

## KRL 99 – A NEW WHEAT GERMPLASM DEVELOPED FOR SALINITY, SODICITY AND WATERLOGGING STRESSES

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A salt and waterlogging tolerant genotype has been developed at CSSRI, Karnal through recombination breeding involving the parentage KRL 3-4/CIMK 2//KRL 1-4. The genotype is unique with respect to amber grain colour and very high level of tolerance to different stresses mentioned above. The genotype has been approved for registration at NBPGR by the Plant Germplasm Registration Committee in its XVI meeting (NBPGR Registration Number **INGR No. 07046**).

### Morpho-agronomic Characteristics

The genotype has dark green foliage with medium waxiness and semi erect growth habit. The plant type is very good with medium plant height and long light brown ears. The grains are of amber colour, oblong shape and medium size.

Data of All India Coordinated salinity / alkalinity tolerance varietal trial 2002-03, 2003-04 and 2004-05 indicated that KRL 99 was found significantly superior to the best check over the years.

The performance of KRL 99 was the best both under high sodic microplots (pH<sub>2</sub> : 9.3) and under waterlogged (pH<sub>2</sub>: 9.3) conditions in comparison to PBW 343, HD 2009, HD 4530, KRL 19 and Kharchia 65. The percent reduction in grain yield in KRL 99 was much less under stress (11%) in comparison to other tolerant varieties KRL 19 (34%) and Kharchia 65 (22%). The high yielding variety PBW 343 incurred much reduction (81%) and the other genotypes HD 2009 and HD 4530 could not survive the stress level.

*Grain yield per plant of wheat genotypes under waterlogged sodic conditions in comparison to normal soil*

GENOTYPE	Grain yield per plant (g)		% reduction from Normal
	Normal pH : 8.1	Waterlogged sodic pH : 9.3	
<i>KRL 99</i>	8.39	7.45	11
<i>KH 65</i>	8.67	6.75	22
<i>KRL 19</i>	8.83	5.86	34
<i>PBW 343</i>	8.9	1.71	81
<i>HD 2009</i>	5.23	0.67	87
<i>HD 4530</i>	4.71	0.1	98
<b>C.D.</b>	<b>0.62</b>	<b>1.24</b>	

The genotype KRL 99 is much improved from Kharchia 65 (red grains) on account of its colour (amber), improved plant type along with high level of sodicity

and waterlogging tolerance. KRL 99 gives its best expression under low sodic/reclaimed sodic and normal sown conditions. However under high sodic conditions (pH more than 9.3), the genotype can provide much better yield than the prevalent variety PBW 343. The genotype is an excellent donor to incorporate salt tolerance in wheat.



Director CSSRI visiting the registered genetic stock KRL 99 grown in the Institute microplots at high sodic level (pH : 9.3).



KRL 99 Plots in field



Excellent performance of KRL 99 under waterlogging for 15 days after 22 days of sowing at high sodicity ( $pH_2 : 9.5$ ) at CSSRI microplots in comparison to a sensitive genotype (HD 4530)  
\* Note that HD 4530 show mortality at this stress level

