

DEPARTMENT OF PLANT BREEDING & GENETICS

PROFILE:-

The Department of Plant Breeding & Genetics was established in 1980 for M.Sc. (Ag) degree programme at JNKVV, College of Agriculture, Gwalior. Since then 100 students have received Post graduate degree till to date. The department has one UG and PG laboratory at present which is well equipped with interactive board and multimedia. The first batch of Ph.D enrolled in second semester 2010-11. Since then two students have received Ph.D Degree. At present student intake capacity of PG and Ph.D programmes are 9 and 6 respectively.

BACKGROUND:-

The Department of Plant Breeding & Genetics has budded as an offshoot from the erstwhile Agricultural Botany in the year 1980. This accelerated the pace of crop improvement as regard to productivity, quality and sustainability, thereby improving the livelihood of farming community.

MISSION:-

The mission of this department to develop human resource in the subject and genetic improvement of field crop for food and nutritional betterment.

MANDATE:-

1. To manipulate genetic architecture to develop suitable varieties of various crops.
2. To produce and maintain recommended crop varieties for quality seed production programme.
3. To serve as a centre of teaching in the field of Plant Breeding & Genetics including allied sciences.
4. To serve as a center of basic research in the field of Plant Breeding & Genetics including allied sciences.

Details of Scientist and other staff:-



Dr A.K.Singh
Professor.& HOD

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0751-2341691(Fax),
9425308850,(Mob)
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FACULTY

S.No	NAME	DESIGNATION	SPECIALIZATION	CONTACT NO /EMAIL ID
1.	Dr.A.K.Singh	Professor.& HOD	Crop Improvement	0751-2460581(o), 0751-2341691(Fax), 9425308850,(Mob) hodpbg2009@gmail.com
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Other Campus Faculty

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1.	Dr.Jagdish Singh	Principal Scientist COA,Indore	Plant Breeding	9425958713 (Mob) Safflowerjagdish@yahoo.com
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21.	Shri Dinesh Awasthi	Tech.Asstt ZARS,Morena	Plant Breeding	9584709675 (Mob)
22.	Dr.V.S.Bhadauria	P.A,KVK,Gwalior	Plant Breeding	9826776808 (Mob)

M. Sc (Ag) Students Received Degree (1980 to 2014-15) – 100

Ph.D Student Awarded Degree; 02

Number of PG/Ph. D Students registered (RVSKVV, GWALIOR)

• M. Sc. (Ag) admitted (New Course) in	2009-10:	06
• Ph. D. admitted in	2009-10:	NIL
• M. Sc. (Ag) admitted (New Course) in	2010-11:	07
• Ph. D. admitted in	2010-11:	03
• M.Sc. (Ag) admitted (New Course) in	2011-12:	08
• Ph. D. admitted in	2011-12:	02
• M.Sc. (Ag) admitted (New Course) in	2012-13:	08
• Ph. D. admitted in	2012-13:	01
• M. Sc. (Ag) admitted (New Course) in	2013-14:	09
• Ph. D. admitted in	2013-14:	04
• M. Sc. (Ag) admitted (New Course) in	2014-15:	09
• Ph. D. admitted in	2014-15:	02

PROGRAMME OFFERED IN UG PROGRAMME:-

Semester	Courses	Credit
I	Principles of Genetics	3(2+1)
II	Principles of Seed Technology	3(2+1)
III	Principles of Plant Breeding	3(2+1)
IV	Breeding of Field/ Horticultural Crops ³	3(2+1)
V	Principles of Plant Biotechnology	3(2+1)
VI	ELPD Module I Seed Production Technology	3(1+2)

PROGRAMME OFFERED IN PG PROGRAMME:-**1st SEMESTERWISE DISTRIBUTION OF M.Sc.(Ag) PLANT BREEDING & GENETICS COURSES(2011-12)**

COURSE NO.	NAME OF COURSE	CREDITS
MAJOR COURSES		
GP501	Principles of Genetics	2+1
GP502	Principles of Cytogenetic	2+1
GP503	Principles of Plant breeding	2+1
GP508	Cell Biology and Molecular genetics	2+1
	Total	12
Minor		
Pl,Path513	Disease resistance in plants	2+0
Pl.Path505	Detection & diagnosis of plant diseases	0+2

Supporting		04
STAT511	Statistical methods for applied Sciences	3+1
	Total	04
PGS501(NC)	Library & Information Services	0+1
PGS502(NC)	Technical Writing & Communication Skill	0+1
PGS503(NC)	Intellectual property & Its management in Agriculture	1+0
	Total	3

2ND SEMESTERWISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
Major Courses		
GP515	Maintenance Breeding and concept of Variety release and seed production	1+1
GP504	Principles of Quantitative Genetics	2+1
GP509	Bio Technology for Crop Improvements	2+1
	Total	8
Minor		
Pl.Path516	Integrated disease management	3(2+1)
ENT511	Pest of Field crops	2(1+1)
	Total	5
Supporting		
STAT512	Design of Experiments	2+1
	Total	3
PGS504(NC)	Basic Concept in Laboratory Technique	0+1
PGS505(NC)	Agricultural Research, Research Ethics and Rural development program	1+0
PGS506(NC)	Disaster Management	1+0
	TOTAL	3

3rd SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP591	Seminar	1+0
GP599	Masters Research	10
	Total	11

4th SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP599	Masters Research	10
	Total	10

PROGRAMME OFFERED IN Ph.D PROGRAMME:-**1st SEMESTERWISE DISTRIBUTION OF PLANT BREEDING& GENTICS COURSES**

COURSE NO.	NAME OF COURSE	CREDITS
MAJORCOURSES		
GP 601	Plant Genetics resources and Pre-Breeding	2+0
GP 604**	Molecular and chromosomal manipulation in crop plant	2+0
GP 605**	Advances in plant Breeding Systems	2+0
	TOTAL	06
Minor		
ENT 606	Recent trends in Biological Control	1+1
	Total	02

Supporting		04
STAT 521	Applied regression Analysis	2+1
	Total	03
PGS501(NC)*	Library & Information Services	0+1
PGS502(NC)*	Technical Writing & Communication Skill	0+1
PGS503(NC)*	Intellectual property & Its management in Agriculture	1+0
	Total	3

1) 2ND SEMESTERWISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
Major Courses		
GP 603**	Genomics in Plant Breeding	2+1
GP 602	Advanced Biometrical & Quantitative Genetics	2+1
GP 608	Advances in Breeding major field crops	3+0
	Total	09
Minor		
ENT 608	Advance Host Plant resistance	1+1
ENT 611	Molecular approaches in Entomological research	1+1
ENT 612	Advanced Integrated pest management	2+0

Supporting		06
STAT 531	Data analysis using statistical packages	2+1
	Total	03
PGS504(NC)*	Basic Concept in Laboratory Technique	0+1
PGS505(NC)*	Agricultural Research, Research Ethics and Rural development program	1+0
PGS506(NC)*	Disaster Management	1+0
	TOTAL	3

2) 3rd SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP691	Seminar	1+0
GP699	Masters Research	10
	Total	11

4.4th SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP691	Seminar	1+0
GP699	Masters Research	10
	Total	11

5.5th SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP699	Masters Research	10
	Total	10

6.6th SEMESTER WISE DISTRIBUTION OF COURSES

COURSE NO.	NAME OF COURSE	CREDITS
GP699	Masters Research	15
	Total	15

TECHNOLOGY PRODUCT DEVELOPED: - The following crop varieties recommended for the state.

Crop	Recommended varieties
Soybean (Early)	JS.95-60,JS.93-05,JS.71-05,JS.90-41
(Medium)	RVS.2001-04, JS.335, NRC.37.JS.75-46, NRC.12.
(Late)	JS.80-21, JS.97-52, JS.72-280.
Maize	JM.8,JM12,JM.216,Ganga white-2,JM.13,J.POP-11,African Tall (F),C.M.-3, J.B.M.-421,H.P.Q.M-1(Hybrid)P.E.M.H-1,P.E.M.H-2.
Sorghum	J.J-938, J.J.-1041, J.J-1022, J.J.-741, C.S.H-.18, I.M.S-.9A, 9B, Indore-12.
Bajra	JBV-2, JBV-3, JBV-4, HHB-67(Improved) (hybrid), GHB-744.
Black Gram	JU-3, PDU-1, LBG-20, TAU-1, PU-35, PU-19, JU-86, T-9, PU-30.
Green Gram	JM-721,TARM-1,K-851,TM-98-50,HUM-1,PUSAVISHAL,PDM-139,PDM-11,PDM-54,Ganga-8,TM-99-37,TJM-3.
PADDY	
(Early)	JR-201, JR-353, JR-345, JR-503, JR-504.
(Medium)	Kranti,IR-64,Mahamaya,Pusa Songhandha-3, Pusa Songhandha-5,Pusa Basmati-1,Madhuri,PS-4.
(Hybrid)	JRH-4, JRH-5.
TILL	JT-21, JT-22, JT-55, TKG-8, TKG-306.
Cotton	RB-50, K-2, Vikram k-4 Maljari, Tapti, JCC-1.

Sunflower	Morden, MSFH-17.
Arhar	JKM-7, TJT-501, RVCPh-2671 (Hybrid), JKM-189, RVA-28.
Groundnut	JL-24, JGN-3, TG-26, TG-24, TG-41, TG-37, JGN-23.
Wheat	
Partial Irrigated (1-2), 10 November,	C-306, Sujata, JWS-17, HW-2004 (Amar), HI-1500 (Amarta), MP-3020, HI-1531, (Harshita), HI-8627, (Malwa kranti), HD-4672 (Malab rattan).
Irrigated Timely sown (3-5), 25 November)	GW-190, GW-273, GW-322, GW-366, DL-803-3 (Kanchan), MP-1142, HI-1479 (Swarna), Raj-1555, HI-8381 (Malabshri), HI-8498 (Malabshakti).
Irrigated Late sown (3-4), 25 November)	M.P-4010, HI-1418 (Navin chadusi), DL-788-2 (Vidhisha), GW-173, HD-2285, HI-1454 (Abha), HD-2864, HI-8498, RVW-4106, MP-1203.
Irrigated extreme late (4-5) 15 January	MP-4010, HD-2402, Raj3777, HI-1418, HD-2864, HD-2932.
Irrigated saline soils (4-5)	Raj-3077, JBO-666, KRL-19.
Gram (Desi)	JG-16, BG-1053, JG-412, JG-6, JG-11, Jaki-92-18, JG-130, JG-315, JG-322, JG-218, Vijay vishal, Uday JG-226, IPCK-2004-29, RVG-201.
Gram (Kabuli)	RVKG-101, JG-1, JKG-3, RVSJKG-102 Fule G-0517, KAK-2, PKV-4, RVG-203.
Pea	Arkel, AP-3 JM—6, Pusa Pragati.
Barseem	JB-1, JB-5, PB-1.
Oat	Kent, JO-1.
Linseed	JLS-9, JLS-23-10, JLT-27, JLT-26
Safflower	JSF-1, JSF-7, JSF-73, JSF-97, JSF-99, RVS-113.
Lentil	JL-3, JL-1, Nori (IPL-81), RVL-31.
Mustard	JM-1, Pusa Bold, JM-2, JM-4, Rohidi, Pusa Jay kisan, JM-3, RVM-2.
Toriya	JT-1
Sugarcane	COJN-86-141, CO-86032, COC-671, CO-6527, CO-7318, CO-6304, CO-86-572.

SIGNIFICANT ACHIVEMENT: - Research Projects Of The Department

- AICRP on Pearl millet
- AICRP on Wheat
- AICRP on Groundnut
- Millet Improvements scheme (State Plan)

WHEAT TECHNOLOGY DEVELOPED: Main Features of MP 4010

1. It is recommended for central zone
2. Average grain yield is 40.10 q/ha
3. Good appearance, bold size and amber color grain
4. Resistant to both stem and leaf rusts.
5. Maturity: 108 days
6. Height: About 80-85 cm
7. Tolerant to terminal heat & drought
8. Its hectoliter weight is around 82.4.
9. Its sedimentation value is 48.5
10. Protein is about 12.6%



RVW 4106 Main Features

1. It is recommended for late sown irrigated condition in MP
2. Average grain yield is 45-55 q/ha
3. Bold size and amber color grain
4. Resistant to both stem & leaf rusts
5. Maturity: 112 days
6. Height: About 87± 15 cm
7. Tolerant to terminal heat & drought
8. Its hectoliter weight is around 79.7
9. Its sedimentation value is 49.0
10. Protein is about 13.55%
11. Notification No. DL-33004 / 99, No. 408 dated 16-03-2012



PEARL MILLET TECHNOLOGY DEVELOPED JBV-2 (OPV) MP309 released in 1999

01	Parentage	Developed from early composite 91(EC-91) bred by random mating 140 S1 progenies
02	Maturity	70-75days
03	Grain Type	Globular,small(Test weight,7.43g)
04	Biotic stress	Resistant toDowney mildew
05	Abiotic stress	-
06	Recommended regions	Rajasthan,Gujrat,M.P.,Haryana,U.P. and Punjab
07	Areas of adoption	MP and A zone of Country
08	Special attributes	Spike Cylindrical Yellow anther,bristles absent exertion complete
09	Average yields	1.8-2.0 t/ha
10	Scientist involved	Dr.A.K.Singh,Dr.G.S.chauhan
11	Year of release	1999
12	notification	SO.425(E) 8.6.99



PEARL MILLET: JBV-3(OPV) MP363 RELEASED IN 2000.

01	Parentage	Developed by random mating of 15 full sib progenies
02	Maturity	70-75 days
03	Grain Type	Obviate ,medium(Test weight,8.66g)
04	Biotic stress	Resistant to downey mildew
05	Abiotic stress	-
06	Recommended regions	Rajasthan, Gujarat, M.P., Haryana, U.P. and Punjab
07	Areas of adoption	M.P.and A zone of Country
08	Special attributes	Spike Cylindrical long(33.1 cm) Yellow white anther, bristles absent exertion complete
09	Average yields	20-26q/ha
10	Scientist involved	Dr.A.K.Singh,Dr.G.S.chauhan,Dr.R.K.Pandya
11	Year of release	2000
12	notification	SO.92(E) 2.2.01



Pearl millet (OPV): JBV-4 (Release in 2006 by Govt. of M.P.)

01	Parentage	Bred by random mating 212 S1 progenies from C3 cycle of early smut resistant composite (ESRCII)
02	Maturity	75 days
03	Grain Type	Obovate to lanceolate
04	Biotic stress	Resistant to downy mildew disease
05	Recommended regions	Madhya Pradesh
06	Areas of adoption	Bhind , Morena, Gwalior part of shivpuri
07	Special attributes	Spike Cylindrical Yellow anther, bristles absent exertion complete
08	Average yields	24-30q/ha
09	Scientist involved	Dr.G.S.chauhan,Dr.A.K.singh & Dr. R.K. Pandya
10	Year of release	2006
11	Notification/ registered	S.O.1178 (E) dt 20.07.07/Registered in NBPGR IC No.548533



RVSBP -1 (OPV) Selected for VIC for state release in 2012

- High Biomass Variety
- Grain yield: 20.81q/ha. Fodder yield :90q/ha
- Maturity :80-85 days



Promising Station Pearl millet Hybrid during 2012-13

Medium height, Dark foliage, Thick panicle with bold grain 45.65

q/ha (80-85 days maturity)



Awards

Best Teacher Award in The field of Agriculture Education by Gwalior Vikas Samiti on 5th September; (2012) to **Dr. A.K. Singh**, Professor & HOD (PBG).