

WHEAT CROP HEALTH NEWSLETTER



Directorate of Wheat Research
P.B. 158, Karnal-132 001.



November, 2007

Volume: 13 (2007-2008)

Issue: 1

Available on website: www.dwr.in

Wheat crop season, 2007-08 has started and with this, the first issue of the Wheat Crop Health Newsletter, Vol. 13 is being brought out this month. This will cover the Crop Protection Technology for different wheat growing zones as finalized during the 46th All India Wheat Workers' Meet and the Karnal bunt situation during 2006-07. In parts of Haryana, the wheat sowings started from 15th of October 2007 and were going on in full swing by the end the month in most parts of the wheat growing areas.

Information generated through the visits of the Scientists of Crop Protection Programme of AICW&BIP (including DWR, Karnal and the survey trips undertaken by specially constituted teams), is disseminated through this Newsletter. It is hoped that the Wheat Crop Health Newsletter will be able to serve the purpose as in the past, with the cooperation and support of all those interest in wheat.

The crop protection strategy in wheat recommended for the season is being given here.

CROP PROTECTION TECHNOLOGIES

North Western Plain Zone (Punjab, Haryana, Northern Rajasthan, Western U.P., foot hills and plains of J&K, H.P. and Uttra Khand)

1. In the termite prone areas, seed treatment with chlorpyriphos @ 0.9g a.i or endosulfan @ 2.4g a.i/kg seed, be taken up for their management. Fipronil (Regent 5FS @ 0.3 g a.i./kg seed) is also very effective. In the standing crop, the broadcasting of the insecticide treated soil 15 DAS be practiced. For this, endosulfan 35EC @ 2.3 Litre or chloropyriphos @ 3 Litre mixed in 50 Kg soil be used for one hectare field.
2. Crop planted under FIRBS is more prone to termite attack in the termite-prone areas, while zero tillage shows less termite damage. Hence, proper attention should be given in crop planted under FIRBS.
3. For avoiding the losses due to diseases, planting of old and rust susceptible varieties should be avoided. Only the recommended varieties for the region should be planted because these carry resistance against rust diseases (yellow and brown). The variety PBW 502 carries additional resistance to Karnal bunt disease, hence, it may be cultivated in the Karnal bunt prone area in the zone.
4. For management of Karnal bunt, one spray of propiconazole (25EC) @ 0.1 % (1 ml in 1 Litre water) may be given (in seed crop only) at ear head emergence stage.

Two sprays of biocontrol fungus, *Trichoderma .viride* at Zadoks growth stages of 31-39 and 41-49 provide a non-chemical (biological control) management of disease. One spray of *T.viride*

(at growth stage 31-39), followed by one spray of propiconazole (25EC) @ 0.1 % at growth stage 41-49 can be given to attain near complete control..

5. Loose smut control measures should be undertaken in view of the horizontal distribution of the seed material among the farmers and the use of the carry over seed. For this, seed treatment with carboxin (75 WP @ 2.5 gm/kg seed) or Carbendazim (50 WP @ 2.5 gm/kg seed) or tebuconazole (@ 1.25 gm/kg seed) or a combination of a reduced dosage of carboxin (75 WP @ 1.25 gm/kg seed) and a bioagent fungus, *Trichoderma viride* (@ 4 gm/kg seed) is recommended.

Integrated management of loose smut involving reduced dosage of chemical fungicide and bioagent fungus is more eco-friendly and equally effective as the chemical control measures and thus should be preferred. Use of bioagents also helps in improving the initial vigour of the crop. Seed treatment with fungicide should be done one or two days before sowing. In case of integrated management, the treatment with *T.viride* should be done 72 hrs before sowing, followed by the fungicide, 24 hours before sowing.

6. Flag smut disease also poses problems in isolated fields in Punjab, Haryana, Rajasthan and some other parts of NWPZ. Disease management measures taken for the control of loose smut disease (as discussed above), prove to be effective against flag smut too. Hence, seed treatment with carboxin or carbendazim may be followed in fields with flag smut history.
7. For powdery mildew control, one spray of propiconazole (25 EC) @ 0.1 % at ear head emergence or appearance of disease (whichever is earlier) is recommended for the powdery mildew prone areas. Crop planted under FIRBS is more prone to powdery mildew, hence proper disease control measures be taken up well in time.
8. The IPM module developed and validated in NWPZ can be adopted in parts of north-west plain zone.. This involves the seed treatment with *T.viride* (@4g/kg seed) + carboxin (75WP @1.25g/kg seed) or tebuconazole (@ 0.5g/kg seed) for the control of loose smut, followed by broadcast of insecticide treated soil (with endosulfan 35 EC @ 2.3L or chloropyriphos @ 3L/ha) at 15DAS for termites. For the management of aphids, foliar spray of imidacloprid 200SL @20g a.i./ha on border rows at the start of the aphid colonization be given. This will help in protection of the bioagent insect, the lady bird beetle inside the field which feeds on aphids. In KB prone areas, the seed crop can be given one spray of propiconazole or two sprays of *T.viride* at tillering and ear head emergence. For the control of powdery mildew in disease prone areas, one need-based spray of propiconazole (25 EC @ 0.1%) can be given at earhead emergence or appearance of disease on flag leaf, whichever is earlier.
9. In this zone, a blanket-recommendation on seed treatment with a combination of the reduced dosage of the fungicide and *T.viride* is made. The bioagent fungus, apart from enhancing the efficacy of the fungicide, also leads to better germination, growth and protection against diseases through PGPR/PGPR-like effect and induced systemic resistance.

North Eastern Plain Zone (Eastern U.P., Bihar, Jharkhand, West Bengal)

1. Foliar blight and brown rust are the main crop health problems in this zone. For effective management of the diseases, cultivation of recommended varieties, like NW 1014, NW 2036, K 9107, HD 2733, DBW 14, HD 2888 and HUW 468 should be encouraged.
2. In this zone, loose smut is also important. Hence, the seed treatment should be done as mentioned under NWPZ.

3. Ear cockle is an important disease in eastern parts of India, hence proper precautions be taken, especially in eastern U.P., Bihar and Jharkhand. Wider publicity should be given by extension agencies on the use of gall-free seed, well before the sowings. Farmers should adopt floatation technique for the separation of galls from the infested seed lots. The infested seed lot should be floated in 2 percent brine solution for this purpose. The galls will float on the surface. These should be separated and destroyed away from the field by burning. The seed should be thoroughly washed to remove the salt solution before sowing.

Central Zone (M.P., Gujarat, Southern Rajasthan, Chhatisgarh)

1. Stem and leaf rusts are the major diseases of wheat in this zone. From rust epidemiology point of view, Central Zone has a great importance in the country. Hence, old and susceptible varieties should be discouraged. For disrupting the *Puccinia* path, rust resistant varieties are required to be grown in the Zone, especially in M.P. The varieties include HI 1500, HI 8627, HW 2004, HD 4672, GW 322, HI 1531, HD 8498 and MP 4010, etc.
2. In parts of northern and eastern M.P., loose smut occurs occasionally. Hence, disease control measures as recommended for NWPZ, be adopted wherever the disease is a problem.
3. Ear cockle nematode occurs in some small pockets in the states of M.P. and Chhatisgarh. Hence, emphasis should be given on the use of gall-free seed in the areas with ECN history.

Peninsular Zone (Maharashtra, Karnataka)

1. Leaf and stem rusts are the main crop health problems in this zone. The rust resistant recommended varieties like, GW 322, HD 2781, HD 2189, HUW 510, NIAW 34, MACS 2846(D), Raj 4037, etc. be grown. This will help in minimizing the losses due to diseases. The old and susceptible varieties should be avoided.

Northern Hill Zone (Hills of J&K State, H.P., Uttrakhand)

1. Loose smut and hill bunt are the two important diseases of wheat in the hills. Hence, seed treatment, as recommended for NWPZ for loose smut disease, be adopted. Both these diseases will be checked through the seed treatment.
2. Most of the old and local varieties of wheat are susceptible to stripe and leaf rusts. Hence, the high yielding rust resistant varieties recommended for the zone, should be cultivated.
3. Powdery mildew is also important in the hills, especially the valley areas. One foliar spray of propiconazole as mentioned under NWPZ may be given in the disease prone areas.

KARNAL BUNT SITUATION IN INDIA DURING 2006-2007 CROP SEASON

During this year, 7057 grain samples collected from various *mandies* in different zones, were analyzed by DWR as well as other cooperating centers of AICW&BIP (Table 1). In NWPZ, the highest incidence was recorded from samples of Hoshiarpur, Punjab on var. PBW 343, followed by Paonta Valley of Himachal Pradesh and Yamunanagar, Haryana. From Rajasthan, out of 92 samples analyzed, 61.96 per cent samples were found infected with KB with infection range upto 10.25 per cent. In NEPZ, 56.88 per cent samples were found infected in Kanpur region of U.P. In eastern UP, 12.73 per cent samples were infected with KB. Based on the overall KB occurrence, it emerged that the KB incidence this year was higher and more prevalent than last year.

In the Central and Peninsular zones, none of the samples from Gujarat (Junagarh, Rajkot, Amreli and Bhavnagar) M.P. (Hoshangabad and Indore), Maharashtra (Satara, Sangali and Pune) and Karnataka (Dharwad) were found infected with Karnal bunt (Table 1).

Table 1: Karnal bunt situation in the country during 2006-2007 crop season

Zone	State	Total Samples	Per cent infected samples	Range of infection (%)	Location of Highest infection (Variety)
NWPZ	Punjab	1774	93.40	3.2*	Hoshiarpur (PBW 343)
	Haryana	820	78.29	0.05-15.10	Yamunanagar (PBW 343)
	Rajasthan	92	61.96	0-10.25	Kotputli (PBW 343)
NHZ	Uttarakhand	3148	72.52	0->10.00	Dehradun (VL 802, PBW 502, UP 262, PBW 373, VL 804)
	Himachal Pradesh	23	91.30	0-18.30	Kundiyan (HPW 155)
NEPZ	Kanpur	109	56.88	0-3.75	Sethiamara (K 7903)
	East UP	330	12.73	0.2-10.00	PBW 343 and Lok 1
CZ	M.P.	211	0	-	-
	Gujarat	387	-	-	-
PZ	Maharashtra	101	0	-	-
	Karnataka	62	0	-	-
TOTAL		7057	68.29	0-18.30	-

*Average % infection

CIRCULAR FOR WINTER SCHOOL

The Crop Protection Programme of Directorate of Wheat Research, Karnal will be organizing a 21-day **Winter School on "IPM in wheat and wheat-based cropping system"** w.e.f. **February 5-25, 2008** under the aegis of the Indian Council of Agric. Research, New Delhi. All those interested, should send their application to the Course-Director (Dr. A.K. Sharma) or the Project Director mentioning the title of the Winter School, their designation and organization. The last date for receiving the applications has been kept as 31st December 2007.

Issued by: Crop Protection Programme, Directorate of Wheat Research, P.B. 158, Karnal-132 001

Compiled and Edited by: A.K.Sharma, M.S.Saharan and K.S.Babu

Phone: 0184- 2266092, 2267490, 2267830, 2267495, **Fax:** +91-0184-2267390

E.mail: picpdwr@hotmail.com