Profile
of
Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya,

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The Directorate of farm was established in August 2008 to coordinate all the research activities and this is responsible for administration, planning, budgeting, evaluation, monitoring with maintenance breeding of crop varieties and production of breeder seed and quality planting materials. It is actively engaged in the maintenance of crop varieties and production of nucleus and breeder seeds to fulfill the requirement of the state as well as the country.

Seed Management

Seed activities are managed through seed production/instructional farm, located in six agro-climatic zones under the administrative control of Director Farm.

Mission

Maintenance breeding of varieties, production of nucleus seed, breeder seed and hybrid seed production for enhancing the productivity and profitability of crops in a sustainable manner to ensure food security.

Mandate

- Serve as centre of excellence to coordinate the maintenance breeding, production of nucleus and breeder seed and promotion of hybrid seed production.
- Production and marketing of Raj Vijay Seed/planting materials.
- Monitoring and strengthening of seed farm activities.
- Increasing skills and awareness among seed growers and quality controllers in seed production technologies.

An Unique Seed Production System

The important features of university seed production system are mentioned below:

- Continuous release of crop varieties and hybrids through crop improvement programmes by team of breeders and scientists.
- One of the most important activities of seed production system is the maintenance breeding of crop varieties by a dedicated team of crop breeders located at various research stations.
- A sound seed production planning is the next component of this system which is finalized in university level meeting of crop breeders, officer-in-charge farm and the Director Farm twice in a year.
- The monitoring of seed production programme both nucleus and breeder seed is carried by internal monitoring teams, representatives of the respective Coordinator/Project Director, monitoring team constituted by respective Coordinator/Project Director, official monitoring team for breeder seed production and senior officers of the university i.e. Director Farm and Hon'ble Vice Chancellor.
- The breeder seed produced is supplied against the indents. The surplus breeder seed is made available to indenters like farmers/seed societies/private seed sectors on first cum first served basis.
- Increasing skills and awareness among seed growers and quality controllers on different aspects seed production technologies are made by trainings, demonstrations and exposure visits.

University Seed Farms and purpose of utilization

The seed activities in the university are managed with the help of twenty seven seed farms (Table 1), 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 (780.37 ha) (64.45%) is under cultivation. Among the cultivated area, 13.39 and 34.59% is irrigated and partially irrigated, respectively. Rest of the cultivation area is under rainfed farming. The area under plantation crop is about 82.02 ha. Rests of the farm area is fallow of pasture land or occupied by road and building.

The instructional post graduate research, applied research, maintenance breeding of seed chain varieties, nucleus and breeder seed production, hybrid seed production, technological demonstrations and production of quality planting materials are the major activities of these farms. Based on the location of farms at college, research station and Krishi Vigyan Kendra's, the purpose of utilization of different university farms are briefly described below:

Table 1: Farm area under cultivation

S.No.	Farm	Total Area (ha)	Cultivated area (ha)	Irrigated area (ha)	Partially irrigated area (ha)	Plantation crop (ha)
1.	Sehore	142.9	90.70	--	20.0	2.0
2.	Indore	147.54	63.26	--	43.52	5.30
3.	Dewas	20.49	18.0	--	2.0	--
4.	Dhar	32.43	24.0	--	10.0	0.43
5.	Jhabua	24.56	12.0	8.0	3.0	11.0
6.	Shajapur	20.0	17.0	--	17.0	--
7.	Ujjain	51.14	43.0	--	22.68	1.0
8.	Khandwa	106.96	55.0	10.0	28.0	16.40
9.	Khargone	37.0	32.0	--	16.0	--
10.	Badwani	20.70	15.0	--	2.0	1.75
11.	Entkhedi	21.64	6.0	--	4.0	14.64
12.	Rajgarh	14.67	8.0	8.0	--	3.0
13.	Mandsaur	90.91	55.0	--	20.0	14.91
14.	Patan	42.0	17.0	--	6.0	--
15.	Neemuch	20.0	13.0	--	--	--
16.	Jaora	12.87	11.50	--	11.50	0.29
17.	Gwalior	84.40	53.20	40.0	13.20	4.0
18.	Shivpuri	21.07	15.0	--	3.0	0.50
19.	Sheopur	15.18	10.0	--	10.0	0.80
20.	Datia	9.18	7.0	--	--	--
21.	Bagwai	56.00	47.2	17.20	30.0	1.0
22.	Aron, Guna	20.0	12.0	--	5.0	5.0
23.	Ashoknagar	18.38	12.0	--	--	--
24.	Morena	31.50	27.0	27.0	--	--
25.	Bhind	20.55	18.50	18.50	--	--
26.	Lahar	20.03	19.03	2.0	3.0	--
27.	Sirsod	108.98	78.98	--	--	--
Total		**1210.85**	**780.37**	**130.7**	**269.9**	**82.02**

i. Instructional college farms [Gwalior, Sehore, Indore, Khandwa & Mandsaur]

- Experimentation of PG/Ph.D. Research.
- Support to experiential learning programme of UG student.
- Conduction of research experiment of AICRPs (Wheat. Pearl Millet, Arid Legumes and Weed Science - Gwalior; Soybean, chickpea, pigeonpea and MULLaRP - Sehore; Dry land Agriculture, Management of Salt Affected Soils, Integrated Farming System, Operational Research Project, Sorghum, Safflower and Cotton - Indore; Cotton - Khandwa and Medical & aromatic plants and Grape - Mandsaur) and several other plan and non plan schemes.
- Maintenance breeding of notified crop varieties and parental lines of hybrids, nucleus and breeder seed production.
- Hybrid seed production in maize, pearl millet, sorghum and pigeonpea.
- Training to persons engaged in seed quality and personals of seed certification agency, department of agriculture and farmers.
- Exposure visit to farmers, students and extension personals.

ii. Instructional research farms [Khargone, Ujjain, Entkhedi, Morena & Jhabua]

- Research experimentation of AICRPs on Groundnut and Pigeonpea - Khargone; Rapeseed and Mustard and Water Management - Morena and Maize - Jhabua and several other plan and non-plan schemes.
- Maintenance breeding of crop varieties and parental lines of pigeonpea hybrids.
- Nucleus seed, breeder seed and hybrid seed production.
- Nursery management for the production of quality planting material of horticultural crops at Entkhedi.
- Training and exposure visit to farmers, RAWE students and officials of department of agriculture.

iii. Instructional KVK/ Seed farms [Bagwai, Joara, Bhind, Sirsod, Ashoknagar, Aron, Badwani, Datiya, Dewas, Dhar, Lahar, Neemuch, Patan, Rajgarh, Shajapur, Sheopur, and Shivpuri]

- Breeder seed production.
- Training on seed technologies to farmers.
- Exposure visit to farmers, RAWE students and extension personals.

Maintenance Breeding

Maintenance breeding means reproduction of seed chain varieties from generation to generation without change in their gene and gene frequency. In general, the process of mutation, migration, selection, recombination, aberration and latent segregation brings drastic change in seed varieties and consequently deteriorate the seed quality. The maintenance of genetic purity of notified crop varieties during seed production programme thus, becomes most important. Accordingly, maintenance breeding of crop varieties is in practice by a team of dedicated plant breeders working in different crop improvement projects. During the report period, 47 varieties in 13 crops were maintained for their genetic purity by respective crop breeders (Table 2). Besides these, genetic purity of A, B and R lines of released hybrids in pigeonpea, sorghum, pearl millet and maize was also maintained (Table 3).

Table 2: Crop varieties in maintenance breeding programme

S.No.	Crop	Variety
1.	Wheat	MP 4010, MP 1203 and RVW 4106
2.	Chickpea	Desi : JG130, JG 11, JG 16, JAKI 9218, JG 218, JG 6, JG226, RVG 201, RVG 202 and RVG 203 Kabuli : JGK 3, JKG 1, RVKG 101 and RVSJKG 102
3.	Lentil	JL 3 and RVL 31
4.	Sorghum	JJ 938 and JJ 1041
5.	Pearl millet	JBV 3 and JBV 2
6.	Maize	JVM 421
7.	Pigeonpea	TJT 501, JKM 7, JA 4 and JKM 189
8.	Black gram	JU 8-6, RBU 38 and T 9
9.	Green gram	TJM 3 and JM 721
10.	Rapeseed and mustard	JT 1, JM 1, JM 2, JM 3 and RVM 2
11.	Safflower	JSI 99, JSF 1 and JSI 97
12.	Soybean	JS 95-60, JS 93-05, JS 335 and RVS 2001 - 4
13.	Ground nut	JGN 3 and JGN 23

Nucleus seed production

Nucleus seed is the first stage of seed multiplication chain and its production is directly controlled the original crop breeder or sponsoring crop breeding institution. It is the multiplied from G_2 bulk seed of the variety. Both internal and external monitoring is performed for better quality assurance of the seed. Nucleus seed was produced in 8 Kharif crops namely, soybean, green green gram, black gram, pearl millet, sorghum, pigeonpea, paddy and groundnut (Table 4). During Rabi season, nucleus seed was produced in wheat ,gram, lentil, pea, mustard, toria, safflower and maize (Table 5) . A total of 756.71, 620.77, 753.95 and 720.99q of nucleus seed was produced during 2009-10,2010-11,2011-12and 2012-13, respectively. During kharif season of 2013-14 nucleus seed production was 290.33q. The maximum quantity of nucleus seed was produced in soybean.

Table 4: Nucleus seed produced in kharif crops

S.No.	Crops	Nucleus seed produced (q)				
		2009-10	2010-11	2011-12	2012-13	2013-14
1	Soybeen	241.83	268.70	256.30	281.00	273.70
2	Green gram	3.56	3.85	1.70	2.40	4.20
3	Black gram	0.25	0.35	0.70	0.80	0.60
4	Pearl millet	0.15	0.15	0.10	0.04	0.04
5	Sorghum	0.45	0.50	0.30	0.20	0.14
6	Pigeonpea	0.60	0.80	3.30	0.87	0.65
7	Paddy	-	9.00	8.00	-	9.00
8	Groundnut	4.00	2.00	2.00	2.00	2.00
Total		**250.84**	**285.35**	**272.40**	**287.31**	**290.33**

Table 5: Nucleus seed produced in Rabi crops

S.No.	Crops	Nucleus seed produced(q)			
		2009-10	2010-11	2011-12	2012-13
1	Wheat	127.03	92.64	124.0	133.80
2	Gram	353.72	213.00	355.0	296.94
3	Lentill	1.40	0.80	0.20	0.40
4	pea	23.00	28.19	-	-
5	Mustard	0.25	0.35	1.80	2.10
6	Toria	0.05	0.05	0.05	0.04
7	Safflower	0.22	0.21	0.20	0.20
8	Maize	0.20	0.18	0.30	0.20
Total		**505.87**	**335.42**	**481.55**	**433.68**
Grand Total [K+R]		**756.71**	**620.77**	**753.95**	**720.99**

Breeder seed production

Single window system of breeder seed production is functional in this university. Breeder seed is the seed directly controlled by the original crop breeder or sponsoring crop breeding institution, produced as per indent from Government of India/ state government following the ICAR guidelines. University is committed to hold the responsibility of breeder seed production as per available indent to maintain the seed production chain and enhanced the SRR in the state as well as in the country. During the report period, breeder seed of 66 varieties was produced in 16 crops (Table 6). Maximum number of varieties in gram (15) followed by wheat (13), rapeseed & mustard (7) and soybean (6). Single variety breeder seed production was in paddy, maize and berseem. A total of 3399.21, 3209.65, 4588.87, 3847.44, 2353.85 and .....q of breeder seed ware produced in Kharif seasons of 2009-10, 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15 respectively (Table 7). Similarly, breeder seed production was 5300.50, 5625.80, 7027.86, 5863.44 and .....q during Rabi seasons of 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14, respectively (Table 8). The variation in quantity of breeder seed produced was mainly due to climatic irregularities/vagaries because majority of seed farm area is either rainfed or partially irrigated to certain extent. Both Kharif and Rabi seasons of 2011-12 was recorded favourable with highest production of breeder seed (11616.74q). In general, the higher quantity of breeder seed was produced in soybean, wheat and gram while, it was lowest in berseem followed by pearl millet and lentil. Breeder seed of maize was produced in both Kharif and Rabi seasons.

Table 6: Crop varieties involved in breeder seed production

S.No.	Crop	Variety
1.	Soybean	JS 95-60. JS 335, JS 93-05, JS 97-52, JS 90-41 & RVS 2001-04
2.	Green gram	TJM 3 and JM 721
3.	Black gram	JU 86, T 9 and RBU 38
4.	Pearl millet	JBV 3 and JBV 2
5.	Sorghum	JJ 1041 and JJ938
6.	Ground nut	JGN 3 and JGN 23
7.	Paddy	Kranti
8.	Pigeonpea	JKM 189, JA 4, JKM 7 and TJT 501
9.	Maize	JVM 421
10.	Wheat	MP 4010, GW 366, GW 322, JW 3020, HW 2004, Lok 1, Sujata, GW 366, MP 1203, GW 273, HD 2932, HD 2987 and RVW 4106
11.	Gram	Desi : RVG 201, RVG 202, RVG 203, JG 11, JG 16, JG 6, JG 130, JG 226, JAKI 92185, JG 218, JG 412 & Vishal Kabuli : RVKG 101, JGK 3 and JGK 1
12.	Lentil	JL 3 and RVL 31
13.	Rapeseed and mustard	JT 1, Rohini, Pusa bold, JM 1, JM 2, JM 3 and RVM 2
14.	Safflower	JSF 1, JSI 99 and JSI 97

Table7: Breeder seed produced in Kharif crops

S.No.	Crops	Breeder seed produced (q)					
		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
1	Soybean	3266.40	2932.90	3607.70	3150.00	1554.00	
2	Green gram	17.49	24.60	27.40	85.00	25.90	
3	Black gram	8.81	12.70	35.00	33.00	11.00	
4	Pearl Millet	3.15	--	0.75	0.25	0.25	
5	Sorghum	12.55	9.00	3.00	3.10	2.20	
6	Ground nut	46.00	36.00	8.00	12.09	1.30	
7	Paddy	--	135.00	900.00	540.00	723.00	
8	Pigeonpea	35.81	59.45	7.02	24.00	36.20	
9	Maize	9.0	--	--	--	--	
Total		**3399.21**	**3209.65**	**4588.87**	**3847.44**	**2353.85**	

Table8: Breeder seed produced in Rabi crops

S.No.	Crops	Breeder seed produced (q)				
		2009-10	2010-11	2011-12	2012-13	2013-14
1	Wheat	2366.40	3330.00	4300.92	3534.00	
2	Gram	2442.00	1909.20	2633.33	2194.80	
3	Lentil	1.20	4.20	3.50	7.70	
4	Pea	160.00	164.50	4.50	--	
5	Rapeseed and mustard	279.80	196.50	45.71	101.94	
6	Safflower	2.10	1.60	--	0.60	
7	Maize	49.00	19.80	39.90	22.40	
8	Berseem	--	--	--	2.00	
Total		**5300.50**	**5625.80**	**7027.86**	**5863.44**	
Grand Total		**8699.71**	**8835.45**	**11616.74**	**9710.88**	

Hybrid seed production

Hybrid varieties are known for higher yield potential in comparison to pure lines/composites. The cost of hybrid seed is always remaining higher because it is mainly produced by the private seed sector. Timely unavailability of hybrid seed also limits the spread of hybrid varieties. In order to overcome these limitations, hybrid seed production programme was initiated in maize, pearl millet, sorghum, caster and pigeon pea. It was also our objective to provide trainings to farmers/members of seed societies on hybrid seed production. Hybrid seed production was 60-54, 48.54, 13.70, 30-60 and ..... q during the year 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14 respectively.

Table 9: Hybrid seed production

S.No.	Crops	Variety	Hybrid seed produced (kg)			
			2009-10	**2010-11**	**2011-12**	**2012-13**
1	Maize	HQPM 1	768.00	840.00	868.00	2040.00
2	Pearl millet	HHB 67	1486.00	917.00	--	--
3	Sorghum	CSH 18	80.00	1397.00	142.00	220.00
4	Caster	DCH 177	285.00	300.00	--	--
5	Pigeon pea	RVICPH 2671	3435.00	1400.00	360.00	800.00
Total			**6054.00**	**4854.00**	**1370.00**	**3060.00**

Production of planting material

Production of quality planting material is also important for horizontal spread of fruits and agro-forestry tree species. Keeping this in view, quality planting material was produced in eleven tree plants namely, Lime, Custard Apple, Jamun, Jack Fruit, Mango, Aonla, Karonda, Guava, Pomegranate, Ashok and Bamboo (Table 10). Twenty one improved and two local varieties were utilized for their reproduction and production of quality planting material, The maximum number of 119020 plants was produced in bamboo followed by Mango (87790), Guava (26326), Jack fruit (25100), Jamun (23300), Lime(16890) and Custard Apple (13050) while, minimum number of plants produced in Pomegranate (100), Ashok (1200), Karonda (6800) and Aonla (7000). A total of 70106, 133550, 55750 and 67170 quality planting materials were produced during 2009-10, 2010-11, 2011-12 and 2012-13 respectively.

Table 10: Production of planting materials in different crops

S.No.	Crops	Variety	Hybrid seed produced (kg)			
			2009-10	**2010-11**	**2011-12**	**2012-13**
1	Lime	Kagzi	1590	5050	**5200**	5050
2	Custard apple	Rargarh Sel.	5500	2500	**3050**	2000
3	Jamun	Local	11500	4800	**4000**	3000
4	Jack Fruit	Babai Sel.	12100	3000	**5000**	5000
5	Mango	Chousa, Langra, Dashhari, Dahiyar, Amrapali, Fazali and Malika	34790	19000	**15000**	19000
6	Aonla	Chakaiya and NA 7	3000	2000	**1000**	1000
7	Karonda	Local	800	2000	**2000**	2000
8	Guava	Chittidar, Dharidar, Rewa 72, Gwalior 27, Allahabad Safeda and Apple Guava	226	6100	**10000**	10000
9	Pomegranate	Bhagawa	100	--	**--**	--
10	Ashok	Pendulous	500	100	**500**	100
11	Bamboo	Katanga	--	89000	**10000**	20020
Total			**70106**	**133550**	**55750**	**67170**