

Nilgiri Wheat News

(May – August, 2011)

IARI, Regional Station, Wellington

Vol 3 (2)

Pathotype 78S84 of *Puccinia striiformis tritici* recorded at Wellington

During the rabi season of crop year 2010-11, a variant has been monitored in several field samples showing wider virulence than pathotype I (38S102) with a remarkable feature that alongwith several resistant genes it can infect *Yr 9*, a gene present in most of the present day Indian wheat cultivars. Samples were sent to DWR, Regional Station, Flowerdale for virulence analysis and found to be similar to the *Yr9* pathotype 78S84. Wellington area in Nilgiri hills of Tamil Nadu is traditionally known to harbour pathotype I (38S102) of wheat yellow rust pathogen since mid seventies. No further evolution of this pathogen could be noticed even after diverse germplasm sources having major resistance genes were planted here by various wheat breeders of the country and were available throughout the year (continued host – pathogen contact) for serving as mutational ground for pathogen to throw new variants. Why mutation for new variation in *P.striiformis* has been slower in Nilgiris is a matter of further investigation.

Wheat Field day celebrated on 21st August, 2011

Wheat Field Day was observed under the aegis of the National Bureau of Plant Genetic Resources (NBPGR) at the Regional Station of the Indian Agricultural Research Institute (IARI) at Wellington, near here, on 21st August,

2011. Among the 50 scientists from various ICAR institutes and State Agricultural Universities who participated were J.S. Sandhu, Additional Director General (Seeds), ICAR, New Delhi and Indu Sharma, Project Director (Wheat), Directorate of Wheat Research, Karnal. Objective of the programme was to display 17,000 wheat and *Aegilops* germplasm raised at the station and regenerated after being stored for 30 years in the NBPGR. The germplasm selected by the participants would be used in breeding programmes. Technology display was also made on this occasion for demonstration on cultivation of dicoccum wheat variety COW(W)2 to Nilgiri farmers. The Regional Station in collaboration with the Tamil Nadu Agricultural University, Coimbatore, had recently released a samba wheat variety COW(W)2 for cultivation exclusively in the Nilgiris and its surroundings. Over 25 farmers from the Nilgiris and Coimbatore benefited from the programme.

Strengthening genetic base of rust resistance in Indian Wheat germplasm

BC3F4 generations of superior back cross derivatives of 20 popular cultivars carrying *Lr45*, *Lr45+Sr31*, *Lr45+Lr19+Sr25*, *Lr35*, *Lr39*, *Lr47* along with *Yr10* and stem rust genes *Sr2*, *Sr14*, *Sr22*, *Sr24*, *Sr25*, *Sr26*, *Sr27*, *Sr29*, *Sr30*, *Sr33*, *Sr35*, *Sr36*, *Sr44* have been sown for generation advancement. Populations having been introgressed with *Lr35*, *Lr39*, *Lr47* along with *Yr10*

will be advanced to BC3F6. Populations availed after introgression of targeted stem rust genes (*Sr2*, *Sr14*, *Sr22*, *Sr24*, *Sr25*, *Sr26*, *Sr27*, *Sr29*, *Sr30*, *Sr33*, *Sr35*, *Sr36*, *Sr44*) in order to pyramiding them in at least 20 popular cultivars will be advanced to BC3F4 stage (pre-emptive breeding for Ug 99 race resistance). BC3F1 generation of populations bred for durable resistance involving APR genes *Lr34*, *Lr46*, *Lr67*, *Sr2*, *Sr22* etc. were also sown for generation advancement. Work on as many as 60 popular Indian wheat cultivars subjected

to genetic analysis of necrotic genes (Ne genes) is in progress.

Conduct of AICWIP trials 2010 - 11

The AICW&BIP yield trials of IVT and AVT were conducted in Southern Hill Zone. The IVT trials were raised at 3 locations viz., Wellington, Mandya and Paiyur while AVT trials were conducted at 4 locations namely Wellington (Timely and Late sown), Mandya and Paiyur during rabi 2009-10. Trials could not be sown at Thalawari owing to heavy rains at the time of sowing.

Mean Grain Yield (q/ha): Rabi 2009 - 10

S.N.	Variety	Wellington (TS)			Wellington(LS)		
		Yield	Rk	G	Yield	Rk	G
1.	HD 3072	34.5	5	0	29.8	3	1
2.	HD 3075	41.0	2	1	28.8	5	1
3.	HW 5216	41.1	1	1	28.1	6	1
4.	HW 5224	37.0	3	1	29.2	4	1
5.	HW 2044#	29.8	6	0	30.1	2	1
6.	COW(W)1#	35.2	4	1	31.4	1	1
G.M.		36.4			29.6		
S.E. (M)		2.110			1.412		
C.D.		6.0			4.0		
C.V.		14.2			11.7		
No. of trials proposed :05, conducted:04, not reported :02 i.e. Mandya(UY) and Paiyur (HCV)							

Check

Initial Varietal Trial

The trial was conducted at 3 locations viz. Wellington, Mandya and Paiyur during Rabi 2010 -11. The trial was

tested with 17 test entries and two checks i.e. HW 2044 and CoW(W)1. At zonal level none of the entries yielded better than the best check COW(W1).

Promotion/retention of varieties in AVT trials in SHZ 2010 -11 based on zonal mean

Response to rust	Grain Yield	Others	Remarks
More than 20S Susceptibility with ACI of 10.0 and above for one or more rusts are rejected which include the varieties as under	Numerically not at par with the checks other than the final year entries are rejected include the varieties	Varieties sowing Seg/Mix more than 10% and very late mature than Std. Check and high lodging score.	Rejected/ Promoted
HD 3072	HD 3072	None	HD 3072
Less than 20S with ACI 10.0 or less to one or more rusts	Numerically at par and above with the best check	Genetically pure	Retained/ Promoted
HW 5216,HW 5224	HW 5216, HW 5224	All including checks	HW 5216, HW 5224,, HD 3075

Promotion/retention of varieties from IVT trials SHZ 2010 -11 based on zonal mean

Response to rust	Grain Yield	Others	Remarks
More than 20S Susceptibility with ACI of 10.0 and above for one or more rusts are rejected which include the varieties as under (For black and Brown South reaction)	Numerically not at par with the checks other than the final year entries are rejected include the varieties as under	Varieties sowing Seg/Mix more than 10% and very late mature than Std. Check and high lodging score.	Rejected/ Promoted
MACS 6471, MACS 6509, NIAW 1788, UAS 340, UAS 341	HS 540, HD 3103, HI 1586, HI 1587, HW 1111, HW 2068, HW 2072, HW 2073, HW 4206, HW 5223, HW 5232, HW 5234, MACS 6471, MACS 6509, NIAW 1788, UAS 340, UAS 341	None	HS 540, HD 3103, HI 1586, HI 1587, HW 1111, HW 2068, HW 2072, HW 2073, HW 4206, HW 5223, HW 5232, HW 5234, MACS 6471, MACS 6509, NIAW 1788, UAS 340, UAS 341
Less than 20S with ACI 10.0 or less to one or more rusts	Numerically at par and above with the best check	Genetically pure	Retained/ Promoted
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Distinguished Visitors:

11 - 12 August,2011 :

- Dr. Malavika Dadlani, Joint Director (Research), IARI, New Delhi

21 August, 2011:

- Dr. J.S. Sandhu, ADG (seeds), ICAR, New Delhi
- Dr. Indu Sharma, Project Director (Wheat), DWR, Karnal

News:

- ❖ Dr. M. Sivasamy, Sr. Scientist (Wheat Breeding) is on a foreign assignment for developing molecular markers of wheat rust resistance genes in Cornell University, United states w.e.f. May, 2011.

Call for summer nursery harvest

Dear Users of Summer Nursery,

1. Seed materials of wheat, barley and triticale and other crops of your centre sown in the month of May, 2011 – 15th July, 2011 are ready for harvesting.
2. Specific requirements for handling your research materials and guest house requirement should be intimated to Dr.P.Jayapraksh (Cell: 09842506455), Sr. Scientist.



Dr. Malavika Dadlani, Joint Director (Research), IARI, New Delhi visited station on 11 – 12 August, 2011



Wheat germplasm field day organized on 21st August, 2011. Distinguished participants were: Dr. J.S. Sandhu, ADG (Seeds), ICAR and Dr. Indu Sharma, Project Director (Wheat), Karnal