


### Brief bio-data of Dr P Kaushal

<b>Name</b>		<b>Dr P Kaushal</b>			
<b>Designation</b>		<b>Joint Director (Research)</b>			
<b>Email address</b>		jdrnibsm@gmail.com			
<b>Contact No.</b>		09198890991			
<b>Qualifications</b>		M.Sc, Ph.D			
<b>Service particular/detail</b>		Starts from first place of posting			
Sl No.	Institution Place	Position	From (Date)	To (date)	
1	National Institute of Biotic Stress Management, Raipur	Joint Director (Research)	22.2.16	continuing	
2	Indian Grassland and Fodder Research Institute, Jhansi	Head, Crop Improvement Division	09.06.11	21.02.16	
3	Central Rice Research Institute, Cuttack	Principal Scientist	21.12.08	08.06.11	
4	Indian Grassland and Fodder Research Institute, Jhansi	Senior Scientist	30.09.04	20.12.08	
5	Institute for Plant Genetics and Crop Plant Research (IPK) Gatersleben, Germany	Post Doc. Fellow (on deputation)	17.1.01	17.05.02	
6	Indian Grassland and Fodder Research Institute, Jhansi	Scientist (Sr. scale)	30.09.99	29.09.04	
7	Indian Grassland and Fodder Research Institute, Jhansi	Scientist	30.09.95	29.09.99	
<b>Major research area</b>		Rice biotechnology, Fodder crops genetics and breeding, alien introgressions for crop improvement, apomixis			
<b>Patent/germplasm registered/ gene bank submission/varieties released etc.</b>					
<ol style="list-style-type: none"> <li>1. Release for varieties: 4 (Guinea grass-3; Berseem-1)</li> <li>2. Germplasm registered: 22 (Guinea grass-7, <i>Pennisetum</i> species- 2, pearl millet- 7, Berseem-6)</li> <li>3. Gene Bank submissions: 3 Libraries (pearl millet, reproductive stages including apomixis)</li> </ol>					
<b>Awards/ Recognitions</b>					
<ul style="list-style-type: none"> <li>➤ Fellow, Range Management Society of India (2013)</li> <li>➤ ICAR Outstanding Research Team Award (2007-08)</li> <li>➤ NAAS Associate (2006)</li> <li>➤ DBT- Indian Biotech Overseas Associateship (2009)</li> <li>➤ DST-BOYSCAST Fellow (2001)</li> </ul>					

<b>Number of Research publications</b>	
I. Research papers (National /International)	25 National; 25 International Research papers
II. Popular/ review articles	3 Germplasm catalogues
III. Book chapters	2 Descriptors
IV. Books authored/ edited	10 book chapters
<b>List three major research achievements</b>	
	<ol style="list-style-type: none"> <li>1. Partitioning of apomixis components to yield a multi-gene regulation of apomixis components, and generation of world's largest ploidy series in guinea grass following Hybridization-supplemented Apomixis-components Partitioning Approach (HAPA), represented by 3x, 4x, 5x, 6x, 7x, 8x, 9x, and 11x cytotypes, from a single 4x progenitor.</li> <li>2. Generating new plant type in fodder pearl millet and identification of genes involved in apomictic reproduction.</li> <li>3. Alien introgressions for desirable gene transfer in rice, pearl millet and berseem through interspecific hybridization.</li> </ol>
<b>Member of professional societies</b>	Range Management Society of India Association of Rice Research Workers
<b>Any other relevant information</b>	List of publications and any other special achievements Please see attached list

### Selected Research Papers

- Siena, L. A., J. P. A. Ortiz, O. Calderini, F. Paolocci, M. E. Cáceres, P. Kaushal, S. Grisan, S. C. Pessino and F. Pupilli. 2016. An apomixis-linked ORC3-like pseudogene is associated with silencing of its functional homolog in apomictic *Paspalum simplex*. *Journal of Experimental Botany*. doi:10.1093/jxb/erw018
- Kaushal, P., S. Paul, S. Saxena, K. K. Dwivedi, M. Chakraborti, A. Radhakrishna, A. K. Roy and D. R. Malaviya. 2015. Generating higher ploidies (7x and 11x) in guinea grass (*Panicum maximum* Jacq.) utilizing reproductive diversity and uncoupled apomixis components. *Current Science* 109: 1392-1395.
- Kaushal, P., K. K. Dwivedi, A. Radhakrishna, M. K. Srivastava, D. R. Malaviya, A. K. Roy, S. Saxena and S. Paul. 2015. Development and characterization of a hexaploid *Pennisetum orientale* (2n=6x=54) cytotype recovered through B<sub>III</sub> hybridization. *Cytologia* 80: 37-43.
- Verma Priyanka, A. Chandra, A. K. Roy, D. R. Malaviya, P. Kaushal, D. Pandey and S. Bhatia. 2015. Development and characterization of genomic based SSR markers in berseem (*Trifolium alexandrinum* L.), an important multi-cut annual forage legume. *Molecular Breeding* 35:23, DOI 10.1007/s11032-015-0223-7
- Pathak S., D. R. Malaviya, A. K. Roy, Kuldip Dwivedi and P. Kaushal. 2015. Multifoliate leaf formation in induced tetraploids of *Trifolium alexandrinum* L. *Cytologia* 80: 59-66.
- Dwivedi, K. K., A. Radhakrishna, S. Kumar, M. K. Srivastava, M.G. Gupta and P. Kaushal 2015. Development of an ISSR-derived SCAR marker linked to apospory in buffel grass (*Cenchrus ciliaris* L.) *Indian Journal of Genetics and Plant Breeding* 75: 271-273.

- Mishra, R., G. J. N. Rao, R. N. Rao and P. Kaushal. 2015. Development and characterization of elite doubled haploid lines from two indica rice hybrids. *Rice Science*, 22: 290-299.
- Sahu, P. P., S. Gupta, D. R. Malaviya, A. K. Roy, P. Kaushal and M. Prasad. 2012. Transcriptome analysis of differentially expressed genes during embryo sac development in apomeiotic non-parthenogenetic interspecific hybrid of *Pennisetum glaucum*. *Molecular Biotechnology* 51:262-271.
- Kaushal, P., Aarti Khare, S. A. Siddiqui, A. Agrawal, S. Paul, D. R. Malaviya, A. K. Roy and S. N. Zadoo. 2010. Morphological, cytological and reproductive characterization of tri-species hybrids (GOS) between *Pennisetum glaucum*, *P. orientale* and *P. squamulatum*. *Euphytica* 174: 261-281.
- Kaushal, P., A. Agrawal, D. R. Malaviya, S. A. Siddiqui and A. K. Roy. 2009. Ploidy manipulation in guinea grass (*Panicum maximum* Jacq., Poaceae) utilizing a Hybridization-supplemented Apomixis-components Partitioning Approach (HAPA). *Plant Breeding* 128: 295-303.
- Chandra, A. and P. Kaushal. 2009. Identification of diploid *Stylosanthes seabrana* accessions from existing germplasm of *S. scabra* utilizing genome-specific STS markers and flow cytometry, and their molecular characterization. *Molecular Biotechnology* 42: 282-291.
- Kaushal, P., D. R. Malaviya, A. K. Roy, Shalini Pathak, A. Agrawal, Ambica Khare, S. A. Siddiqui. 2008. Reproductive pathways of seed development in apomictic guinea grass (*Panicum maximum* Jacq.) reveal uncoupling of apomixis components. *Euphytica* 164: 81-92.
- Kaushal, P., Aarti Khare, S. N. Zadoo, A. K. Roy, D. R. Malaviya, A. Agrawal, S. A. Siddiqui and R. N. Choubey. 2008. Sequential reduction of *Pennisetum squamulatum* genome complement in *P. glaucum* ( $2n=28$ )  $\times$  *P. squamulatum* ( $2n=56$ ) hybrids and their progenies revealed its octoploid status. *Cytologia* 73:151-158.
- Malaviya D. R., A. K. Roy, P. Kaushal, B. Kumar and A. Tiwari. 2008. Phylogenetic studies based on isozyme similarity among *Trifolium* species. *Plant Systematics and Evolution* 276: 125-136.
- Kaushal, P., A. K. Roy, A. Khare, D. R. Malaviya, S. N. Zadoo and R. N. Choubey. 2007. Crossability and characterization of interspecific hybrids between sexual *Pennisetum glaucum* (pearl millet) and a new cytotype ( $2n=56$ ) of apomictic *P. squamulatum*. *Cytologia* 72: 111-118.
- Kaushal, P., A. Tiwari, A. K. Roy, D. R. Malaviya and B. Kumar. 2006. *In vitro* regeneration of *Trifolium glomeratum*. *Biologia Plantarum* 50: 693-696.
- Jain, A., A. K. Roy, P. Kaushal, D. R. Malaviya and S. N. Zadoo. 2006. Isozyme banding pattern and estimation of genetic diversity among guinea grass germplasm. *Genetic Resources and Crop Evolution* 53: 339-347.
- Malaviya, D. R., A. K. Roy, A. Tiwari, P. Kaushal and Bijendra Kumar. 2006. *In vitro* callusing and regeneration in *Trifolium resupinatum*- a fodder legume. *Cytologia* 71: 229-235.
- Kaushal, P., S. N. Zadoo, D. R. Malaviya and A. K. Roy. 2005. Apomixis research in India: past efforts and future strategies. *Current Science* 89: 1092-1096.
- Malaviya, D. R., B. Kumar, A. K. Roy, P. Kaushal and A. Tiwari. 2005. Estimation of variability of five enzyme systems among wild and cultivated species of *Trifolium*. *Genetic Resources and Crop Evolution* 52: 967-976.
- Kaushal P., D. R. Malaviya, A. K. Roy, B. Kumar and A. Tiwari. 2005. *Trifolium alexandrinum*  $\times$  *T. resupinatum* - interspecific hybrids developed through embryo rescue. *Plant Cell, Tissue and Organ Culture* 83:137-144.
- Roy, A. K., D. R. Malaviya and P. Kaushal. 2005. Pollination behaviour among different breeding populations of Egyptian clover. *Plant Breeding* 124: 171-175.
- Kaushal, P., D. R. Malaviya and A. K. Roy. 2004. Prospects for breeding apomictic rice: a

- reassessment. *Current Science* 87: 292-296.
- Malaviya, D. R., A. K. Roy, P. Kaushal, B. Kumar and A. Tiwari. 2004. Development and characterization of *Trifolium alexandrinum* x *T. apertum* using embryo rescue. *Plant Breeding* 123: 536-542.
- Roy, A. K., D. R. Malaviya, P. Kaushal, B. Kumar and A. Tiwari. 2004. Interspecific hybridization of *T. alexandrinum* with *T. constantinopolitanum* using embryo rescue. *Plant Cell Reports* 22: 705-710
- Malaviya, D. R., A. K. Roy, P. Kaushal and B. Kumar. 2004. Affinity between *Trifolium alexandrinum* and *T. apertum* – cytological investigations in embryo rescued hybrid. *Cytologia* 69: 425-429.
- Jain A., S. N. Zadoo, A. K. Roy, P. Kaushal and D. R. Malaviya. 2003. Meiotic system and probable basic chromosome number of *Panicum maximum* Jacq. accessions. *Cytologia* 68: 7-13.
- Roy, A. K., P. Kaushal, S. N. Zadoo and R. N. Choubey. 2003. Identification of a new cytotype of *Pennisetum squamulatum* Fresen. with  $2n=56$  chromosomes. *Range Management and Agroforestry* 24: 71-73.
- Kaushal, P., Ravi, J. S. Sidhu and H. S. Dhaliwal. 2001. Introgression of isozyme genes utilizing monosomic alien addition lines (MAALs) of *Oryza officinalis* in *O.sativa*. *Journal of Agricultural Science (U.K.)* 136: 393-397.
- Kaushal, P. and J.S.Sidhu. 2000. Pre-fertilization incompatibility barriers to interspecific hybridizations in *Pennisetum* species. *Journal of Agricultural Science (U.K.)* 134: 199-206.
- Kaushal, P., D. R. Malaviya and K. K. Singh. 2000. Identification of shade tolerant genotypes of *Panicum maximum* and study of alterations in nutrient content under shade. *Range Management and Agroforestry* 21: 74-78.
- Kaushal, P. and Ravi. 1998. Crossability of wild species of *Oryza* with *O. sativa* cvs PR 106 and Pusa Basmati 1 for transfer of bacterial leaf blight through interspecific hybridization. *Journal of Agricultural Science (U.K.)* 130: 423-430.
- Kaushal P., Ravi and J.S.Sidhu. 1998. Screening of wild *Oryza* species against bacterial leaf blight (*Xanthomonas oryzae* pv. *oryza*) pathotypes of Punjab (India). *Plant Breeding (Germany)* 117: 491-493.

Certified that above facts are correct and I have repeatedly edited and verified to my full satisfaction.

**(P. Kaushal)**