

A Profile

DIRECTORATE OF RESEARCH SERVICES



**RAJMATA VIJAYARAJE SCINDIA KRISHI VISHWA VIDYALAYA,
RAJA PANCHAM SINGH MARG, NEAR AKASHWANI, GWALIOR (M.P.) – 474 002**

HISTORICAL PERSPECTIVE

The “Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya” (RVSKVV), Gwalior was established by Govt. of Madhya Pradesh on August 19, 2008 (Madhya Pradesh Ordinance No. 4 of 2008 Extraordinary Gazette No. 507 dated 19th August, 2008) and enacted as Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya Act, 2009 (Madhya Pradesh Act No. 4 of 2009 dated 12th February, 2009). The State Agriculture University (SAU) is located at Raja Pancham Singh Marg, Near Akashwani, Gwalior, Madhya Pradesh.

MISSION

To conduct research activities for enhancing productivity, profitability and sustainability of agriculture and allied sectors and improving the livelihood of the people of the state of Madhya Pradesh.

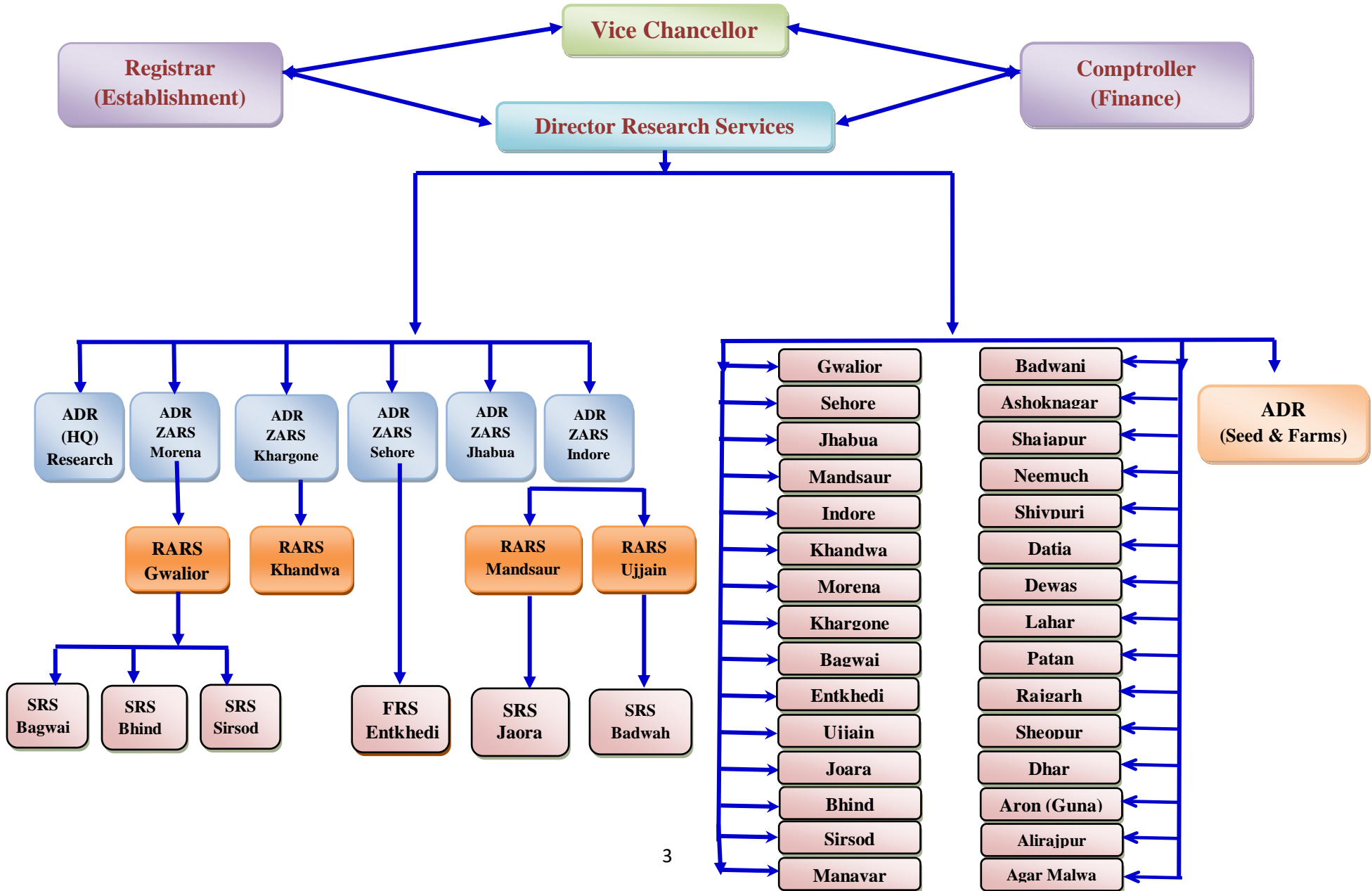
MANDATE

- Collection, conservation, evaluation and maintenance of germplasm of different crops.
- To conduct the hybridization programme for development of high yielding, biotic & abiotic stress tolerant/resistant varieties of different crops.
- To conduct basic, strategic, applied and anticipatory research in the field of agriculture and allied sciences.
- To conduct research for food, nutritional & livelihood security of the farmers/people of the state.
- To promote collaborations between international and national institutions for high quality research.
- To provide consultancy services to stakeholders.
- To provide the developed & refined technologies to KVKs, line departments and extension personnel’s for dissemination amongst the farmers.
- Production of disease free and genuine planting material/seed.
- Generation of income for Vishwa Vidhyalaya.

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ORGANOGRAM



NUMBER OF PROJECTS RUNNING:

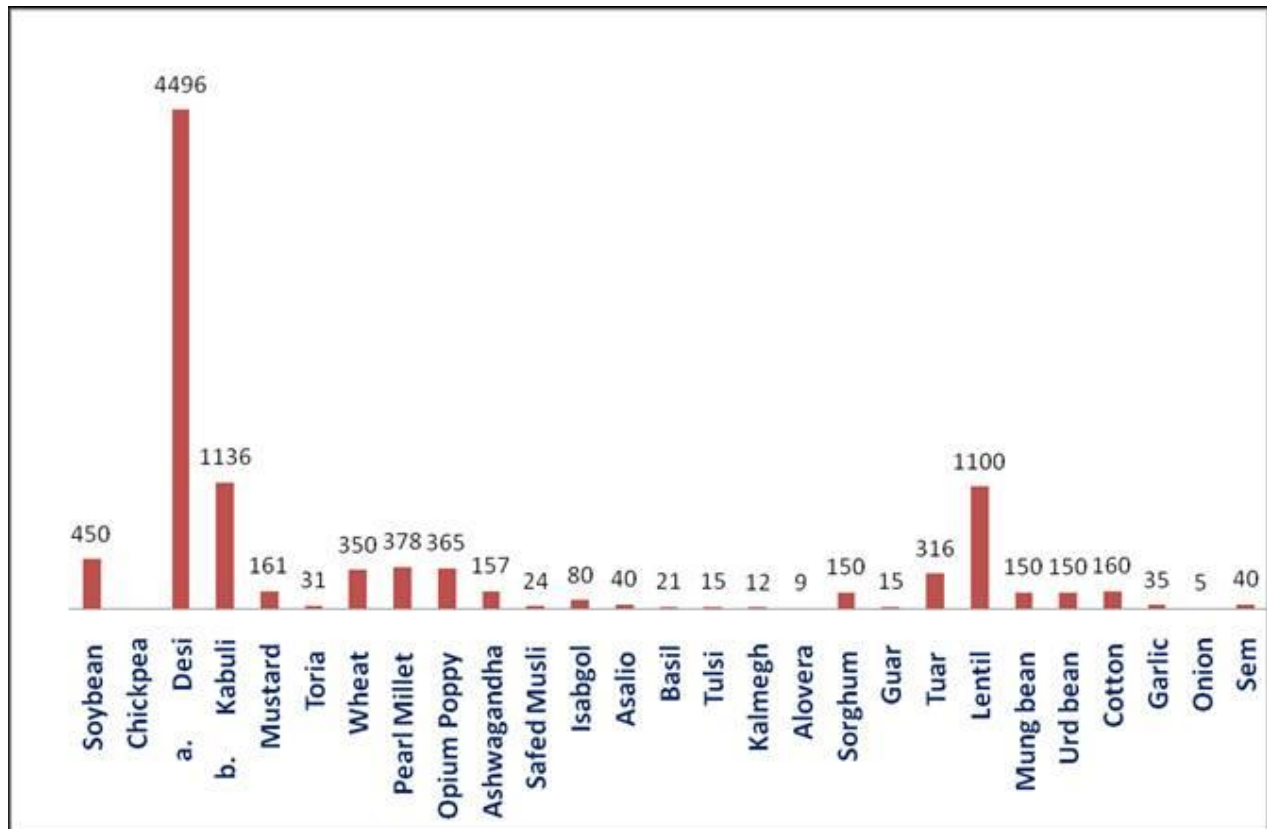
S. No.	Name of Project/Scheme	Numbers
1	All India Co-ordinated Research Projects on: <u>Crop improvement (18):</u> Wheat, Sorghum, Maize, Pearl Millet, Chickpea, Pigeonpea, MULLaRP, Arid legume, Soybean, Rapeseed & Mustard, Safflower, Groundnut, Cotton and Mega Seed project; <u>Natural Resource Management (06):</u> Dryland agriculture, Weed science, Water management, SAS, CSRP and ORP	27
2	Non Plan Schemes running at Indore, Sehore, Gwalior, Bagwai, Entkhedi and Jaora	12
3	Plan Schemes running at Gwalior, Khargone, Indore, Sehore, Ujjain and Mandsaur	7
4	Tribal Sub Plan Projects running at Gwalior, Khandwa, Khargone, Indore, Sehore, Ujjain, Morena, Jhabua, Shajapur, Dhar, Dewas, Bhind, Rajgarh, Aron (Guna), Badwani, Neemuch, Shivpuri, Ashok Nagar and Sheopur	12
5	Externally Funded Projects	23
6	Agro-met Advisory Project running at Morena, Khargone, Jhabua, Sehore and Indore	5 Centres
7	Infrastructure Development Projects (Mandi Board)	7
8	Product Testing Trial/CPC	360
	Total	453

CROP VARIETIES RELEASED AND NOTIFIED:



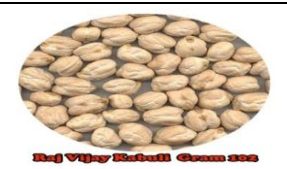



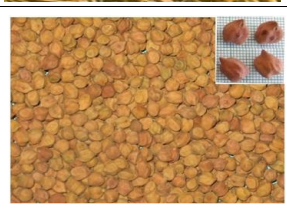

S. No.	Name of the Crops	No of Varieties developed
1.	Chickpea [JG 6, RVKG 101, RVSJKG 102, RVG 201,RVG 202, RVG 203, RVG 204 , RVG 205]	8
2.	Pigeonpea [TJT 501 & RVA 28]	2
	Pigeonpea (Hybrid) [RVICSH 2671]	1
3.	Lentil [RVL 11-6 & RVL 31]	2
4.	Soybean [RVS 2001-04, RVS 2001-18 & RVS 2002-4]	3
5.	Rapeseed & Mustard [RVM 1 & RVM 2]	2
6.	Groundnut [JGN 23]	1
7.	Wheat [MP 1203 & RVW 4106]	2
8.	Sorghum hybrid [RVICSH 28]	1
9.	Sorghum [RVJ 1862]	1
10.	Toria [RVT 1 & RVT 2]]	2
11.	Safflower [RVS 113]	1
12.	Cotton [RVK 67]	1
13.	Safed Musali [RVSM 414]	1
14.	Ashwagandha [RVA 100]	1
15.	Kalmegh [RVK 1]	1
16.	Sarpgandha [RVSP 1]	1
	Total	31








GERMPLASM COLLECTION/GENETIC RESOURCES:





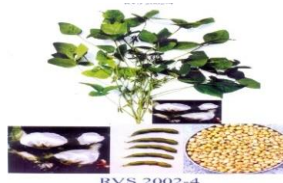




S. No.	Crop	No. of accessions	S. No.	Crop	No. of accessions
1	Soybean	450	12	Tulsi	15
2	Chickpea	-	13	Kalmegh	12
	a. Desi	4496	14	Alovera	9
	b. Kabuli	1136	15	Sorghum	150
3	Mustard	161	16	Guar	15
	Toria	31	17	Tuar	316
4	Wheat	350	18	Lentil	1100
5	Pearl Millet	378	19	Mung bean	150
6	Opium Poppy	365	20	Urd bean	150
7	Ashwagandha	157	21	Cotton	160
8	Safed Musli	24	22	Garlic	35
9	Isabgol	80	23	Onion	05
10	Asalio	40	24	Sem	40
11	Basil	21	-	-	-
	Total	7689		Total	2157
	Grand Total			9846	










CROP VARIETIES DEVELOPED, NOTIFIED AND RELEASED

Crop	Variety (Noti. No. & Date)	Maturity days	Avg. yield (kg/ha)	Special Characteristics	Adaptability zone	Variety Image
Chickpea	JG 6 (SO 449 (E) 11.02.2009)	113	2000-2100	Resistance to <i>Fusarium</i> wilt, MR to DRR and Tolerant to infestation of pod borer.	M.P., Chhattisgarh, Maharashtra, Gujarat, U. P. and Rajasthan	 JG 6
	RVKG 101 (SO 456(E) 16.03.12)	109	1500 - 1800	Whitish bold seeded variety (40.6 g/100 seed)	Madhya Pradesh	 Raj Vijay Kabuli Gram 101
	RVSJKG 102 SVRC, 10.12.10	104	1200 - 1500	First whitish extra bold Kabuli variety with average seed size of 58.0 g/100 seed.	Madhya Pradesh	 Raj Vijay Kabuli Gram 102
	RVG 201 (SO 456(E) 16.03.12)	101	2000-2500	Resistance to <i>Fusarium</i> wilt, moderately resistant to dry root rot and tolerant to <i>Helicoverpa armigera</i>	Madhya Pradesh	 Raj Vijay Gram 201
	RVG 202 (SO 268 (E) 28.01.2015)	100-105	1800 - 2000	Large seeded Desi chickpea variety and resistance to <i>Fusarium</i> wilt, MR to dry root rot and color rot	M.P., Chhattisgarh, Maharashtra, Gujarat, U.P. and Rajasthan	 Raj Vijay Gram 202 (RVG 202)
	RVG 203 (SO 176(E) 01.02.13)	100	1900-2000	Moderately resistant against <i>Fusarium</i> wilt and dry root rot	M.P., Maharashtra, Gujarat, U.P. and Rajasthan	 Raj Vijay Gram 203 (RVG 203)
	RVG 204 SVRC 23.05.2017	111	2300-2500	Long plant, bold seeded, Resistant to wilt and tolerance to pod borer, suitable for mechanical harvesting	Madhya Pradesh	
	RVG 205 SVRC 23.05.2017	107-118	2000-2500	First green seeded variety of M.P., Long plant, pink flower, bold seeded, Resistant to wilt and tolerance to pod borer	Madhya Pradesh	

Pigeonpea (1st CMS Hybrid of the world)	RVICPH 2671 SO (1146(E) 24.04.14)	164-184	2276 - 2852	Resistant to wilt and SMV and possess high <i>dal</i> protein	Madhya Pradesh	
Pigeonpea	TJT 501 SO 2187 (E) 27.08.2009	145-155	1800-2000	Resistant to Fusarium wilt and tolerant to Phytophthora blight	M.P., Maharashtra, Gujarat, U.P. and Rajasthan	
	RVA 28 SVRC, 10.12.10	147-157	1734	Early maturity, Resistant to wilt.	Madhya Pradesh	
Lentil	RVL 31 (SO 1146(E) 24.04.14)	107	1200 - 1300	Bold seeds (2.4g/100 seeds). Being early maturity, it escapes the drought	Madhya Pradesh	
	RVL 11-6 (SO 1007(E) 30.03.17)	116	1744	Bold seed, drought tolerance	M.P., Maharashtra, Gujarat, U.P. and Rajasthan	
Wheat	MP 1203 (SO 454 (E) 12.02.09)	110	4000-4500	Early maturing, High yielding. Resistance against brown and black rust	Madhya Pradesh	
	RVW 4106 (SO 456(E) 16.03.12)	105-110	5035	Resistant to black and brown rusts	Madhya Pradesh	

Sorghum hybrid	RVICSH 28 (SO 3540(E) 22.11.16)	110	65-68 t/ha (Fodder)	High sugar content (17 %) Resistance to lodging and ability to tolerate the drought	Madhya Pradesh	
Sorghum	RVJ 1862 (SO 3540(E) 22.11.16)	111	35-40 q/ha(grain) and Fodder yield is 118 q/ha	Tolerance to leaf spot and moderately tolerant to grain mold and Moderately tolerant to shoot fly and stem borer.	Madhya Pradesh	
Soybean	RVS 2001-04 (SO 1146(E) 24.04.14)	92-95	2495	2-3 seeds/pod, oval shaped yellows color seed with brown hilum	Madhya Pradesh	
	RVS 2001-18 (SO 2458(E) 29.08.17)	92	2300	Early maturing, Resistance to YMV, chorcol rot	Madhya Pradesh	
	RVS 2002-4 (SO 1007(E) 30.03.17)	96	1905	Medium maturity, Resistance to YMV, chorcol rot, root rot and stem fly	M.P., Chhattisgarh, Maharashtra, Gujarat, U. P. and Rajasthan	
Mustard	RVM 2 (SO 2815(E) 19.09.13)	125-130	2000-2200	Oil content 39.2 %, moderately resistant to white rust	J&K, Punjab, Haryana, Delhi and Rajasthan	
	RVM 1 (SO 3540(E) 22.11.16)	98-121	1400-2000	Moderately resistant to Alternaria, powdery mildew, downy mildew and <i>Sclerotinia</i> stem rot	Madhya Pradesh	
Toria	RVT 1 (SO 2458(E) 29.08.17)	90-105	1654	Tolerance to Alternaria and powdery mildew, drought tolerance oil content 42.08 to 44 %	Madhya Pradesh	
	RVT 2 SVRC 23.05.2017	108-09	1700-2400	Brown seeded, Tolerance to Alternaria and powdery mildew, drought tolerance, oil content 42 to 44 %	Madhya Pradesh	

Groundnut	JGN 23 (SO 449 (E) 11.02.2009)	140	1600-1800	Tolerant to Tikka disease of groundnut	Madhya Pradesh	
Safflower	RVS 113 SVRC 10.12.10	125-130	1600-1800	Spineless with early maturity, Oil content 29-30%, Resistant to lodging and shattering	Madhya Pradesh	 Raj Vijay Safflower 113
Cotton	RVK 67 SVRC, 27.05.15	145-160	1600-2000	Tolerance against jassid and bollworms	Madhya Pradesh	
Safed Musali	RVSM 414 SVRC, 10.12.10	85-100	1656 - 2370	Root powder contains 6.2 % steroidal saponine and 1.21 % sapogenine, Resistant to Fusarium moniliforme	Madhya Pradesh	 Raj Vijay Safed Musali 414
Ashwagandha	RVA 100 SVRC, 10.12.10	160	600 - 700 (Dry root)	Early maturity, Resistant to Alternaria blight.	Madhya Pradesh	 Raj Vijay Ashwagandha 100
Kalmegh	RVK 1 SVRC, 10.12.10	150-180	5500 - 6000	Suitable for three cutting	Madhya Pradesh	 Raj Vijay Kalmegh 1
Sarpgandha	RVSP 1 SVRC, 10.12.10	150-180	2700-2800	-	Madhya Pradesh	 Raj Vijay Sarpgandha 1

PROMINENT TECHNOLOGIES DEVELOPED:

Colleges, Research Centres and KVKs under the jurisdiction of Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya have been working for last several years and some salient achievements are:

- Developed most widely adopted soyabean variety JS-335 at Sehore, which covers 70% of soybean acreage in the country.
- Developed first extra bold (44g/100 seed) variety of kabuli gram (JGK-3) at Sehore, having early maturity and resistance against Fusarium wilt.
- Developed Gwalior-27 variety of Guava, at Gwalior.
- Developed high protein (12.6%) variety of wheat (MP-4010) having highest hectoliter weight, at Gwalior.
- Developed efficient chickpea Rhizobium strains JGRS-65 and JGRS-105 at Sehore.
- Developed Ridge and furrow method of soybean cultivation in high rainfall areas of medium to deep black soils at Indore.
- Developed wilt and sterility mosaic resistant variety of pigeon pea (TJT-501) at Khargone.
- Developed early maturing and disease resistant variety of Groundnut (JGN-23) at Khargone.
- Developed disease resistant varieties of crops viz., powdery mildew in green gram (JM-721) at Indore, wilt and sterility mosaic in pigeon pea (JKM-7) at Khargone and multiple disease resistant varieties in chickpea viz., JG-16, JG-11, JG-130, JG-6 and JAKI-9218 at Sehore and JG-412, JG-218 and JG-226 at Indore.
- Developed watershed management technology as early as during 1975-84 under Indo- U.K. project at Indore.
- Developed profitable Raised and Sunken bed technology and agro-forestry practices for salt affected soils at Badwah (Indore).
- Developed economically viable agronomical practices for judicious use of manure, fertilizers and bio fertilizers.
- Developed efficient cropping systems for different agro-climatic zones under irrigated and rainfed conditions.
- Application of salicylic acid @ 50 ppm recorded higher grain yield of soybean (2277 kg/ha) followed by application of Etherel @ 200 ppm of (2260 kg/ha).
- Application of *Rhizobium* + PSB + 100% RDF (20:50:20:20 NPKS kg/ha) or *Rhizobium* + 2.5 ton compost/ha + 50% RDF +PSB inoculation with recommended dose of nitrogen and sulphur can be applied depending on the availability of indigenous compost for optimum seed yield in chickpea.
- Application of FYM @ 5 t/ ha gave significantly higher grain yield of chickpea in comparison to control (no fertilizer application).
- Application of Ammonium molybdate @ 1.0 g/kg seed as seed treatment in chickpea along with *Rhizobium* +PSB was found effective and remunerative over control.
- Application of Molybdenum @ 1.0 g/kg seed resulted in 25-30% higher seed yield in lentil.

- In irrigated conditions, wheat variety GW 173 recorded the highest grain yield of 5600 kg/ha at 150:60:40 kg NPK /ha
- Irrigation applied atCRI, tillering, booting and milk stage along with 125% RDN in wheat gave maximum grain yield (4630kg/ha), net return of Rs. 54320/ha and B: C ratio of 2.54.
- Application of 1.233g PSF/kg seed + 50% P/ha produced highest grain yield of wheat (51.90q/ha).
- In Agri.–Horticulture system, aonla gave the maximum net returns (Rs.21000/- per ha) followed by guava (Rs 10050/- per ha)) and drum stick (Rs4750/-per ha), respectively.
- In Agri.–Horticulture system, intercropping systems pigeon pea+ soybean (4:2 rows) between the rows of fruit plants provided highest SEY (Soybean Equivalent Yield) (1060kg/ha), NR (Rs12000 /-per ha) and B: C ratio (2.07).
- Application of 40 kg sulphur/ha with 0.7 IW/CPE ratio gave the highest bulb yield (9233 kg/ha, sulphur uptake (38.99 kg/ha), net returns of Rs. 74948/ha and WUE of 219 kg/ha/cm in garlic under alluvial soil
- *Trichoderma viride* multiplied on maize for 10 days applied as seed dresser @ 10g/kg on opium seed and soil application @ 1:25 kg before sowing (seed row), reduced the downy mildew infection up to 7.37% as compared to 13.81% in untreated plot. Significant differences were also observed on latex, seed and husk yield in the treated plot.
- Rynaxypyr 20SC @ 150 ml/ha and Methomil 40SP@1kg/ha were found effective against grey & green semi-loopers and girdle beetle in soybean and gave higher yield as compared to control.
- In multi-location, testing of *Rhizobium* strains in chickpea showed that *Rhizobium* strain LGR 012 yielded highest grain yield (2212 kg/ha) followed by CH 2209-42/942 (2205 kg/ha) with highest N uptake (95.1 and 93.4 kg/ha).
- Foliar application of copper oxychloride @ 0.3 % + streptocycline 100 ppm at 30, 60 and 90 days after sowing was found most effective in controlling myrothecium leaf blight in cotton
- Use of distillery and sugar industry waste i.e. LS 5 t/ha + RSW @ 2.5 lakh L/ha in rice (cv CSR 30) – wheat (cv HI 1077) cropping sequence, the first season study indicates highest number of tillers per hill (28.4), plant height (127.1 cm), length of panicle (23.4 cm), grain (2.44 t/ha) and stover (7.33 t/ha) yield was recorded in rice due to application of amendments over control.
- In Sweet corn-chickpea cropping system, Chickpea exhibited highest yield of 2248 kg/ ha with net return of Rs.40466 per ha and B: C ratio of 7.61.
- In soybean-wheat cropping sequence, construction of dead furrows at the interval of 10 rows for safe removal of excess water from soybean field improved the productivity (1566kg/ha), WUE (3.67kg/ha/mm) and (Rs 26.600/-) in vertisols.
- In micro-watershed system, the cropping sequence of sweet corn–tomato exhibited the highest net return of 1,15,676/- per ha and B:C ratio of 2.65 followed by soybean–potato which has recorded net return of Rs.79,394/-per hectare and B:C ratio of 2.36.

- By long-term application of organic/ green manures at different soil ESP in sodic vertisols, the grain and stover/ straw yield of paddy and wheat decreased significantly with increase in soil ESP. Incorporation of green manure increased the paddy and wheat yields (grain and stover/straw) significantly over control.
- The survival and growth of Aonla, Ber and Drumstick in fruit plants, Arjuna, Mahuwa, Neem, Gugaland Karanj in medicinal plants and Siras, Babool, Sheesham and Khamer in forest trees are good for sustainable ravine management.
- New *Rhizobium* strain RVSGRS 114 identified
- Rhizobium + PSB + 2.5 tonn compost/ha save 15% RDF (NPKS)
- Sequential cropping of Soybean – Wheat (I year) -> soybean – Chickpea (II year) with RDF (20:50:20:20 NPKS kg/ha).
- Application of Ammonium molybdate @ 1.0 g/kg seed with *Rhizobium* +PSB+RDF has found effective and remunerative giving 25-30% an additional yield soybean-gram cropping system
- In IPNM, application of *Rhizobium* + PSB + 100% RDF (20:50:20:20 NPKS kg/ha) or *Rhizobium* + 2.5 ton compost/ha + 50% RDF +PSB inoculation with recommended dose of nitrogen and sulphur can be applied depending on the availability of indigenous compost for optimum seed yield in chickpea.
- Hybrid seed production technologies of Pigeonpea have been standardized.



- Experience in Organic cotton cultivation (1,00,000 ha).
- Finalization of appropriate management strategies and capacity building to farmers for adoption *Bt* cotton.
- Technology for management of false wilt in *Bt* cotton Developed
- *G. hirsutum* genotypes with excellent fibre properties (Superior Long)
- Standardized Intercropping technologies in Cotton.
- Developed Micro-irrigation techniques in Cotton.
- In Pearlmillet, seed dressing with *Bacillus pumilis* (INR7) + *Chitosan* was found effective in reducing downy mildew incidence and increasing grain and fodder yield
- Application of Oxy-demeton methyl @ 1 ml/l water to control Aphid population in Mustard.
- Spraying of thiomethoxam 25WG @ 0.005% imidacloprid 17.8%SL @ 0.0045% and acetamiprid 20SP @ 0.004% at 50 to 70 days after sowing was found beneficial for the management of aphid and increasing the seed yield of safflower.
- Application of 125% RDF (25N:100P:25K: 38S kg/ha) was found optimum for maximum economic yield in groundnut

LAND MARKS:

1. First Central Research Farm established in 1916 at Gwalior
2. First Agricultural Research Institute established in 1919 at Gwalior.
3. First Institute of Plant Industry established in 1924 at Indore.
4. First aerobic composting technique which is known as *Indore Compost* was developed at Institute of Plant Industry, Indore (now College of Agriculture) in 1931 by Albert Howard and Yashwant Wad. This technique was appreciated by our Father of Nation Mahatma Gandhi Ji when he visited Institute of Plant Industry on 23 April, 1935.



5. Development of improved varieties and agronomical practices from various Research Centres has helped Madhya Pradesh attain first, second and third rank in production of pulses, oilseeds and cereals, respectively, in the country.
6. Bring soybean revolution in the State through breeding programmes and popularising soybean cultivation in the State. Madhya Pradesh is now known as the Soy State of India.
7. Developed first ever coloured cotton variety (JCC-1) at Khandwa.
8. Soybean variety JS-335 covers more than 70% area in the country.
9. JG-11 Chickpea variety brought revolution in Andhra Pradesh and 80% area under this variety.
10. RVSJKG-102 First whitish extra bold Kabuli Gram variety with average seed size of 58g/100 seed.
11. JGK-3 First Kabuli gram pinkish medium large seeded (44 g/100 seed) with resistant to Fusarium Wilt.
12. Developed first brown seeded pigeon pea hybrid.
13. Conservation and popularization of “Kadakhnath” breed of poultry amongst the farmers as a component of Integrated Farming System (IFS).
14. Popularization of Apiculture/Bee keeping as a pollinator of crops and component of Integrated Farming System (IFS).