

**Dr. S.K. Jain, Principal Scientist (Plant Pathology)**

Since, joining the Agricultural Research Services as scientist in 1997, associated with the research work on different diseases of wheat and barley as well as other field and vegetable crops. Virulence typing of wheat and barley rust pathogens in India was done, detected 17 new pathotypes of brown and black rusts of wheat in the initial stages and identified resistant sources against these pathotypes. Postulation of rust resistance genes *i.e.* 11 *Lr* genes, 11 *Sr* genes and 6 *Yr* genes, either singly or in combinations, was accomplished in more than 700 wheat germplasm and varieties through host-pathogen interaction based on gene matching technique and cytological studies. More than 700 wheat and barley lines resistant to one or other rusts were identified. Pathotype-specific adult plant resistance of both hypersensitive and non-hypersensitive types was confirmed in more than 50 wheat lines wheat lines/varieties, studied temperature-sensitive rust resistance. Three black and brown rust resistant wheat genetic stocks were developed with un-utilized black rust resistant genes *Sr26*, *Sr32* and *Sr43* in the background of adopted varieties and registered with the ICAR-NBPGR, New Delhi. Identified wheat genotypes immune to hill bunt and loose smut diseases. Identified 3 local bread wheat lines collected from Leh (J&K) and Kinnaur (H.P.) and 2 local durum wheat lines from M.P. and Karnataka that are susceptible to all the pathotypes of brown rust pathogen. These are very helpful in genetic studies as earlier there was no wheat line which was susceptible to all the pathotypes. During Ph.D. studies at the Institute of Phytopathology & Applied Zoology, Justus-Liebig University, Giessen, Germany (2001-2004) undertook molecular and cytological studies on host-pathogen interactions of barley - powdery mildew, wheat - and oat - spot blotch pathosystem for resistance and susceptibility. Investigated functional analysis of barley RAB-specific *GDI* gene by transient transformation assay where sequence-specific, dsRNA-mediated gene-silencing of *GDI* revealed a probable role in the resistance of barley against powdery mildew. Associated in the development, evaluation and release of varieties of wheat (VL *Gehun* 953, VL *Gehun* 967, VL *Gehun* 2014 and VL3004), barley (VL *Jau* 118, VL *Jau* 130) and soybean (VL *Soya* 77, VL *Soya* 89, VL *Bhatt* 201) which have been notified for cultivation in respective area of adoption.

Presently working on screening of germplasm accessions from core and minicore-collections of different crops against biotic stresses, bacterial endophytes for antagonistic activity against pathogens and molecular host pathogen interaction studies in finger millet-blast pathosystem. Authored more than 65 research publications including research papers, review and book chapters apart from bulletins, popular article and extension folders/cards etc. Received DAAD-STIBET fellowship, Germany for Doctoral studies, selected for Senior Research Fellowship of ICAR and recognized as fellow of prestigious societies (Indian Phytopathological Society, Indian Society of Plant Pathologists and Society for Advancement of Wheat & Barley Research).