		Gwalior	Indore	Sehore	Khandwa	Total
1.	No. of students enrolled		53	55	35	53	**196**
2.	Exam. passed	'B' certificate	13	17	18	9	**57**
		'C' certificate	4	14	11	4	**33**
3.	No. of cadets attended the CATC camp		19	-	35	53	**107**
4.	Army Attachment at		-	-		-	

Glimpses of NCC activities

Group Photograph of NCC Cadets participated in International Yoga Day 2017 at SAF Ground, Gwalior

Cleaning College Campus by NCC Cadets under Swachh Bharat Abhiyan

NCC cadets Watering Plants under Swachh Bharat Abhiyan, in College Campus

NCC day celebration

NCC Cadets presenting Guard of honor to Hon'ble V.C. Prof. S.K. Roa on the occasion of Republic Day, 2018

Group Photograph of NCC Cadets, PI Staff, NCC Officer, Ex. V.C., RVSKVV & JNKVV Prof. V.S. Tomar and other VV dignitaries with Hon'ble V.C., Prof. S.K. Rao

3.3 Students Counseling and Placement:

S. No.	Name of employer / Organization	No. of students employed					
		Gwalior	Indore	Khandwa	Sehore	Mandsaur	Total
1.	Central Govt.	07	06	-	01	01	15
2.	Government / public sector	14	14	09	17	03	57
3.	Private sector	23	81	04	18	-	126
4.	Self employed	03	-	-	-	-	03
Total		**47**	**101**	**13**	**36**	**4**	**201**

3.4 Cultural and Sports Activities:

3.4.1 Cultural Activities

3.4.1.1 Cultural activity at University level: A festival of knowledge and culture **Youth Festival** was organized at College of Agriculture, Indore. Five constituent colleges of the Vishwa Vidyalaya *viz.* College of Agriculture, Gwalior, Indore, Sehore, Khandwa and College of Horticulture, Mandsaur participated enthusiastically in the competitions held under 18 categories of singing, dancing, fine arts and theatre.

"Youth Festival" a meeting place for creative minds to discuss their ideas and allow for testing of their ideas in the face of intense competition, rigorous evaluations and a touch of the carnival. Winners of the competitions were awarded certificates, trophies in the intra-college events.

S.No.	Activity	Winner	Runner
1	One Act Play	CoA, Gwalior	CoA, Sehore
2	Folk Dance	CoH, Mandsour	CoA, Indore
3	Skit	CoA,, Khandwa	CoA,, Sehore
4	Elocution	CoH,, Mandsour	CoA,, Sehore
5	Patriotic Song	CoA,, Gwalior	CoA,, Sehore
6	Group Song	CoA, Sehore	CoA,, Khandwa
7	Rangoli	CoH,, Mandsour	CoA, Indore
8	Mono Acting	CoA, Indore	CoA, Sehore
9	Cartooning	CoA, Indore	CoA, Gwalior
10	Poster Making	CoA, Indore	CoA, Gwalior
11	Debate (Against)	CoA, Sehore	CoA, Khandwa
12	Solo Song (Light	CoA, Gwalior	CoA, Sehore
13	Extempore	CoH, Mandsour	CoA, Khandwa
14	Quiz Competition	CoA, Khandwa	CoA, Indore
15	On spot Painting	CoA, Sehore	CoA, Indore
16	Clay Modeling	CoH, Mandsour	CoA, Sehore
17	Mime	CoA, Gwalior	CoA, Indore

Glimpses of Cultural Activities

3.4.1.2. Sports activity at University Level:

1.) College of Agriculture, Gwalior:

S.N.	Activates	Male		Female	
		Winner	Runner	Winner	Runner
1	Badminton	-	-	-	-
2	Athletics	✓	-	-	✓
3	Table – Tennis	✓	-	-	✓
4	Volley ball	✓	-	-	-
5	Kabaddi	✓	-	-	-
6	Kho – Kho	✓	-	-	-

2.) College of Agriculture, Indore:

INDOOR GAMES – Held at B. M. College of Agriculture, Khndwa during 14-16 December 2017. The details of the performance of the teams as follows:

Activity	Male		Female	
Badminton	MR. Janmoj Yadav	**Runner**	Ku. Pooja Parmar	**Winner**
	Mr. Shyam Patidar		Ku. Shruti Patil	
	Mr. Sanjay Verma		Ku.Archana Solanki	
			Ku. Shraddha Tomar	
T. T.	Mr. Yashraj Solanki	**Runner**	Ku. Kiran Kharadi	**Winner**
	Mr. Madhusoodan Popandiya		Ku. Ayushi Rathore	
	Mr. Ajay Chouhan		Ku. Babita Rajput	
	Mr. Krashna Lal Patidar		Ku. Pooja Solanki	
Carrom	Mr. Ajay Rathore	**Runner**	Ku. Rina Dhope	-
	Mr. Sagar Kanwa		Ku. Maya Mewada	
	Mr. Kamlesh Mobhiya		Ku. Deepshikha Achale	
	Mr. Shubham Badvan		Ku. Mamta Mewada	

OUTDOOR GAMES - Volly Ball and Kho- Kho tornaments were held at B. M. College of Agriculture, Khndwa during 14-16 December 2017. The Kabaddi tournament was held at College of Agriculture, Gwalior during 8-10 Jan 2018. The details of the performance of the teams as follows:

Volley Ball		Kho-Kho	
Mr. Ajay Kumawat	**Runner**	Mr. Ajay Chouhan	**Runner**
Mr. Sanjay Verma		Mr. Rajesh Mandloi	
Mr. Aman Patidar		Mr. Saurabh Raghuwanshi	
Mr. Satyam Upadhyay		Mr. Suresh Chauhan	
Mr. Krashnkant Patel		Mr. Ashutosh Tyagi	
Mr. Nikhil Patil		Mr. Ravindra Singh Rajput	
Mr. Pankaj Waskel		Mr. Amitesh Patil	
Mr. Rameshwar Parmar		Mr. Bhagwati Gehlot	

Mr. Rahul Patel		Mr. Rahul Chauhan	
Mr. Shashvat Chaturvedi		Mr. Jitendra Mandloi	
		Mr. Prakash Sisodiya	
		Mr. Surajlal Patel	
		Mr. Madhusoodan Popandiya	
KABADDI			
Mr. Sanjay Verma	**Participated**	Mr. Ravindra Chouhan	**Participated**
Mr. Krishnakant Patel		Mr. Rahul Rajput	
Mr. Rameshwar Parmar		Mr. Chandrashekhar Parmar	
Mr. Deepesh Kumar		Mr. Ravindra Birla	
Mr. Priyansh Patidar		Mr. Hukumchand Iyer	
Mr. Snil Mukati		Mr. Pawan Gurjar	

ATHLETICS - The Athletics events were held at College of Agriculture, Gwalior during 8-10 Jan 2018. The details of the performance of the teams as follows:

Activity	**Male**		**Female**	
100 m	Mr. Suresh Chauhan	**B**	-	
200 m	-	**-**	Ku. Ruchika Chopra	**B**
400 m	-	**-**	Ku. Roshani Choubey	**S**
800 m	-	**-**	Ku. Punita Gupta	**B**
1500 m	-	**-**	Ku. Pooja Meena	**S**
4 x 100 m	Mr. Surendra Pawar	**B**	Ku. Mamta Ahirwar	**S**
	Mr. Hukumchand Iyer	**B**	Ku. Roshani Choubey	**S**
	Mr. Madhusoodan Popandiya	**B**	Ku. Babita Rajput	**S**
	Mr. Shubham Patidar	**B**	Ku. Ruchika Chopra	**S**
Shot-put	Mr. Vijay Jamodkar	**G**	Ku. Anamika Atolia	**S**
Discuss	Mr.Vijay Jamodkar	**G**	Ku. Archana Solanki	**S**
Javelin	Mr. Suresh Chauhan	**B**	Ku. Babita Rajput	**B**
Long Jump	Mr.Suresh Chauhan	**G**	Ku. Archana Solanki	**S**
High Jump	Mr. Balwant Chauhan	**B**	-	
Total telley of Medals				
Gold		**3**		**0**
Silver		**-**		**6**
Bronze		**4**		**3**
		7		**9**

10 players from College of Agriculture, Indore were selected in RVSKVV, Team and participated in XVIII All India Agricultural University Sports and Games meet 2017-18. The meet was held at **UAS, GKVK, Bengaluru during 30th January to 3th February 2018**.

Ku. Puja Parmar
Ku. Kiran Kharadi
Ku. Ayushi Rathore
Mr. Suresh Chauhan
Mr. Vijay Jamodkar
Mr. Ajay Chauhan
Mr. Ravindra Singh Rajput
Mr.Madhusudan Popandiya
Mr. Nikhil Patil
Mr. Sanjay Verma

3.) RAK, College of Agriculture, Sehore:

Badminton/ Table-Tennis/ Carrom (Men & Women) Volley ball & Kho-Kho were organized at College of Agriculture, Khandwa during 07th to 09th Nov, 2016. Twenty five boys and Ten girls were represented our college. Women carom team of our college was winner and boys Table – tennis team runner-up. List of Women carom team and boys Table – tennis team are given below :-

Women carom team (Winner)		**Boys Table – tennis team (Runner- up)**	
S. No.	**Name of Players**	**S. No.**	**Name of Players**
1.	Shivani Patta	1.	Nitin Rajput
2.	Hemlata Luvwanshi	2.	Suresh Dangi
3.	Jyoti Dhakad	3.	Pawan Choukse
4.	Sumidha Jat	4.	Ankit Dawar

Athletics (Men& Women) & Kabaddi (Men) were organized at College of Agriculture, Gwalior during 15th to 17th Dec, 2016. Sixteen boys and Ten girls were represented our college. Women carom team of our college was winner and boys Table – tennis team runner-up. List of Athletics players (Men& Women) with their positions in respective events are given below:-

S. No.	**Name of Event**	**Name of Players**	**Position**
1.	100 meter Race (Men)	Rahul More	Third
2.	100 meter Race (Women)	Ku. Ragini Thakur	Second
3.	200 meter Race (Men)	Ankit Malviya	Third
4.	200 meter Race (Women)	Ku. Ragini Thakur	Second

5.	400 meter Race (Men)	Amer Singh Meda	Second
6.	400 meter Race (Women)	Ku. Pooja Yadav	Third
7.	800 meter Race (Men)	Amer Singh Meda	Second
8.	800 meter Race (Women)	Ku. Chitra Shakya	Second
9.	1500 meter Race (Men)	Amer Singh Meda	Second
10.	1500 meter Race (Women)	Ku. Chitra Shakya	Second
11.	Long Jump (Men)	Ku. Ragini Thakur	Second
12.	Long Jump (Men)	Gore Lal	Third
13.	High Jump (Women)	Ku. Neha Nagar	Third
14.	Shot Put (Women)	Ku. Nitu Kumare	Second
15.	Discus Through (Women)	Ku. Nitu Kumare	Third

XVII All India Inter Agricultural University Sports & Games Meet 2016-17 Held at HAU, Haryana Ku. Sandhya Sinha (Badminton) and Nitin Rajput (Volleyball) were selected and participated.

4.) BM, College of Agriculture, Khandwa:

- College organized Inter Collegiate Indoor Games Under the title (***Spandan 2017***) Viz, Badminton, Table tennis, Carom, Chess, and outdoor games namely Volley Ball and Kho-Kho Tournament of R.V.S.K.V.V, from 14-16 Dec 2017. College of Agriculture Khandwa was Winner in Carom (Boys and Girls Both) and Badminton (Boys Section).
- In Inter Collegiate Athletics and Kabbadi tournament held at College of Agriculture Gwalior from 08th to 10th Jan., 2018, College of Agriculture Khandwa secured 9 Gold, 4 Silver and 5 Bronze Medals and Ku Babita Gawali was selected as the best Athlete. Kabaddi Team of the college was runners up in the event. Overall Championship.

5.) KNK, College of Horticulture, Mandsaur:

S.No	Activities	Winner		Runner	
		Male	Female	Male	Female
1.	Badminton	-	-	-	Runner
2.	Running (400 m)	-	-	Runner	-
3.	Running (1500 m)	-	-	Runner	-

Glimpses of Sports Activities

4. RESEARCH HIGHLIGHTS:

The research network of the University spreads over six agro-climatic zones of Madhya Pradesh and covers 26 revenue districts. These agro-climatic zones are Gird, Malwa Plateau, Nimar Valley, Jhabua Hills, Vindhyan Plateau and Bundelkhand zones. Accordingly, five Zonal Agricultural Research stations, four Regional Agricultural Research Stations and five Special Research Stations have been operating to enhance the productivity and livelihood security of farming community. Presently, 27 All India Coordinated Research Projects on crop improvement, natural resource management and horticulture are running at different centers. Besides these, 7 plan, 12 non plan, 23 tribal sub plan, 5 Agromet Advisory services, 05 externally funded projects are the research strength of the University. The maintenance breeding of crop varieties and production of nucleus seed, breeder seed, hybrid seed and planting materials are managed with the help of twenty seven seed farms.

Research Stations of the University

S.No.	Particulars	No.	Location and Year of Establishment
1.	Zonal Agricultural Research Station	05	Indore (1924), Sehore (1952), Khargone (1964), Morena (1981) and Jhabua (1989)
2.	Regional Agricultural Research Station	04	Gwalior (1916), Khandwa (1964) Ujjain (1989) and Mandsaur (1964)
3.	Special Research Station	06	Enthkedi (1962), Jaora (1964), Bagwai (1964), Badwah (1969), Bhind (2010) and Sirsod (2011)

4.1 List of All India Coordinated Research Projects

S.No.	Name of Projects	Centre
1	AICRP on Water Management	Morena
2	AICRP on Groundnut	Gwalior
3	AICRP on Rapeseed & Mustard	Morena
4	AICRP on Safflower	Indore
5	AICRP on Soybean	Sehore
6	AICRP on Cotton Improvement Project	Khandwa
7	AICRP on Cotton Improvement Project	Indore
8	AICRP on Sorghum improvement	Indore
9	AICRP on Chickpea	Sehore
10	AICRP on Pigeonpea	Khargone
11	AICRP on Pearl Millets	Gwalior
12	AICRP on Wheat Improvement Project	Gwalior
13	AICRP on Dryland Agriculture	Indore
14	AICRP on Medicinal and Aromatic Plants	Mandsaur
15	AICRP on Salt Affected Soils	Indore
16	AICRP on Weed Control	Gwalior
17	AICRP on Arid Legumes (Guar)	Gwalior
18	AICRP on Pigeonpea (Sub Centre)	Sehore
19	AICRP on MULLaRP	Sehore
20	AICRP on Integrated Cropping System	Indore
21	Indo-British Dryland Agriculture Research (ORP)	Indore

22	AICRP on Fruits (Grape)	Mandsaur
23	AICRP on Maize	Jhabua
24.	AICRP on Chickpea	Indore
25.	AICRP on Soybean	Morena
26.	AICRP on Onion & Garlic	Mandsaur
27.	ICAR Seed Project on Seed Production in Agricultural Crops	Gwalior

4.2 Research Schemes (Non Plan)

S. No.	Name of Scheme/Project	Centre
1	Agriculture Research Lab & Institute	Indore
2	Regional Research Station	Indore
3	Soil Testing Scheme	Indore
4	Regional Research Station	Sehore
5	Regional Research Station	Gwalior
6	Regional Research Station	Bagwai
7	Intensification of Research on Mango Guava & Citrus	Gwalior
8	Soil Testing Scheme	Gwalior
9	Intensification of Research on Mango, Guava & Citrus	Enthkedi
10	Horticulture Research Scheme (Seed production)	Jaora
11	Sugarcane Research Scheme	Indore
12	Potato Aphid Research	Sehore

Seed Farms (Non Plan)

S. No.	Name of Scheme/Project	Centre
1	Agriculture Research Farm	Mandsaur
2	Agriculture Research Farm	Khargone
3	Agriculture Research Farm	Khandwa
4	Agriculture Research Farm	Bagwai
5	Agriculture Research Farm	Gwalior
6	Agriculture Research Farm	Ujjain
7	Agriculture Research Farm	Jaora
8	Agriculture Research Farm	Indore
9	Agriculture Research Farm	Sehore
10	Live Stock Farm	Gwalior
11	Live Stock Farm	Sehore
12	Live Stock Farm	Indore

4.3 Research Schemes (Plan)

S. No.	Name of Scheme/Project	Centre
1	Fodder Research Scheme	Gwalior
2	Strengthening of MP Agriculture Research Institute	Khargone
3	Productivity Improvement of crops under rainfed area	Indore
4	National Agricultural Research Project	Sehore
5	Director of Extension Education	Sehore
6	National Agricultural Research Project	Ujjain
7	College of Horticulture	Mandsaur

4.4 Research Scheme (Tribal Sub Plan)

S. No.	Name of Scheme/Project	Centre
1	Improvement of Millets	Gwalior
2	Propagation of Aonla & Ber for Tribal	Khandwa
3	Intensive Extension Research Project	Gwalior
4	Intensive Extension Research Project	Sehore
5	Intensive Extension Research Project	Khandwa
6	Intensive Extension Research Project	Indore
7	Intensive Extension Research Project	Khargone
8	National Agricultural Research Project	Morena
9	National Agricultural Research Project	Khargone
10	National Agricultural Research Project	Khandwa
11	National Agricultural Research Project	Jhabua
12	Seed Production Programme of KVK	Shajapur
13	Seed Production Programme of KVK	Dhar
14	Seed Production Programme of KVK	Dewas
15	Seed Production Programme of KVK	Bhind
16	Seed Production Programme of KVK	Rajgarh
17	Seed Production Programme of KVK	Aron (Guna)
18	Seed Production Programme of KVK	Badwani
19	Seed Production Programme of KVK	Neemuch
20	Seed Production Programme of KVK	Shivpuri
21	Seed Production Programme of KVK	Ashok Nagar
22	Seed Production Programme of KVK	Sheopur
23	College of Agriculture	Khandwa

4.5 India Meteorological Department (GOI):

S. No.	Name of Scheme/Project	Centre
1	Agromet Advisory Services	Morena
2	Agromet Advisory Services	Khargone
3	Agromet Advisory Services	Jhabua
4	Agromet Advisory Services	Sehore
5	Agromet Advisory Services	Indore

4.6 Externally Funded Projects

S. No.	Title of the Project	Funding agency	Principal Investigator	Budget (Rs. in lakhs)
1.	Delivering more produce and income to farmers through enhancing genetic gains for chickpea and pigeonpea	ICRISAT, Hyderabad	Dr M.Yasin & Dr A. N.Tikle College of Agriculture, Sehore	132.924
2.	Mission for integrated development of Horticulture (MIDH)	lqikjh ,oa elkyk fodkl funs'kky;] dksyhdV] dsjyk	DES, RVSKVV, Gwalior	7.00
3.	Development of Decision Support System for Optimum Agri-produce in Tribal District of Alirajpur using Geospatial Technology	DST, Ministry of Science and Technology, Govt. of India, New Delhi.	Dr Bharat Singh College of Agriculture, Indore	16.522
4.	Breeding of medicinal plants for improved yield and quality	NMPB, New Delhi	Dr H Patidar, College of Horticulture, Mandsaur	52.516
5.	Mainstreaming agricultural biodiversity conservation and utilization in agricultural sectors to ensure ecosystem services and reduce vulnerability	Biodiversity International India-Office, New Delhi	Dr M.Yasin College of Agriculture, Sehore	2.66

4.7 Salient Research Achievements:

After harvest of pigeon pea significantly higher growth, yield attributing characters of wheat was achieved under permanent broad bed and furrow method of sowing and irrigation with sub-surface method compared with other treatments. The permanent broad bed and furrow method of sowing resulted in highest grain yield (5463 kg ha^{-1}) and straw yield (6120 kg ha^{-1}), net profit (Rs 75,639 ha^{-1}), B:C ratio (3.76) and water productivity of wheat. While in irrigation level, The maximum grain (5395 kg ha^{-1}) and straw yield (5980 kg ha^{-1}), net returns of Rs 72,581 ha^{-1}, B:C ratio 3.50 and water productivity (2.12 kg grain m^{-3} water) were registered under sub-surface irrigation method.	
Period of fruit set and ripening in Grapes (days): Early fruit set was recorded in Bangalore Blue (37 days), while maximum days taken for fruit set after pruning was recorded in H-5 (52.00), Kishmish Rozavis Red (51.25 days) and Sharad Seedless (50.50).Early fruit ripening was observed in Medika (123 days), Pusa Urvashi (128 days) and Kishmish Cherney (128 days), while more days taken to fruit ripening was observed in Kishmish Rozavis white (165 days).	
Results of AICRP-IWM showed that additions of 125% recommended doses of nutrients (25kg N, 50kg P_2O_5 and 25kg K_2O ha^{-1}) of black gram crop during rainy season grown on raised bed in sandy loam textured soil deficient in available N, P and K. The result showed that maximum seed (1,238 kg ha^{-1}), straw (2,455 kg ha^{-1}) yield, net return (Rs. 43,588 ha^{-1}) and B:C (3.82) ratio compared with 100% RDN after harvest of fennel, whereas irrigation recommended at 0.8 IW/CPE under drought condition in alluvial soil of Chambal command area.	

Molecular DNA finger printing of New Variety- Raj Vijay Toria 2 developed at ZARS, Morena: DNA profile of Toria (Raj Vijay Toria 2) (lane 3) along with controls [Basant (lane 1) PM-67] generated with primer pairs of genic-SSRs (PUTs-). Molecular marker sizes are depicted in bp. Primers PUT-19, PUT-96, PUT-149, PUT-169, PUT-181 and PUT-271 are useful in generating unique profile for discriminating ***Raj Vijay Toria 2*** from other varieties**.** This work was accomplished in collaboration with ICAR-NBPGR, New Delhi on October 5, 2017	
Impact of herbicides under "weed management in conservation agriculture systems: In pearl millet crop under pearl millet-mustard-cowpea cropping system IWM practices (atrazine 500 g/ha PE+one HW) significantly reduced the weed population and dry weight of weeds and resulted in significant higher yield (3.02 t/ha) followed by atrazine+2, 4-D (2.25 t/ha). The highest B:C ratio was obtained in treatment atrazine+2,4-D. Under conservation tillage practices highest grain yield was obtained in conventional tillage T_2 (CT-ZT-ZT) followed by T_1 (CT-CT) similarly B: C ratio was also highest in T_2 (CT-ZT-ZT	
Chemical management of Pearl millet of blast: Pearl millet blast *Magnaporthegrisea*has become a serious foliage disease of pearl millet in India .For the management of the disease five fungicides viz., Iprobenphos (Kitazin)48 EC @ 0.1% ,Tricyclazole (Beam) @ 0.1%, Azoxistrobin 25 EC @ 0.05% , Propiconazole @ 0.05% and Trifloxystrobin + Tebuconazole @ 0.05%, were evaluated in the form of foliar application for the management of the disease.The minimum per cent disease index was recorded in the treatment Trifloxystrobin + Tebuconazole (28.3%) followed by Propiconazole (33.3%) and Azoxistrobin (35.5%), while maximum blast PDI was recorded in control (64.4%).All the five fungicides significantly reduced the disease and out of them Trifloxystrobin+ Tebuconazole	

showed maximum control of the disease and it was significantly superior over Tricyclazole, Iprobenphosand control, but it was statistically at par with Propiconazole and Azoxistrobin.Trifloxystrobin+ Tebuconazolealso gave maximum grain yield (2671 kg/ha) as compared to 1862 kg/ha in control	
Residue management through sowing techniques : Three year pooled results of residue management through sowing techniques and irrigation levels on growth and yield of wheat after harvest of pearl millet. The results were obtained significantly higher growth and yield attributing characters, grain yield (4739 kg ha^{-1}) and straw yield (5437 kg ha^{-1}), gross returns, water productivity were recorded maximum under sowing by happy seeder with 25% RRSM (Residue retention through sowing method) of previous crop pearl millet and five irrigations (CRI, tillering, late jointing, milking and dough stage) compared with traditional sowing and irrigation methods compared with traditional method of sowing.	

New varieties / Hybrids identified for release:

- **Raj Vijay Gram 204 (RVG 204)** is identified for release for cultivation in Madhya Pradesh in the meeting of M.P-State Seed Sub-committee meeting at Bhopal on May 23, 2017. It has Long plant, bold seeded, matures in 111 days, resistant to wilt and tolerance to pod borer and potential yield is 2300-2500 kg/ha. It is suitable for mechanical harvesting Madhya Pradesh

- **Raj Vijay Gram 205 (**RVG 205) is is identified for release for cultivation in Madhya Pradesh in the meeting of M.P-State Seed Sub-committee meeting at Bhopal on May 23, 2017. It has Long plant, pink flower, bold seeded, matures in 107-118 days, resistant to wilt and tolerance to pod borer and potential yield is 2000-2500 kg/ha. It is First green seeded variety of M.P.

- **Raj Vijay Toria 2 (RVT 2)** identified for release for cultivation in Madhya Pradesh in the meeting of M.P-State Seed Sub-committee meeting at Bhopal on May 23, 2017. Its plant height is 110-130 (cm), maturity 98-105 days, number of Primary branches /plant 5-6, number of Secondary branches 2-3 and number of siliqua/plant 142-375. Seeds are blackish brown and round in shape; contains oil 42.8-44%. It is tolerant to drought conditions and suitable for double cropping systems. The variety escapes the problem of white rust and gives an average yield of 1105-1600 kg/ha.

- **Lentil variety RVL 13-5** identified in Annual Group Meet of AICRP on MULLARP held at IGKVV Raipur (CG) from September 8-9, 2017 for release for release in central Zone. Its plant type is semi erect, Maturity duration is 106 days, medium height and branches with broad leaf which is very much suitable for intercropping and potential yield is 14 qt/ha.

- **The First Asalio Variety** from central India Raj Vijay Asalio-1007 (Maturity duration 118 days) and its potential yield is 1522.98 Kg/ha. has been identified for release through central variety release committee by All India Workshop of Co-ordinated research Project on Medicinal and Aromatic Plants and Betel Vine at MPUAT, Udaipur on 11th to 14th Nov. 2017.

- **Raj Vijay Toria 1 [RVT 1]** variety notified vide no. S.O. 2805 (E) dated 25.08.2017 in the **Gazette of India** by Ministry of Agriculture, GOI. It has given 1266 (kg/h) seed yield. Seeds are blackish brown. It contains 42-44% oil and test weight ranges from 3.1-3.6 (g). It matures in 98 days and suited for double cropping. It is also escaped from white rust and aphid's incidence. This variety is recommended for sowing in first to second week of September for its best performance.

- **Raj Soya 18 (RVS 2001-18)** variety notified vide no. S.O. 2805 (E) dated 25.08.2017 in the **Gazette of India** by Ministry of Agriculture, GOI, New Delhi for general cultivation in Madhya Pradesh. It is early maturing (92 days), resistance to YMV, chorcol rot and potential yield is 2300 kg/ha.

4.7.1 Crop Improvement:

Cotton:

- Higher yielder genotypes have been screened under water stress condition. Out of 21 genotypes tested genotypes T SH-327, TCH-1199, AR-9108 and RCH-1217 were found better under water stress condition.
- Seven genotypes were screened for climate change. Normal sowing date (DI = 26-6-16) gave maximum yield, while the genotypes G.I (Rasi – 659 BG II) and G-4 (JK-5) were recorded maximum yield among interaction DIGI and DIG4 were recorded maximum yield of cotton.
- evaluation of improved bulk material in station trials, 14 short listed elite entries of *hirsutum* genotypes including *LC* were tested under rainfed conditions for screening purpose. Yield data ranged between 644 to 1569 kg $ha^{-1}$and the highest seed cotton yield was given by the entry IH 14-01 (1569 kg ha^{-1}), followed by IH 12-12 (1567 kg) The ginning out turn showed non significant differences among the entries and it was better in entries viz. IH 14-01 (35.0%), and IH 12-12 (34 %).
- station trial (PRT) 43 entries were tested and the highest seed cotton yield was given by the entry IHDC 11-12 (1701 kg) and IHDC 11-10 (1647.6 kg) respectively. Highest GOT (36.8 %) in IHS 11-7 and IHS 11-23b.
- Another trial of dwarf cultures suitable for HDPS, Nineteen *hirsutum* cotton genotypes were evaluated and The highest seed cotton yield was given by the entry IHD 11-5 (975 kg) followed by IHD 12-22 (891 kg), IHD 12-5 (881 kg ha^{-1}) respectively. The ginning out turn was higher (above 34%) in entries viz. IHD 12-14 (35.7%), followed by IHD 12-7 (34.6 %), IDC 11-9 (34.3 %) and IHD 12-4 (34.0 %).

Wheat:

- Thirty-four new entries tested along with 2 checks revealed that 13 genotypes in first non-significant group, GW495 (7853 kg/ha) followed byPBW770 (7535 kg/ha) and RAJ4502 (7354 kg/ha) produced significantly highest grain yield over other new entries and check varieties.
- Sixteen varieties were in first non-significant group revealed that MP3470 (3214 kg/ha) followed by MP1341 (3069 kg/ha), HD3270 (2858 kg/ha) produced significantly higher grain yield compared to other varieties and checks.
- Genotypes CTCZ-40(6285 kg /ha) followed by MP4010 (5785 kg/ha), CTCZ-31(5710 kg /ha), RVW 4106(5710 kg /ha) and CTCZ-39(5160 kg /ha) produced significantly higher grain yield compared to other varieties.

- Genotypes CTCZ-50(7575 kg /ha) followed by CTCZ-51 (6390 kg/ha), CTCZ-49(6070 kg /ha), CTCZ-62 (5935 kg /ha) and CTCZ-27(5790 kg /ha) produced significantly higher grain yield compared to other varieties.
- RVW 4271 (7965 kg/ha) followed by RVW 4267 (7628 kg/ha), MP 4010 (7418 kg/ha), RVW 4281 (7393 kg/ha), RVW 4279 (7205 kg/ha), RVW 4272 (7038 kg/ha) showed significantly higher grain yield over other test varieties.
- PL892 (6764 kg/ha) followed by (KB1531) (6746 kg/ha), PL898 (6109 kg/ha), BH946 C (5654 kg/ha), UPB1066 (5482 kg/ha), JB347 (5459 kg/ha) produced significantly higher grain yield over other new entries.
- About 19 selections were made on the basis of grain yield. EIGN 14th HTWYT 21, 48th IBWSN 1299, 26th HRWSN 2017, 33th SAWSN 3205, 33th SAWSN 3284 recorded promising for grain yield.
- Out of 295 advance lines tested, 89 lines promoted to PYT 2 Breeding trial during the year 2016-17.

Pearl Millet:

- Fifteen AICRP trials (Breeding & Pathology) were conducted during 2016 by the center, along with Ten Hectares Pearl millet FLD's were conducted in 2016 by Shivpuri KVK under technical supervision of AICPMIP, Gwalior.
- One hundred twenty eight (128) germplasm were grown during Kharif 2016 and screened for various traits as under. 140 restorer lines (F3 –F7) have been evaluated for six traits and selected for utilization in crossing Program.
- Forty Seven new (Single cross) Hybrids with the combination of different male sterile lines Backgrounds have been developed during Kharif 2016.
- One hundred sixty Single cross Hybrids developed from the center were Evaluated for different characters along with standard check Kaveri Super Boss during Kharif 2016.Out of these following ten hybrids were found promising. RVBH15-35, RVBH15-7, RVBH15-103, RVBH15-107, RVBH15-57, RVBH15-10 RVBH15-54 RVBH15-104 RVBH15-10, RVBH15-99.

Arid Legume:

- Fourteen genotypes were tested in IVT, out of these, variety X-10 gave maximum seed yield (1250 kg/ha), net monetary return (` 46,879/-ha) and BCR (3.57) of Clusterbean, over all the varieties. The lowest seed yield (844.91) was recorded by GAUG 1304 variety.

Pigeon pea:

- In Initial Varietal Trial of Mid Early duration varieties, 17 entries were evaluated. The maturity of the entries ranged from 151 to 181 days with mean maturity of 156 days. The earliest maturing genotype was AH 12-09(125 days). Most of the entries matured in 160 days. However BRG 15-4 and the check variety PT 0012 matured in 181 and 170 days respectively. Only two genotypes exceeded the best check TJT 501. PT 0705-3-1-1 out yielded all the genotypes giving the yield of 2384 kg ha^{-1}

with 15.5 5 increase over the best check, followed by the genotypes NTL 30 (A private sector variety) which exceeded by 10.8 % over the best check giving an yield of 2064 kg ha^{-1}.

- In Initial Varietal Trial of Medium duration, 23 entries were evaluated. The maturity of the entries ranged from 160 to 190 days with a mean of 175 days. The seed yield ha^{-1} ranged from 1586 to 2913 kg ha^{-1} with the mean of 2301 kg ha^{-1}. Only three entries viz- BDN 2008-7, RPS 2007-10 and AKTE 12-02 exceeded by 16.5, 14.9 and 19.0 % over the best check –JKM 189 (2448 kg/ha). At zonal level, no entry surpassed the yield of check variety JKM 189 (1969 kg/ha-). However, new entry BDN 2008-7 was at par in yield with check variety BDN 2. The genotype RVSA 7-17 from Sehore centre gave 5% higher yield (1413 kg/ha) over the check ICP 8863 (1334 kg/ha) and promoted to AVT I of South zone.
- In Initial Hybrid Trial of Early Duration 11 hybrids were tested. The days to maturity ranged from 148 (PHP 130) to 157 days ((SKNP 1114) while yield ranged from 377 kg/ha (PHP 130) to 1502 kg/ha (RVICPH 2431 at Sehore centre). At zonal level over 7 locations RVICPH 2431 ranked first giving 10.2% higher yield (1167 kg/ha) over the best check CORG 9701 (1059 kg/ha). The maturity of this hybrid was 10 days earlier over the zonal level (140 days) than maturity at Sehore centre (150 days). The hybrid is advanced for re-testing in the year 2016-17.
- In ICRISAT short duration hybrid trial, 12 hybrids were evaluated. The overall maturity of the hybrids was 150 days. Most of the hybrids matured in the same range. MN 5 was found to be of shortest stature among the tested genotypes having plant height of 84.5 cm. The highest yielding hybrid was ICPH 3683 (1205 kg/ha) giving 87.4% higher yield than the check ICP 88039 (643.2 kg/ha), followed by ICPH 3674 (1048.4 kg/ha). Both of these hybrids matured in 149 days.
- In National crossing program, 8 parents were selected for introducing their selective traits like: JKM 189 (High yielding variety in cultivation) , ICP 161 (early duration) , JA 4 (heat & drought tolerant), RVSA 07-10 (Phytophthora tolerance), JSA 28 (Early duration), ICPL 87119 (High yield), MN 1(Short duration, short stature), MN 5 (short stature, short duration).

Rapeseed & Mustard:

Performance of entries in AICRP network under irrigated condition:

- **Toria:** In IVT Toria the highest seed yield (3580 kg/h) was obtained in TRL 79 (ASR). Entry TH 1502 showed highest seed index of 4.68 gm. In AVT-I of Toria the highest seed yield (3267 kg/h) was recorded in PT 303 (Filler 3) and PT 303 (NC) followed by RAUDT 10-33# (3260 kg/h). Noticeably, PT 303 (NC) matures early in 109 days. The highest seed index 4.20 gm was obtained by PT 303 (Filler 3).
- **Yellow Sarson:** In IVT- Yellow Sarson the highest seed yield (3704 kg/h) was obtained in entry YSKM 16-2. Entry PYS- 2013- 03 matures earlier (127 days) than others. All entries test weight ranges from 4.54 (g) to 5.22 (g) which is of medium bold seeded group.

- **Early Mustard:** The highest seed yield (3693 kg/h) was obtained in JD 6 (ZC) followed by SVJ- 68 (3654 kg/h) and RH 1573 (3537 kg/h) in IVT Early Mustard. Entry NPJ- 202 showed early maturity (129 days). Noticeably, the highest seed index (6.52 gm) was found in entry PRE- 2013-19. In AVT-II of early mustard the highest seed yield (3797 kg/h) was obtained in NRCHB- 101 (Filler 3). PRO 5111 was indentified an early maturing entry (132 days) among 06 entries. The highest seed index of 6.90 gm was obtained in NRCHB- 101 (Filler 3).
- **Timely Sown Mustard:** In IVT (TS) Mustard entry RGN- 394 exhibited of giving high seed yield (3858 kg/h) followed by KMR 16-4 (3582 kg/h) and RH 1326 (3490 kg/h). NPJ 204 matures earlier in 127 days than other entries. The highest seed index (6.93 g) was obtained in entry RH 406 (Filler). In AVT-I (TS) Mustard maximum seed yield (3810 kg/h) was obtained in RGN 73 (LR) followed by Entry PR 2012-12 (3704 kg/h). Entry Kranti (NC) matures in 128 days. Noticeably, the entry RH 1209 had highest seed index 7.42 g.
- **Late Sown Mustard:** In IVT of late sown mustard entry DRMRIJ 16-3 gave highest seed yield 2091 kg/h followed by DRMR 2035 (2074 kg/h) and PRD- 2013-6 (2066 kg/ha). DRMR 2035 matures early in 113 days. Maximum seed index of 5.58 gm was found in NRCHB- 101 (ZC).Among most of the entries of IHT showed significant differences for seed yield (kg/h). The highest seed yield gave by entry PHR- 126 (3523 kg/h). As compare to other entries, 5IJ1110 and PHR- 126 matures in 125 days. Remarkably, the highest seed index (7.08 gm) was found in entry No. 16.
- **Quality Mustard:** The highest seed yield was obtained in LES- 54 (3416 kg/h) followed by PM- 30 (ZC) (3226 kg/h) and PDZ- 8# (3152 kg/h) in IVT (Quality) Mustard. Entry PDZ- 8# matures earlier in 129 days than others. The highest seed index (7.53 g) was found in entry PM- 29 (LR). In AVT –II (Quality) Mustard the highest seed yield of 3881 kg/h was recorded in RGN-73 (ZC) followed by PM 30 (LR) (3532 kg/h) and RH 406 (3479 kg/h). Entry RGN 73 (ZC) matures early in 136 days. The highest seed index (6.65 g) was obtained in Kranti (NC).

Safflower:

- In Initial Varietals Trial I (IVT I), entry SSF-13-71 recorded the highest yield of 3779 kg/ha followed by RVS 15-5 (3221 kg/ha.The harvest index of this high yielder genotype was 26.1%.
- In Initial Varietals Trial II (IVTII), entry SSF-21-15 recorded the highest yield of 3199 kg/ha followed by A-1 (2877 kg/ha. The harvest index of this high yielder genotype was 30.3%.
- Advanced Station varietal trial, spiny tall genotype JSI-17-126 recorded highest yield of 2830 kg/ha followed by JSI-17-118,&JSI 17-112, against the spiny check JSF-1 (2253 kg/ha). Among the spineless genotypes JSI 17-121 have higher yield (1989 kg/ha) This year short stature spiny early dwarf entries JSI 17-129, JSI 17-130 &JSI 17-125 have good response ,In spineless early short stature genotypes reached up to 1863 & 1844 kg/ha seed yield respectively. The entries were JSI 17- 127,& JSI 17-109.

Chickpea:

- In PYET seed yield ranged from 688.0 to 1746.8 Kg/ha among 30 tested genotypes. AGBLDS16017 recorded the highest yield followed by AGBLDS16010 in *Desi* and in *Kabuli* yield ranged from 847.5 to 1982.2 Kg/ha and genotype SAGL 171000 and SAGL 171004 recorded high yield. In PYET-1 (Pea shape) seed yield ranged from 856.6 to 1453.5 Kg/ha among 30 tested genotypes and SAGL 152303 recorded the highest yield followed by SAGL 162356. In PYET-2 (Pea shaped) seed yield ranged from 726.1 to 1746.8 Kg/ha and genotype SAGL 152336 and SAGL 152329 were recorded high yielder.
- In SVT (Black) seed yield ranged from 575.7 to 1589.2 Kg/ha among tested genotypes. JG 11 recorded the highest yield followed by SAGL 163002 and In SVT (Green) yield ranges from 635.1 to 1352.2 Kg/ha and genotype SAGL 161007 and SAGL 161017 were recorded highest yield.
- Seed yield ranged from 613.9to 1316.7 Kg/ha among tested genotypes in SVT-1 (pea shape). SAGL 162356 recorded the highest seed yield followed by SAGL 152348.
- Seed yield ranged from 617.8 to 1473.7 Kg/ha among tested genotypes in SVT-2 (pea shape). SAGL 152232 recorded the highest seed yield followed by SAGL 152238.
- Seed yield ranged from 834.6 to 1907.6 Kg/ha among tested genotypes in SVT-2 (*Desi*). SAGL 152200 recorded the highest seed yield followed by RVSSG 27.
- Seed yield ranged from 576.8 to 1857.8 Kg/ha among tested genotypes in SVT-1 (*Desi*). SAGL 152275 recorded the highest seed yield followed by SAGL 152265.
- In *Kabuli* SVT genotype Seed yield ranged from 1629.2 to 2579.1 Kg/ha among tested genotypes, SAGL 162291 recorded highest yield followed by SAGL 162290.

Soybean

- 40 entries tested in this trial along with checks. SL 1104 (3407.0 kg/ha) and KDS 1045 (3333.0 kg/ha) gave high yield than checks.
- Nine varieties tested in this trial. The trial was sown on 26-6-2016. Entries viz RVS 2007-6 gave the highest yield (2375.0 kg/ha) followed by RVS 2008-24 (2361.0 kg/ha) and JS 20-96 (2241.0 Kg/ha).
- Twenty one entries were evaluated in this trial entry RVS 2012-8 gave the highest yield (2378.6 kg/ha) followed by RVS 2012-32 (2358.0 kg/ha) as compared to check JS 335 (1860.0 kg/ha).
- Twenty two bulks were tested in this trial. Entry RVS 2011-3 gave maximum yield (1960.0 kg/ha) followed by RVS 2011-1 (1940 kg/ha) RVS 2011-13 (1930.0 kg/ha). Than check.
- Single plant progenies nucleus and breeder seed were produced of JS 95-60, JS 93-05, JS 335, RVS 2001-4, RVS 18, RVS 24, JS 20-29, JS 20-34, JS 20-69 as per state and govt. of india indent.

MULLaRP-

Urdbean:

- The genotype VBG 12-111recorded highest seed yield of 1971 kg/ha followed by **KPU 12-1730** (1921 kg/ha). The genotypes **PU13-15,RU 03-22,VBG 12-111 and PU 11-25** matured in 79 days. 100 seed weight ranged from 3.84 to 4.79g.
- The genotype **KPU 129-104** recorded highest seed yield of 1977 kg/ha followed by **KPU 524-65**(1762kg/ha). The genotypes **IPU 11-2** matured in 79 days. 100 Seed weight ranged from 3.92 to 4.41 g.

Lentil:

- The genotypes L 4076 recorded the highest seed yield of 1857 kg/ha followed by RL 7-3 (1538kg/ha). IPL 536 was observed early maturing (99 days). Seed sizes of all tested genotypes were ranged from 2.5 to 4.0 g/100 seeds.
- The genotypes L 4769 (IVT) recorded the highest seed yield of 1444 kg/ha followed by L 4076 (1225 kg/ha). L 4769 was observed early maturing (87 days). Seed sizes of all tested genotypes were ranged from 3.1 to 3.9 g/100 seeds.
- The genotypes RVL 13-7 recorded the highest seed yield of 1596 kg/ha followed by RVL 13-5 (1417 kg/ha) and RVL 14-4 (1331). IPL 316 was observed early maturing (93 days). Seed sizes of all tested genotypes were ranged from 2.98 to 4.10 g/100 seeds.

Fieldpea:

- The genotypes **IPF 16-18** recorded the highest seed yield of 2375 kg/ha followed by **RPF 2010-1** (2180 kg/ha). **VL 64,IPF 16-13,PANT P 354,RPF 2010-1PANT P 355 and PANT P 353** were observed early maturing (100 days). Seed weight of all tested genotypes were ranged from 11.50 to 18.00 g/100 seeds.
- The genotypes **RPF 2010-11**recorded the highest seed yield (2200 kg/ha) followed by **PANT P 347** (1997 kg/ha). **PANT P 340 and VL 65** were observed early maturing (96 days). Seed weight of all tested genotypes was ranged from 10.50 to 17.50 g/100 seed.

Medicinal & Aromatic Plants:

- Out of 120 lines of ashwagandha 37 lines selection form single plant selection and grown during Kharif 2016-17. Observation were recorded on selected plants on the basis of different morphological characters like berry colour (Red, Yellow, Orange), berry size (small, medium, large) plant type (erect or bushy) branching pattern (B.P., T.P.), leaf type (oblong or ovate), leaf surface (hairy, non hairy). Individual selected plants will be analyzed for there chemical quality and yield parameters.

Groundnut:

- The cultivated groundnut (*Arachis hypogaea* L.), is self-pollinated, allotetraploid ($2n = 4x = 40$) with a genome size of 2891 Mbp, originated through a single hybridization and polyploidization event. The aim of groundnut breeding programs across the world is to develop new varieties that meet the requirements of grower,

processor, and consumer. The most widely targeted traits of groundnut improvement programs are Yield and yield contributing parameters. Our main focus on groundnut breeding should be to produce higher yielding groundnut varieties with early maturity using breeding programmes supported by biotechnological tools to reduce the time of traditional breeding methods.

- Phenotypic characterization of two initial varietal trial (IVTI and IVTII) and one advance varietal trail (AVT) has been carried out at our centre. Other than that we have maintained 250 germplasm lines received from DGR Junagarh and selected plants from segregating material received from ICRISAT-Hyderabad.
- Dendrogram is showing correlation between 17 entries of IVT II based on morphological data. ISK-2 is presenting different group due to its low plant stand and other morphological traits. ISK-2016-5, ISK-7 and ISK-23 are showing highest kernel yield.
- Average value of all the four replications for all morphological characters has been taken to analyze statistical significance and correlation between the traits. The coefficient of correlation among all traits at maturity was calculated using SPSS ver.19 software. All eight morphological traits were used to form clusters based on their similarity index. The similarity matrices were used to construct a dendrogram for all the genotypes using NTSYS-pc based on UPGMA.

Sorghum:

- Five genotypes were contributed in Coordinated Trials and tested i.e. two in AVT –I (single cut), one in AVT I (GS), two in IVT (GS) and seven experimental hybrid in IIHT trial.
- Six coordinated trials *viz* AVT, AHT, IVT, IHT, IIHT and IAVHT were conducted in *Kharif* 2016. The entries were tested for grain yield, fodder yield and other characters.
- Under new MS development program 20 new MS lines developed at Indore were evaluated for agronomical attributes.
- 40 kharif germplasm lines were evaluated for grain yield /plant and other agronomical attributes.

4.7.2 Crop Production Technologies:

Cotton

- The Bt. Hybrids of the region have been evaluated. Use of Bt. Hybrid + Closer spacing (25 % less than recommended) + 125% RDN + recommended foliar spray was obtained highest seed cotton yield result into maximum boll weight, sympodia per plant and final plant population. Technologies for organic cotton production have been worked out. It was concluded that application of RDN through inorganic obtained the highest seed cotton yield because of maximum yield attributing characters.

- **Developing suitable Agronomy for ruling Bt. hybrids of the region:** Results indicated that the closer spacing of 45x 45 cm with 125% NPK $^{-1}$ + foliar spray of DAP+MOP +1% spray of $Mgso_4$ recorded higher seed cotton yield (3561 kg ha^{-1}) while the closer spacing of 45x45 cm along with 125% recommended dose of fertilizer + foliar spray of DAP + MOP+1% spraying of $mgso_4$ gave highest net return of Rs.157675/- ha^{-1} with B C ratio of 4.48.
- **The significant differences in yield due to various integrated weed management practices have been prevailed:** Result indicated that the weed free check gave the highest yield of 2982 kg ha^{-1} as compared to the rest of the treatments. However the application of pendimethalin @ 1.0 kg a.i. ha^{-1} + 1 hoeing + tank mixture of quizalofopethyl @ 50 g a.i. ha^{-1} + pyrithiobac sodium @ 62.5 g a.i ha^{-1} at 2-4 weed leaf stage + 1 hoeing (T_6) was proved superior (1959 kg ha^{-1}) over other treatments. Economic evaluation revealed that the treatment T_8 gave highest net return Rs.127989 ha^{-1} as compared to all rest treatments.
- **Improving use efficiency of inputs (water and nutrient):** In a trial conducted on input use efficiency, significant differences in yield as per the effect of various treatments have been prevailed. The treatment poly mulch gave the highest seed cotton yield 3073 kg ha^{-1} as compared to rest of the treatments. The highest sympodia 18.85 $plant^{-1}$ was noted with the treatment ploy. WUE and water productivity data revealed that the maximum WUE was recorded in treatment having poly mulch (2.51 kg/ha/mm) followed by crop residue mulch, Paper mulch and Dust mulch.Among the various treatments, mulching with crop residue was found more remunerative with the net return of Rs.116730 ha^{-1} with BC ratio of 4.15.
- **Production Technology for organic cotton**: In a trial conducted on Organic cotton, significant differences in yield as per affect of various treatments have been prevailed. The application of recommended dose of N through in organic fertilizers recorded higher yield of 1210 Kg ha^{-1} as compared to the all rest treatments.Although the treatment recommended dose of nutrient through inorganic based P equivalent basis was also found statistically superior (997 kg ha^{-1}) over treatment (absolute control) T_1 (687 kg ha^{-1}), T_9 (741 kg ha^{-1}) and T_{10}, (772 kg ha^{-1}) respectively. Economic evaluation revealed that the recommended dose of N through inorganic fertilizers was found more remunerative with net return of Rs.39837 ha^{-1} and the tend noted in B.C. ratio.
- **Evaluation of Bt. G. hirsutum genotypes under HDPS cultivation:** Results indicated that the Bt variety code No.209 recorded significantly higher yield of 2109 kg ha^{-1} as compared to all rest Bt varieties. Similar trend was also observed in respect of yield and bolls Sq m^{-1}. and sized of bolls respectively. In case of GOT the code No.211, 213 and 217 were registered as higher ginner with 34.44, 35.0 and 34.0% GOT over rest of the entries.

Safflower:

- Among the different planting geometries, 45cm x 20 cm recorded the significantly highest seed yield. (2592 kg/ha) .Other planting geometries were in the order of 60 x 20 > 75 x 20 > 90 x 20 cm. Annigeri-1 recorded the highest seed yield (2309 kg /ha), which was at par with JSF-1(2211 kg/ha). Interaction effect was significant. Annigeri-1 and JSF-1 recorded the highest seed yield with a plant spacing of 45cm x 20cm.
- At Indore centre, two short duration varieties (RVS-113 and JSI-99) were evaluated to identify suitable plant spacing and fertilizer level. Seed yield did not differ significantly with two plant spacings of 30 x 20 cm (2100 kg/ha) and 45 x 20 cm (2074 kg/ha). Seed yield with 125% RDF recorded the highest seed yield (2225 kg/ha) which was at par with that of 100% RDF.(2065 kg/ha). Lowest seed yield was recorded with 75% RDF (1970 kg/ha). Crop sown on 1st November recorded significantly highest seed yield (1784 kg/ha). Crop sown on 30th November recorded statistically lowest seed yield (1172 kg/ha) (Table 2.8c). Similar trend was noticed with respect to biological yield, harvest index, gross returns, net returns and B:C ratio. Among the varieties, Annigeri-1 recorded significantly highest seed yield (1697 kg/ha). Similar trend was recorded with respect to biological yield, harvest index, gross returns, net returns and B: C ratio. Interaction effect was not significant.

Medicinal & Aromatic Plants-

Ashwagandha (*Withania somnifera*):

- Out of 120 germplasm lines tested from higher dry root yield, seed yield and quality root characters. The following entries viz; MWS 90-130, MWS 130, MWS 90-121, MWS 122, MWS 90-142, MWS -142, MWS 90-127, MWS 216, and MWS 217 recorded higher seed and root yield more than 400 kg/ha.
- The starch content decrease from smooth root 14.68% to wild hard woody 8.42% but there is an increasing trend in crude fiber content from smooth root (10.50%) to wild hard wood (35.64%). The withanolids content was highest in smooth starchy root (1.26%) and found to decrease in woody or fibraus roots up to 0.98%. The alkaloid content is opposite of withanolide content it is found lowest 0.216% in starchy roots and increased up to 0.547% in wild hard woody roots. The result concluded that for powder making of withanolide, starchy roots are better but for solvent extraction of Alkaloids fibrous woody roots are preferable.

Opium poppy *(Papaver somaniferum):*

- Seed yield (kg/ha) ranged from 234.32 kg (MOP-1054) to 933.33 kg (MOP-511). Highest seed yield (kg/ha) recorded by MOP-511 (933.33 kg) followed by ND-1146 (868.37 kg/ha), MOP-278 (833.33 kg/ha), NC-57915 (776.50 kg/ha), UOP-56 (752.21 kg/ha), UOP-790 (745.74 kg/ha and UOP-82 (724.93 kg/ha) as compaired to check JOP-540 (687 kg/ha). Entries MOP 511, ND-1146, MOP-278, NC-57915, UOP-56, UOP-790 and UOP-82, recorded more than 724 kg/ha seed yield.

Isabgol (*Plantago ovata*):

- The seed yield (kg/ha) ranged from minimum 383 kg/ha (MIB-1008) to 873 kg/ha (MIB-1004). The highest seed yield (kg/ha) were recorded by 873 kg/ha (MIB-1004) 726, SLS-56, SPS-19, 717 SLS 66 followed by 857 kg/ha (MIB-1005), 798 kg (SPS-25), 768 kg/ha (MIB-123, MIB-124 kg/ha), as compaired to 756 kg/ha in JI-4 and 613 kg/ha GI-2 (Check).
- Over all performance indicate that seed yield ranges from 542 kg/ha (DPO-335) to 842 kg/ha (MIB-124) Highest seed yield ranged by MIB-124 (842 kg/ha) followed by UI-89 (786 kg/ha) MIB-1004 (716 kg/ha) & MIB-5 (707 kg/ha) as compaired to superior check JI-4. (708 kg/ha). Heighest swelling fector 10.0 and highest husk % 35.8 recorded by MIB-5.

Safed musli (*Chlorophytum borivilianum*):

- Among the 24 lines tested during the year 2016-17 fasciculated root yield kg/ha. ranges from 1843 kg/ha (MCB-409) to maximum 3823 kg/ha (MCB-412). The superior genotypes for fasciculated root yield and sapogenine content identified are MCB-412 followed by RVSM-414, MCB-404, MCB-424 and MCB-406 found superior in fresh fasciculated root yield to the existing variety during the 2016-17 to 2015-16 at Mandsaur centre. These lines may be tested in multilocation trail.
- Seed yield (kg/ha) ranges from 1077 kg (UOP-79) to 1411 kg (UOP-20) as compared to check 1372 kg (JOP-540) respectively. The latex yield (kg/ha) ranges from 61 kg/ha (MOP-278) to 102 kg/ha (UOP-20). Maximum latex yield recorded by entry UOP-20 (102 kg/ha) followed by chetak aphim (95 kg/ha), UOP-30 (83 kg/ha), UOP-80 (72 kg/ha), UOP-79 (69 kg/ha) and MOP-11 (67 kg/ha) as compaired to check MOP-540 (62 kg/ha).morphine Content ranges from 10-4% (UOP-20) to maximum 12.8% (MOP-278) followed by MOP -511 (12.6%) as compare to check JOP-540 (12.1%).
- Multilocation Trial: Under multilocation evaluation trial of safed musli at Mandsaur. Two promising genotypes along with two check JSM 405 and RVSM 414 were tested during 2016-17. Observation were recorded and presented in 1.2.4.1. The dry root yield kg/ha ranged from 177 kg/ha (AKSM-8) to 343.6 kg(RVSM 414) None of the entry recorded superior dry root yield as compaired to check RVSM 414.

Asalio (*Lepidium sativum*):

- Among the fourty Germplasm lines tested during the year 2016-17. Higher seed yielding genotypes identified are MLS-1001, MLS-1006, MLS-1007, MLS-1016, MLS-1, MLS-13 and MLS-16. These lines may be tested in multilocation trial.
- Asalio seed oil is a very good source of unsaturated fatty acids. The oil content of the germplasm under study ranges from 18.02% (MLS 10-12) to 22.10 (MLS 10-21). The total unsaturated fatty acids are ranaing from 70.72% (MLS 10-22) to 85.12% (MLS 10-09). The highest linolenic acid (Omega 3) present is 47.48% in MLS 10-09 followed by 46.80% in MLS 10-05. These lines with high unsaturated fatty acids can be taken for further work.

Tulsi (*Ocimum basilicum*):

- The highest seed yield (kg/ha) was recorded by MOB-14 (1361 kg/ha) followed by MOB-13 (1291 kg/ha), MOB-16 (1150 kg/ha), MOB-2, MOB-15 and MOB19 (1071 kg/ha) as compaired to lowest seed yield recorded by entry MOB-5 (635 kg/ha).Out of 21 germplasm lines tested and evaluated the entry MOB-2, MOB-13, MOB-14, MOB-15, MOB-16 and MOB-19 are identified superior entries and must be utilize in crop improvement work.

Kalmegh *(Andrographis paniculata):*

- Highest dry herbage yield were recorded from entry MAP-1 (87.08 q/ha) followed by MAP 11, MAP-2 (78.42 q/ha), MAP-9 (75.75 q/ha), MAP-7 (75.25 q/ha) MAP-12 (71.00 q/ha) and MAP-8 (67.17 q/ha) as compared to lowest yield MAP-4 (59.25 q/ha). High yieleding lines. Entries MAP-1, MAP-2, MAP-7, MAP-9, MAP-11 and MAP-12 are found superior in high dry herbage yield and must be tested in Multi locational Trail.

- Thirteen promising entries were tested and Mandsaur to identify promising lines for dry biomass and seed yield observation were recorded and presented in table 1.2.6.1 Dry biomass yield kg/ha ranged rand from 1134.3 kg/ha (DMAPR-13) to 4448.0 kg (DMAPR-18). during 2015-16 and 4463.7 kg/ha (MAP-2) to 5622.7 kg/ha (DMAPR-35) during 2016-17. Highest biomass yield recorded by entries (DRAPR-18) (4448.0 kg) followed by DRMAP-35 (4009.0 kg) INGR 07041(3349.3 kg) and AK-1 (3284).

Basil (*Osicimum basilicum*):

- Under multilocation evaluation trial of basil four promissing genotypes along with check were tested at Mandsaur during 2016-17. Observation were recordd and presented in Table 1.2.5.1 plant height, ranges from 112.6 cm (MOB-16) to 152.12cm (Rahuri-1) days to 50% flowring ranges from 54.8 days (MOB-16) to 63.4 days (Rahuri-1). The seed yield kg/ha ranges from 872 kg/ha (Rahuri) to 1211 kg/ha (MOB 14). Maximum seed yield kg/ha recorded by MOB 14 (1211 kg) followed by MOB 16 (1155 kg) MOB 13 (1133 kg/ha) and MOB 19 (1090 kg/ha). Similary oil content % for green leaf yield ranges from 0.376% (Rahuri 1) to 0.992% (MOB 16) Maximum oil content in green leaf recorded by MOB 16 (0.992%) followed by MOB 14 (0-892) MOB 13 (0.872) and MOB 19 (0.840).

Wheat:

- **Performance of new wheat genotypes at different dates of sowing under irrigated conditions:** Check variety GW 366 gave significantly higher grain yield (6184 kg/ha) under normal sown conditions which was followed by RVW 4106 (6133 kg/ha). The mean yield obtained under normal planting (5825 kg/ha) was significantly higher than late planting (4820 kg/ha).
- **Management of lodging and yield maximization in wheat:** Recommended dose of fertilizer (RDF) gave significantly higher grain yield (6055 kg/ha) in comparison to all other treatments. Among growth retardant treatments two sprays of Lihoin

(0.2%) produced maximum grain yield (5952 kg/ha) which was significantly higher than other treatments.

- **Comparative Performance of line versus dibbling in wheat:** The highest yield was obtained in dibbling 15X15cm (6106 kg/ha) followed by 15 X 20cm (5911 kg/ha) with seed rate of 100 kg/ha. HI 8737 yielded significantly higher (5932 kg/ha) as compared to HI 1544 (5689 kg/ha).

Weed Management:

- **Mustard:** Integrated weed management (oxyfluorfen + one HW) gave maximum seed yield (1.81 t/ha) as well as reduced the weed density and dry weight of weeds followed by pendimethalin 1.0 kg/ha PE. Conventional tillage practices T_1 (CT-CT) gave maximum seed yield (1.96 t/ha) as compared to other tillage practices. Similarly, highest B:C ratio was recorded in T_1 (CT-CT) tillage practices (3.91). In case of weed management practices the highest B:C ratio was obtained in pendimethalin (3.65) followed by IWM practices (3.56).
- **Weed management in potato under organic farming:** Two hand weeding at 20 and 40 DAS gave highest yield (14.58 t/ha) followed by recommended herbicide metribuzin 0.5 kg/ha + one hand weeding. Among organic weed management practices one hand weeding at 20 DAS with straw mulch 5 t/ha controlled the weeds with 74.65% WCE as well as gave higher yield of potato (13.89 t/ha) followed by one hand hoeing at 20 DAS + one hand weeding at 40 DAS (13.72 t/ha) with 71.83% WCE.
- **Persistence of herbicides in soil applied in pearl millet crop under Pearlmillet-mustard-green gram cropping system:** Herbicides atrazine 500 g/ha PE + 2, 4-D 500 g/ha PoE and atrazine 500 g/ha PE + one HW applied to pearl millet persisted in soil for 45 days. No residues of herbicides were left after harvesting of crop as per bioassay method using barley as test crop. Different tillage practices in pearlmiillet-mustard cropping system could not affect the persistence of herbicides applied to pearl millet.
- **Persistence of herbicides in soil applied in mustard crop under pearlmillet-mustard-green gram cropping system in conservation agriculture system:** Herbicides pendimethalin 1.0 kg/ha PE and oxyfluorfen 0.230 kg/ha PE + one HW applied in mustard crop persisted in soil for 60 and 45 days after application respectively. No residues of herbicides were left after hervest of crop as per bioassay method using maize as test crop.
- **Herbicide residue in post harvest soil of wheat in farmers field :**The residues of herbicides sulfosulfuron 25 g/ha, metsulfuron 4 g/ha, metsulfuron + sulfosulfuron 16g/ha and 2, 4-D 0.5 kg/ha applied on wheat crop in farmers' fields were not found in post harvest soil as per bioassay study using maize as test plant.
- **Wheat:** The maximum yield of 4.45 t/ha was obtained with the application of metsulfuron+sulfosulfuron 16g a.i./ha followed by sufosulfuron 25 g/ha PoE (4.29 t/ha) 2,4-D 0.5 kg/ha (4.26 t/ha) and metsulfuron 4 g/ha (4.10 t/ha) which was 18.09, 13.79, 13.00 and 8.75% higher over farmers practice (3.77 t/ha).

Effect on weeds: Weed population and dry weight of weeds were affected by weed management practices. The population of *P. monspeliensis, H. spontaneum, C. album, C. arvensis, M. hispida* and *A. arvensis* were reduced significantly by weed control treatments. The maximum narrow leave weeds were controlled by two hand weedings followed by black plastic mulch, one hand hoeing at 20 DAS and one hand hoeing + one hand weeding after 30 days of sowing. But the highest reduction of broad leave weeds was recorded in recommended herbicide + one hand weeding followed by recommended herbicide alone. At 60 DAS, the minimum narrow leave weeds were recorded in one hand weeding + straw mulching followed by two hand weedings, while broad leave weeds were recorded in recommended herbicide + one hand weeding treatment followed by recommended herbicide, two hand weeding and one hand weeding + straw mulching. Similarly among four mulching treatments the straw mulch with one hand weeding controlled broad leave weeds at 30 DAS followed by straw mulch alone. The total weeds were effectively controlled with the application of straw mulch as compared to black plastic mulch and white plastic mulch at 30 DAS. At 60 DAS when one hand weeding was done followed by straw mulch shows good result to control the weeds. Although the treatment recommended herbicide (metribuzine 0.5 kg/ha) with one hand weeding gave best result to control broad leave weeds at 30 and 60 DAS.

Effect on Crop: On the basis of results the highest plant height was recorded in treatment two hand weeding at 30 DAS but at 60 DAS it was recorded in treatment one hand hoing + one hand weeding. Similar result was also observed for number of stems/plant at 60 DAS followed by two hand weeding. The tuber yield was affected significantly due to different treatments. The yield of potato tuber was recorded highest (14.58 t/ha) under two hand weeding treatment followed by recommended herbicide with one hand weeding (14.24 t/ha) . The lowest tuber yield (6.77 t/ha) was obtained in unweeded control plot. Among all four mulching treatments the one hand weeding at 20 days + straw mulching gave highest yield (13.89 t/ha) followed by straw mulching 5 t/ha (9.20 t/ha) alone. Overall, it was concluded that two hand weeding at 20 and 40 DAS gave highest yield (14.58 t/ha) followed by recommended herbicide metribuzin 0.5 kg/ha + one hand weeding. Among organic weed management practices one hand weeding at 20 DAS with straw mulch 5 t/ha controlled the weeds with 74.65% WCE as well as gave higher yield of potato (13.89 t/ha) followed by one hand hoeing at 20 DAS + one hand weeding at 40 DAS (13.72 t/ha) with 71.83% WCE.

Herbicide residue in post harvest soil of wheat in farmers' field: Field demonstrations were conducted on farmers' field for weed control in wheat during Rabi season of 2016-17 at different villages of Gwalior district. The treatments consisted of post emergence application of sulfosulfuron 25 g/ha, metsulfuron 4 g/ha, 2, 4-D 0.5 kg/ha, Metsulfuron+Sulfosulfuron 16g /ha and weedy check (no herbicide). Soil samples were collected after harvest of crop and residues of herbicides were determined by bioassay technique using maize as bioassay plant. The residues of herbicides sulfosulfuron 25 g/ha, metsulfuron 4 g/ha, 2,4-D 0.5 kg/ha and metsulfuron + sulfusulfuron 16 g/ha applied on wheat in farmers' fields were not found in post harvest soil as per bioassay study using maize as test plant.

Recommendation passed on to state package of practices.

Wheat:

i) Application of pinoxaden 40 g/ha (25 DAS) followed by carfentrazon 25 g/ha as post emergence (one week after pinoxaden spray) or sulfosulfuron 25 g/ha (30 DAS) 2,4-D 0.5 kg/ha + isoproturon 1.0 kg/ha as PoE may be used for controlling grassy and broad leaved weeds and gave higher yield and net return from wheat.

ii) Post emergence application of herbicide combinations sulfosulfuron + metsulfuron (0.03 + 0.002 kg/ha), pinoxadon + metsulfuron (0.06 + 0.004 kg/ha) and mesosulfuron + iodosulfuroncontrolled most of weedsand gave higher yield and profit in wheat.

- **Mustard:** Fluchloralin 1.0 kg/ha as PPI or oxadiargyl 90 g/ha or isoproturon 0.75 kg/ha as PE application controlled the majority of weeds under urid-mustard cropping system.
- **Gram :** Application of pendimethalin 1.0 kg/ha pre emergence controlled almost all weeds & in turn gave the higher yield.
- **Pea:** Application of fluchloralin 1.0 kg/ha as PPI or isoproturon 0.75 kg/ha as PE + one HW or pendimethalin 1.0 kg/ha + one HW or metribuzin 250 g/ha as EPoE performed better for controlling the weeds as well as getting higher seed yield of pea.
- **Onion:** For obtaining higher bulb yield of onion and net return 3 hand weeding at 30, 45 & 60 DAT (weed free) or pre emergence application of oxyfluorfen 250 g/ha + one HW at 40 DAT or oxadiargyl at 900 g/ha with one hand weeding at 45 DAT may be practiced. No residual effect observed in succeeding cucumber, maize and moong crops.
- **Coriander :** For effective control of weeds, higher yield and economic returns from coriander (grain) two hand weeding (30 and 45 DAS) or pre emergence application of pendimethalin 1.0 kg/ha or isoproturon 0.75 kg/ha PE with one hand weeding at 30 DAS could be used.
- **Paddy :**Butachlor 1.5 kg/ha as PE or pretilachlor 1.0 kg/ha as PE or 2,4-D EE 0.75 kg/ha as PoE may be applied for good control of weeds and higher yield and monetary return.
- **Pearlmilet :**Pre emergence application of atrazine 0.5 kg/ha controlled most of the weeds and gave higher yield and no residueleft in soil. Conventional tillage operation is better than other tillage practices.
- **Groundnut :** Application of imazethapyr 100 g/ha as post emergence + 1 HW at 30 days after sowing of oxyfluorfen 120 g/ha as PoE + one hand weeding at 30 DAS or 2 hand weeding are effective for controlling the weeds.
- **Soybean :** Application of imazethapyr 100 g/ha PoE for controlling the broad leaved weeds and quizalofop ethyl 50 g/ha as PE for controlling the grassy weeds as well as 2 hand weeding could be used in soybean. No herbicide residue was left in post harvest soil.

- **Sesame: Application** of quizalofop ethyl 0.05 kg/ha as PE or trifluralin 0.75 kg/ha as PPI or pendimethalin 0.75 kg/ha alone or in combination with one hand weeding at 30 DAS may be usedfor good control of weeds and higher yield.
- **Black gram :**
  - **i)** Alachlor 2.0 kg/ha as PE or imazethapyr 100 g/ha as PoE or imazethapyr + imazamox (pre mix) 50 g/ha as PoE pendimethalin + imazethapyr (pre mix) 1000 g/ha PE could be applied for controlling weeds in blackgram and to obtain higher yield.
  - **ii)** Pre-mix herbicides Imazethapyr + imazamox 80 g/ha as PoE or pendimethalin + imazethapyr 1000 g/ha as PE may be used for good control of weeds and higher yield of blackgram.

Pigeonpea:

- In demonstrations of the package of technology the yield increment ranged from 16.01 to 34.1 per cent in various farmers' field with mean increase of 29.13 per cent over farmer's practices. The pigeonpea variety TJT 501 was demonstrated in both the trials as it is mid-early (150 days) in maturity, favouring farmers for double cropping system. In intercropping of soybean with pigeonpea in 4: 2 ration the yield increment of intercropping against sole pigeonpea ranged from 13.2 to 25.7 percent with mean increase of 18.0 percent.
- The target of breeder seed production of variety TJT 501 could not be achieved due to continuous rainfall during the season resulting into poor crop stand.

Rapeseed & Mustard:

- **Long term fertility experiment on cropping systems involving mustard (Bajra-Mustard:** the treatment consisted of the ten fertility levels in both the crops i.e. control, 100% PK, 100% (80:40:20) NPK kg/h, 150% NPK kg/ha, 100% NPK + S @ 40 kg S ha, 100% NPK + Zn @ 25 kg ZnSo4 ha^{-1}, 100% NPK + B @ 1.0 kg B ha^{-1}, 100% NPK + FYM @ 2.5 t ha^{-1}, (dry weight basis), 100% NP and 100% NK were applied in mustard. Whereas, in Bajra, Sulphur, ZnSo4, Boron and FYM were lacking but other treatments remains the same. The experiment was laid out in R.B.D. desing with three replications. The Bajra crop was sown on 23rd July, 2016 and mustard crop was sown on 03rd November, 2016 and harvested on 17th October, 2016 and 16th March, 2017 respectively.The seed yield of Bajra was significantly increased with increasing fertility levels. The 150% NPK produced significantly higher seed (3225 kg/ha) over all the fertility levels. The control plot produced lowest seed yield (1975 kg/ha).In case of mustard crop the seed yield increased significantly with increasing fertility levels. The significantly higher seed yield was recorded with 150% NPK (2639 kg/ha) over all other fertility levels and the lowest seed yield was rcorded by control plot (964 kg/ha).
- **Agronomical manipulation of latest release varieties for yield optimization:** The maximum seed yield (3260 $kgha^{-1}$) was recorded by the crop sown on 10th October 2016 which was significantly superior to the crop sown on 20th October 2016 (3101

kgha^{-1}) and 30th October 2016 (2834 kg/ha).The highest seed yield (3203 kgha^{-1}) was recorded by the treatment planting geometry 45 x 30 cm which was significantly superior to 30 x 20 cm (2933 kgha^{-1}) and 30 x 20 cm (2931 kgha^{-1}) but it was at par with 45 x 15 cm (3164 kgha^{-1}) and 30 x 10 cm (3095 kgha^{-1}).

- **Agronomical evaluation for yield maximization:** In this experiment three levels of nitrogen i.e. 80, 100 and 120 kg/ha, two levels of phosphorus i.e. 20 and 40 kg/ha and two levels of potash i.e. 0 and 30 kg/ha. Thus a total of twelve treatment combinations were tested in R.B.D. design with three replications. The crop was sown on 22nd October, 2016 and harvested on 21st March; 2017.The seed yield of mustard was increased significantly with increasing fertility levels. The highest seed yield (3767 kg/ha) was recorded in 120 kg N 40 kg P_20_5 and 30 kg K_2O ha^{-1} and lowest seed yield (2865 kg/ha) was recorded in 80 kg N, 20 kg P_20_5 and 0.0 kg K_20 ha^{-1}.On the basis of two year mean the maximum seed yield of mustard (3342 kg/ha) was obtained with the treatment 120 kg N: 40 kg P205: 30 kg K20 ha^{-1} and minimum seed yield (2596 kg/ha) was recorded in 80 kg N: 20 kg P_20_5 and 0.0 kg K_20 ha^{-1}.

Chickpea

- In a trial onAgronomical evaluation of *AVT-2 Deshi chickpea genotypes under normal sown.* The data pertaining to seed yield indicated that the seed yield was significantly influenced due to different varietal treatments. The genotypes GCP 101 produced significantly higher seed yield (1866 kg/ha) followed by NBeG 452 (1845 kg/ha) as compared to other genotypes.
- In a trial onAgronomical evaluation of *AVT-2 Kabuli chickpea genotypes under normal sown.*The seed yield was significantly influenced due to different varietal treatments. RVSSG 36 produced significantly higher seed yield (2456 kg/ha) followed by BGD 128 (2423 kg/ha).
- In a trial onBiofortification of Zn and Fe in chickpea through agronomic intervention. The result showed that the variety RVG 202 recorded maximum seed yield of 1475 kg/ha which is significantly superior than JAKI 9218 (1244 kg/ha. As regards nutrient levels, application of RDF + Soil application of ZnSO4 @ 25 kg/ha (Recommended practice) gave maximum seed yield of 1480 kg/ha.
- In a trial onOptimizationin productivity of chickpea genotypes amenable to mechanical harvesting. The result indicated that the seed yield was significantly influenced due to different genotypes CSJ 515 produced significantly higher seed yield (2841kg/ha)followed by Phule G 08108 (2799 kg/ha) as compared to other genotypes.
- Four chickpea *Rhizobium* strains were isolated in laboratory screening. *Rhizobium* Isolates RVSGRS 127S, 128J, 129D and 130R showed growth at pH 8.0. and none at pH4.0. Under field screening of locally isolated *Rhizobium* strains isolate RVSGRS 121 yielded 19.1% higher (1870 kg/ha) over control (1570 kg/ha) which was identical with 20 & 40 kg N/ha applied through fertilizer .
- Under Multiplication testing of *Rhizobium* strains procured from various centers, *Rhizobium* strain LGR 14-2 Ludhiana recorded highest grain yield of chickpea

variety RVG 202 (2030 kg/ha) followed by with strain RVSGRS 119 Sehore (1998 kg/ha) and AKCR -05 Akola (1906 kg/ha)..However these strains were found statistically identical with each other and also with the reference strain CH 1233 (Hisar) and F 75 (IARI).

- In a trail on testing of nodule endophyte bacteria, maximum yield of 2130kg/ha was recorded with Mesorhizobium*+ HNE 1 (Pseudomonas flourescens)* followed by 2125 kg/ha with *Mesorhizobium + LNE 1 (Pseudomonas aeruoginosa)* and 2106 kg/ha with *Mesorhizobium + CNE -1 (Ref.Check).* These were also superior over mesorhizobium alone which produces grain yield of 1927 kg/ha. As regards the dehydrogenase activity in soil, the maximum value (68.4 µgTPF/g soil/hr) recorded with *Mesorhizobium+ HNE 1 (Pseudomonas flourescens)* followed by 68.2 µgTPF/g soil/hrwith *Mesorhizobium + LNE 1 (Pseudomonas aeruoginosa) and* these were significantly superior over the dehydrogenase activity recorded in control plot soil (42.1µgTPF/g soil/hr).

Soybean:

- Application of 2 % urea as foliar spray at pod formation stage improved the soybean yield but it was significantly at par with other treatments.
- The herbicidal treatments F 8072 premix 725 g/ha gave higher yield of soybean and controlled weed effectively. Increased in seed yield with this weedicide was 63.97 % higher than weedy check.
- In front line demonstrations, improved production technology increased soybean yield on an average 24.63 % over farmer's practice.

MULLaRP:

- **Herbicide weed management in Urdbean and its carry over effect on succeeding rabi crops:** Among the weedicide application of Imazamox 35 WG + Imazethapyr 35 WG] @ 60 g/ha - PoE at 20 DAS gave the maximum yield 581kg/ha fallowed by Clodinafop propargyl 8 EC + Aciflourfen sodium 16.5 EC @ 187.5 g/ha at 20 DAS (559 kg/ha).
- **Foliar nutrition urdbean productivity** : Application of TNAU pulse wonder @ 5kg/ha at flowering Yielded 736 kg/ha fallowed by 18:18:18 NPK 2% spray at flowering (669 kg/ha) and Urea 2% and salicylic acid spray at flower initiation (420 kg/ha).
- **Agronomic Evaluation of AVT-2 Lentil Genotypes for higher Productivity:** The data showed that genotypes and seed rate infuenced seed yield of lentil significantly over control. The maximum seed yield 1475 kg/ha was recorded with genotypes LAG 16-2 followed by LAG 16-8 (1263 kg/ha) and LAG 16-1 (1239 kg/ha). Lower seed rat 40 kg/ha gave significantly higher seed yield 1394 kg/ha than higher seed rate 50 kg/ha.
- **Enhancing nutrient and water use efficiency of lentil through hydrogel and foliar nutrients under rainfed /limited irrigation situations: The** application of hydrogel and foliar nutrients influenced seed yield of lentil significantly. Application of hydrogel @ 2.5 kg/ha recorded maximum seed yield 1117 kg/ha found significantly superior than all the treatments. As regards foliar nutrituion spraying

of salicylic acid @ 75 ppm at flower initiation & pod development stages gave maximum seed yield (1121 kg/ha) which was found at par with Thiourea 500 ppm Spray at flower initiation & pod development (1020 kg/ha) and 2 % Urea spray at flowering initiation & pod development (1010 kg/ha).

- **Agronomic management for biofortification in lentil through soil/foliar application of nutrients:** The application ofnutrients influenced seed yield of lentil significantly over contro. Application of RDF +0.5 % Zn foliar Appl + SI with bfr LNm 43a recorded maximum seed yield 1470 kg/ha found significantly superior than control (1010kg/ha.

Grape:

- **Girth:** Among the 51 varieties, maximum girth 60.49 mm was recorded with Merbein Seedless, while the minimum 31.11 mm was recorded in Sirius.
- **No. of mature canes per vine:** Maximum mature canes/vine was observed with New Perlette (74.25) followed by Cabernet Sauvignon (70.75), while it was minimum 30.75 in the Kishmish Moldowsky.
- **Fruitful canes per vine:** Maximum fruitful canes per vine were recorded in Pusa Navrang (63.5) and Shiraz (51.75), while minimum was recorded in Krishna Seedless (4.25).
- **Period of panicle appearance (days):** Among all the 51 varieties, Period of panicle appearance was ranges in between 17-24 days.
- **Period of anthesis (days):** Earliest anthesis was recorded in Bangalore Blue (27.5 days), while Sangiovese has taken more number of days for anthesis (42.75 days) after fruit pruning.
- **Period of fruit set (days):** Early fruit set was recorded in Pusa Navrang (36.5 days), while maximum days taken for fruit set after pruning was recorded in Shiraz (51.75), Italia (50.5 days) and Kishmish Rozavis White (50.25 days).
- **Period of Fruit ripening (days):** Early fruit ripening was observed in New Perlette (123 days), Pusa Navrang (125 days) and Sultanin-2 (126 days), while more days taken to fruit ripening was observed in Kishmish Rozavis white (163 days).
- **Berry length (mm):** Maximum berry length was recorded in Red Globe (29.51 mm) and Rizamat (28.78 mm), while minimum was recorded in Gargenega (8.14mm), Clariette (8.29 mm) and Sauvignon Blanc (8.46 mm).
- **Berry diameter (mm):** Maximum berry diameter was recorded in Red Globe (23.84 mm), Kishmish Moldowsky (19.3 mm) and Anabe-Shahi (19.16 mm), while minimum was recorded in Sauvignon Blanc (8.27 mm).
- **No. of bunches per vine:** Maximum number of bunches per vine was recorded in Pusa Navrang (114), Tempranillo (99.75) and Convent Large Black (97.25), while minimum was recorded in Dilkhush (3.25) and Kishmish Rozavis (4.75).
- **Bunch weight (g)**: Manjri Naveen has recorded maximum bunch weight (241.5 g), while Sirius has recorded minimum bunch weight (16.43 g).

- **Berry weight (g):** Maximum berry weight was recorded in Anabe-Shahi (5.03 g) and Red Globe (4.87 g), while minimum was recorded in Cabernet France (0.75 g), Cabernet Sauvignon (0.81 g) and Sangiovese (0.82 g).
- **Weight of 100 berries (g):** Maximum weight of 100 berries was recorded in Anabe-Shahi (503 g) and Red Globe (486.5 g), while minimum was recorded in Cabernet France (75.25 g) and Cabernet Sauvignon (81.43 g).
- **TSS (^{o}B):** Maximum TSS (^{o}B) was recorded in Sharad Seedless (26. 5), while minimum was recorded in Black Seedless (15.50).
- **Acidity (%):** Maximum Acidity was recorded in Viognier (0.79 %), Bangalore Blue (0.78 %) and Carignane (0.75 %) while minimum was recorded in Sharad Seedless (0.42 %).
- **Juice %:** Maximum Juice content was recorded in Bangalore Blue (70.80 %), Arka Shyam (67.45 %) and Medika (66.26 %), while lowest was recorded in Country Bangalore (55.75 %).
- **Raisin recovery %:** Maximum raisin recovery % was recorded in Pusa Urvashi (23.73 %) and Thompson Seedless (24.43 %), while minimum was recorded in Fantasy Seedless (21.48 %) and A 18-3 (21.53 %).
- **No. of Seeds/berry:** Maximum number of Seeds/berry was recorded in Carignane (7.00), while minimum was recorded in Tsimlasky Chernyi (1.00).
- **Weight of 100 Seed (g):** Maximum weight of 100 Seed was recorded in Arka Shyam (6.88 g), while minimum was recorded in Carignane (1.1g).

Yield (Kg/vine):

Colour seedless varieties: Maximum yield was recorded in A18-3 (6.43 kg/vine), while minimum was recorded in Kishmish Rozavis Red (0.24 kg/vine).

Red Wine varieties: Maximum yield was recorded in Grenache (7.64 kg/vine), while minimum was recorded in Carignane (0.70 kg/vine).

Seedless table varieties: Maximum yield was recorded in Manjri Naveen (6.43 kg/vine), while minimum was recorded in Sonaka (0.38 kg/vine).

White wine: Maximum yield was recorded in Chenin Blanc (3.97 kg/vine), while minimum was recorded in Sirius (0.16 kg/vine).

Juice varieties: Maximum yield was recorded in Medika (3.17 kg/vine), while minimum was recorded in Bangalore Blue (2.63 kg/vine).

Seeded table varieties: Maximum yield was recorded in Muscat of Alexandria (3.75 kg/vine), while minimum was recorded in Dilkhush (0.74 kg/vine).

ONION AND GARLIC:

- Highest marketable yield was recorded with ON 15-32. Highest total yield was found with ON15-29 which was followed by ON 15-32. Minimum double bulbs were recorded in case of ON 15-11 and ON 15-18. Minimum bolter bulbs were observed with ON 15-11. Rotted bulbs were minimum with ON15-32. Minimum neck thickness was found in case of ON15-13. Highest average weight of bulb was found with ON15-29 which was followed by ON15-32. None of the entries was found infected with stemphyllium blight and purple blotch. Lowest thrips incidence was recorded in entry ON 15-06.
- Maximum pyruvic acid content was recorded in ON15-06. Highest reducing sugar was found in ON15-04. Maximum non reducing sugar was observed in case of ON15-04. Total sugar was highest with ON15-06. TSS was highest in ON15-04.after the two months storage lowest total weight loss was recorded in entry ON15-27. Minimum sprout loss was found with ON15-04. Minimum rot loss was under ON15-27.
- The findings revealed that highest marketable and total yield was recorded with GRS1330. Maximum weight of bulb was recorded with GRS1328. Maximum number of cloves per bulb was recorded in case of GRS1328. Highest average weight of cloves was found in GRS1328. Lowest disease incidence was observed in GRS1330. Lowest thrips incidence was recorded with entry GRS 1328.There was significant difference among garlic germplasm for pyruvic acid content. Highest pyruvic acid content was recorded in GRS 1332. Lowest pyruvic acid content was found with GRS 1337 . After the six months storage lowest total weight loss was found with GRS 1330 . Minimum rot loss was recorded in entry GRS1345. Highest total weight loss and rot loss was found with G-282(Check).

Arid legume:

- Under rain fed situation, variety RGC-936 and Naveen (branched type) should be sown under agro- climatic condition of Gird region.
- Varieties 5863 selected and developed from local material had high percentage of gum and possess better yielding capacity.
- For effective control of weeds in guar per-plant application of Fluchloralin@1.5 kg a. i. /ha should be undertaken.
- The critical period of weed crop competition in guar is first 15 to 30 days after sowing.
- First week of July is most appropriate date for gaur sowing.
- Unbranched and branched variety of guar should be shown at 30 and 45 cm of row spacing respectively.
- Under agro-climatic condition of Northern M.P. balanced use of fertilizer viz., 20: 40:20 N:P:K kg/ ha should be adopted.
- Among various cropping system, guar with pearl millet at the ratio 3:1 is found most economical.
- Wheat crop should be grown after guar crop for the saving of 30 kg nitrogen per hectare.

- Application of 40 kg S along with 60 kg P2 O5/ha should be done for getting the higher yield of guar under Northern M.P. conditions.
- Bajra- Mustard rotation with full dose of nitrogen ranked first as the rotation fetched net income of Rs.33, 857/ha, while Bajra-Mustard with 3/4th dose of nitrogen was next in order.
- Variety V-218 was found better than the variety local in respect of input levels. In case of input treatments recommended fertilizer+ weed control+ pant protection gave the maximum yield.
- In Guar +Bajra inter–cropping system intercultural after 30 DAS gave effective weed control and increase yield.
- Experiment of cropping system with Guar-Wheat crop sequences revealed that 75 per cent recommended fertilizer application was most remunerative and there was a saving of fertilizer of 26 kg P2O5 in Guar and 30 Kg nitrogen in Wheat per hectare.
- The effect of varieties spacing and fertilizer experiment showed that among the different cowpea varieties GC-3 was superior to all the varieties.
- A row spacing of 45 cm is better over 30 cm spacing. Among the fertilizer the recommended dose proved superiority.
- On the basis of three years result it has been concluded that the application of 60 kg P2O5 / ha+ 10 tonnes F.Y.M./ha with Rhizobium gave maximum net return of 31,087 with B:C Ratio 4.56 of guar crop.
- Thiourea spray at vegetative and at flowering stage with seed soaking gave maximum net return Rs.10, 506 with B: C Ration of 2.40 of Cowpea.
- On the basis of study made of long term cropping system in five years, the best crop system is GUAR-GUAR, which gave Rs.17445 net income, and BCR 4.01 followed by Bajra-Guar with Rs.14165 as net income and 3.18 BCR.
- On the basis of two years the variety HG-365 gave the highest yield. As regard the fertility level he higher yield under wider row spacing (45cm) was obtained over closer spacing.
- On the basis of three years mean the maximum grain yield of Clusterbean, net profit and benefit cost ratio was recorded with S2L4 (50% S as gypsum+50% S elemental sulphur) and next in order was S1L4.
- In Moth-Bajra intercropping system to obtain higher returns per unit area of land, sole month gave highest Bajra equivalent yield.
- To obtain higher seed yield of Moth bean, it should be sown first fortnight of July using 15 kg/ha seed at a row distance of 30cm in Gird region of M.P.
- On the basis of three years study it is concluded that if a farmer has facility of two irrigations then irrigate clusterbean crop at vegetative (25-30 DAS) and 50% flowering stage (40-45 DAS). In case of only one irrigation 50% flowering stage is better at Gwalior condition
- In intercropping system significantly highest clusterbean equivalent seed yield, net return and B.C.ratio were obtained with sole clusterbean .In weed management practices two intercultures at 25 and 45 DAS was remunerative.

- Application of Imazethapyr+ Imazamox @ 40g/ha at 20 DAS in guar provided better weed control and higher crop productivity.

Groundnut:

- ASK-1-2016-5 and SK-2016-1 are showing highest kernel yield and is best performing line in Gwalior region. They are making single group in the dendrogram.
- Trail number ISK1-5 is having highest kernel yield 869.225gm/net plot.
- The significantly highest values of gross returns, net returns and B C ratio were obtained where the crop was sown at the closer spacing of 20×10 cm and the lowest values were obtained at the crop spacing of 25×10 cm.
- The highest values of gross returns, net returns and B C ratio were obtained where 125% NPK was applied and was at par with treatment where 100% NPK was applied. Application of 75% NPK resulted in lowest BC ratio (1.65).
- The highest values of available N and organic carbon in the soil after the harvest of the crop were obtained where the crop was sown at the spacing of 20×10 cm followed by spacing of 25×10 cm and 30×10 cm. Placing crop with the plant geometry of 30 ×10 cm resulted in significantly highest values of available phosphorous and available potassium in the soil.
- Application of different fertility treatments to the groundnut resulted in significant effect on the available nutrient status in soil after harvest of groundnut. Available P and K in the soil after harvest of the crop were significantly superior where 125% NPK were applied to crop but available N in soil was significantly superior where 100% NPK was applied. The organic carbon status of soil was not significantly influenced under influence of different fertility treatments.

Sorghum

- On the basis of Three years mean data, it is concluded that75% RDN through inorganic fertilizer+25% RDN through vermicompost+ seed treatment with PSB+ Azospirillum microbial fertilizers and 100% RDN through inorganic fertilizer at par with each other and produced significantly higher sorghum grain yield (4883 and 4733 kg ha^{-1}), and dry fodder yield (13774 and 13496) net return (Rs 74873 and 76784) as compared to other treatments in sorghum
- 75% RDN through inorganic fertilizer + 25% RDN through vermicompost + seed treatment with PSB+ Azospirillum microbial fertilizers and 100% RDN through inorganic fertilizer at par with each other and produced significantly higher grain yield (4139 and 4078 kg ha^{-1}), and net return (Rs 59263 and 62520) as compared to other treatments in sorghum.

Natural Resource Management (NRM)

AICRP for Dryland Agriculture:

- **Effect of Land Configuration, Seed Rate and Variety on Productivity of Soybean under Vertisols:**
  Among different land configuration treatments 90 cm raised bed and furrow with 3 rows of 30 cm recorded the highest mean seed yield of 954 kg/ha and it was significantly more compared to Flat bed sowing at 45 cm, open furrow after 10 row of 45cm and open furrow after 05 row of 45cm but at par with 60 cm raised bed and furrow, 2 row of 30 cm (927 kg/ha). The treatment 90 cm raised bed and furrow with 3 rows of 30 cm recorded 16.6 % higher seed yield than Flat bed sowing at 45 cm.
- **Catchments–Storage Command Relationship for Enhancing Water Productivity in Micro –watershed:**
  An experiment for enhancing water productivity in micro –watershed, Soybean and sweet corn for green cobs were sown in *Kharif*season.Whereas, Sweet corn for green cobs, Potato, Tomato were planted in *Rabi*season. Among the different models, Sweet corn– Tomato found the more remunerative as it recorded total net return Rs. 68,042/- per hectare with B:C ratio 2:51 followed byfollowed by sequentially grown Soybean –chickpea - (Rs. 58,907/- with B: C ratio 2:79).Sweet corn (Suger-75) grow in *Kharif* and *Rabi* both recorded net return of Rs. 63,886/- with B: C ratio 2:27.
- **Evaluation of doses of Nutrient Loaded Nano Clay Polymer Composite (NCPC) on resource use efficiency**
  It was concluded that application of higher dose of nutrient loaded NCPC, 75% of RDF+NCPC+S @ 10 kg/ha in soybean recorded higher seed yield 1478 kg/ha followed by treatment 75% of RDF + NCPC + Mo @ 10 kg/ha (1476 kg/ ha) and 75% of RDF + NCPC + Zn @ 10 kg/ha (1472 kg/ha).The increase in seed yield due to treatments were 10.77 10.63 and 10.36 % as compared to 100 % of RDF. The application of different doses of nutrient loaded NCPC recorded significantly higher higher leaf area index (3.23), Relative water content (51.47%), Root weight density 1.33 g cm^{-3}, Number of nodules per plant (54.7), Nodule dry weight (338 mg) and 100 seed weight (15.4 g) recorded by 75 % of RDF + NCPC + S @ 10.0 kg/ha. seed yield 1478 kg/ha as well as net income Rs 51,723/- /ha with maximum benefit cost ratio of 2:64.
- **Mitigation of drought effect through foliar spray of chemicals.**
  Foliar sprays of 1% KNO_3 solution, 2% KCl and spray of thiourea @ 250 g/ha alone and tank mix Trizophos @ 600 ml/ha integrated with each treatment at the vegetative and reproductive stages (25-30 and 55-60 DAS) were studied to combat the abiotic and biotic stresses on soybean under aberrant weather conditions. Results revealed that the treatment foliar spray of thiourea, KNO_3 KCl alone or mixed with trizophos @ 600 ml/ha of soybean crop were found equally effective to combat the drought situation.The significantly higher seed yield (1294 kg/ha)of soybean recorded by the treatment T_6- spray of 1% KNO_3 + Trizophos @ 600 ml/ha, followed by the treatment T_8 Foliar Spray of thiourea @ 250g/ha + Trizophos @ 600 ml/ha (1219 kg/ha) spraying at 25-30 and 55-60 DAS as compared to control. The control treatment recorded lowest seed yield 900 kg/ha. The foliar spray of 1% KNO_3, 2% KCl and thiourea @ 250g/ha alone resultant lower seed yield (1102 to1185 kg/ha) of soybean as compared to spray with trizophos (1198 to1294 kg/ha).
- **Assessing Carbon Sequestration Potential of Various Intercropping Systems in Vertisols under rainfed conditions:**
  The experiment having the treatments soybean and maize sole and intercropped with sunhemp which incorporated in soil at 40-50 DAS with a view to improve corbon content of soil .The results indicated that though the yield of crops under sole cropping higher than the incorporation (as In situ) of sunhemp as intercropping ,however the sunhemp incorporation in the soybean/maize +sunhemp have more available soil nutrients status

viz,OC,N,P_2O_5,K_2O,S as compared to sole crops. The PH values were slightly lower in the intercropping treatments

- **Long Term Manurial Trial in *Vertisols:***
  Based on the average of last 25 years, treatments T_6 (FYM 6 t ha^{-1} + N20 P13) gave highest seed yield of 1988 kg $ha^{-1}$and was found significantly superior with regards to seed productivity.The treatment T_6 was also found superior to rest of the treatments with regards to improvement in physical and chemical properties of the soil. The treatment T_1*i.e.,* control was found statistically inferior to all the treatments in respect of yield and soil improvemnet.

- **Integrated Nutrient Management to Increase Productivity and Maintenance of Soil Fertility under Soybean chick pea cropping system.**
  Based on last two years data indicated that T9 (10 t FYM + (Rhizobium + PSB) + 50% NPK+5 t Residues + Zn + S) found superior with all the respect.it gave the highest seed yield, net monitory returns and improve physic-chemical properties of experimental field as well as uptake of N, P, K and S which was higher to rest of the treatments of any level of application of fertilizer source. Lowest values were recorded in the control i.e. T_1.

- **Evaluation of Pigeonpea Lines for Dryland Conditions through Farmers' Participation:**
  The five entries were tested along with the two checks. The top ranking entries are JKE 114 E (1118 kg/ha); ICP 8863 –08-41 (1064 kg/ha); ICP 8863 –08-39 (1007 kg/ha); ICP 8863 – 08-40 (970 kg/ha) were found superior over rest of the entries under test. Whereas, seed yield of check variety JKM 189 (992 kg /ha) and JA 4 (907 kg /ha) recorded lowest.

- **Evaluation of Chickpea varieties for dryland conditions through farmers' participation:**

  During *Rabi* 2016-17, eight chickpea varieties *viz.,*JG-16,JG-6, Jaki-9218, Kak-2, IG-593,Ujjain-21, JG-11 and JG-130 were planted just after harvest of soybean on residual moisture. Chickpea variety Jaki-9218 recorded higher yield of 1838 kg/ha and higher gross return (Rs. 98916 per ha), net return (Rs. 85916 per ha) and B: C ratio (7.60) followed by IG-593, JG 130, JG-11 and JG-6 Yield ranged between (1786 to 1726 kg/ha) as compared to check variety Ujjain 21 (1673 kg/ha). During growth period 17.1 mm rains were received in 2 days in the month of October, 2016.

- **Low- till Farming Strategies for Resource Conservation and Improving Soil Quality:**
  The experiment conducting since 1999 (last 18 years) having the treatments conventional tillage with and without off season tillage, Low tillage *i.e.,* (plough planting only), combined with sources of organic biomass (soybean crop residues, compost, *Glyricidia* leaves) and hand weeding/herbicide application. The results of study during 2016-17 showed that growth & yield attributing characteristics, Rain water use efficiency energy input output and balance, seed productivity and monitory returns were observed highest with treatment T_3 (LT + 4 t ha^{-1} straw + HW and lowest in T_7 (LT+2t ha^{-1}*Glyricidia Green Leaves*+Hb).

- **Development of suitable Agri-horticulture production system for medium deep *Vertisols* of *Malwa* plateau:**
  This year the field crop component *viz.,* pigeon pea, soybean were not sown in between the rows of fruit plants due to adverse weather conditions. Among the fruit trees, Aonla gave the maximum fruits of 1814 kg/ha with net returns of Rs. 36284 /-ha and SEY of 955 kg/ha followed by Guava (170 kg/ha yield; Rs.3397/ha net return and 89 kg/ha Soybean equivalent yield.

- **Evaluate the Bio-efficacy and phytotoxicity of *Stance 110 SC* in soybean (*Glycine max* (L) *Merrill*).**
  Experiment was conducted during *kharif* season 2016 on soybean crop. It was concluded that spray of Cyclanilide 22 + Mepiquat chloride 88 SC with a dose of 150 ml/ha is beneficial to increase seed yield of soybean as received 14.3 % higher than untreated (Control).The treatment also recorded higher number of branches, pod numbers, pod weight/plant and seed index as compared to untreated.

AICRP on Irrigation Water Management:

- The significantly higher growth, yield attributing characters of wheat was achieved under permanent broad bed and furrow method of sowing and irrigation with sub-surface method compared with other treatments. The permanent broad bed and furrow method of sowing resulted in highest grain yield (5463 kg ha-1) and straw yield (6120 kg ha-1), gross returns (Rs 1,03,037 ha-1), net profit (Rs 75,639 ha-1), B:C ratio (3.76) and water productivity of wheat. While in irrigation level, The maximum grain (5395 kg ha-1) and straw yield (5980 kg ha-1), gross returns of Rs 1,01,563 ha-1, net returns of Rs 72,581 ha-1, B:C ratio 3.50 and water productivity (2.12 kg grain m-3 water) were registered under sub-surface irrigation method.
- Higher growth and yield attributing characters, seed (1129 kg ha^{-1}), straw yield (2300 kg ha^{-1}), gross returns (Rs 44,115 ha^{-1}), net profit (Rs 18396 ha^{-1}), B:C ratio (1.72) and water productivity (0.312 kg grain m^{-3} water) of soybean were achieved under 0.1% slope through laser land leveller and it was followed by treatment 0.2% slope through laser leveller.. Under broad bed and furrow method of irrigation produced higher growth and yield attributing characters, seed yield (1168 kg ha^{-1}) and straw yield (2382 ha^{-1}), net returns (Rs. 20,317 ha^{-1}), B:C ratio (1.80), and water productivity of soybean Growth, yield contributing characters, grain yield and straw yield of wheat significantly influenced by different ,Level of slope and irrigation methods. Highest value of growth, yield contributing characters and grain yield (5323 kg ha^{-1})
- The growth and yield attributing components, grain and straw yield of pearlmillet was found significantly higher under 100% RRSHS (Residue retention through sowing of crop by happy seeder) sowing method intercultural operations through tractor operated ridge furrow maker method with weedicide addition. Similar to yield, the higher gross income of Rs. 61,487 ha^{-1}, net return Rs. 41,337 ha^{-1}, B:C ratio of 3.05 and water productivity of 1.30 grain of pearlmillet m^{-3} water were recorded with 100% RRSHS. In case of intercultural operations, maximum gross income, net income, B: C ratio and water productivity was found through tractor operated ridge furrow maker + weedicide application.
- Seed and straw yield of soybean improved significantly with method of sowing, mulching and irrigation at 60% CPE through drippers under soybean - mustard cropping sequence. Grain (1116 kg ha^{-1}) and stover yield (2228 kg ha^{-1}) were observed maximum under permanent broad bed and furrow method of sowing followed by conventional broad bed and furrow method of sowing and both treatment were at par with each other but significantly higher compared with conventional tillage and zero tillage sowing. Similarly, mulching enhanced grain yield by 6.95% over without mulching. Irrigation at 60% CPE through drippers resulted significantly higher seed

yield (1165 kg ha^{-1}) over other irrigation methods. The economic studies of the data showed that highest gross returns, net returns, B:C ratio were recorded under permanent broad bed and furrow sowing method, with mulching and 60% CPE through drip irrigation method of soybean. The total water use was maximum under conventional tillage method of sowing (4580 m^{-3} water), without mulching (4480 m^{-3} water) and conventional method of irrigation (4800 m^{-3} water). The maximum water productivity was obtained higher under permanent broad bed and furrow sowing method, mulching and 60% CPE through drip irrigation method.

- The method of establishment of paddy and irrigation schedule showed significant effect on growth and yield attributing characters and straw yield of paddy Highest grain (4551 kg ha^{-1}) and straw (5471 kg ha^{-1}), gross return (Rs. 37,736 ha^{-1})of paddy. However, Maximum net return, B:C ration and water productivity was recorded with direct seeding of paddy. The sub-surface irrigation at 1.25 IW/CPE ratio with fertigation produced higher growth and yield parameters, grain (4544 kg ha^{-1}) and stover yield (5471 kg ha^{-1}) over other irrigation treatments. The maximum gross returns and net returns was recorded under sub-surface drip irrigation at 1.25 IW/CPE ratio with fertigation compared with traditional or drip irrigation at 1.00 IW/CPE ratio. The total water-use was maximum under traditional method of irrigation and minimum with sub-surface drip irrigation at 1.0 IW/CPE ratio with fertigation, whereas reverse trend was found in water productivity.
- Farm Irrigation Water Management (OFIWM) experiments were conducted at different locations of head, mid and lower reaches of minor Chambal canal command areas. The paddy, pearlmillet, greengram, pigeonpea, clusterbean, sesame in *Kharif* and mustard, wheat and chickpea were taken during *Rabi*. The interventions such as leveling through laser assist land leveling, sowing and irrigation methods were taken. The results showed that at head reaches beneficial crop rotation pigeonpea – wheat followed by paddy – wheat, whereas at mid reaches pigeonpea – wheat followed by clusterbean – wheat and at lower reaches clusterbean – barley followed by pearlmillet – mustard and pearlmillet – chickpea, respectively. Among irrigation method, broad bed and furrow was found best in terms of yield, economic benefits and water productivity in all head, mid and lower reaches of canal command area in all crops except paddy.

AICRP on Management of Salt Affected Soils and Use of Saline Water in Agriculture:

- Survey of ground water quality of Khargone and Khandwa districts indicated that only 17.8 and 12.2 % ground waters samples were having salinity/ sodicity problem. The soil survey of Khargone and Khandwa districts was carried out by the centre using remote sensing techniques. The villages in Khargone and Khandwa districts with such soils were identified and area estimated as 2448 and 76 ha respectively. The map sowing salt affected soils in the districts were prepared using Remote Sensing and GIS techniques.
- Long-term application of organic/ green manures at different soil ESP in sodic Vertisols revealed that incorporation of Dhaincha as green manure increased the mean yield of paddy and wheat by 42 and 68 %, respectively over control. The

highest grain yield of wheat (2869 kg ha-1) was noticed under sprinkler irrigation with 3 cm depth of irrigation water in the study on performance of wheat crop as influenced by different depth and frequency of irrigation under different methods of irrigation in sodic Vertisols. The minimum water expense (WE) was obtained 39 cm in case of SI with irrigation depth 3 cm. The drip irrigation system for irrigating cabbage, highest curd yield 20.98 t ha-1 was obtained in case of drip irrigation with 1.3 LPH dripper discharge rate scheduled daily. The total water expense was estimated around 53.00 cm. Application of lagoon sludge @ 5 t ha-1 along with raw spent wash @ 2.5 lakh L ha-1 registered 97 and 127 % increase in seed/ grain of paddy over control, respectively at field of Sh. Hariram Malviya. The significant reduction in ESP was noticed with the addition of LS @ 5.0 t ha-1+ RSW @ 2.5 lakh L ha-1 as compared to control.

- The total water expense, obtained during the year 2016-17 under different depths and frequencies in case of boarder strip and sprinkler irrigation are shown in Table 1. The minimum water expense (WE) was obtained 39 cm in case of SI with irrigation depth 3 cm followed by 40 cm in SI with irrigation depth 2 cm during the years 2016-17 respectively. The maximum WE was 51.84 cm in case of BSI with COD 65% followed by 48.96 cm in BSI with COD 85%. It implies that minimum water expense was observed in case of SI with irrigation depth 3 cm among the tried various depths and frequencies in sprinkler as well as border strip irrigation. If water saving is object, one may irrigate wheat crop in sodic black soils by sprinkler irrigation with 3 cm depth scheduled on the basis of 1.2 IW/CPE ratio.
- The yields obtained during the years 2016-17 under different depths and frequencies in case of boarder strip and sprinkler irrigation are shown in Table 1. The highest yield of 2869 kg/ha, was obtained in case of SI with irrigation depth 3cm and the lowest yield of 1941kg/ha was obtained in case of BSI with COD 65% during the years 2016-17. The data clearly indicates that to obtain higher yield of wheat crop in sodic black soils, one should opt SI with irrigation depth 3cm scheduled on the basis of 1.2 IW/CPE ratio among the tried various depths and frequencies in sprinkler as well as border strip irrigation. However, to obtain higher yield of wheat crop in sodic.

  Black soils in case of Border strip irrigation one should opt BSI with COD 85% and scheduled on the basis of 1.2 IW/CPE ratios.
- The water productivity (WP) obtained during the year 2016-17 under different depths and frequencies in case of boarder strip and sprinkler irrigation are shown in Table 1. Improved production along with judicious use of water in sodic black soil is necessary which can well be assessed by water productivity. The highest water productivity (WP) of 73.6 kg/ha-cm was obtained in case of SI with depth 3cm during the years 2016-17 respectively and the lowest water productivity (WP) of 37.4 kg/ha-cm was obtained in case of BSI with COD 65% during the years 2016-17 respectively (Table 1). However, the maximum water productivity (WP) was 45.5 Kg/ha-cm respectively in case of BSI with COD 85% followed by 41.7 Kg/ha-cm in BSI with COD 75% during the year 2016-17. The data indicates superiority of

sprinkler irrigation over BSI in respect of water productivity. SI with 3cm depth when scheduled on the basis of IW/CPE ratio 1.2 appears to give highest water productivity as compared to tried various irrigation systems. It implies that one should opt SI with irrigation depth 3cm scheduled on the basis of 1.2 IW/CPE ratio among the tried various depths and frequencies in sprinkler as well as border strip irrigation to obtain higher water productivity (WP). Similarly, one should opt BSI with COD 85% and scheduled on the basis of 1.2 IW/CPE ratio to obtain higher water productivity (WP).

4.7.3 Crop Protection Technology:

Sorghum:

- In terms of rains this was abnormal year as first shavers with very high intensity received during Second week of July 2016. This year shoot fly attacked the crop 10 to 80% the peak infestation was noticed during 25thJuly to 6th of August 2016. The stem borer infestation ranged from 5 to 20 % with two peaks during 23th to 2nd August2016 and 8th to 16th September 2016 in the crop grown on farmer's fields of the region. This year sorghum aphid infestation was noticed less. Ear head worms (*Cryptoblabus* sp. and *Helicoverpa armigera*) infestation were 5 to 10 % on panicle during late October. Ear head bug infestation was observed up to 15% on Panicles during 15th September to 25th of October 2016.
- In research area the seed of different genotypes and checks of AVT(GS),IVT(GS),AHT(GS),IHT(GS),IAVHT(SS) and ICRIST trial were sown on 4th of July 2016, after that monsoon delayed due to which germination of crop was also delayed and effective date of sowing 19th July2016. The shoot fly infestation was comparatively high during very early crop growth and it was increased and infested the seedlings up to 70% whereas stem borer attacked the crop 15 to 20%.
- Validation of IPM module- A trial with Seven treatments was conducted with 3 replications to assess the impact of insecticides on shoot and ear head pests with 8.1x 3 sq. Mt. plot size. The sprays of insecticides and seed treatment were given to the crop seed treatment with Imidacloprid + carbofuran along with the sprays of Quinolphos showed superiority over other treatments in managing the shoot and ear head pests with higher grain yields.

Pearl Millet:

- In the screening of Pearl millet hybrids and varieties MH 2260 showed multiple diseases resistant reaction as it was free from smut and blast with only 1.3 % downy mildew incidence. MH2261 was also free from downy mildew with 1 % smut and blast (PDI 3.3).
- In the testing of advance pearl millet hybrids and varieties MH 2154 showed multiple disease reaction as it was completely free from all the existing three diseases viz., downy mildew, smut and blast .MH 2039 was also free from smut and blast with only 1.3% downy mildew incidence. One more entry MH 2134 also owed

multiple disease resistance as it was free from downy mildew and blast with less than 5 % smut severity under artificial inoculation.

- In the testing of advance pearl millet hybrids and varieties MH 2154 showed multiple disease reaction as it was completely free from all the existing three diseases viz., downy mildew, smut and blast .MH 2039 was also free from smut and blast with only 1.3% downy mildew incidence. One more entry MH 2134 also owed multiple disease resistance as it was free from downy mildew and blast with less than 5 % smut severity under artificial inoculation.
- During the survey in kharif 2016. The downy mildew, rust and ergot were not observed in any of the surveyed field while smut and blast were observed and recorded. The blast severity in Morena, Bhind, Gwalior, and Shivpuri districts was in the range of 1-10, 1-70, 2-10 and 3-10 % respectively. The smut severity in surveyed locality was low and it was in the range of 0-3%.
- In respect of blast management the foliar application of Propiconazole was significantly superior over Iprobenphos (kitazin) 48 EC and Tricyclazole but was at par with Trioxystrobin+Tebuconazole @ 0.05% , and Azoxystrobin 25 EC @ 0.05%.
- Pearl millet seed dressing with metalaxyl was found more effective than the bioagents for the control of downy mildew.

Pigeonpea

- Thirty entries of breeding material were planted in PSB sick plot. Among the entries not any single entry shows resistance reaction against Wilt. Only entries RVSA 15-8, RVSA 15-11, RVSA 07-10, RVSA 07-22 , JSA-28, JSA-34 and JSA-47 shows moderately resistant reaction. Wilt incidence in check was 74.12 % and LSI 42.26

Rapeseed & Mustard:

- The maximum disease severity were recorded in different plant pathological experiments during Rabi 2016-17 were as follows White-rust 53.80%, Alternaria blight 51%, Alternarial pod blight 18.00%, Stagehead 64.10%, Downey mildew 39.00%, Sclerotinia stem rot 82.50% and Powdery mildew up to 55.10%.
- The conclusion of this experiment is that the early sown (10 Oct., 8 Oct. and 15 Oct.) (Ist & IInd week) of Oct. is best sowing date of mustard for this region with minimum insect pest & diseases pressure are appeared and maximum seed yield were recorded with high oil content and seed yield size and weight.
- The maximum seed yield 3122 kg/ha was recorded in seed treatment with Carbandazim 50 wp @ 2g/kg seed + No. irrigation during 25th Dec. to 15th Jan and two foliar spray of Carbendazim 50 wm @ 1g/l of water at 45-50 and 65-70 days after sowing followed by seed treatment with Carbandazim 50 wp @ 2g/kg seed + No irrigation during 25th Dec. to 15th Jan. with one foliar spray of Carbendazim 50 wp @ 1g/l of water at 60-65 days after sowing. These technology reduce the severity of all the diaseas of Rapeseed musatard and also good for seed weight, seed size (Max. 4.96 g (1000).

Chickpea:

- During the year 2016-17, 156 entries [including L 550 as check] were evaluated to record their reactions against the pod borer. The larval population (mean- 0.83 larvae/plant) in all the entries was statistically equal. It ranged from 0.77/plant [Phule G 0405; BDNG 2015-1; CSJK 114 and Phule G 13301] to 1.72 [PG 0104]. The pod damage differed significantly in all the entries and ranged from 6.19% [IPC 2012-98] to 2.76% [CSJK 112] with a mean of 4.73%. Considering the low incidence of pod borer, the entry HC 1 recorded relatively higher yield than the check [L 550], but was statistically on par.
- Seven chickpea varieties were screened against the pod borer and classified in to resistance groups based on their natural yield potential and yield loss due to the pod borer by using maximini- minimax method. In our study the tolerant and susceptible check varieties were RVG 202 and RVKG 101, respectively. Keeping in mind, the minimum acceptable yield under unprotected condition as 75 per cent at least and maximum acceptable yield losses of 25 per cent, the varieties were categorized. Based on this method, the variety RVG 202 was tolerant high yielding; varieties JAKI 9218, RVG 201; and JG 130 were susceptible high yielding and three varieties namely RVSIKG 102, JGK 3 and RVKG 101 were susceptible low yielding. None of the varieties screened was categorized as tolerant low yielding.
- Seasonal profusion of pod borer larvae was recorded on JG 130 [*desi*] and RVSSG 30 [*Kabuli*] varieties of chickpea during the cropping season. The pest appeared during SWW 49 at density of 0.2 and 0.3 larvae/mrl, respectively on both the varieties. The incidence continued up to SWW 6. The seasonal mean larval population on *desi* and *Kabuli* varieties was recorded to be 1.3 and 1.43 larvae/mrl with an average pod damage of 8.77 and 8.82 per cent, respectively. Relatively higher grain yield was recorded from *Kabuli* [1650 Kg/ha] than that of *Desi* [1220 Kg/ha] variety. During the vegetative and flowering stages of the crop, early instars of the pest were observed in high ratio, whereas at podding stage the later instars [third onwards] were observed in high ratio.
- Monitoring of pod borer male moth through pheromone traps was carried out in chickpea fields at Sehore during the crop season. The first trap catch was recorded during 52nd SWW [5.16 moth /trap/week with a peak [33.42 moths /trap/week] during 10th SWW. The peak coincided with the reproductive phase of the crop. The declining trend was observed till SWW 13 [3.28 moths/trap/ week].

Soybean:

- Population of Blue beetle (0.4 to 2.2 beetle /mrl)was recorded during the month of July. Grey semilloper, Gesonia *gemma* (0.6 to 5.2 l/ mrl) Green semilooper *Chrysodexis acuta* (.3 to4.5l /mrl) were recorded during August - September. Extend of damage by stem fly and girdle beetle were recorded 90 and 9.20 per cent respectively.
- For management of pod blight complex seed treatment either with carboxin + thiram or carbendazin + mancozeb (2g/kg) followed by Thiophanate methyl@ 0,1%

at 55 and 75 DAS has increased the germination and effectively managed the disease.

Grape:

- Survey of vineyards was carried out during 2016-2017 in Ratlam district of Madhya Pradesh. Total 10 vineyards were surveyed for observing the prevalence of different insect-pests *viz.*, Mealybug (*Maconellicoccus hirsutus*), thrips (*Rhipiphorothrips cruentatus*), flea beetle (*Scelodonta trigicollis*), mites (*Tetranichus urticae*), *Spodoptera* Sp., *Helicoverpa* Sp., and stem borer (*Coelosterna scabrator*). It was observed that out of 10 vineyards surveyed, 4 vineyards (40.00%) were found infested with mealy bug, and but all vineyards having low level of infestation. Infestation of Thrips was recorded in all 10 vineyards and but the infestation level was low in 8 vineyards (80.00%) while moderate in 2 vineyards (20.00%). The infestation of flea beetle was low to moderate and recorded in 4 vineyards (40.00 %) only. The infestation of stem borer was recorded in 6 vineyards (60.00 %). *Spodoptera* was observed only in one vineyard (10.00%) during the period. There was no recorded infestation of *Helicoverpa* and mite during the period under report. Survey indicates that thrips and stem borer were the major pests in Ratlam district, which leads to weathering the vineyards.

Cotton:

- In cotton seventeen promising entries have been screened for development of repository for sucking pests GISV-267 and GISV-272 were gave better performance. Population dynamics studies have been conducted. Among sucking insects only jassids population was found above ETL during 35 to 50 SMW. Among boll worms 2 or more *Helicoverpa* larvae/5 plants were recorded during 39 to 43 SMW. The number of *Earias* larvae varied from 0.0 to 14.40/ 20 green bolls. Efficacy of new formulation of insecticides, bio pesticides and neem formulation have been evaluated. Flonicamid 50 WG @ 75 g ai/ha, Pyrifluquinzone @ 75g gai/ha, Buprofezin 25SC@ 250 g ai/ha and Difenthiuron 50 WP @ 300g ai/ha Per formed better among treatments. Mating Disruption Pheromone for the pink boll worm have been evalvated. Application of Profenophos ,Thiodicarb and Cypermethrin was found singificantly superior for keeping the lowest pink boll. worm population and highest yield.
- In cotton Bacterial blight was observed in Ist week of August. The incidence was incresed upto 14.38%. Myrothecium leaf blight of cotton was first observed in IInd week of August. In the month of September, the disease incidence increased upto 11.29%.
- Myrothecium leaf blight of cotton was first observed in II week of August. In the month of September, the disease incidence was increased upto 15.44%.
- Grey mildew was first observed in second last week of September. The disease incidence is increase upto 11.29 %.

Onion and garlic:

Survey and Monitoring of major diseases of onion and garlic in Mandsaur during Rabi 2016-17: A survey was conducted during the *Rabi* season 2016-17 on the various onion and garlic fields in different villages of Mandsaur and Neemuch districts. The incidence of disease severity was observed to be high during January- February

Name of diseases	Disease Intensity		Date of Collection	Variety	Locality/ Tehsil
	Percent Disease incidence (%)	Percent Disease Index (%)			
Onion					
Purple blotch	7.33-8.00	12	January February	Local, Nasik red, AFLR	Mandsaur, Dalouda, Sitamau, Shamgarh, Jiran, Piploda Narayangarh
Stemphyllium leaf blight	13.45-14.60	2-3	January-February		
Garlic					
Purple blotch	10.67-12.00	13	January February	Local, Shankar Mahadev, Ooty Local G-2, G-282, Riyavan local	Mandsaur, Dalouda, Sitamau, Shamgarh, Jiran, Manasa, Piplia
Stemphyllium leaf blight	12.30-14.60	2-3	January-February		

Groundnut:

Pest and disease incidence and their control measures:

Name of Pest and Diseases	Scientific name	Control measures
Pest/Insects		
Bud necrosis virus	-	-
Thrips	*Haplothrips indicus*	Dimethoate 30 EC @ 2 ml/litre water at 45 DAS
Termite	*Odontotermes redemani*	Chlorpyrifos @ 1.5 Litre/ha by drip method
Diseases		
Early blight	*Cercopora arachidicola*	• Seed treatment with Dithane M-45 @ 2g/kg seed + Bavistin @ 1g/kg seed
Stem rot	*Sclerosium rolfsii*	
Late blight	*Phaeoisariopsis personata*	• Imidacloprid (@ 1 ml/3litre water) + Mancozeb (@ 2 gm/litre) at time of disease occurrence

Sorghum:

- In terms of rains this was abnormal year as first shavers with very high intensity received during Second week of July 2016. This year shoot fly attacked the crop 10 to 80% the peak infestation was noticed during 25thJuly to 6th of August 2016. The stem borer infestation ranged from 5 to 20 % with two peaks during 23th to 2nd August2016 and 8th to 16th September 2016 in the crop grown on farmer's fields of the region. This year sorghum aphid infestation was noticed less. Ear head worms

(*Cryptoblabus* sp. and *Helicoverpa armigera*) infestation were 5 to 10 % on panicle during late October. Ear head bug infestation was observed up to 15% on Panicles during 15th September to 25th of October 2016.

- In research area the seed of different genotypes and checks of AVT(GS),IVT(GS),AHT(GS),IHT(GS),IAVHT(SS) and ICRIST trial were sown on 4th of July 2016, after that monsoon delayed due to which germination of crop was also delayed and effective date of sowing 19th July2016. The shoot fly infestation was comparatively high during very early crop growth and it was increased and infested the seedlings up to 70% whereas stem borer attacked the crop 15 to 20%.
- Validation of IPM module- A trial with Seven treatments was conducted with 3 replications to assess the impact of insecticides on shoot and ear head pests with 8.1x 3 sq. Mt. plot size. The sprays of insecticides and seed treatment were given to the crop seed treatment with Imidacloprid + carbofuran along with the sprays of Quinolphos showed superiority over other treatments in managing the shoot and ear head pests with higher grain yields.

4.8 Linkage and Collaborations with National and International Organizations:

MOUs

- Signed MOU between Bioversity International, New Delhi for the project on "Mainstreaming agricultural biodiversity conservation and utilization in agricultural sectors to ensure ecosystem services and reduce vulnerability" vide letter no DRS/TO/2017/2132 dated 08.12.2017.
- Signed MOU between National Medicinal Plant Board, New Delhi for the implementation of the project "Breeding of medicinal plants for improved yield and quality" vide letter no DRS/TO/ 2017/1991 dated 28-11-2017.

Annual Workshop/ Seminar/Symposium organized:

- **Annual Group Meet on "Pulses for Spring, Summer and Rice Fallow cultivation comprising the crops of Mungbean, Urdbean, Cowpea and Guar"** was held at RVS Krishi Vishwa Vidyalaya, Gwalior during November 10 – 11, 2017. In this group meet, more than 70 participants from different ICAR institutes, state agricultural universities and research centers participated over the two days programme. The progress of research in the important pulse crops for last 1 year were reviewed while technical programme was formulated for the coming spring/ summer season.; Dr. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior, Dr. A.K. Singh, Hon'ble Ex Vice Chancellor, RVSKVV, Gwalior; Dr. I.S. Solanki, Assistant Director General (Food and Fodder Crops), ICAR, New Delhi and Dr. N.P. Singh, Director, ICAR- IIPR, Kanpur, Dr. Shiv Sewak, Nodal Scientist (Arid Legumes), ICAR – IIPR, Kanpur and Dr. Sanjeev Gupta, Project Coordinator (MULLaRP), ICAR-IIPR, Kanpur reviewed the programme thoroughly and made critical comments. Likewise the project co-coordinators formulated the detailed technical programmes and included new genotypes and technologies for evaluation. In this series the Varietal Identification Committee

meeting was also held on 10th November, 2017 and one **cowpea variety (TC-901)** was identified for release and general cultivation. Recommendations were made on major technologies also.

- **Annual Group Meet of AICRP-Chickpea:** The 22nd Annual Group meet of AICRP-Chickpea, was organized by the AICRP-Chickpea Main Center, R.A.K. College of Agriculture, RVSKVV, Sehore on 28-30th August, 2017 at ICAR-CIAE, Bhopal. The Group meet was inaugurated by the Hon'ble Vice Chancellor of Rajmata Vijayaraje Sciendia Krishi Vishwa Vidyalaya (RVSKVV), Gwalior by lighting the lamp followed by ICAR song. At this occasion scientists working in AICRP- Chickpea from all over India were present along with scientist from the international centers ICRISAT and ICARDA. Dr. B. S. Baghel, Director Research Services, RVSKVV expressed gratitude to ICAR for selecting Bhopal as its venue. Highlighting the achievement of Sehore center, he informed the house that about 14 chickpea varieties have been released by this center till date, which are popular not only in Madhya Pradesh but also in other states of India, particularly in southern India. Madhya Pradesh contributes about 40 % chickpea production in the country and the varieties released by the center like JG 11, JG 16, JG 130 and recently RVG 202 and RVG 203 are popular amongst the cultivators in central and southern India. The center has developed production technology and identified good sources of wilt resistance which has contributed significantly in chickpea production in the country. At This occasion Dean Faculty of Agriculture, RVSKVV, Dr. (Mrs.) M. Billore, chairperson of Association of Agriculture Graduates (AAG) Shri V.D. Sharma and Dr. N.P. Singh, Director IIPR Kanpur has congratulated AICRP-Chickpea scientists for getting prestigious Ch. Devi Lal award of best AICRP in the country during 2016.

- Dr. A. K. Singh, Hon'ble VC, RVSKVV, Gwalior and Dr. S. Desai, Principal Scientist, CRIDA, Inaugurated, Contingent planning meeting for Madhya Pradesh in aberrant climates conditions on 4th Oct. 2017 at College of Agriculture, Indore.

- A seven days training program on **"Development of Climatic Risk Management tools in Agriculture using Extended Range Forecast"** organized by College of Agriculture, R.V.S. Krishi Vishwa Vidyalaya, Gwalior (M.P.) during September 18-24, 2017 in collaboration with Indian Institute of Technology, Bhubaneswar and India Meteorological Department, New Delhi. The Programme was started with the inauguration by Prof. A K Singh, Hon'ble former Vice Chancellor, RVSKVV, Gwalior. Use of extended range weather forecasts at monthly scale developed by IIT Bhubaneswar in agriculture to generate crop advisory was started by IMD and ICAR to allow different stakeholders for strategic decision making, such as, selection of crops and varieties, sowing window, input availability, irrigation water scheduling etc. Long range forecast of IMD, although operational, is not sandwiched with appropriate Advisory due to mismatch of spatial and temporal scale of the forecast generated and farmers' need. However, these problems can be addressed by operationalizing extended range and seasonal weather forecast coupled with agro-advisory. Use of extended range forecast in agricultural advisory is to be achieved by developing operational climate risk management (CRM) tools. The training on CRM tools with focus on hands-on-practice imparted knowledge and skill to the trainees regarding decision making during Agro Advisory preparation with knowledge of climate risk matrices, risk management options, down scaling of extended weather forecast and linking forecast with crop simulation model, analyzing crop model outputs to arrive at viable management scenarios, to help in deciding resource distribution by planners etc.

Awards and recognitions:

- Dr. D.S. Sasode senior scientist (Agronomy) College of Agriculture Gwalior awarded with "**Distinguished Scientist Award**" for outstanding contribution and recognition in the field of Agronomy in "2nd National Agricultural Convention on Agricultural Skill Development for Doubling Farmers Income" held on 7th October 2017 at RAU, Bikaner, Rajasthan.
- Dr. Varsha Gupta scientist (Agronomy) College of Agriculture Gwalior awarded with **"Young Scientist Award"** for outstanding contribution and recognition in the field of Agronomy on the occasion of International Conference on Advances in Agricultural and Biodiversity Conservation for Sustainable Development (ABCD - 2017) during 27 – 28 October, 2017 at CCS University, Meerut, U.P. India Agricultural Technology Development Society (ATDS) Ghaziabad, UP, during International Conference.
- Dr Bharat Singh senior scientist (Soil Science & Agricultural Chemistry) College of Agriculture Indore Received **Outstanding Achievement Award in September 2017** at **Sri Venkateshwar Veterinary University, Tirupati** in National Seminar on "Doubling Farmers Income for Sustainable & Harmonious Agriculture DISHA-

2017" by Science & Technology Society for Integrated Rural Improvement, Thorrur, Warangal, Telangana.

Training And meeting organized/Participated:

- The Research Review Meeting of All India Coordinated Research Projects (ICAR) was organized under the chairmanship of Prof. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior at the Directorate of Research Services during November 25-27, 2017. The authorities of the University, Dean, ADRs, Project In-charges working at different places of the University and HOD's actively participated in the meeting.
- The Review Meeting Scientist working in Colleges/Research Stations/KVKs for the preparation for Horticultural Projects was organized under the chairmanship of Prof. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior in the Directorate of Research Services during January 29-30, 2018. The authorities of the University, Scientist working at different places of the University actively participated in the meeting.

Distinguished Visitors:

- Dr. V S Bhatia, Director, and Dr. M Kuchlan, IISR, Indore along with Directors of RVSKVV namely Dr. B S Baghel (Director Research Services), Dr. S K Shrivastava (Director Extension Services), Dr. R L Rajput (Director Farm) and Dr V K Tiwari (Scientist; PB) I/C Soybean Project and staff members monitored AICRP-Soybean (Sub-Center), ZARS, Morena on September 6, 2017

- Prof. S. K. Rao, Hon'ble Vice Chancellor of RVSKVV, Gwalior visited College of Agriculture, Khandwa on 13/11/2017 He also visited Sports Complex , KVK, Farm, Girls and Boys Hostel. He inaugurated Boys hostel " Shishir" in college premises. He also inaugurated Soil Science Lab and Video Conferencing facility. Prof. Rao also visited Cotton Research Center, Organic farm initiatives, etc. He appreciated and was delighted with the college environment.

- Dr. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior visited Fruit Research Station, Entkhedi on 15/11/2017. Dr. Rajesh Verma, dean, RAK College of agriculture and Dr. M.S. Parihar, In Charge, FRS Entkhedi along with all the scientist and technical staff cordially welcomed the Hon'ble Vice Chancellor. He visited to the Mango and Guava orchards, shade house and poly house and saw the progress of Nursery and given his valuable guidance for increasing the

production of quality planting material. He visited the newly established "Centre for Fruit Processing"under RKVY Project. A brief introduction of project and machinery installed there was given by PI Dr. Shalini Chakraborty. Hon'ble Vice Chancellor suggested various new ideas of food processing on which lines centre can work and fulfill the mandates. He strongly suggested to develop value chain for Munga (*Drumstick*) at the centre

Research Publications in referred journal:

S. No.	Author (s)	Title	Journal	Vol.	Year	NASS Rating
1	Rawat, Subhash, Patel, Devidas, Gupta M.K., and Vani, D.K	Assessment of Genetic Variability, Correlation and Path Analyses for Yield and its components in Soybean	Trends in Bio Sciences	10(23)	2017	3.94
2	Patel, Devidas, Moitra,P.K. and Rawat, Subhash	Genetic variability, correlation and path analysis in F1 of Bread Wheat	International Journal of Green Farming	8(50)	2017	4.38
3	Singh, Balkrishna, Singh, Rohatash,and Barholia,A.K	Response of Guava to Foliar application of Urea, Potassium Sulphate and Borax on growth and fruit yield	Crop Research an International Journal	52(6)	2017	4.60
4	Thakur, Rahul, Khandkar, U. R., Devbrata, Nath, Patidar, Rohit K. and Patidar, Narendra K.	Impact of sewage sludge on enhancing chemical properties and fertility levels of sodic Vertisols of Madhya Pradesh	*Green Farming*	*8:1-5*	2017	4.38
5	Arora, Asha	Leaching behavior of oxyfluorfen in FYM amended and un-amended sandy clay loam soil	*Indian Journal of Weed Science*	*49(1)*	2017	5.17
6	Sasode, D.S., Gupta Varsha, Joshi Ekta, Arora Asha, Dixit. J. P. and Panse Raju	Management of composite weed flora of wheat (*Triticum aestivum L.*) by herbicide mixtures	*Indian Journal of Weed Science*	49(2)	2017	5.17
7	Joshi Ekta, Sasode D.S., Gupta Varsha and Tiwari Sushma	Productivity and profitability of groundnut (*Arachis hypogea*) as influenced by crop geometry and plant nutrition	*Annals of Agricultural Research*	38(4)	2017	4.07
8	Bharat Singh, MP Jain, AK Sharma1, NS Thakur, Shalini Singh, Shweta Pawar and Rini Shrivas	Nutrient Management as a Tool for Enhancing Soybean Productivity and Soil Fertility	*Bulletin of Environment, Pharmacology and Life Sciences.*	6	2017	4.95
9	Bharat Singh, MP	Effect of Reduced Tillage	*Bulletin of*	6	2017	4.95

	Jain, AK Sharma, NS Thakur, Shalini Singh, Rini Shrivas and Shweta Pawar	and Organics on Soil Properties, Growth and Productivity of Soybean (*Glycine Max* L)	*Environment, Pharmacology and Life Sciences.*			
10	Joshi, Ekta, Sasode, D. S., Gupta, Varsha and Tiwari, Sushma	Productivity and profitability of groundnut as influenced by crop geometry and plant nutrition	*. Annals of Agricultural Research*	38 (4)	2017	4.02
11	Gupta Sangeeta, **Kushwah S. S.**, Sharma R. K. and Singh O. P.	Effect of irrigation regimes and nutrient levels on growth, yield and quality of drip irrigated broad bean (*Vicia faba*).	Indian Journal of Agricultural Sciences,	**87** (10)	2017	6.22
12	Jatav A. S., **Kushwah S. S.** and Naruka I. S.	Performance of potato varieties for growth, yield, quality and economics under different levels of nitrogen.	Advances in Research	9(6)	2017	4.81
13	Barcchiya Jayashri and **Kushwah S. S.**	Influence of integrated nutrient management on root growth, flowering and quality of seed in french bean (*Phaseolus vulgaris* L.).	International Journal of Plant & Soil Science,	16(6)	2017	4.77
14	Barcchiya Jayashri and **Kushwah S.S.**	Influence of integrated nutrient management on growth, yield parameters and yield in French bean (Phaseolus vulgaris L.).	Legume Research,	40(5)	2017	6.12
15	Sen Satish, Sharma R.K., **Kushwah S.S.** and Dubey R.	Effect of different weed management practices on growth and yield of cauliflower (*Brassica oleracea* var. *botrytis* L.).	Annals of Plant and Soil Research,	20(1)	2018	4.39
16	Jyoti Kanwar, Kaul M.K., Shaktawat R.P.S. and **Naruka I.S**	In vitro multiple shoots induction from nodal explants of Sour orange (Citrus *aurantium* L.)	***The Bioscan***	12 (1)	2017	
17	Sowmya P.T., **Naruka I.S.,** Shaktawat R.P.S. and Kushwah S.S	Effect of Sowing dates and stage of pinching on growth, yield amd quality of Fenugreek (*Trigonella foenum-graecum* L.).	***International Journal of Bio-resource and Stress Management***	8 (1)	2017	
18	Patidar Manish, Shaktawat R.P.S. and **Naruka I.S.**	Effect of sulphur and vermicompost on growth, yield and quality of garlic (*Allium sativum* L.).	***Journal of Krishi Vigyan***,	5 (2)	2017	
19	Waskela Prakash, **Naruka I.S.** and Shaktawat R.P.S	Effect of row spacing and level of NPK on growth and yield of Fennel (*Foeniculum vulgare*).	***Journal of Krishi Vigyan***	6 (1)	2017	
20	Saniya, Jyoti Kanwar and	Studies on Genetic Variability Parameters	***Int. J. Curr. Microbiol. App. Sci.,***	6(8)	2017	

	Naruka I.S.	and Character Association among Yield and Yield Contributing Traits in Grape (*Vitis vinifera* L.).				
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GLIMPSES OF RESEARCH ACTIVITIES

Dr. P.J. Khankhane, Scientist, DWR, Jabalpur Visiting Experimental field of Mustard on 24.02.2017

Release of *Neochetina spp*. in pond
Spraying of *Alternaria alternata on water hyacinth*

View of water hyacinth in pond after three months of releaseof *Neochetina spp*.

Effect of straw mulch on potato crop at 60 DAS

Effect of one hand hoing on potato crop at 60 DAS

Effect of Oxyfluorfen 0.23 kg/ha as PE + 1 HW at 25 – 30 DAS in mustard crop

Plant Growth Hormones

PGR- Cyclanilide 22 + Mepiquat chloride 88 SC (*Stance 110 SC*) in soybean.

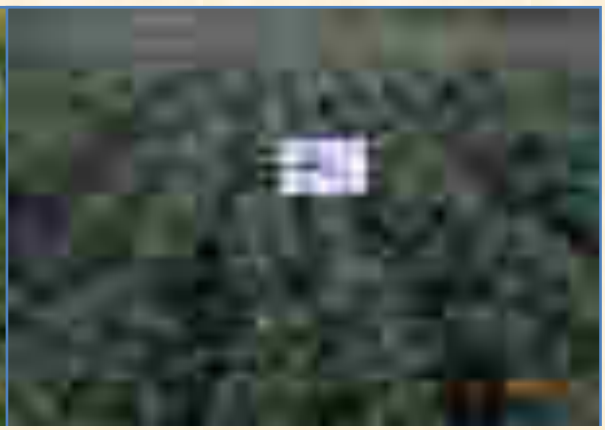
Control

Water spray

Cyelanilide 22 + Mepiquat chloride 88@ 150 ml/ha

Cyelanilide 22 + Mepiquat chloride 88@ 200 ml/ha

Cyelanilide 2.8 % SC @160 ml/ha



Mepiquat chloride 5% AS @255 ml/ha

4.9 Activities of Seed Production Farms:

RVSKVV is also making sincere efforts to generate cutting edge technology for enhancing crop productivity. Thrust is also farm seed replacement in the state by producing quality seeds of important crops. It is worthwhile to mention that RVSKVV has produce **7191.16** q seeds with different crops during 2017-18 which helped the farmers in a big way for seed replacement and thereby enhancing the productivity of crops.

The seed activities in the University are managed with the help of twenty seven seed farms, which are located in twenty four districts and six agro-climatic zones of Madhya Pradesh. Out of the total farm area of 1210.85 ha., only 64.45% (780.37 ha.) is under cultivation. Among the cultivated area, 13.39 and 34.59% is irrigated and partially irrigated, respectively. Rest of the cultivated area is under rainfed farming. The area under plantation crop is about 82.02 ha. Rests of the farm area is fallow or pasture land or occupied by road and buildings.

Breeder seed produced in Kharif and Rabi crops:

S. No.	Crops	Qty. (q.)
(A) Kharif crops		
1.	Soybean	1866.0
2.	Green gram	120.0
3.	Sorghum	4.30
4.	Paddy	17.20
5.	Pigeonpea	11.10
Total (A)		**2018.60**
(B) Rabi crops		
1.	Wheat	2206.0
2.	Gram	2930.4
3.	Lentil	2.25
4.	Rapeseed and Mustard	33.91
Total (B)		**5172.56**
Grand Total (A+B)		**7191.16**

5. Extension Activities:

RVSKVV, Gwalior has 26 Krishi Vigyan Kendras (KVKs) under its jurisdiction established with the financial support of ICAR. Out of which, 21are under the administrative control of the University and five under NGOs/ ICAR institute, which are functioning under technical guidance of Directorate of Extension Services of the University. The Directorate is committed to serve the farmers through its well organized network of Krishi Vigyan Kendras, which play a vital role in dissemination and transfer of recent emanated research technologies in agriculture, horticulture, livestock production and allied fields.

The KVKs are assessing the technological needs of the farmers of the districts and revalidating the technology for adoption through On Farm Testing. The KVKs are disseminating technologies and strengthening the farmers through, Front Line Demonstrations, Training Programmes for Farmers and Farm Women, Extension functionaries and Vocational Training for Rural Youth and other regular Extension Activities in selected villages of the concerned district. Thus, they contribute in minimizing the gap between prevailing farmers' yield and production potential in specific area.

Mission

Directorate of Extension Services is committed to serve the farmers and to achieve the motto of the University, which is to reach the un-reached through its extension system. The main objectives of the Directorate are:

1. Transfer of technology, assessment, application, refinement and providing feedback to the researchers.
2. Up gradation of knowledge and skill of extension functionaries as well as farming community.
3. Development and dissemination of technology through print and electronic media for mass reach.
4. Catering the needs of farming communities through single window system.
5. Linkage with line departments, concerned institutions and NGOs.
6. Reviewing the activities of KVKs and technological backstopping of KVK scientists and help in formulating action plan.
7. Popularization of low draft improved agricultural implements.

Krishi Vigyan Kendras

Twenty one Krishi Vigyan Kendras of RVSKVV are located at the districts of Agar-Malwa, Alirajpur, Ashok Nagar, Badwani, Bhind (Lahar), Datia, Dewas, Dhar, Guna (Aron), Gwalior, Jhabua, Khandwa, Khargone, Mandsaur, Morena, Neemuch, Rajgarh, Shajapur, Sheopur, Shivpuri and Ujjain. KVK Bhopal is working under administrative

control of ICAR- CIAE and KVKs in districts Indore, Sehore, Ratlam and Burhanpur are working under the aegis of reputed NGOs, with technical backstopping of RVSKVV. KVKs facilitate the process of assessment of technology through OFT, skill upgradation through training programmes, and technology dissemination through method and result demonstrations, Kisan Melas, Seminars and mass campaigns etc.

Agro-climatic Zone wise Location of KVKs:

Agro-climatic Zone	Features	District / KVK's under the Zone
Gird Zone	Semi-arid climate, situated between 152-224msl, annual rainfall 566-977 mm and soils are Alluvial medium black, mixed red black and red yellow in colour.	Sheopur, Morena, Bhind, Gwalior, Shivpuri (Partial), Guna (Partial) and Ashok Nagar
Bundelkhand	High temperature, situated between 266-560msl, annual rainfall 750-1200mm with shallow clayey loam soil	Datia, Shivpuri (Partial)
Malwa Plateau	Semi-arid climate, situated between 450-675 msl , annual rainfall 800-1200mm, soil is medium to deep black (vertisol)	Neemuch, Mandsaur, Ujjain, Shajapur, Rajgarh, Dewas and Dhar (Partial), Indore Ratlam and Agar-Malwa
Jhabua Hills	Undulated topography, situated between 450-700 msl, erratic rainfall (600-800mm) and shallow to medium skeletal gravely soil	Alirajpur, Jhabua and Dhar (Partial)
Nimar Valley	Hot and dry weather, situated between 450-700 msl, less annual rainfall (600-800mm), soil is deep black clayey (vertisol)	Badwani, Khargone, Khandwa, Burhanpur
Vindhyan Plateau	Hot humid climate, undulated topography, situated between 350-600 msl, annual rainfall, 1000-1200mm and medium black soil.	Guna (Partial), Bhopal, Sehore

Mandate of KVK: The major mandate of KVKs is the assessment, refinement and demonstration of technology/ products.

The major activities of KVKs are given below:

- On farm testing for assessing the suitability of technology farming systems.
- Frontline demonstrations to establish production potentials of newly released technologies on farmers' fields and provide feedback.
- Training of farmers and farmwomen to upgrade their knowledge and skills in modern agricultural technologies and training of extension personnel to orient them in the frontier areas of technology development.
- Work as resource and knowledge centre of agricultural technologies for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district.
- Create awareness about frontier technologies through a number of extension activities *viz*: Farmer fair, Field day, Campaign, Ex-trainees meet, etc.
- For enhancing the productivity through increased seed replacement rate and use of quality planting material KVKs are taking up the activities of producing quality seed and planting material.

Thrust Areas:

- Enhance crop productivity through, intensive vocational trainings of farmers, farm women and rural youth.
- Demonstrate and disseminate the integrated approach encompassing the feasible components of farming and related technologies targeting towards enhancing the farm family income.
- Crop diversification with suitable oilseed, pulse, fruit and vegetable cultivation.
- Testing of early maturing high yielding varieties of major crops on farmer's field.
- Awareness regarding different methods of water harvesting and conservation including construction of small water retention structures (Rain-Water harvesting)
- Soil fertility improvement to sustain soil health.
- Integrated nutrient management in different crops.
- Popularization of resource conservation technologies.
- Post harvest value addition and entrepreneurship development for agricultural produce.
- Balanced feeding and reproduction of livestock and poultry.
- Clean milk production and processing of dairy products.
- Promotion of exotic and off-season cultivation of vegetables, medicinal and aromatic plants.
- Promotion of organic farming.
- Use of improved implements for drudgery reduction.
- Demonstrations of improved farm – machinery to farmers.
- Demonstrations on utilization of innovative traditional knowledge of the farmers.

Service Provided by the Directorate of Extension Services / KVKs

5.1 Major activities of KVKs under RVSKVV, Gwalior

On Farm Trial

The KVKs conducted 276 On Farm Trials for assessment and refinement of new technologies generated by RVSKVV, Gwalior, other Universities and ICAR Institutes as per local needs and micro farming situations. A total of 2531 farmers were direct beneficiaries of the OFTs as their fields/units chosen for conducting the trials. Details of these OFT are given below:

Host Institute	No. of OFTs	Beneficiaries
OFT on crops		
RVSKVV	189	1721
ICAR & NGO	49	400
Total	**238**	**2121**
OFT on Enterprises		
RVSKVV	25	261
ICAR & NGO	13	149
Total	**38**	**410**

Thematic area wise details of OFTs conducted on crops are described below.

Thematic area wise details of OFTs

Thematic Area	No. of OFTs	No. of Beneficiaries
Cropping Systems	24	240
Varietal evaluation	30	259
Improved Implement/Farm Machinery	16	150
Integrated Crop Management	22	200
Integrated Disease Management	13	85
Integrated Pest Management	36	351
Natural Resource Management	7	75
Resource Conservation Technology	01	10
Post Harvest Technology	01	10
Soil Fertility Management	44	389
Water Management	01	10

Thematic Area	No. of OFTs	No. of Beneficiaries
Weed Management	13	105
Farmer Interest Groups	05	45
Income Generation	01	10
Information and Communication Technology	06	90
Agro-forestry	01	5
Horticulture crop	29	231
LPM	15	131
Others	11	135
Total	**276**	**2531**

Thematic area wise details of OFT conducted on enterprises

Thematic Area	No. of OFT's	No. of Beneficiaries
Disease Management	1	10
Fisheries	3	15
Nutrition	11	105
Production and Management	8	115
Others	15	155
Total	**38**	**400**

5. 2 Frontline Demonstrations

Frontline demonstrations are conducted to demonstrate the superiority of recent and location specific proven technologies of agriculture and allied fields among farming community and extension functionaries for up-scaling in the larger area as well as for generating the production data along with the feedback. During the reporting year, a total number of 2573 FLDs were conducted on various oilseeds, pulses, cereals, vegetables crops and cash crops, agro forestry and other important crops covering the total area of 1027.35 ha. In addition to this, 2265 demonstrations in 925.94 ha area were also conducted on various oilseed and pulse crops under cluster demonstrations scheme. Moreover, demonstrations on 12 important income generating enterprises like KMAS, dairy, poultry, goatry, azola, raised bed etc. Were also conducted through which 720 farmers were directly benefitted.

Crop wise details of FLDs Conducted during 2017-18 through KVKs:

S. No.	Crop	Area (ha)	No. of Beneficiaries	% increase
Cereals				
1	Rice	10	25	28.5
2	wheat	193.8	397	52.3
3	Maize	60	154	54.89
4	Barley	15.2	42	33.02
5	Pearl millet	6	10	21.2
Pulses				
6	Black Gram	37.4	43	37.93
7	Gram	67.3	187	39.59
8	Pigeon pea	27.95	97	59.19
9	Green Gram	30	75	21.23
10	Cluster bean	4	10	23.03
Oilseed				
11	Soybean	180.9	443	29.24
12	Mustard	108	272	40.82
13	Bottle guard	1	10	12.21
14	Cucumber	1	10	11.74
15	Lentil	10	25	10.9
16	Sesame	36	90	41.55
Vegetables				
17	Cauliflower	1	10	11.31
18	Cabbage	1	10	11.25
19	Chickpea	69.3	185	51.07
20	Tomato	10	25	36.41
21	Okra	1	10	43.43
22	Watermelon	2	5	30.5
23	Potato	15	15	12
Spices				
24	Garlic	40	118	76.63
25	Capsicum	2	10	25.39
26	Chilli	28	75	31.93
27	Onion	17	50	99.32
28	K. Onion	13	50	44
29	Turmeric	2	10	10.25
Fibre Crops				
30	Cotton	14	35	28.36
Fodder Crops				
31	Berseem	2	10	21.46
Flower Crops				
32	Chrysanthemum	2.5	10	10.89
33	Marigold	1	10	32.21

Medicinal Crops				
34	Kalmegh	2	10	5.69
35	Ajwain	5	10	20.32
36	Kalungi	5	10	31.28
37	Kala jeera	2	5	8.63
38	Chadrasoor	2	5	10.25
Fruit Crops				
39	Banana	2	5	2.08
40	Drumstick	2	5	5.23
	Total	**1027.35**	**2573**	-

Cluster Demonstration Pulses and Oilseed

S. No.	Cluster Crop	Area (ha)	No. of Beneficiaries	% increase
Pulses				
1	Black Gram	80	200	25.36
2	Chickpea	174	435	28.89
3	Pigeon pea	90	225	42.15
4	Green Gram	10	25	32.41
	Total	**354.0**	**885**	**-**
Oilseed				
5	Soybean	291.94	680	76.46
6	Mustard	180	450	43.1
7	Groundnut	30	75	42.89
8	Linseed	20	50	9
9	Sesame	50	125	17.26
Total		**571.94**	**1380**	**-**

FLDs conducted on enterprises

S. No.	Enterprise	Area (ha)	No. of Beneficiaries	% increase
1	Zero till	2	07	28.0
2	Buffalo	-	27	25.36
3	Cow	-	182	16.12
4	Buffalo Calf	-	10	14.4
5	Azola	-	35	20.0
6	KMAS	-	350	28.33
7	Raised bed	19	25	21.6
8	Mushroom	-	10	-
9	Fish	0.8	4	18.36
10	Poultry	-	40	22.0
11	Nursery	-	20	16.32
12	Kitchen Garden	01	10	10.20
Total		**22.8**	**720**	**-**

5.3 Training Programmes:

Training has been considered a key component for updating the knowledge and inculcating new skills among the participants. The great emphasis has been given on organizing trainings both for the farmers as well as for the trainers. A total of 1176 training programmes were organized involving to 29914 beneficiaries including farmers and farm women, rural youth, extension personnel and sponsored from different agencies detail of which are given in following table.

S. No.	Training	RVSKVV			ICAR & NGO			Total		
		No.	D*	Benf.	No.	D*	Benf.	No.	D*	Benf.
1.	Farmers and Farm Women	661	414	16834	212	214	4767	873	628	21601
2.	In-Service	64	46	1524	16	17	377	80	63	1901
3.	Rural Youth	21	85	637	31	41	560	52	126	1197
4.	Sponsored	94	443	3614	12	12	196	106	455	3810
5.	Vocational	41	203	1078	24	137	327	65	340	1405
	Total	**881**	**1191**	**23687**	**295**	**421**	**6227**	**1176**	**1612**	**29914**

*** Total duration in days**

5.4 Extension Activities

With the objective of creating awareness about advanced agricultural technologies, a number of extension activities were organised by KVKs at their campuses and in the villages. These extension activities include method demonstrations for small group to Kisan Melas for huge gathering. It includes use of old communication techniques of poster exhibition to latest technique of SMS and social media. Broadly, these activities are advisory based like farm advisory services, lectures delivered by resource persons, animal health camps and vaccination camp, exhibitions, extension literature and popular article, media based activities like CD/DVD, film show, news paper coverage, radio talks and TV talks, meeting based like ex-trainee Sammelan, celebration of important days, club meet, farmers' seminar, field day, group meet, Gosthi, Mela and SHG meeting Technology week concept was given to the KVKs for showcasing the available technologies to the district level extension functionaries and farmers. Details of various extension activities are given in following table:

Activities for popularization of agriculture technologies

S. No.	Activities	RVSKVV			ICAR/NGO			Grand Total		
		Target	Achievement	Beneficiaries	Target	Achievement	Beneficiaries	Target	Achievement	Beneficiaries
1	Advisory Services	536	542	197831	49	43	58333	585	585	256164
2	Ag. Mobile Clinic	498	538	3579	0	0	0	498	538	3579
3	Animal Health Camp	23	22	894	11	8	264	34	30	1158
4	Awareness programme	35	45	2988	0	0	0	35	45	2988
5	Celebration of important days	52	78	5273	13	26	1835	65	104	7108
6	Clean India Awareness Campaign	0	0	0	13	9	426	13	9	426
7	Diagnostic Visits	361	504	4269	33	69	491	394	573	4760
8	Exhibition	82	97	87745	17	18	3395	99	115	91140
9	Exposure Visits	14	56	1723	7	6	302	21	62	2025
10	Extension Literature	131	157	17775	20	55	400	151	212	18175
11	Ex-trainees Sammelan	28	30	1351	6	4	1471	34	34	2822
12	Fal- Fool Sabji	1	2	1622	0	0	0	1	2	1622
13	Farm Advisory Services	861	1169	282836	59	81	2392	920	1250	285228
14	Farm Science Club conveners meet	6	5	266	0	0	0	6	5	266
15	Farmers Seminar	19	19	1742	4	3	132	23	22	1874
16	Farmers Visit to KVK	5357	13346	41093	4018	3732	7125	9375	17078	48218
17	Field Day	135	168	7590	48	49	1243	183	217	8833
18	Film Show	256	271	7841	68	93	3481	324	364	11322
19	Group meetings	100	131	2916	36	30	543	136	161	3459
21	Hindi Pakhwada	1	1	20	0	0	0	1	1	20
22										
23	International Women's Day	3	3	153	0	0	0	3	3	153
24	Interface	14	17	1129	4	5	216	18	22	1345
25	Kharif Sammelan	4	9	603	1	1	530	5	10	1133
26	Kisan	0	2	4550	0	0	0	0	2	4550

	Chaupal									
27	Kisan Ghosthi	111	147	5845	6	89	3736	117	236	9581
28	Kisan Mahila Diwas	3	2	58	0	0	0	3	2	58
29	Kisan Mela	31	38	40217	3	4	1626	34	42	41843
30	Kisan Mobile Advisory	52	44	28750	0	0	0	52	44	28750
31	Kisan Shiksha Diwas	0	1	67	0	0	0	0	1	67
32	Krishi Gyan Doot Meet	10	10	253	0	0	0	10	10	253
33	Krishi Mahotsav	9	245	41852	0	180	8835	9	425	50687
34	Lectures delivered as resource persons	779	1596	48696	85	215	6991	864	1811	55687
35	Live webcast of PM Programme	0	1	665	1	1	804	1	2	1469
36	M.P. Foundation Day	1	1	23	0	0	0	1	1	23
37	Mahila Mandal Meetings	13	36	868	0	0	0	13	36	868
38	Method Demonstrations	45	65	1865	18	20	380	63	85	2245
39	Newspaper coverage	594	764	634	110	162	0	704	926	634
40	Organic Farming	1	1	21	0	0	0	1	1	21
41	Participatory Rural Appraisal (PRA)	0	0	0	0	0	0	0	0	0
42	Partheniu m awareness day	5	4	749	0	2	106	5	6	855
43	Plantation day	1	1	17	0	0	0	1	1	17
44	Popular Articles	149	156	2008	16	16	0	165	172	2008
45	PPV & FRA	1	2	327	1	1	146	2	3	473
46	PMFBY	14	19	1246	0	0	0	14	19	1246
47	Pre Rabi Kisan Samelan & World Soil Health Day	0	1	724	2	2	252	2	3	976
48	Progressiv e Farmer	0	0	0	1	1	39	1	1	39

	Meet									
49	Radio talks	147	196	1469	21	34	0	168	230	1469
50	Samagra Swachhata Diwas	22	27	233	0	0	0	22	27	233
51	Sankalp se Sidhhi	11	12	1509	1	1	862	12	13	2371
52	Scientific visit to farmers field	664	977	11965	145	319	2776	809	1296	14741
53	Self Help Group conveners meetings	20	30	813	12	18	600	32	48	1413
54	Soil Health Camp	28	113	2196	4	16	412	32	129	2608
55	Soil Health Day	13	9	1567	1	1	778	14	10	2345
56	Soil Test Campaigns	36	563	2766	4	6	327	40	569	3093
57	Summer deep ploughing	162	185	1753	0	0	0	162	185	1753
58	Swachhata Abhiyan	14	18	780	1	1	63	15	19	843
69	Technology Week	16	15	1067	3	3	711	19	18	1778
60	TV talks	109	124	980	28	40	0	137	164	980
61	Special day celebrations	5	5	1100	0	0	0	5	5	1100
62	Swachata Pakhwada	0	1	164	6	34	704	6	35	868

Publications:

S. No.	Publications	RVSKVV		ICAR/ NGOs		G. Total	
		No.	Copies	No.	Copies	No.	Copies
1	Published Abstracts	16	0	0	0	16	0
2	Book Chapters	2	0	4	0	6	0
3	Booklets	16	5650	0	0	16	5650
4	Books	17	5100	1	0	18	5100
5	Extension Literature (Folders)	42	45100	33	16800	75	61900
6	Newsletter	51	44800	5	8000	56	52800
7	Popular Article	14	0	0	0	14	0
8	Research papers in Journals	68	0	10	0	78	0
9	Technical bulletins	9	2800	6	80	15	2880
10	Training Manual	4	640	1	0	5	640
11	Training Report	29	100	3	0	32	100
12	Popular article	49	0	20	0	69	0
15	Pamphlet	14	6000	0	0	14	6000
16	Leaf Let	2	6000	5	675	7	6675

5.5 Production and Supply of Technological Inputs:

Timely and adequate availability of the quality seeds to ensure better yield is very essential and still remains as a major constraints to the farmers. Therefore, it was taken as a challenge and appropriate steps were taken at the KVKs for helping the farmers in this regard. The KVKs produced 3794.13 q seed and a total of 438192 seedlings and saplings of different crops during 2017-18. The details are given in following tables.

Seed Production

Crop	Seed Category	Quantity (q)
Oilseed		
Soybean	Nucleus	2.60
Soybean	Breeder	1373.0
Soybean	TL	1.50
Mustard	Mustard	47.50
Pulses		
Pigeon Pea	Breeder	59.9
Gram	Breeder	1366.0
Gram	TL	9.0
Lentil	Breeder	2.0
Cereals		
Paddy	Breeder	115.4
Wheat	Breeder	760.92
Wheat	TL	25.67
Barley	TL	3.75
Fodder		
Oat	TL	0.54
Azola	-	0.10
Vegetables		
Okra	-	0.0525
Fenugreek	-	0.01
Spinach	-	0.01
Onion	-	0.08
Chinese Cabbage	-	0.46
Garlic	-	18.85

Ginger	-	5.0
Flowers		
Marigold	-	0.006
Green Manure		
Sunhemp	TL	1.79
Total		**3794.13**

Planting Material (Seedlings/Saplings) Production:

Crop	Quantity (No.)
Vegetables	
Tomato	108129
Brinjal	15330
Chilli	66251
Cabbage	4010
Cauliflower	9310
Bottle Gourd	87
Sponge Gourd	84
Bitter Gourd	56
Pumpkin	51
Kharif Onion	118225
Broccoli	310
Fruit Plants	
Mango (Desi)	1214
Mango (Grafted)	69
Lemon	1758
Pomegranate	106
Guava	42
Karonda	27
Jackfruit	561
Custard Apple	27
Jamun	65
Tamarind	10
Aonla	16
Drum Stick	3995
Ber Bud	33
Beal	106
Guava	69
Papaya	520
Jack Fruit	562
Ornamental plants	
Marigold	35000
Ashok	82
Vidya	12
Gaillardia	20080

Fodder Crops	
Napier Grass	50,000 Root slip
Forest plants	
Gudachi	03
Seasum	830
Durenta	110
Meetha Neem	98
Drum Stick	22
Gudhal	07
Kesiasama	71
Bamboo	497
Gulmohar	42
Amltas	17
Mogra	17
Seven	143
Kachnar	82
Karanj	50
Belpatra	06
Total	**438192**

Other Products

Enterprise/Unit	Name of Product	Quantity/Number
Dairy	Milk (Cow)	14212.5 Lt.
	Milk (Buffalo)	6054 Lt.
Poultry	Chicks	17865
	Eggs	3345
	Birds	900
Bee Keeping	Raj Vijay Honey	221 kg
	Honey processed	1056.5 kg
Vermi-composting	Vermi-compost	1100 qt.
	Worms	356 kg
	Vermi wash	100 Lt.
Fodder	Azola	201 Kg.

5.6 Soil and Water Sample Analysed

Soil and water testing is an import activity of KVK for improving the soil fertility and sustainability of agricultural production. During the year 2017-18, KVKs analyzed 37549 soil samples by which 75351 farmers of 897 villages were covered. Total 16 parameters including pH, EC, organic carbon, NPK and micro nutrients were analysed in soil testing. The KVK wise details of soil and water samples tested are given in following table.

KVK	Number of Sample collected	Total No. of Soil sample tested	Total No. of Soil health card prepared	No. of Beneficiaries	Villages Covered
Ashoknagar	1285	1285	1500	1500	
Barwani	707	707	1098	1098	38

Bhind	157	157	0	157	67
Datia	Nil	Nil	Nil	Nil	Nil
Dewas	876	876	100	100	
Dhar	1000	1000	1000	1000	78
Guna	3402	3402	9905	9905	157
Gwalior	8313	8313	22971	22971	48
Jhabua	2686	2686	4500	4500	67
Khandwa	1625	1625	10400	1625	41
Khargone	1933	1933	8820	8820	57
Mandsaur	247	247	247	247	5
Morena	1038	1038	-	1207	41
Neemuch	625	625	625	625	3
Shajapur	150	150	512	512	5
Sheopur	592	592	1120	1120	14
Shivpuri	405	405	405	405	34
Ujjain	500	500	500	500	8
Burhanpur	2500	2500	5327	5327	24
Indore	1030	1030	1429	1429	25
Ratlam	397	397	115	115	7
Sehore	7081	7081	8188	8188	163
Total	**37549**	**37549**	**82762**	**75351**	**897**

5.7 Kisan Mobile Advisory Services

Kisan Mobile Advisory (KMA) is the easiest ICT tool working successfully for dissemination of latest information to the farmers and farm women. This is a unique programme for making linkages between different stakeholders who are key players for making agriculture more productive. During the year 17-18, a total of 1409 farm advisory were issued by the KVKs from which 1063722 farmers were directly benefited. In addition to this, KVKs also provided audio, video and photo based advisories through WhatsApp.

KVK	No. of advisories (SMS) sent	No. of farmers registered	No. of Extension functionaries	No. of villages covered
Ashoknagar	29	32000	155	
Barwani	55	17082	106	
Bhind	29	13700	281	
Datia	90	69526	225	610
Dewas	47	38890	149	1027
Dhar	76	124314	107	
Guna	106	374000	350	
Gwalior	44	25900	600	
Jhabua	104	12860	380	
Khandwa	50	7918	150	385

KVK	No. of advisories (SMS) sent	No. of farmers registered	No. of Extension functionaries	No. of villages covered
Khargone	108	40235	250	
Mandsaur	104	28774	-	944
Morena	87	13710	13710	775
Neemuch	42	18500	25	799
Shajapur	38	24500	157	
Sheopur	38	15000	600	
Shivpuri	72	33000	600	
Ujjain	92	33324	167	1096
Burhanpur	38	15500	74	
Indore	77	37247	59	
Ratlam	41	42152	112	1053
Sehore	42	45590	638	
Total	**1409**	**1063722**	**188895**	**-**

5.8 Other Important Achievements

5.8.1 Awards to KVKs

KVK	Name of Award	Category	Awarded by
Datia	Special Swachhta Pakhwara Award	Institution	ICAR
Datia	Pandit deen dayal Upadhyay Rastriya Krishi Vigyan Protsahan Award-2017	Institution	ICAR
Dhar	Mahindra Samridhi Award 2017	Farmer (Shri Dinesh Patidar)	Mahindra group
Dhar	Jagjivan Ram Innovative Farmer Award 2016	Farmer (Shri Shriram Patidar)	ICAR
Jhabua	Fakrudin Ali Ahmed Award	Group	ICAR, New Delhi
Ujjain	Sh. Ashwini Singh, IARI Innovative Farmer Fellow	Farmer	IARI, ICAR, New Delhi

5.8.2. Krishi Mahotsav.

Krishi Mahotsav was celebrated by the Govt. of M.P. in all the districts, in which scientists from 24 KVKs were engaged in different programmes. During the event, 84 blocks of 26 districts were covered through various activities.

5.8.3 Programme on International Soil Health Day.

On the occasion of International Soil Day on 5th December, 2017 Kisan Sammelan were organized at all the Krishi Vigyan Kendras in these Sammelans and Soil Health Cards were distributed to the farmers.

5.8.4 Registration of local plant species/ land races under PPVFRA.

KVKs identified some local germplasm/ land races of different crops for registration under PPVFRA, New Delhi. The details are as follows.

KVK	Name of crop	No. of varieties/ land races Identified	No. of varieties registered	Remarks
Datia	Sesame	1	submitted for registration	Local name Kali Til
Datia	Taramira	1		Local name Shonha
Datia	Rice	1		Local name Kali Moonchh
Datia	Sunhemp	1		Local name Sun
Datia	Lentil	1		Local name massor
Datia	Sorghum	1		Local name Judai
Datia	Taro	1		Local name Banda
Datia	Lablab bean	1		Local name Sema
Dhar	Wheat	2	-	registration is under process
Dhar	Maize	2	-	registration is under process
Dhar	Soybean	3	-	-
Dhar	Linseed	1	-	-
Dhar	Chickpea	2	-	-
Dhar	Pigeon pea	1	-	-
Dhar	Field pea	1	-	-
Dhar	Pumpkin	1	-	-
Dhar	Custard apple	1	-	

KVKs identified as Centre of Specialization

S. No.	Name of KVKs	Specialization
1.	Aron (Guna)	Coriander Production Technology
2.	Ashok Nagar	Durum Wheat Production Technology
3.	Badwani	Chilli Production and Value addition of spices
4.	Datia	Natural Resource Management
5.	Dewas	Integrated Farming System
6.	Dhar	High tech vegetable cultivation

7.	Gwalior	• Hi tech Horticulture • Vermi-composting Technology
8.	Jhabua	Kadaknath rearing in Integrated Farming System
9.	Khandwa	Cotton Production Technology
10.	Khargone	Pomegranate & Watermelon Production Technology
11.	Lahar(Bhind)	Crop diversification
12.	Mandsaur	Seed spices
13.	Morena	• Apiculture • Conservation agriculture
14.	Neemuch	Garlic Processing Technology
15.	Rajgarh	Hi tech fruit nursery
16.	Shajapur	Mandarin Production Technology
17.	Sheopur	Management of soil & water resources & IFS
18.	Shivpuri	Mechanization in ground nut and Hi - tech tomato production
19.	Ujjain	Integrated Nutrient Management
20.	Bhopal	Farm mechanization
21.	Sehore	Integrated Farming System
22.	Ratlam	Dairy Management and Dairy Technology
23.	Indore	Organic Farming
24.	Burhanpur	Banana Production Technology

5.9 Major Activities of Directorate of Extension Services.

5.9.1 Meeting of Scientific Advisory Committees and monitoring of KVKS.

The Scientific Advisory Committee meetings were conducted to give necessary guidance and support to carry out the mandated activities of KVK in a more planned and scientific manner. The Committee monitors progress and facilitate in-depth exchange of views in specific fields. The Committee evolves the scientific and technical vision documents for the KVK, reviews periodically and takes further course of action as deemed fit for furthering scientific and technological activities of the KVK. Activities of KVKs are monitored through these meeting of Scientific Advisory Committees (SAC). Director Extension Services, Joint Director Extension, Deputy Director Extension and other officers from the Directorate of Extension participated in these meetings to reviews previous activities and finalize the action plans for coming season. A total of 48 SAC meetings (Kharif and Rabi) were conducted for all 24 KVKs during 2017-18.

5.9.2 Establishment of new KVKs: The ICAR has established two new KVKs at newly created districts Alirajpur and Agar Malwa and also sanctioned an additional (second) KVK in larger district Dhar during the current year. The KVKs at Alirajpur and Agar-Malwa started functioning. Meanwhile, Govt. of M. P. has transferred 20 ha land for establishing second KVK at Manawar in district Dhar.

5.9.3 Establishment of Agriculture Technology Information Centre (ATIC): After laid out of foundation stone of Agriculture Technology Information Centre by Hon'ble Shri Radha Mohan Singh, Union Minister of Agriculture and Shri Narendra Singh Tomar, Union Minister of Rural Development and Panchayati Raj, the construction work of ATIC building has been started.

5.9.4 Training /Workshops/ Meetings organised by the Directorate of Extension Services: Following capacity building/ HRD programmes and workshops/ review workshops were conducted for KVK scientists by the directorate of extension services during the year 2017-18:

a. Farmers' Fair, Agricultural Exhibition and Krishak Sangosthi

S. No.	Event	Date	Organizer
1.	Naya Bharat Manthan: Sankalp se Siddhi evam Vishwa Madhumakkahi Diwas programme organized during Foundation Day of the University	August 19, 2017	Directorate of Extension Services, RVSKVV, Gwalior and Krishi Vigyan Kendras
2.	Two Days Fal, Fool, Shak-Sabji evam Parirachhit Padarthon ki Pradarshani Evam Sangosthi	February 22-23, 2018	Directorate of Extension Services, RVSKVV, Gwalior and Directorate of Horticulture and Food Processing, Bhopal

b. Workshops/Review Meetings/Capacity building programmes organized at Directorate of Extension Services RVSKVV, Gwalior.

S. No.	Date	Place	Particulars	Organizers
Workshops/Review Meetings				
1.	May 08-09, 2017	RVSKVV, Gwalior	Annual Action Plan Workshop 2017-18	DES, RVSKVV, Gwalior
2.	Novem ber 29-30, 2017	RVSKVV, Gwalior	Group Meeting on Technologies Applicable for Doubling Farmers' Income	DES, RVSKVV, Gwalior
3.	January 18-20,	RVSKVV-KVK,	Zonal Workshop of Zone-IX for Cluster Frontline	ICAR-ATARI, Jabalpur and DES, RVSKVV,

	2018	Jhabua	Demonstrations	Gwalior
Capacity Building Programme				
1.	November 17-19, 2017	KVK, Jhabua	Facilitating entreprenuership through skill development for augmanting the farm family income	DES, RVSKVV, Gwalior
2.	December 11-13, 2017	RVSKVV, Gwalior	Training of Trainers on Skill Development	ICAR-ATARI, Jabalpur
3.	13-14 March 2018	ICAR-CIAE Bhopal	Enhancing farm income through farm mechanization and custom hiring entrepreneurship	DES, RVSKVV, Gwalior
4.	20-21, March, 2018	KVK, Datia	Integrated farming system concept, models and approaches for Enhancing the farmers Income	DES, RVSKVV, Gwalior

5.9.5 Swatch Bharat Abhiyan: Swachchta Diwas and activities on keeping India clean were organized in all Krishi Vigyan Kendras under 'Swachcha Bharat Abhiyan' in which farmers and farm women were conveyed the message of cleanliness.

6. LIBRARY AND DOCUMENTATION SERVICES:

Library system of different constituent Colleges of Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior continued to play the pivotal role in dissemination of information across the University.

Entire academic community continued to harness the benefits of this useful information system. Textbooks, Reference books, Competitive examination books, digital library e-books, scientific periodical, thesis, report, encyclopedias, CDs relevant to teaching and research activities etc. have been stocked in the library of constituent Colleges of the University.

Books and Journals available:

S.No.	Particulars	No. of books
1.	Total No. of books available in different College Library of Vishwa Vidyalaya.	127362
2.	New books purchased during 2017-18	7273
3.	*e*-Books	139

Central Library: The fund provided by ICAR has been utilized by the Central Library of the University. The much awaited and highly needed books on various subjects have been purchased. The basic infrastructural facility has been developed that has made the academic atmosphere of the libraries more conductive for the research scholars, students and teachers alike. The computerization of all the e-libraries of Vishwa Vidyalaya has made the functioning smoother now, therefore each and every user is assisted promptly. The e-library is fully functional connecting the local user through World Wide Web to the global scenario of knowledge. The good quality book cases keep study material safe and intact, and the comfortable furniture is a kind of great relief to the voracious readers. There are 12557 books (Textbooks & Reference books) of Agriculture, Horticulture, Animal Husbandry and other disciplines are available in Central Library of the University.

7. INFRASTRUCTURE DEVELOPMENT:

a) College of Agriculture, Gwalior:

S.No.	Department	Infrastructure Development
1.	Agril. Engineering	30 practical models of Farm Machinery and Post Harvest Technology equipments have been installed for development of lab to make practical's more effective.

b) College of Agriculture, Indore: Nil

c) RAK, College of Agriculture, Sehore: Nil

d) BM, College of Agriculture, Khandwa: The vision of the Institute is to "ensure good governance, flawless administration and sound human resource management to harness the full potential of the staff and the students so as to transform a process driven institution into a result oriented organization".

1) Ambedkar Hall (Conference Hall)

A newly built conference hall with a sitting capacity of 75, was inaugurated by Hon'ble Vice Chancellor RVSKVV, Dr S.K. Rao with the name "Ambedkar Hall".

Conference Hall

2) Soil Science lab

3) Pathology Lab

4) Gym strengthening: Physical exercise is important for maintaining physical fitness and can contribute positively to maintaining a healthy body. College also has a Gymnasium with latest machines like Cardio Equipment, strength equipment, Treadmill, Rehabilitation Upright Bike, Massager etc. Sports complex and Gym is presently

used by students as well as by the staff for activity requiring physical effort, carried out to sustain or improve health and fitness. New Machines and other health equipments are purchased in order to strengthen Gymnasium.

5) Organic Turmeric Processing Unit: It is established at Cotton Research Centre, Khandwa. Organic turmeric is produced in the farm and this unit will help us in processing it to the final value added product. Good quality of organic turmeric is a great source of "*Curcumin*" which is good for health.

Organic Turmeric Farming and Processing Unit


6) **Madhav Gaushala:** This is cattle husbandry unit with 70 cattle's at cotton research centre and is known as "Madhav Gaushala". It is a large source of cow dung provider, which is supplied in making vermin-compost.


The development works carried out at Gaushala.

- Construction of Cattle Shed.
- Construction of grass godown.
- Compound wall.

7) Hydroponic Unit: Hydroponic unit at cotton research centre provide green fodder for the cattle in the *Madhav Gaushala*. It Optimizes the general health and performance of animals and livestock, while minimizing feed costs. The Fodder Pro Feed System allows you to grow your own nutrient-rich fodder at minimal cost. Hydroponic systems also reduce water waste and the amount of natural resources needed to grow while allowing complete control over climate, nutrients and growing conditions.

Hydroponic unit at cotton research centre

e) College of Horticulture, Mandsaur:

S.No.	Facility developed	Qty	Amount (Lakh)
1	Water Cooler	1	0.19990
2	Routinely used consumable sports goods like Bedmenton rackets, Volleyball, Cricket bat and stumps.	-	0.19909
3	Desktop	3	0.95670
4	Laptop	2	0.87780
5	Colour Printer	3	0.32670
6	B/w Printer	4	0.63560
7	Invertor	1	0.37200
8	Battery	2	
9	Invertor	1	0.37200
10	Battery	2	
11	Railwair internet and Wi-fi System	1	0.87300*

8. GENERAL ADMINISTRATION AND FINANCE:

8.1 **General Administration:** The Board of Management (BoM) of RVSKVV is the apex-body, empowered to make policy decisions with the Vice-Chancellor as its Chairperson who is also the Executive Head of the University. The composition of BoM is given below:

BOARD OF MANAGEMENT

S. No.	NAME AND ADDRESS OF MEMBERS
1	Principal Secretary Farmer Welfare and Agriculture Development MP Govt., Mantralaya, Vallabh Bhawan, Bhopal (M.P.)
2	Secretary Department of Finance MP Govt., Mantralaya, Vallabh Bhawan, Bhopal (M.P.)
3	Dr. N.S. Rathore Deputy Directore General (Agril. Eduaction) ICAR, KAB-II, Pusa, New Delhi
4	Dr. Vijay Singh tomar Ex. Vice-Chancellor (RVSKVV/JNKVV) DH-33 A, DD Nagar, Morar, Gwalior (M.P.)
5	Dr. O.P. Mathuriya Agriculture Scientist C-333, Kailash Vihar, AV-1 Kalyanpur, Kanpur-208017 (U.P.)
6	Dr. Sushil Kumar Piyashi Agril. Engineear (SWE) College of Agriculture Engineering Aadhartal, Jabalpur (M.P.)
7	Sh. Praveen Kumar Shinde F-108/29, Shivaji Nagar, Bhopal (M.P.)
8	Sh. Shivraj Sharma Bal Niketan Road Gandhi Colony, Morena (M.P.)
9	Sh. Ranjeet Singh Rana H-32, Purani Court Ghasmandi, Morar, Gwalior (M.P.)
10	Dr. Sunanda Singh Raghuwanshi E-7/59, SBI Colony, Arera Colony, Bhopal (M.P.)

ACADEMIC COUNCIL

The Academic Council is vested with the responsibility of implementing and monitoring all the academic programmes. The council is headed by the Vice-Chancellor, as chairperson and consists of Dean Faculty, Director Instructions, Director Research and Director Extension, University Head of Departments and Professors as members. The composition details are given below:

S. No.	NAME AND ADDRESS OF MEMBERS	OFFICIALS
1	Dr. S.K. Rao Vice-Chancellor RVSKVV, Gwalior	**Chairman**
2	Dr. Mridula Billore Dean, Faculty of Agriculture RVSKVV, Gwalior	Member
3	Dr. B.S. Baghel Director, Research Services RVSKVV, Gwalior	Member
4	Dr. R.N.S. Banafar Director, Extension Services RVSKVV, Gwalior	Member
5	Dr. A.K. Singh Director, Instructions and Dean, Student Welfare RVSKVV, Gwalior	Member
6	Dr. A.K. Singh Managing Director, National Horticulture Board Ministry of Agriculture and Farmer Welfare, Govt. of India 85, Institutional Area, Sector-18, Gurgaon-122012 (HR)	Member
7	Dr. Rajpal Singh Former Professor and Head 278-A, Durgesh Vihar, J.K. Road, Bhopal-462041 (M.P.)	Member
8	Shri D.L. Kori Registrar, RVSKVV, Gwalior	**Member Secretary**

ADMINISTRATIVE COUNCIL

S. No.	NAME AND ADDRESS OF MEMBERS	OFFICIALS
1	Dr. S.K. Rao Vice-Chancellor RVSKVV, Gwalior	**Chairman**
2	Dr. Mridula Billore Dean, Faculty of Agriculture RVSKVV, Gwalior	Member
3	Dr. B.S. Baghel Director, Research Services RVSKVV, Gwalior	Member
4	Dr. R.N.S. Banafar Director, Extension Services RVSKVV, Gwalior	Member
5	Dr. A.K. Singh Director, Instruction and Student's Welfare RVSKVV, Gwalior	Member
6	Two Dean colleges nominated by the Vice-Chancellor for a period of two years by rotation- 1. Dean, College of Agriculture, Gwalior. 2. Dean, College of Agriculture, Indore.	Member
7	Dr. (Smt.) Sugandhi Tiwari Comptroller RVSKVV, Gwalior	Member
8	Dr. H.S. Bhadauria Executive Engineer/In-charge of Work section RVSKVV, Gwalior	Member
9	Two Heads of Department from Agriculture Faculty by rotation according to the seniority for a period of two year- 1. Head of Department (Extension Education). 2. Head of Department (Genetics Pl. Breeding).	Member
10	Shri D.L. Kori Registrar, RVSKVV, Gwalior	**Member Secretary**

9. IMPORTANT EVENTS/INAUGURATIONS:

Fourth Convocation:

The Fourth Convocation of the Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior was held on July 29, 2017. Hon'ble Governor of Madhya Pradesh and Chancellor of Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior Shri Om Prakash Kohli presided over the function. Shri Gauri Shankar Bisen, Hon'ble Minister, Department of Farmers' Welfare and Agriculture Development, Govt. of Madhya Pradesh was the Guest of Honour, while Dr. Trilochan Mahapatra, Secretary, Department of Agricultural Research and Education & Director General, Indian Council of Agricultural Research, New Delhi graced the occasion as Chief Guest. Hon'ble Members of Board of Management and Academic Council, Directors, Deans, Faculty members, Staff, Distinguished guests, recipients of Degrees graced this event. On this occasion Dr. Trilochan Mahapatra delivered the convocation address. The Convocation ceremony began with the academic procession comprising of Hon'ble Governor, Special Guest of Honour, Vice-Chancellor, Members of Board of Management and Academic Council of the University led by the Registrar; walked the aisle in College of Agriculture Auditorium. In the Convocation, a total of 549 students were conferred UG, PG and Ph.D. degrees, four students received **Gold Medals** and three students were honoured with, **"Sirtaj Bahadur Sinha Memorial"** Cash Prize.

NEW INDIA MANTHAN: Sankalp se Siddhi, 10th Foundation Day of University and World Honey Bee Day

The **New India Manthan: Sankalp se Siddhi, 10th Foundation Day of University and World Honey Bee Day** were celebrated on August 19, 2017 in the gracious presence of **Hon'ble Shri Sudarshan Bhagat, Union Minister of State, Agriculture and Farmers Welfare, Govt. of India** as chief guest of the function. **Shri Gauri Shankar Bisen, Hon'ble Minister, Farmer Welfare and Agricultural Development**, Govt. of M.P**.** as Special Guest. The programme was presided over by Prof. Panjab Singh, Hon'ble Chancellor, Rani Laxmi Bai Central Agricultural University, Jhansi (U.P.).

- **Inauguration of Rice Laboratory at Bagwai:** Rice laboratory at Regional Agricultural Research Station, Bagwai was inaugurated by Hon'ble Board Member and MLA, Bhitarwar (Gwalior) Shri Lakhan Singh Yadav and Prof. A.K. Singh, Hon'ble Vice Chancellor, RVSKVV, Gwalior on June 22, 2017 in gracious presence of Dr. H.S. Yadav, Director Research Services, Dr. Y.M. Kool, Director Planning and Farm Development, Dr. R.L. Rajput, Director Farm and Dr. J.P. Dixit, Dean College of Agriculture Gwalior.

- **Hon'ble Governor Shri Om Prakash Kohli,** Madhya Pradesh inaugurated **Bio-technology Centre** on July 29, 2017 in the presence of **Shri Gauri Shankar Bisen,** Hon'ble Minister, Department of Farmers' Welfare and Agriculture Development, Govt. of M.P. and **Hon'ble Prof. Trilochan Mohapatra,** Secretary, DARE and DG, ICAR, New Delhi.

SEMINAR/ SYMPOSIA/ WORKSHOPS/ CONFERENCES/ MEETINGS ORGANIZED:

- **Annual Group Meet of AICRP - Chickpea:** The 22nd Annual Group meet of AICRP-Chickpea was organized by the AICRP-Chickpea main Center, R.A.K. College of Agriculture, R.V.S.K.V.V., Sehore during August 28-30, 2017 at ICAR-CIAE, Bhopal. The group meet was inaugurated by the Hon'ble Vice Chancellor of Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya (RVSKVV), Gwalior by lighting the lamp.

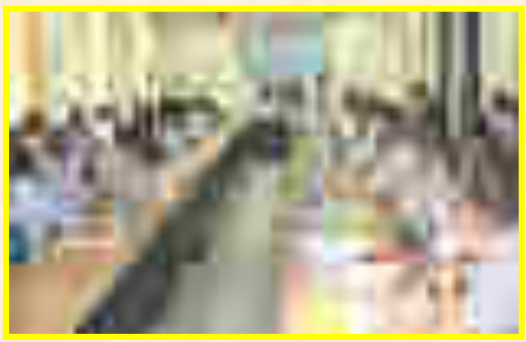
- **Annual Group Meet on, "Pulses for spring, summer and Rice Fallow cultivation comprising the crops of Mungbean, Urdbean, Cowpea and Guar":** Annual Group Meet was held at Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior during November 10 – 11, 2017. In this group meet, more than 70 participants from different ICAR Institutes, State Agricultural Universities and research centers participated in the two days programme. The progresses of research in the important pulse crops for last one year were reviewed, while technical programmes were formulated for the coming spring/ summer season. Prof. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior, Dr. A.K. Singh, Hon'ble Ex. Vice Chancellor, RVSKVV, Gwalior; Dr. I.S. Solanki, Assistant Director General (Food and Fodder Crops), ICAR, New Delhi and Dr. N.P. Singh, Director, ICAR - IIPR, Kanpur, Dr. Shiv Sewak, Nodal Scientist (Arid Legumes), ICAR – IIPR, Kanpur and Dr. Sanjeev Gupta, Project Coordinator (MULLaRP), ICAR-IIPR, Kanpur reviewed the programme and made critical comments. Likewise the project co-coordinators formulated the detailed technical programmes and included new genotypes and technologies for evaluation. In this series, the meeting of Varietal Identification Committee was also held on November 10, 2017 and one **cowpea variety (TC-901)** was identified for release and general cultivation. Recommendations were also made on major technologies.

WORKSHOP ORGANIZED

- **Workshop on public finance management system (PFMS):** Directorate of Extension Services organized two one-day workshops on Public Finance Management System (PFMS) on September 6, 2017 at Gwalior and on September 8, 2017 at College of Agriculture, Indore. The workshops were organized for the Drawing and Disbursing Officers (DDOs) and Heads of KVKs to inform them about the use and functioning of PFMS system to cashless finance management.

- **Zonal Workshop of KVKs under ICAR, Zone VII (MP, CG and Odisha) at KVK, Burhanpur:** All the senior scientist and heads of KVKs under the jurisdiction of RVSKVV participated in the Zonal Workshop of KVKs under ICAR, Zone VII (MP, CG and Odisha) at KVK, Burhanpur during November 24-26, 2017. The workshop was organized by the Director, ATARI, Zone IX, Jabalpur. This workshop was chaired by Smt. Archana Chitnis, Hon'ble Minister, Woman and Child Development, Madhya Pradesh and Dr. Trilochan Mahapatra, DG, ICAR & Secretary DARE was the chief guest of the workshop. The progress of KVKs during 2016-17 and their plan for doubling the farmers income were discussed in the workshop in the presence of Dr. S. K. Rao, Hon'ble Vice Chancellor, RVSKVV and Dr. S. K. Srivastava, Director of Extension Services.

- **Workshop on formulation of Action Plans 2017-18 for Doubling the Farmers' Income by 2022"** was organized for the KVKs under RVSKVV by the Directorate of Extension Services, RVSKVV, Gwalior on May 8-9, 2017. The action plan of the KVKs for the year 2017-18 in context of doubling the farmers/ income by 2022 was discussed and reviewed by Dr. S.R.K. Singh, Principal Scientist (Agri. Extension), ATARI, Jabalpur and Dr. S. K. Srivastava, Director Extension Services and other experts.

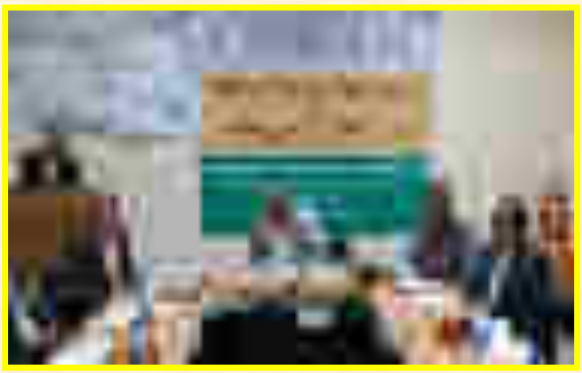


- **"Nutri smart village concept workshop"** was organized at KVK Datia campus in May 25, 2017. Representatives from different departments *viz;* FWA, Horticulture, ATMA, Aanganwadi, ASA, CDPO and farmers participated in this programme. Relevant information was delivered through presentations in workshop by the KVK scientists on different aspects of nutritional security.

- A seven days training program on, **"Development of Climatic Risk Management tools in Agriculture Using Extended Range Forecast"** was organized by College of Agriculture, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (M.P.) during September 18-24, 2017 in collaboration with the Indian Institute of Technology (IIT), Bhubaneswar and Indian Meteorological Department (IMD), New Delhi. The Programme was inaugurated by Prof. A.K. Singh, Hon'ble Vice Chancellor, RVSKVV, Gwalior.

- University organized two five-days training programmes on, **"Agro forestry for enhancing the farmers Income"** under the programme of doubling the farmer income by 2022 during October 09-13, 2017 and November 23, 2017 at KVK, Gwalior. The participants of these training were the officers of the Department of Farmers Welfare and Agriculture Development, Govt. of Madhya Pradesh.

- **"Training for Trainers" for Skill Development Training on seed production technologies"** was organized on Dec. 11, 2017 by Agriculture Skill Council of India (ASCI) at the Directorate of Extension Services, RVSKVV, Gwalior. A total 31 participants from different states of the country participated in the programme. Hon'ble Vice chancellor Dr. S. K. Rao chaired the session of inaugural programme in presence of Dr. R.N. Singh Banafar, Director Extension Services; Dr. Manzoor Alam, ASCI, Dr. Keshwa, Principle Scientist, Agriculture Extension, ICAR, New Delhi.



KRISHAK SANGOSTHI AND KISAN MELA ORGANIZED:

- Krishi Vigyan Kendra, Mandsaur organized Kisan Mela on May 18-20, 2017 in its campus. Hon'ble Shri Gaurishankar Bisen, Minister, Farmer Welfare and Agriculture Development, Madhya Pradesh was the chief guest and Dr. H. Patidar, Dean, College of Horticulture, Mandsaur graced this occasion.

- University organized the, **'Krishak Sangosthi"** at College of Agriculture, Indore on Sept. 23, 2017. Dr. Trilochan Mahapatra, DG, ICAR and Secretary DARE was the chief guest and Dr. A.K. Singh, Hon'ble Vice Chancellor was the Chairman of the programme. Director Extension Service and other officials from the directorate were present during the programme.

- **Krishak Sangosthi on Processing and Usage of Onion and Garlic:** NHRDF, Indore organized a state level Krishak Sangosthi during Dec. 8-9, 2017 on processing and usage of onion and garlic at College of Agriculture, Indore. Hon'ble Vice Chancellor Dr. S.K. Rao chaired the programme and Dr. R.N.S. Banafar, Director Extension Services, RVSKVV, Gwalior was the special guest of the programme.

AWARDS AND RECOGNITIONS

- Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare, Govt. of India awarded Dr. I.S. Tomar, ADR, ZARS and Senior Scientist & Head of Krishi Vigyan Kendra, Jhabua and Dr. R.K. Yadav, Scientist with, **"Fakhruddin Ali Ahemad Award-2016"** in the gracious presence of Shri Sudarshan Bhagat, Hon'ble Union Minister of State, Agriculture and Farmers Welfare, Govt. of India and Prof. Trilochan Mohapatra, Hon'ble Secretary, DARE and DG, ICAR, New Delhi on the occasion of 89th Foundation Day of ICAR, New Delhi **on July 16, 2017.**

- Dr. S.C. Gupta, Principal Scientist (Soil Science), AICRP-Chickpea main centre Sehore has been conferred Indian Society of Pulses Research and Development (ISPRD) **recognition award for the year 2017** for his outstanding contribution in the field of NRM at ICAR-IIPR, Kanpur on Dec. 2, 2017.

- 33rd M.P. Young Science Congress of M.P. Council of Science & Technology was organized at Rani Durgawati University, Jabalpur during 15th-16th March, 2018, in which Smt. Pooja Singh, Assistant Professor, RVSKVV, RAK College of Agriculture Sehore has been awarded as the M.P. Young Scientist (1st prize) in the field of Agricultural Sciences.

- **Visit Abroad :** Prof. S.K. Rao, Hon'ble Vice Chancellor attended workshop on Grain Legume and Dryland Cereal Seed Systems Strategy Development organized by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) from Nov. 30, 2017 to Dec. 1, 2017 in Nairobi, Kenya with a focus on the Grain Legumes and Dryland Cereals (GLDC) crops.

- **Prominent Visitor: Visit of Madhya Pradesh Vidhan Sabha Krishi Vikas Samiti** Shri Kedar Shukla, Hon'able Chairman, Madhya Pradesh Vidhan Sabha Krishi Vikas Samiti and MLA, Sidhi with Shri Nararayan Singh Kushwah, Hon'ble MLA, Gwalior and team members, Dr. S.K. Rao, Hon'ble Vice Chancellor, RVSKVV, Gwalior, Dr. B.S. Baghel, Director Research Services, Dr. R.L. Rajput, Director Instruction visited Agro-technology Park, Krishi Vigyan Kendra, Gwalior on Oct. 28, 2017. The team appreciated the work of KVK in transfer of improved crop technologies and promotion of horticulture in the district. The team also interacted with trainees in training programme on, "Nursery management Technique" at KVK, Gwalior.

- Dr. T. Mahapatra, Secretary, DARE & DG, ICAR along with Dr. A.K. Singh, D.D.G. (Agril. Extension), ICAR; Dr. Anupam Mishra, Director, ATARI, Jabalpur and Dr. S.K. Srivastava, DES, RVSKVV visited College of Agriculture Khandwa on Nov. 26, 2017. They visited and inspected the facilities provided in the College, KVK, hostels (Boys and Girls) and Cattle Farm.

10. HUMAN RESOURCE DEVELOPMENT:

Participation of Scientist in National/International Seminars/Symposia/ Conferences/ Short term Courses /Trainings/Workshops/Summer and Winter Schools etc.

S. No.	Title of training	No. of participants nominated
1.	Summer/Winter Schools	15
2.	National/International/Seminars/Symposia/Conference	19
3.	Short term courses	-
4.	Workshop	16

11. AWARDS AND RECOGNITIONS:

S. No.	Name of Person	Name of the Award	Awarding Organization
1	Dr. G.S. Rawat	Krish iVigyan Gaurav(2017)	Bhartiya Krishi Anushandha Samiti, Karnal
2	Dr Ekta Joshi	Best poster award	International conference on GRISAAS-2017 during 02-04 December 2017 held at MPUAT, Udaipur (Rajasthan)
3	Dr Ekta Joshi	Scientist of the year award	International Conference "GRISAAS" held at MPUAT, Udaipur during 2–4 December, 2017
4	Dr Ekta Joshi	Appreciation Certificate	On the occasion of teachers day for outstanding research and excellent teaching by "Jan Utthan Nyaas Society Gwalior" on 5th September, 2017
5	Dr. Deep Singh Sasode	Excellence in Research Award	Astha Foundation during International Conference on "Global research initiatives for Sustainable Agriculture and Allied Sciences (GRISAAS-2017)" during 2-4 December, 2017 held at MPUA&T, Udaipur (Rajasthan)
6	Dr. Deep Singh Sasode	Distinguished Scientist Award	All India Agrcultural Student Association (AIASA) during 2nd National Agriculture Convention on "Agricultural Skill Development for Doubling Farmers Income" on 7th October, 2017 at RAJUVAS, Bikaner (Rajasthan).
7	Dr. Deep Singh Sasode	Appreciation award	Best research and excellent teaching on the occasion of teacher's day by "Jan Utthan Nyaas Society Gwalior" on 5th September, 2017.
8	Dr. Varsha Gupta	Young Scientist Award	Agricultural Technology Development Society (ATDS) Ghaziabad, UP, during International Conference on Advances in Agricultural and Biodiversity

			Conservation for Sustainable Development (ABCD - 2017) 27 – 28 October, 2017.
9	Dr. Varsha Gupta	Appreciation award	Best research and excellent teaching on the occasion of teacher's day by "Jan Utthan Nyaas Society Gwalior" on 5th September, 2017.
10	Dr. Varsha Gupta	Scientist of the Year	Astha Foundation during International Conference on "Global research initiatives for Sustainable Agriculture and Allied Sciences (GRISAAS-2017)" during 2-4 December, 2017 held at MPUA&T, Udaipur (Rajasthan).
11	Ekta Joshi, Deep Singh Sasode and Varsha Gupta	Best poster award	The National Forage Symposium 2017" at RVSKVV, Gwalior on March, 3-4, 2017
12	Dr. Narendra Singh Gurjar	Young Scientist	Aastha Foundation
13	Dr. Priyadarshini A. Khambalkar	Best oral Full Paper Presentation	3rd International Conference Biresource & Stress Management 8-11 Nov. 2017
14	Dr. S.P.S. Tomar	Outstanding young person award for the year 2017	JCI Gwalior on dated 18th April, 2017.
15	Dr. R.S. Sikarwar	Scientist of the Year	GRISAAS Udaipur ,Dec,02-04,2017
16	Dr. Sushma Tiwari	Scientist of the Year	GRISAAS Udaipur ,Dec,02-04,2017

17. **R. K. Singh** received certificate of fellowship by Indian society of pulse research and development on Dec, 04, 2017.
18. **R. K. Singh** received best poster award in national symposium on challenges and opportunities management of plant disease under weather change and central zone meet of IPS held on Dec. 14-15, 2017 organized by JNKVV, Jabalpur and Indian Phyto pathological society, New Delhi.
19. **Dr. S.C. Gupta,** Principal Scientist received the ISPRD recognition award for outstanding contribution in pulses research under National Resource Management Category through IIPR (ICAR), Kanpur.
20. **Smt. Pooja Singh,** Assistant Professor, received the M.P. Young Scientist award (1st prize) 2018, in the field of Agricultural Sciences from M.P. Council of Science & Technology.

21. **Dr. P.P. Shastry, Dean, COA, Khandwa** was honoured with ***"Professional Excellence Award"*** for his outstanding contribution in Cotton research by the Hon'ble Governor of Meghalaya, Shree Ganga Prasad in an International Congress, organized by Cotton Research & Development Association, Hisar, at Barapani, Meghalaya on 20th February, 2018. Dr Shastry has devoted 28 years in cotton research & development and also played an important role in the introduction of Bt Cotton in M.P.
22. Excellence in Extension Award to Dr D.K.Vani at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.)
23. Excellence in Extension Award to Dr Mukesh Gupta at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.)
24. Young Scientist Award to S. K. Arsia at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.) and Society of Scientific Development in Agriculture and Technology, Meerut, U.P.
25. Young Scientist Award to M.K. Kureel at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.) and Society of Scientific Development in Agriculture and Technology, Meerut, U.P.
26. Scientist Associate Award to Dr Rashmi Shukla at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.)
27. Young Scientist Award to Ashish Bobade at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.)
28. Excellence in Teaching (English) Award to Dr. O.P. Sharma at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.) and Society of Scientific Development in Agriculture and Technology, Meerut, U.P.

29. Young Scientist Award to Dr. Sourav Gupta at International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) held at MPUAT, Udaipur (Raj.), 02-04 December. Organized by Astha Foundation, Meerut (U.P.) and Society of Scientific Development in Agriculture and Technology, Meerut, U.P.
30. Best Oral Presentation Award to Dr. Sourav Gupta at International conference on advances in agricultural and applied sciences for promoting food security, Kathmandu, Nepal, 13-15 May. Organized by SAID, Ranchi (Jharkhand)
31. Best M.Sc. (Ag.) Entomology Thesis award to Dr. Shahin Khan during 02 to 04 December 2017 by SSDAT, Meerut on the occasion of International conference on Global research Initiatives for sustainable agriculture at Udaipur.
32. Dr. R.K. Sharma received "Young Scientist Award" in the field of Vegetable Science by Astha Foundation on the occasion of International Conference on "Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017)" during 2-4 December, 2017 held at MPUAT, Udaipur (Raj.)
33. Dr. R.P. Ptel received excellent in teaching award on occasion of International conference on Global research initiatives for sustainable agriculture & allied science (GRISAAS-2017) DURING 02-04-December, 2017 held at Maharana Pratap University of Agriculture & Technology, Udaipur, Rajasthan (India)
34. Dr. K.C. Meena received Young Scientist award 2017 on the occasion of International Conference on Advances in Agricultural and Biodiversity Conservation for sustainable development (ABCD-2017) during 27-28 October, 2017 at C.C.S University, Meerut, Uttar Pradesh, India.
35. Dr. K.C. Meena received Young Scientist award 2017 on the occasion of International Conference on Advances in Agricultural and Biodiversity Conservation for sustainable development (ABCD-2017) during 27-28 October, 2017 at C.C.S University, Meerut, Uttar Pradesh, India.
36. Second best poster award- Damar, Usha; Sharma, R. K.; Kushwah, S. S. and Singh, O. P (2017). Effect of varieties, organic manures and inorganic fertilizers on growth, yield and quality of okra (Abelmoschus esculentus L.). Abstract in international conference on "Global research initiatives for sustainable agriculture & allied sciences (GRISAAS-2017)" held from 02–04 December 2017 at MPUAT, Udaipur, Rajasthan by Astha Foundation, Meerut (Uttar Pradesh) India.
37. Dr. Anuj Kumar received 2nd prize in poster presentation at GRISAS, 2017 by Astha Foundation, Meerut on 02 to 04 Dec, 2017. at MPUAT, Udaipur (Raj)
38. Dr. Roshan Gallani received the best poster presentation award titled "Effect of varieties and nutrient levels on growth, yield, quality and nutrient uptake of cauliflower (Brassica oleracea var. botrytis L.) at Malwa region of M.P." at International seminar on "Global research initiatives for sustainable agriculture and allied science" held at MPUAT, Udaipur during December, 02-04, 2017.
39. Dr. K.C. Meena received Best Poster presentation Award 2017 in an International conference on global research initiatives for sustainable agriculture & allied sciences (GRISAAS-2017) during 02-04 December 2017 at Maharana Pratap

University of Agriculture & Technology, Udaipur, Rajasthan.

40. Er. Rajesh Gupta, Scientist, KVK, Mandsaur received "Distinguished Scientist Award 2017" from Green Reap Welfare Society at Indian Institute of Rice Research (IIRR), Rajendranagar, Hyderabad.

41. Er. Rajesh Gupta, Scientist, KVK, Mandsaur received KVK Scientist Award 2018 from Samagra Vikas Welfare Society at Babasaheb Bhimrao Ambedkar University, Lucknow (U.P.).

12. VISITS ABROAD:

S. No.	Name of Person	Place	Date
1	Dr. M. Yasin	Maraakesh	6-9 May 2018 VII International Food Legume Research conference
2	Dr. A.N. Tikle	Icrised	December 2017 International crops genomic conference

13. Distinguished Visitors:

i. Distinguished Visitors at RVSKVV, Gwalior:

S. No.	Name	Designation	Date
1	Dr. M.K. Nema	Prof & HoD (Retd), JNKVV, Jabalpur	09-05-2017
2	Dr. B.S. Tomar	Principal Scientist (Seed Technology) & Head, Division of Vegetable Science,	26-07-2017
3	Dr. S. Mukharji	Professor, Parashwa Nath Colony, Swaran Path (Janpath), Behind Punjabi Dhaba, Nirman Nagar, Jaipur- 302019	10-08-2017
4	Dr. S.K. Singh	Head Division of Fruits, IARI, New Delhi-110012	28-08-2017
5	Dr. R.A. Koushik	Director Residencial Instruction Maharana Pratap University of Agricultural In Technology, Udaipur-313001	14-09-2017
6	Dr. B.S. Tomar	Principal Scientist (Seed Technology) & Head, Division of Vegetable Science, ICAR, New Delhi- 110012	12-10-2017
7	Dr. M.K. Nema	Prof & HoD (Retd), JNKVV, Jabalpur	07-11-2017
8	Dr. R.M. Sharma	Principal Scientist, IARI, New Delhi	27-12-2017
9	Dr. V. Nachegowda	Director Research, University of Horticultural Sciences, Udyanagiri, Bagalkot-587102 (Karnataka)	31-01-2018
10	Dr. Vikramaditya Pandey	Principal Scientist, Department of Horticulture, Horticultural Science Division, Krishi Anusandhan Bhawan-II, ICAR, Pusa, New Delhi-110012	24-03-2018
11	Dr. P.K. Singh,	Director, DWR, Jabalpur	
12	Dr. D.V.Singh	EX, Head, Plant Pathology, IARI,NewDelhi	13.04.2017

13	Dr. M.N.Khare	Ex, Dean JNKVV, Jabalpur	13.04.2017
14	Dr. M.N.Khare	Ex, Dean JNKVV, Jabalpur	30.08.2017
15	Dr.K.D.Shrivastava	Ex-Head Department of Plant Pathology, IARI, New Delhi.	08.09.2017
16	Dr. Rashmi Agrawal	Head Department of Plant Pathology, IARI, New Delhi.	25.09.2017
17	Dr. M.N.Khare	Ex, Dean JNKVV, Jabalpur	12.10.2017
18	Dr. R.K.Dantre	Professor, IGKVV,Raipur	06.02.2018
19	Dr. B. Gangwar	Ex.Director IIFSR, Modipuram, Meerut	06/02/2018
20	Dr. Muneshwar Singh	PI, LTFE, IISS, Bhopal	15/02/2018
21	Dr. Pradip Dey	P.S. (STCR) IISS, Bhopal	16/02/2018
22	Dr. Usha Kiran Chopra	Ex. HOD, IARI, New Delhi	13/02/2018
23	Dr. Khemchand	HOD, Division of Social Science, IGFRI, Jhansi	09/02/2018
24	Dr. V.S. Tomar	Ex. V.C., JNKVV, Jabalpur	02/02/2018
25	Dr. G.P. Verma	Ex. DRS, JNKVV, Jabalpur	05/02/2018
26	Dr. O.P. Aishwath	P.S., IISR, Ajmer, Rajasthan	07/02/2018
27	Dr. Subhashini	P.S., CPCRI, Kerala	16/02/2018
28	Dr. Arvind Kumar Rai	P.S., ICAR, CSSRI, Karnal	15/02/2018
29	Dr.V.Chinnaswami	Professor	08/06/2017
30	Dr.V.V.Patil	Ex. V.C, Raichur	05/08/2017
31	Dr. D.N. Bhardwaj	Ex, Professor, Kanpur	16/10/2017
32	Dr. D.N. Bhardwaj	Ex, Professor, Kanpur	19/01/2018

33. Dr. T. Mohapatra D.G., ICAR, along with Dr. A.K.Singh D.D.G., (Agril. Extension) ICAR, Dr. Mishra Director, ATARI Jabalpur and Dr. S.K. Shrivastav, DES, RVSKVV visited the College Campus at Khandwa on 26/11/2017. They visited and inspected the facilities provided in the college, KVK, Hostels (Boys and Girls) and Cattle Farm. He was happy and was impressed with the clean and well equipped College Class rooms, Labs and Campus Khandwa.

(D.G (ICAR) at Sports complex and Boys Hostel at B.M. College of Agriculture, Khandwa)

34. Prof. S. K. Rao, Hon'ble Vice Chancellor of RVSKVV, Gwalior visited College of Agriculture, Khandwa on 13/11/2017. He also visited Sports Complex, KVK, Farm, Girls and Boys Hostel. He inaugurated Boys hostel "Shishir" in college premises. He also inaugurated Soil Science Lab and Video Conferencing facility. Prof. Rao also visited Cotton Research Centre, Organic farm initiatives, etc. He appreciated and was delighted with the college environment.

35. Dr. A.S. Rajput Director Regional Center of Organic Farming, Nagpur Visited on 25/11/2017 College Campus and Cotton Research Farm.

36. District Collector Smt Swati Meena and Supt. Police Sh Bhasin visited the research farm & Polyhouse.

37. Dr. S.K. Rao, Vice Chancellor, RVSKVV, Gwalior Inaugration of 15 KVA solar electric unit at CoH, Mandsaur.
38. Dr. R.N.S. Banafar, DES, RVSKVV dadted 21-01-18.

39. Dr. Sawant, Director, NRC Grapes, Pune, Dr. R.G. Somkumar, Principal Scientist and Dr. A.K. Upadhyay, Principal Scientist Participation in Grape Day and pre QRT Visit at CoH, MDS dated 06-02-18 to 08-02-18.
40. Dr. Hari Har Ram, Ex-Profeessor and member, Dr. P.Rao, Principal Scientist and Head, CMAP, Bangaluru & member and Dr. N.R.Reddy, Scientist and DMAPR, Anand Visit of QRT team for M & A.P. at CoH, MDS on dated 15 to 17 February 2018.
41. **Prof. Trilochan Mohapatra, DG- ICAR, New Delhi**, Dr. A.K. Singh, Director IARI & DDG – Agril. Extension, Dr. A.K. Singh, Head – Plant Breeding – IARI, Dr. S.K. Rao, Vice Chancellor, RVSKVV, GWL and Dr. Anupam Mishra, Director, ATARI Zone VII to participate in Agri industry meet and exhibition at CoH, MDS on dated 05-03-2018.
42. Dr. R.L. Rajput, DI, RVSKVV, GWL visit PG student trials and convenyed a meeting with PG students at CoH, MDS on dated 8-9th March 2018.
43. Dr. K.N. Nagaich, Dy. DI, RVSKVV, GWL visit PG student trials and convenyed a meeting with PG students at CoH, MDS on dated 8-9th March 2018.
44. Dr. K.V. Prabhu, Chairman, PPV & FRA, visited M&AP and grape project 22-03-18.
45. Dr. S.K. Singh, Head- fruits and Horticutural Technology, IARI to deliver guest lecture to the students at CoH, MDS on dated 22-03-18.
46. Sh. Yash Pal Singh Sisodiya, MLA, Mandsaur to State level seminar on M& AP at CoH, MDS dated 28-03-2018.
47. Dr. B. Mishra, Reader, IIT, Roorkee to deliver guest lecture to the students on soft skills and personality development at CoH, MDS dated 15 to 17 February 2018.

14. PUBLICATIONS:-

Research papers/Abstract (Presented & Published)/Books/Book Chapters/ Teaching Manual/ Popular Articles etc.

S. No.	Category of publication	Nos
1	Papers Published in National and International Journals	142
2	Research paper presented in the seminar/ Souvenir	16
3	Abstract Published in Seminar/Symposia/Conferences	25
4	Books	7
5	Book Chapters	8
6	Teaching Manuals	20

14.1 Papers Published in National and International Journals:

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
1	Bajpai, Rashmi and Vasure, Narendra	Role of acidity on processing of different Karonda products (Jam, Jelly, Squash, Candy) during storage periods	Agriculture Update	8		2017	5.2			National
2	Dangi, Ajay, Tomar, K.S., Kashyap, Arjun, Raghuwanshi, Kalyan and Jatav, Pratibha	Response of Growth regulator on rooting and survival percentage of acid lime [Citrus aurantifolia (Christm.) Swingle]	Eco. Env. & Cons	23 (September Suppl.)	S178-S181	2017	4.89		0971-765X	International
3	Gangrade, D., Bajpai, R., Vasure, N. and Kumar, G.	Effect of foliar spray of urea and boron on growth parameters of guava(Psidium guajava L.) var. Shweta	Multilogistic in science	VII special issue	343-344	2018	5.2		2277-7601	International
4	Jatav, Pratibha, Barholia, A.K., Kashyap, Arjun, Raghuwanshi, Kalyan Singh, Bauskar, Ankit and Dangi Ajay	Effect of different concentration of growth regulators and rooting media on rooting of air layers of guava (Psidium guajava L.) cv. Gwalior-27 under gird region of M.P.	Eco. Env. & Cons.	23 (September Suppl.)	S100-S103	2017	4.89		0971-765X	International
5	Kashyap, Arjun, Raghuwanshi, Kalyan Singh, Lekhi, R., Jatav, Pratibha and Dangi, Ajay	Response of different concentration of ndole butyric acid and rooting media on callus formation and rooting of air layers in acid lime [Citrus aurantifolia (Christm.) wingle] var. Kagzi lime	Eco. Env. & Cons	23 (September Suppl.)	S96-S99	2017	4.89		0971-765X	International
6	Patidar, Payal and Bajpai, Rashmi	Effect of integrated nutrient management on growth parameters of Brinjal cv. NDBH-6	Multilogistic in science	VII special issue	360-362	2018	5.2		2277-7601	International
7	Raghuwanshi, Kalyan Singh,	Response of different concentration of	Eco. Env. & Cons	23 (Septe	S96-S99	2017	4.89		0971-765X	International

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Singh, K.V., Kashyap, Arjun, Jatav, Pratibha and Dangi, Ajay	ndole butyric acid and rooting media on callus formation and rooting of air layers in acid lime [Citrus aurantifolia (Christm.) wingle] var. Kagzi lime		mber Suppl.)						
8	Wasnik, V.K., Ghosh, P.K, Rawat, G.S., Dixit, J.P., Singh, S.K. and Singh, V.B.	Influence of tillage and weed management practices on productivity of maize in maize berseem cropping system	Progressive Research Journal	12 (3)		2017	3.84			International
9	Wasnik, V.K., Ghosh, P.K, Rawat, G.S., Dixit, J.P. and Singh, S.K.	Productivity of berseem in maize berseem cropping system as influence by tillage and weed control measures	Progressive Research Journal	12 (4)		2017	3.84			International
10	Gupta, Sourav, Tomar, S.S., Rawat, G.S., Kushwah, S.S., Singh, V.B., Arora, Asha and Singh, S.P.	Effect of weed management practices and crop geometries on yield attributes and yield of clusterbean varieties	Progressive Research Journal	12 (2)	206-209	2017	3.84			International
11	Sourav, Gupta, Tomar, S.S., Rawat, G.S., Sahu, Jyotimala, Sharma, R.N., Yadav, Sushil, Kasana, B.S. and Kushwah Artika Singh,	Effect of weed management practices on Economic viability of clusterbean varieties grown at different crop geometries. varieties	Progressive Research Journal	12 (2)	150-153	2017	3.84			International
12	RawatUpama, Rajput, R.L. and Rawat, G.S.	Effect of different varieties and fertilizer levels on yield, yield attributes and quality of clusterbean	BhartiyaKrishiAnusandhanSamiti	32 (1)	23-26	2017	3.07			National
13	Rawat, G.S. and Rajput, R.L.	Improvement of productivity of clusterbean through front line demonstration in northern M.P.	BhartiyaKrishiAnusandhanSamiti	32 (1)	62-63	2017	3.07			National
14	Rawat, Upama, Rajput, R.L. and Rawat, G.S.	Effect of different varieties and nutrient management on productivity, profitability quality and nutrient uptake of clusterbean	BhartiyaKrishiAnusandhanSamiti	32 (2)	95-98	2017	3.07			National
15	Rawat, G.S., Upama Rawat and Rajput, R.L.	Effect of promising varieties of clusterbean on yield attributes, yield and economics in Northern M.P.	Bhartiya Krishi Anusandhan Samiti	32 (2)	99-101	2017	3.07			National
16	Kirar Neha Singh and	Effect of agronomic practices on growth	Bhartiya Krishi	32 (3)	180-182	2017	3.07			National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Rawat, G.S.	and yield of clusterbean	Anusandhan Samiti							
17	Kushwah, Artika Singh, Rawat, G.S., Gupta, Sourav, Patil, Devendra and Prajapati Neelima	Production and profitability assessment of clusterbean based intercropping system under different row aggangement	Legumes Research	40 (5)	916-919	2017	6.12			National
18	Sharma, Kalpana, Rawat, G.S. , Gaur, Dharmendra and Sharma Anju	Effect of post emergence herbicides on weed control, growth and yield of clusterbean in M.P.	Agric. Sci. Digest	37 (3)	179-184	2017	4.21			National
19	Joshi, Ekta, Sasode, D. S., Gupta, Varsha and Tiwari, Sushma	Productivity and profitability of groundnut as influenced by crop geometry and plant nutrition	Annals of Agricultural Research	38 (4)	1-6	2017	4.02			National
20	Tiwari Sushma, Tripathi M.K., Kumar Narendra, Tomar R.S., Joshi Ekta, Tiwari Reshu, Gupta Radha and Singh A. K.	Improvement of Groundnut for Fatty Acids using Marker Assisted Breeding Approaches: A Review	International journal of pure and applied biosciences. Int. J. Pure App. Biosci.	5 (6)	59-63	2017	4.70			International
21	Tiwari Sushma, Kumar Narendra, Tomar R S, Sikarwar R S and Joshi Ekta	Marker Assisted Breeding for Improvement of Groundnut	Frontiers in crop improvement			2017	3.62			National
22	Gupta, Varsha, Sasode, Deep Singh, Kansana, B.S., Arora, Asha, Joshi Ekta and Dixit J.P.	Effect of pre and post emergence herbicides on weed flora in Black gram	Indian Journal of Weed Science	49 (3)	256-259	2017	5.17			National
23	Panse, R.K, Sasode, D.S., Rajak, S.K, Sharama, Satish, Verma, Nandram and Mandloi, Rishikesh	Development and evaluation of pest management modules against Thripstabaci (Lindeman)	Onion Indian journal of ecology, September (2016)	43 Si. 2	832-834	2017	4.96			National
24	Sasode, D.S., Gupta Varsha, Joshi Ekta, Arora Asha, Dixit. J. P. and Panse Raju	Management of composite weed flora of wheat (Triticumaestivum L.) by herbicide mixtures	Indian Journal of Weed Science	49 (2)	147-150	2017	5.17			National
25	Tomar, S S, Singh, Raghuvir,	Effect of different herbicides combination on weed	Journal of Pharmacognosy and	6 SPL	465-469	2017				National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Singh, Ajay, Singh , Adesh, Yadav ,Ashok and Sharma, Janmejay	flora, yield and economics of maize (Zea mays L.)	Phytochemistry							
26	Ajay Singh, Tomar S.S., Sharma, Janmejay, Tomar, Snadeep Singh and Rai Anil kumar	Effect of weed management practices on weeds, yield and economics of mustard	Progressive Research: An International Journal	Vol-12 SPL III	2023-2025	2017	3.84			International
27	Dhanoliya Neelesh, Kumar Dipesh, Jatav Rajesh, Vasure Narendra and Raghuwanshi Pawan	Studies on the succession and incidence shoot gall maker (betousa stylophora) on aonla (Phyllanthus emblica L.).	International Journal of Agriculture Sciences ISSN: 0975-3710&E-ISSN: 0975-9107,	Volume 9, Issue 17,	4139-4141	2017				International
28	Khan Shahin, Tomar SPS and Raghuwanshi Pawan Kumar	Effect of number of spray and time of application of monocrotophos for the control of mustard aphid Lipaphis erysimi (Kalt.) On mustard	International Journal of Chemical Studies	Volume 6 ; 2	2018	665-666	5.31			International
29	Khadse Sachin Ramesh, Khandwe Nanda, Sinha Sandhya and Tomar SPS	Studies on correlation of gram pod borer, Helicoverpa armigera (Hubner) with abiotic factors by pheromone traps	International Journal of Chemical Studies	Volume 6 ; 2	2018	872-875.	5.31			International
30	Priyadarshani A. Khambalkar, Narendra singh, S.K. Verma, and Shashi S Yadav	Influence of integrated nutrient management on soil fertility and properties of sandy clay loam and relationship with productivity of pearlmillet (Pennisetum glaucum)-mustard (Brassica juncea) cropping sequence	International Journal of Chemical Studies	5(5)	1237-1243	2017	5.31		P-ISSN: 2349–8528 E-ISSN: 2321–4902	International
31	Dhakad, Hemlata., Yadav Shashi S., Jamra Sweta and Arya Vinayand Gaur, Dharmendra	Status and Distribution od different forms of Potassium in Soils of Gwalior district sequence.	International Journal of Chemical Studies	5(5)	1161-164	2017	5.31		P-ISSN: 2349–8528 E-ISSN: 2321–4902	International
32	Arya Vinay and Yadav Shashi S.	Status of NPK and protein in multicut forage sorghum varieties under different fertility levels	International Journal of Chemical Studies	5(5)	920-924	2017	5.31		P-ISSN: 2349–8528 E-ISSN: 2321–4902	International
33	Argal,.M.S.	Effect of Nutrient	International	10(2)	189-198	2017			Print	International

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Verma S.K and Tomar P.S	Management on Soil Health and Wheat (Triticum aestivum L.) Production in Degraded land of Chambal Ravine	Journal of Agriculture, Environment and Biotechnology,						ISSN NO: 0974-1712	
34	Argal, M.S VermaS.K. and Rajput ,Sunil	Nutrient Management Options in Ravine of Chambal and its Affects on Growth and Yield of Wheat (Triticum aestivum L.)	New Agriculturist	28(2)	1-1	2017				
35	PS Tomar, Naresh Gupta, Narendra Singh Gurjar, SK Verma and KN Bansal	Long term effect of fertilizers and manure on K-fractions in inceptisol under pearl millet-mustard cropping system	International Journal of Chemical Studies	2017, VOL. 5, SSUE 6	948-952	2017	5.31		P-ISSN: 2349–8528 E-ISSN: 2321–4902	International
36	Fatehpuria, P. K., Sasode, R.S., Chobe, D.R., Gupta, V., and Singh, Reeti.,	Studies on field evaluation of Brassica germplasm/varieties against Sclerotiniasclerotiorum under inoculated condition	Flora and fauna	23 (1):	87-89	2017	4.55	F023	0971-6920	National
37	Sasode, R.S., Fatehpuria, P. K., Chobe, D.R., and Pandya, R. K. (2017)	Influence of seed dressing on pearl millet downy mildew	Int. J. Pure App. Biosci.	5(3):	874-877	2017	4.74	I296	2320-7051	International
38	Fatehpuria, P. K., Sasode, R.S., Pandya, R. K. and Singh, Reeti., and Gupta J.C. 2017	Efficacy of different noculation techniques for testing the pathogenicity of Sclerotiniasclerotiorum causing Sclerotinia blight of Brassica juncea.	Int. J. Chem. Studies	5(5):	1937-1940	2017	5.31	I177	2349-8528	International
39	Fatehpuria, P. K., Sasode, R.S., Chobe, D.R., and Singh, Reeti., 2017	Standardization of concentration of effective botanicals against sclerotiniasclerotiorum	Int. J. Pure App. Biosci.	5(6):	286:288	2017	4.74	I296	2320-7051	International
40	Sasode, R.S., Fatehpuria, P. K., Chobe, D.R., and Pandya, R. K. (2017)	Management of pearl millet downy mildew by the application of bio-agents, chemicals and botanical	Int. J. Pure App. Biosci.	5(6):	606:608	2017	4.74	I296	2320-7051	International
41	Gupra, Radha., Tiwari, Reshu., Tiwari, Sushma., Sharma, A. K., Tripathi, M.K.,	Trichoderma: A Biocontrol Agent for Ecofriendly Management of Soil Borne Diseases of Crop Plants	Prog. Res. An Internat. J.	12	2689-2692	2017	3.84	P155	0973-6417	International
42	Ioria, H.S.	Effect of soil fertility and irrigation on water use, productivity and uptake of nutrients in chickpea in Gird Zone of Madhya Pradesh.	*Annals of Plant and Soil Research.*	20(1)	22-25	2018				

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
43	Kushwah Asha, Jain Sudhanshu, Yasin M. and Singh A.K.	Assessing genetic diversity in chickpea for crop improvement	International Journal of Agriculture Sciences	9 Issue 37, 2017	4563-4565	2017				International
44	SushmaTiwari, M.K.Tripathi,Narendra Kumar,R.S.Tomar,EktaJoshi, Reshu Tiwari,Radha Gupta and **A.K.Singh**	Improvement of G.nut for fatty acid using Markar Assisted Breeding approaches	International Journal of Pure and applied Bioscience	5(6): ISSN: 2320-7051.	5 9-63	2017				International
45	R.S.Sikarwar, Navneet Satankar, Munesh Kumar Kushwah and **A.K.Singh**,	Genetic Variability, Heritability and genetic Advance Studies in yellow Sarson *(Brassica rapa* var. yellow Sarson)	International Journals of Agriculture Sciences	Volume 5, Issue 5ISSN (online) 2319-1473.		2017				International
46	Satankar Navneet , Sikarwar R.S., **Singh A.K**. and Rai Anil Kumar,	Genetic Diversity in Pigeonpea [*Cajanus Cajan* L. Millsp.]	International Journals of Agriculture Sciences	Volume 9, Issue 18, 2017,	4177-4179.	2017				International
47	Sharma Prabhakar, Tomar Sadhana, Sharma Prashant and Daipuria, O.P.	Impact of watershed development programme in annual income of beneficiaries.	Progressive Research-An International journal.	Vol. 12 special - IV)	2602-2604	2017	3.84			International
46	Gurjar Lakhan Singh, Daipuria, O.P., Sharma Prashant, Sharma Prabhakar and Patel, M.M.	Constraints faced by non-beneficiaries of front line demonstration in adoption of improved pulse production technology.	Progressive Research-An International journal.	12 (3)	339-341.	2017	3.84			International
47	Sharma Neha, Tomar Sadhana, Sharma Prabhakar and Daipuria, O.P.	A Socio-econmical study of rural women under mahila samridhi yojana of Gwalior district of Madhya Pradesh.	Adv. Res. J. Soc. Sci.	8(2):	311-315	2017	3.56			
48	**Prabhakar Sharma**, Tomar Sadhana, Sharma Prashant and Daipuria, O.P.	Problems faced by the beneficiaries in adoption of watershed management practices.	Progressive Research-An International journal.	13 (1)	84-87.	2018	3.84			International
49	Khandkar, U. R., Tiwari S. C., Sharma, R. K., Verma, S. K., Meena, R. L. and Kaledhonka	Relative Efficiency of Amendments for Reclamation of Sodic Vertisols and their Effects on Crop Production.	Journal of Soil Salinity and Water Quality	9(2)	187-193	2017	4.94	J438	J. Soil Salinity and Water Quality	National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	r, M. J.									
50	Thakur, Rahul, Khandkar, U. R., Devbrata, Nath, Patidar, Rohit K. and Patidar, Narendra K.	Documentation on enhancing nutrient uptake and yield of rice with application of sewage sludge and different fertility levels on sodic Vertisols.	International journal of current microbiology and applied sciences	6 (10)	2986-2998	2017	5.38	I190	International journal of current microbiology and applied sciences	International
51	Thakur, Rahul, Khandkar, U. R., Devbrata, Nath, Patidar, Rohit K. and Patidar, Narendra K.	Impact of sewage sludge on enhancing chemical properties and fertility levels of sodic Vertisols of Madhya Pradesh	Green Farming	8	1-5	2017	4.38	G045	Green Farming	National
52	Vishwakarma, Megha, Khandkar, U. R. and Tiwari S. C	Effect of Different Levels of Fertilizers and Biogas Slurry on Yield and Chemical Composition of Wheat Grown under Sodic Vertisols.	Journal of Soil Salinity and Water Quality	9 (2)	200-204	2017	4.94	J438	J. Soil Salinity and Water Quality	National
53	Parveen G. Ansari, R. K. Singh, Shruti Kaushik, Ashok Krishna, T. Wada and H. Noda.	Detection of symbionts and virus in the whitefly Bemisia tabaci (Hemiptera: Aleyrodidae), vector of the Mungbean Yellow Mosaic India Virus in central India	Appl. Entomol. Zool	52 (4)	567-579	2017	6.89		Appl. Entomol. Zool	National
54	Dubey, S.C., Singh, B., Gupta, Om, Saxena, D.R., Sharma, 0. P., Kohire, 0. D., Anadani, V. P., Singh, R. K., and Tripathi, A.	Management of wilt and root rots of chickpea (Cicer arietinum) using Trichoderma harzianum in India	Indian Journal of Agricultural Sciences	7 (10)	1283-1287	2017	6.22		Indian Journal of Agricultural Sciences	National
55	Patidar, J. K., Kashyap, V., Singh, P. K., Singh, R.	Biocontrol potential of native strains of Trichoderma	International journal of Agricultu	10 (2)	5066-5068	2018	4.82			

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	and Singh, R. K.	against Rhizoctonia bataticola causing dry root rot of chickpea	ral Science							
56	Sharma, Neha., Upadhyay, S. N., Bhadauria, N. S. Singh, S.B. and Sharma, Janmejaya	Screening of mustard genotypes against mustard aphid in protected and unprotected conditions	Progressive Research-An International Journal	12	2207-2211	2017				National
57	Sharma, Neha., Upadhyay, S. N., Bhadauria, N. S. and Singh, S.B.	Ecofriendly management of mustardaphid, Lipaphis erysimi	Multilogic in Science	VII	111-114	2018				International
58	Bhardwaj, Nikki., Singh, S.B. and Singh, Krishna Kuma	Efficacy of insecticides against girdle beetle of soybean, Glycine max (L.) Merril	Int.J. Curr. Microbiol. App. Sci.	7 (2)	905-910	2018				National
59	Bhardwaj, Nikki., Singh, S.B., Pavitra, S. and Singh, K. K.	Efficacy of insecticides against insect pests of soybean, Glycine max (L.) Merril.	J. Pl. Dev Sci.,	10 (1)	55-60	2018				National
60	Ranjeet, Khapedia, H. S.; Sharma, S. K.; Sikarwar, R.; Narendra Gujar	Growth in area, yield and productivity of major crops in Malwa plateau agroclimatic zone of Madhya Pradesh	Int. J. Curr. Microbial. App. Sci	7	4685-4692	2018	4.8			
61	Khapedia, H.S.; Ranjeet, Sharma, S. K.; Sikarwar, R.; Mridha, I. S.	Forecasting wheat productivity and production of Madhya Pradesh using autoregressive integrated moving average model	Int. J. Curr. Microbial. App. Sci.	7	4693-4705	2018	4.8			
62	Sharma Sanjay, Ranjeet, Pratiksha Dubey, Indra Singh Mirdha, R.S. Sikarwar	Precipition rend analysis by Menkendal method				2018	4.18			
63	Nisar A. Bhat,Amritbir Rair, Aketi Ramesh, Sanjeeda	Soil biological Activity Contributing to Phosphorus Availability in Vertisols under	Front.Plant Sci.	8	1523	2017	10.49			

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Iqbal, Mahaveer P. Sharma, Sanjay Kumar Sharma, G.B. Bhullar	Long –Term Organic and Conservational Agricultural Management.								
64	Singh P.K., K.K.Singh, K.k.Gill, Ramniwas, R.S. Singh and Sanjay Sharma	Dry biomass partitioning of growth and development in wheat (triticum aestivum.L.) crop using CERES-wheat in different agro-climatic zones of India	Current Science	11 (4)	750-766	2017	6.97			
65	Nisar A. Bhat; S. Iqbal , S.K.Sharma	Nutrient stats in relation to organic farming status: A Review.	International J. Res. & Review	4 (8)	27-33	2017	9.84			
66	Parmar, S., Sharma, S.K., Debrata Nath, Chaudhary, R.S., Patidar, R.K.	Long term rainfall Data Analysis for Contingency Crop Planning for Indore Region of Madhya Pradesh	Advances in Research	9 (2)	1-11	2017	4.80			
67	Patidar, N. K., Rajput Archana, Sharma, S.K.,Patidar, R.K., Parmar, S., Thakur, R.	Micro Nutrient Evaluation in soils of Jhabua District of Madhya Pradesh	Int. J. Pure App. Bio. Sci	5 (1)	918-926	2017	4.74			
68	Patidar Narendra Kumar, Patidar R.K., Rajput Archana, Sharma, S.K., Thakur, R.	Evaluation of Basic Properties of Soil and Major Nutrient in Soils of Jhabua District of Madhya Pradesh.	IJAEB	10 (1)	1-7	2017	4.69			
69	Arsia, S.K., Mishra, S.P. and Saxena, Moly	In vitro evaluation of bioagents and agrochemicals against Fusarium udum. J. Pharmacognosy and Phytochemistry				2018	5.21		2537-2540.	National
70	Arsia, S.K., Saxena, Moly, Saxena, D.R. and Mishra, S.P.	Effect of crops root exudates on conidial germination of Fusarium udum.Progressive Research – An International	J. 12 (special IV)			2017	4.29		2637-2639	International

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
71	Das MP, Tambi KN, Ali SA and Sethy H	Correlation studies on the growth and yield attributing characters of onion in Vindhyan Plateau of Madhya Pradesh. Green Farming				2017	4.38		8(6): 1317-19	National
72	Dubey, S.C., Singh, B., Gupta O.M., Saxena, D.R., Sharma, O.P., Kohire, O.D., Anadani, V.P., Singh, S.K. and Tripathi, A.	Management of wilt and root rots of chickpea (Cicer arietinum) using Trichoderma harzianum in India. Ind. J. Agric. Sci.				2017	6.22		87: 1283-7	National
73	Joshi Priyanka, Yasin M. and Jain Sudhanshu	Diverse pea seed shaped RIL's derived from recombination between angular and owl's head parents in chickpea (Cicer arietinum L.) International Journal	Agriculture Sciences.			2017	4.00		0975-3710	International
74	Khadse Sachin Ramesh, Khandwe Nanda, Sinha Sandhya and Tomar SPS	Studies on correlation of gram pod borer, Helicoverpa armigera (Hubner) with abiotic factors by pheromone traps	International Journal of Chemical Studies			2018	4.86		6(2): 872-875	International
75	Kumar Pawan, Tikle AN, Verma S and Malik Rekha	Diversity assessment of hulled barley (Hordeum vulgare L.) accessions by agro-morphological traits and SSR markers.	Research J. Biotechnology			2017	6.26			National
76	Kushwah Asha, Jain Sudhanshu, Yasin M., Singh A.K.	Assessing genetic diversity in chickpea for crop improvement	International Journal of Agriculture Sciences			2017	4.00		9(37) : 4563-4565	International
77	Parihar, A.K., Basandrai, A.K., Saxena, D.R., Kushwaha, K.P.S., Chandra, A,	Biplot evaluation of test environments and identification of lentil genotypes with durable resistance to Fusarium wilt in India	Crop & Pasture Science			2017	7.44		10.1071/CP17258	National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Sharma, K., Singha, K.D., Singh D., Lal H.C. and Sanjeev Gupta									
78	P Banjarey, P Kumari, Verma S, Tikle AN, Malik R, Sarkar A and Verma RPS	Comparative analysis of Agro-morphological and molecular variations in Huskless Barley (Hordeum vulgare L.) under central Agro-climatic Zone of India	Int. J Curr. Microbiol. App. Sci.			2017	5.28		6(12) : 2821-29.	National
79	Singh, M., Rana, J.C., Singh, B., Kumar, S., Saxena, D.R., Saxena, A., Rizvi, A.H. and Sarkar, A.	Comparative Agronomic Performance and Reaction to Fusarium wilt of Lens culinaris, L. orientalis and L. culinaris x L. ervoides derivatives	Front. Plant Sci	-	-	2017	10.3	-	1162. doi10 .3389 /fpls. 2017. 0011 62	National
80	Singh. P., Shukla. A.K. and Mishra. S.K.	Rhizospherical and biochemical changes in Zn efficient and inefficient Wheat cultivars under Zn stressed conditions	Prog. Agric.	-	-	2017	4.29	-	-	National
81	Sunil Chaudhari, Patil SB, Thakare Dipali, Tikle AN and Saxena KB	Effect of fertility restoration on yield and its contributing traits of CGMS-based pigeonpea hybrids	Green Farming			2017	4.38	-	-	National
82	Tomar Vivek, Khandwe Nanda, Choukikar Kailash, Azmi Aftarika and Jatav Lokendra	Seasonal incidence and periodic activity of major insect pests of soybean Bullt. Of Enviro	Pharmac o. And life Sciences 6 special issue			2017	4.95			National
83	Joshi Priyanka, Yasin M. and Jain Sudhanshu	Diverse pea seed shaped RIL's derived from recombination between angular and owl's head parents in chickpea (Cicer arietinum L.)	Internati onal Journal of Agricultu re Sciences.			2017	4.00		0975-3710	National
84	Kushwah Asha, Jain Sudhanshu, Yasin M., Singh A.K.	Assessing genetic diversity in chickpea for crop improvement	Internati onal Journal of Agricultu re			2017	4			National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
			Sciences							
85	Rawat, Subhash, Patel, Devidas, Gupta M.K., and Vani, D.K.	Assessment of Genetic Variability, Correlation and Path Analyses for Yield and its components in Soybean.	Trends in Bio Sciences.	10 (23) :		2017	3.94			National
86	Patel, Devidas, Moitra,P.K. and Rawat, Subhash	Genetic variability, correlation and path analysis in F1 of Bread Wheat.;	International Journal of Green Farming.	8(50)		2017	4.38			International
87	Singh, Balkrishna, Singh, Rohatash,and Barholia,A. K.	Response of Guava to Foliar application of Urea, Potassium Sulphate and Borax on growth and fruit yield.	Crop Research an International Journal	52(6)		2017	4.60			International
88	Singh, Amit, Singh,J., Bhadouria, Rohatash Singh, Haldar, Ajay, Patidar, D.K. and Meena, K.C.	Effect of Plant growth regulators and chemicals on Physic- Chemical status and Organo leptic value of mango fruits.	Trends in Bio Sciences.	Vol. 10(26) ISSN:0974-8431		2017	3.94			National
89	Singh, Amit, Singh,J., Bhadouria, Rohatash Singh, Haldar, Ajay, Kanpure, R.N. and Patidar, D.K.	Effect of Plant growth regulators and chemicals on self life of Mango cultivar Sunderja.	Trends in Bio Sciences	Vol. 10(26) ISSN:0974-8431		2017	3.94			National
90	Singh, Balkrishan, Bhadouria, R.S., Barholia.A. K. and Singh K.V.	Influence of Foliar application of Urea, Potassium, Sulphate & Borax on the Fruit Quality of Guava	International Journal of current Microbiology and Applied Science. ISSN: 2319-7692	Special Issue-6		2018	5.38			International
91	Shukla, Rashmi, Shukla ,Y.K. and Vani, D.K.	Study on Physico-chemical and Nutritional Composition of Guava(Psidium guajava) products.	Progressive Research-An International Journal	Vol. 12(specialiii)		2017	3.84			International

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
92	Shukla, Rashmi, Shukla ,Y.K.	Studies of Different Guava Cultivars(Psidium guavaja L.) for Nutritional and Livelihood security suited to degraded soils.	The Asian Journal of Horticulture	Vol. 12(1)		2017	3.26			National
93	Shukla, Rashmi, Shukla ,Y.K.and Pathak , Smita	Studies on preparation and packaging of Guava Cheese.	International Journal of Current Microbiology and Applied Science ISSN:2319-7706	Vol. 7(2)		2018	5.38			International
94	Shukla, Rashmi, Shukla ,Y.K.and Pathak , Smita	Sensory Evaluation of Guava Cheese prepared from different varities.	International Journal of current Microbiology and Applied Science.ISSN: 2319-7706	Vol. 7(2)		2018	5.38			International
95	Shukla, Rashmi, Shukla ,Y.K.and Pathak , Smita	Standardization and preparation of Guava Cheese from different cultivars	International Journal of current Microbiology and Applied Science.ISSN: 2319-7706	Vol. 7(3)		2018	5.38			International
96	Khan, Shahin,Bhadouria,Upadhyay, S.N. and Srivastava, V.K.	Reaction of Sorghum germplasm against stem borer (Chillo partellus Swinhoe)	Progressive Research-An International Journal	Vol. 12(Special Issue-IV)		2017	3.1			International
97	Khan, Shahin, Tomar, SPS and Raghuwanshi, P.K.	Effect of number of spray and time of application of Monocrotophos for the control of Mustard Aphid9 Lipaphis erysimi (Kalt.) on Mustard	International Journal of Chemical Studies	Vol. 6(2)		2018	5.31			International
98	Artika Singh Kushwah, G.S. Rawat, Sourav Gupta, Devendra Patil and Neelima	Production and profitability assessment of clusterbean (CyamopsistetragonolobaL. Taub.) based intercropping systems under	Legume Research	40(5): 916-919 /2017/ Publishe			6.15			National

S. No.	Author (s)	Title	Journal	Volu.	Page No.	Year	NASS Rating	JID	ISSN	National / International
	Prajapati	different row arrangement.		d						
99	Parsai, S.K., Moghe Vinay, Patidar Mahendra and Ram U.S.	Bioefficacy of insecticides on insect pests complex of Soybean,	Environment and Ecology	34 (2)		2016	4.18			National
100	Bobade Ashish, Parsai, Satish, Gupta, M.K., Bharti O.P. and Vani D.K.	Economic Analysis of IRM and Non IRM strategies for sustainable Cotton Production in, Khandwa District of Madhya Prades,	Progressive Research. An International Jaurnal	12(3)		2017	3.84			International

101. Ansari, Prveen G.; Singh, R.K. Kaushik, S.; Krishna, KWade, T.; and Node, H. 2017. Detection of symbionts and viruses in the whitefly, Bemasia tbaci (Hemiptera: Aleurodidae) vector of Moongbean yellow mosaic India virus. *The journal Applied Entomology and Zoology* (online). 1-13.
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103. Barcchiya, Jayashri and Kushwah, S.S. 2017. Influence of integrated nutrient management on growth, yield parameters and yield in French bean (*Phaseolus vulgaris* L.). *Legume Research*. **40**(5):920-923.
104. Bhandari, J.; Kanpure, R. N.; Singh, O.P.; Kachouli, B. and Patidar, D.K. 2018. Effect of organic And inorganic nutrient sources on growth, yield and quality of acid lime (*Citrus aurantifolia* Swingle).*International Journal of chemical studies*. **6**(1):1635-39.
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107. Bhandari, J.; Kanpure, R.N.; Singh, O.P.; Kachouli, B. and Patidar, D.K. 2017. Effect of organic and inorganic nutrient sources growth, yield and quality of acid lime (*Citrus aurantifolia* Swingle).*International journal of chemical studies*. **6**(1):1635-1639.
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116. Kurve, Giteshwari; Sankar, Vidhya M.; Kumar, Anuj and Singh, O.P. 2018. Effect of pre soaking of bulbs in plant growth regulators on flowering and vase life of Tuberose (*Polianthes tuberose* Linn.). *International Journal of chemical studies*. **6**(1): 1485-1490.
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133. Singh, Himanee and Chaturvedi, Roopesh. 2017. Swami Vivekananda: The Spiritual Unfoldment, the Context. **4** (1).
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14.2 Research papers presented in the seminar/ Symposium:

1. Chaturvedi, Roopesh. 2018. Political Cynicism and Mass Migration: An overview of the Novels of Displaced Sensibility' in 62nd All India English Teachers' Conference at Hyderabad from Jan.18-20, 2018.
2. Dubliya, Yogesh; Sankar, Vidhya, M.; Kumar, Anuj and Gallani, Roshan. 2018. Evaluation of different INM practices on growth and productivity of tuberose (*Polianthes tuberosa*) in Malwa region of M.P." National conference on *"Innovative technological interventions for doubling farmers' income''* at SKUAST Jammu (J&K).'
3. Dwivedi, S.K. 2017. Fruit based fermented beverages. In Proceeding of ICAR-Winter school on "Hi-Tech interventions in fruit production towards hastening productivity, nutritional quality and value addition" organized by Department of fruit science, College of horticulture and forestry, Agriculture University- Kota.
4. Dwivedi, S.K. and Singh, Om. 2018. Preparation and Evaluation of Ready to Serve Beverages from Jamun fruits. During International Conference on *Invigorating Transformation of Farm Extension towards Sustainable Development: Futuristic Challenges and Prospects* - INTFES – 18. In Proceeding organized by Tamilnadu Agriculture University, Coimbatore, Tamilnadu during 9-10 March 2018.
5. Haldar, A.; Nagaich, K.N.; Meena, K.C.; Patidar, D. K., and Thakur, R. 2017. Response of variety, spacing and nitrogen on growth and tuber yield of potato with special reference to economics. International conference on *Global Research Initiatives for Sustainable Agriculture & Allied Sciences* (GRISAAS-2017) during 02-04 December 2017 at Maharana Pratap University of Agriculture & technology, Udaipur, Rajasthan.
6. Khan, K. A.; Patel, M.B. and Kapur, Tarun. 2018. Study of Suspended Particulate Matter in Traditional Seed Spices Cleaning-Grading Industry. 52nd Annual Convention of *Indian Society of Agricultural Engineers* at AAU, Anand from 8-10 January 2018.
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10. Pandey, G.N.; Patel, R.P.; Patidar, B. K. and Patidar, D. K. 2017. Assessment of losses of leaf blight disease in chandrasur caused by *Alternaria alternate*. Symposium on *challenges and opportunities: Management of plant diseases under weather changes*, December,14-15, 2017, JNKVV, Jabalpur, (M.P.) India.
11. Pandey, G.N.; Patidar, B.K.; Patidar, D. K. and Patel, R. P. 2017. Management of anthracnose disease of safed musali (*Chlorophytum borivilianum*) caused by *Colletotrichum chlorophyti*. Symposium on challenges and opportunities: Management of plant diseases under weather changes, December,14-15,2017, JNKVV,Jabalpur, (M.P.) India.
12. Patel, R.P.; Pandey, G.N., D Padidar, K. and Pandey, Ankit 2018. Effect of climate change on severity of downy mildew caused by (*Peronospora arborescens* (BERK.) of opium poppy (*Papaver somniferm* L) in Mandsaur District of M.P. and Adjoining area of Rajasthan. National Conference on *"Current Trends in Plant Science and Molecular Biology for food Security and Climate Resilient Agriculture.*Rajmata Vijayaraje Sciendia Krishi Vishwa Vidyalaya, Gwalior & National Environmental Science Academy (NESA), New Delhi 15-16 February, 2018.
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15. Sonkar, Priyamvada; Chouhan, Anil; Kanpure, R.N.; Anjanaew, S.R. and Barde, Pravin. 2017. Effect of foliar application of urea, boronand 2,4-Don growth,quality and yield of Acid Lime (*Citrus aurantifolia* Swingle). International Conference on *Advance Research in Applied Science, Environment Agriculture & Entrepreneurship Development,* December 4-6, 2017 at Bhopal (M.P.).
16. Tripathi, M.K. 2017. Climate change and approaches to mitigate climatic adversities in Madhya Pradesh agriculture. *International Conference on Global Research Initiatives for Sustainable and Allied Science* (GRISAAS) , MPUA&T Udaipur during December02-04, 2017.

14.3 Abstract published in various conference/souvenir:

S.No	Author (s)	Title	Conference Proceedings	Page No.	Year	National / International
1	Ekta Joshi and Varsha Gupta	Nutrients omission study for better nutrient uptake and enhanced nutrient efficiencies in maize (Zea mays L.) under maize-wheat cropping system	National Seminar on Developments in Soil Science, 82nd Annual Convention December 11-14, 2017 Amity University, Kolkata.		2017	National
2	Varsha Gupta, Ekta Joshi and D.S. Sasode	Weed management in potato crop under organic farming	National Seminar on Developments in Soil Science, 82nd Annual Convention December 11-14, 2017 Amity University, Kolkata		2017	National
3	Ekta Joshi, Deep Singh Sasode and Varsha Gupta	Effect of nutrient omission on growth, yield, profitability and water productivity of wheat in maize – wheat cropping system	Third International Conference on 'Bioresource and Stress Management' held at State Institute of Agriculture Management, Jaipur, Rajasthan, India during 8-11th November, 2017.		2017	National
4	Ekta Joshi, Varsha Gupta and D.S. Sasode	Crop geometry and plant nutrition effect on productivity and profitability of groundnut in Gwalior region	International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) during 02-04 December 2017 at Maharana Pratap University of Agriculture & Technology, Udaipur, Rajasthan (India)	125	2017	International
5	Sushma Tiwari, Narendra Kumar, R.S. Tomar, R.S. Sikarwar and Ekta Joshi	Marker Assisted Breeding for Improvement of Groundnut	International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) during 02-04 December 2017 at MaharanaPratap University of Agriculture & Technology, Udaipur, Rajasthan (India)	238	2017	International
6	Sushma Tiwari, Ekta Joshi, R S Sikarwar, M K Tripathi, Reshu Tiwari and R S Tomar	Thrust areas of research for exploiting the potential yield of the groundnut using molecular and conventional breeding approaches	International Conference on Emerging trends in Allied & Applied Biotechnology-2017 held at Orchha (M.P.) from 1-2 April 2017.		2017	International
7	Patidar, Payal and Bajpai, Rashmi	Integrated nutrient management on yield of brinjal (Solanum melongena) cv. NDBH-6	-		2017	International
8	Patidar, Payal, Bajpai, Rashmi and Agrawal, S.	Effect of integrated nutrient management in Brinjal cv. NDBH-6	-	254	2017	National
9	Singh, H. and Bhadoria, H.S.	Response of coriander to integrated nutrients	National Conference on "Managing Soil Health for Sustainable and Nutritional		2017	National

		management.	Food Production" organized by JNKVV, Jabalpur during October 28-29, 2017			
10	Bhadoria, S.K.S., H. Bhadoria, H.S. and Singh	Effect of Irrigation regimes and fertility levels on growth, yield, water use efficiency and economics of potato.	National Conference on "Managing Soil Health for Sustainable and Nutritional Food Production" organized by JNKVV, Jabalpur during October 28-29, 2017		2017	National
11	Bhadauria, S.K.S. and Bhadoria, H.S.	Effect of irrigation schedules and ferlity levels on growth, yield, water use efficiency and economics of brinjal.	20th Indian Agricultural Scientists & Farmers Congress" held at BRIATS, Allahabad during Feb. 17-18, 2018		2018	National
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13	S.K.Yadav, A.K.Singh, R.K.Sharma, Sushma Tiwari and Asha Kushwah	Genetic and genomic diversity analysis using SSR molecular marker in Small millet. National Conf. in Plant science and Molecular Biology for food security and climate resilient agriculture,	International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2017) during 02-04 December 2017 at MaharanaPratap University of Agriculture & Technology, Udaipur, Rajasthan (India)	pp:98	15-16 Feb.2018	National

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19. Patel, R.P.; Pandey, G.N.; Patidar, D.K. and Pandey, Ankit. 2018. Effect of climate change on severity of Doeny mildew caused by (Peronospora arborescens (Berk.) of Opium poppy (Papaver somniferm L.) in Mandsaur district of Madhya Pradesh and adjoining area of Rajashthan. National conference on current trends in plant science and molecular biology for food security and climate resilient agriculture 15-16 ,February, 2018, RVSKVV,Gwalior, M,P, Souvenir & abstracts. pp 154.
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14.4 Books:

S. No.	Author(s)	Book Name	Year	ISBN No.
1	Baldev Singh, Madan Mohan Patel, Shobhana Gupta Yagya Dev Mishra R.N.Paradia	Innovations for Agricultural Development(Edited) Biotech Books	2017	978-81-7622-395-9
2	Upadhyay S.D., Singh S.B. and Tomar S.P.S.	Insect Ecology	2017	978-81-7622-373-7
3	Sasode Singh, Rajni., Pandya R,K., and Kashyap, Vivek	Plant Diseases and their Management	2017	978-9383774—210
4	Fatehpuria, P.K., Chobe, D.R., Sasode Singh, Rajni., Pandya R,K., and Singh Reeti.	A Competitive Approach of Plant Pathology	2017	978-9383774—302
5	Shadanan Upadhyay, S. B. Singh and Satya Prakash Tomar	Insect Ecology	2017	978-7622-373-7
6	Singh, S. B., Upadhyay, S. N. and Choudhary, R. K.	Non Insect pests and Their Management	2017	978-81-7622-402-4
7	Meena, K.C., R.K. Verma and Nitin Soni	Studies of seed storability of Withania sominifera (Ashwagandha)Studies of seed storability of Withania sominifera (Ashwagandha)" Lambert Academic Publication, Saarbrucken, Germany ISBN	2017	978-3-330-31841-0

14.5 Book Chapters:

S. No.	Author (s)	Title	Book Name	Page No.	Year	ISBN No.
1	Sasode, R.S., Pandya, R. K. and Singh, Reeti.,	-	Production Technology of rabi crops	421-459	2017	978-81-7622-410-9
2	Sanjeev Kumar Yadav ,A.K.Sharma, A.K.Singh, Prashant Kumar Singh	Role of Small Millets in Agriculture	S.R.Scientific publications	-	2017	ISBN 978-8188805-99
3	Jaya R. Chauhan and A.K.Singh	Mutation Breeding for crop Improvement	Jaya publishing house,	-	2017	ISBN 978-93-86110-34-3.
4	S.N. Upadhyay and S. B. Singh	Integrated Pest management in Rabi Crops	Production Technology of Rabi Crops by Suresh Singh Tomar Yagya Dev Mishra and Shailendra Singh Kushwah.	-	2017	-
5	Roshan Gallani	Fertigation	Tapak sichai ke saath urvarak prayog	276-283	2017	-
6	S.K. Dwivedi	Fruit based fermented beverages	In Proceeding of ICAR-Winter school on "Hi-Tech interventions in fruit production towards hastening productivity, nutritional quality and value addition" organized by	385-402	2017	-

			Department of fruit science, College of Horticulture and Forestry, Agriculture University			
7	JVNS Prasad, M. Usman, C.H. Shriniwasrao, A.K. Indoriya, S. Borker, S.R. yadav and Nitin Soni	जलवायु समुत्थान प्रोधौगिकी किम्मों का ग्रमीण स्तर पर प्रदर्षन।	-	299-330	2017	-
8	B.K.Patidar	Vegtable at a Glance	Recent Advances in Crop Helath Management	505-519	2017	-

14.6 Teaching/Practical Manual/Bulletin/Reports:

S. No.	Author (s)	Title	Year	ISBN No.
1	P.K.S. Gurjar, Lal Singh, Rajesh Lekhi, A.K. Barholia	Fundamental of Horticulture (New)	2017-18	RVSKVV 83/2017
2	Lal Singh, P.K.S. Gurjar, Rajesh Lekhi, A.K. Barholia and K.S. Tomar	Post Harvest Management and Value Addition of Fruits and Vegetables credit 2 (1+1)	2017-18	RVSKVV 84/2017
3	Sasode,Rajni Singh., Gupta,Radha., Ajay, Kumar., Saini,Pragati.,Bobade, Ashish., Pandya , R.K., Singh, Reeti., Kaur,Arvindar., and Singh, Akhilesh.	A Laboratory guide of Plant Pathology	2017	Published for RVSKVV
4	Singh, R. K., Mishra, S. P. and Krishna Ashok	Instructional manual on fundamental of plant pathology. Department of plant pathology	2017	Published for RVSKVV
5	M. P. Jain, S. K. Sharma, H. L. Khapedia and R. K. Singh	Adivashi jilo me satat vikash, aajioka avm poshan suraksha hetu aadhunik krishi taknik	2017	Published for RVSKVV
6	A, K Badaya, S. N. Upadhyay and S. B. Singh	Toxicology of Insecticides	2017	RVSKVV 87/2018
7	सतीश परसाई बी.टी.	कपास लगायें सफेद सोना पायें, कृषक जगत बीज–कपास विशेषांक, भोपाल, जयपुर,रायपुर	2017	Published for RVSKVV
8	सतीश परसाई	गुलाबी इल्ली से बचाएँ कपास की फसल (खेत खलिहान)	2017	Published for RVSKVV
9	R.K. Sharma & Anuj Kumar	Haldi ki Unnat taknikiya Krishak Doot	2017	Published for RVSKVV
10	R.K. Sharma & Anuj Kumar	Gainde ki Kheti se Double Income, Krishak Bharti	2018	Published for RVSKVV
11	Anuj Kumar & R.K. Sharma	Rajnigandha ki Unnat Kheti Krishak Doot	2018	Published for RVSKVV
12	R.K. Sharma & Anuj Kumar	Faydemand gainde ki kheti. Krishak Doot	2018	Published for RVSKVV
13	R.K. Sharma & Anuj Kumar	Gainda upjaye adhik aay paye. Hari Dhar Times	2018	Published for RVSKVV
14	Rishi Richa; Owais Yousuf and K. Alam Khan	Food Fortification: A Need of Present and Future. Readers Shelf	2017	Published for RVSKVV
15	एस.आर.अंजनावे, आर.एन.कानपूरे, अजय हलदार, बसंत कचौली, एवं अनसिंह निनामा	सीताफल का वैज्ञानिक तरीके से उत्पादन हरित कृशिराज	2017	Published for RVSKVV
16	आर.पी., पटेल , जी एन., पाण्डुेय ओ. पी., सिंह, एवं आर.एन.,कानपूरे	ईसबगोल की खेती हरित कृशिराज	2017	Published for RVSKVV

17	एस.आर.अंजनावे, आर.एन.कानपूरे,, बसंत कचौली, प्रियंवदा सोनकर एवं अजय हलदार	बेल–पड़ती भूमि के लिए वरदान मध्य भारत कृशक भारती	2017	Published for RVSKVV
18	रिया ठाकुर, अजय हलदार एंव आर. एन.कानपूरे	ईसबगोल करें मालामाल .किसान इन्टरनेषनल कृशि पर आधारित त्रैमासिक पत्रिका	2017	Published for RVSKVV
19	डॉ. के. सी. मीणा, डॉ. अजय हालदार, रिया ठाकुर, डी. के. पाटीदार	ईसबगोल एक औशधीय फसल, कृशक जगत, भोपाल	2017	Published for RVSKVV
20	डॉ. के. सी. मीणा, धर्मेन्द्र कुमार पाटीदार एवं डॉ. अजय हलदार	औशधीय पौधो की खेती एवं संभावनायें कृशक जगत भौपाल	2017	Published for RVSKVV

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