SHORT COMMUNICATION

Preliminary Field Screening for Reaction to Rust and Powdery Mildew Diseases of Wheat Germplasm

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Wheat diseases particularly yellow rust, brown rust and powdery mildew cause significant losses in yield. Although a large number of chemicals are available in the market for controlling the diseases but they are costly and local farmers are not able to purchase them. Hence, the cultivation of resistant/tolerant varieties is the only alternative to prevent the losses. The present study reports the reaction of some elite lines to yellow rust, brown rust, black rust and powdery mildew.

Four hundred twenty five accessions of indigenous as well as exotic material in wheat germplasm were screened under epiphytotic conditions at the NBPGR Regional Station, Bhowali during Rabi 2002-2003, which is known as hot spot for rust and several other wheat diseases. The accessions were sown in three rows, 2 meter long with 23 cm spacing. Normal dosages of manures, fertilizers and other cultural practices were used. The outbreak and scoring of diseases were recorded under natural infestation. This centre provides good feasibility for screening the germplasm of wheat especially for yellow rust (*Puccinia striiformis*), brown rust (*Puccinia recondita*) and powdery mildew (*Erysiphe graminis* var. *tritici*) because of the appearance of the disease in sufficient spectrum for effective screening of germplasm. Percentage of leaf covered by yellow rust, brown rust, black rust and powdery mildew were calculated, taking 10 hills from each micro plots randomly at fortnightly intervals beginning 45 days after transplanting (DAT). The disease intensity was also recorded simultaneously on a 0-9 scale.

Wheat is popularly grown in *Rabi* season in rain fed/irrigated areas of Uttaranchal due to its increased demand for food as well as low cost of cultivation. Powdery mildew of wheat is essentially a disease of the hills where it appears in severe form. Of late, it has been reported in plains also but so far its incidence is not high. At times it is reported from isolated places in Tarai areas.

Out of the four hundred twenty five accessions based on disease intensity, 07 entries for yellow rust, brown rust and black rust 07 entries for powdery mildew and 02 for yellow rust, brown rust, black rust and powdery mildew, respectively were found highly resistant (<1 score) are listed below:

Yellow Rust, Brown Rust and Black Rust

EC-339599, EC-374931, EC-374939, EC-331630, IC-82401 IC-104630 & IC-104577.

Powdery Mildew

EC-339591, EC-339600, EC-339604, EC-339608, IC-35155, IC-82133, & IC-325775

Yellow Rust, Brown Rust, Black Rust and Powdery Mildew

EC-339597 & EC-339630.

These accessions showed a good promise for multiple resistance to various wheat diseases and can be utilized for evolving disease resistant varieties. Breeding for disease resistant cultivars has been taken up by different centers under the All India Co-ordinated Wheat Improvement Project. Therefore, the present results will be quite useful to the wheat breeders of the country.

References

Joshi, LM (1972-73) 13th All India Wheat Research Workers Workshop Mimeograph, pp 1& 25-26.

Muneem KC (1978) Response of some exotic wheat varieties to powdery mildew. *Indian Phytopathology*, **31(1):** pp 84.

Vallaga J and Chiarappa L (1964) Plant disease losses – They occur worldwide *Phytopathology* **54:** 1305–1308.