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Short Communication

MULTIPLE DISEASE RESISTANCE IN BARLEY GERMPLASM

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Four hundred forty one germplasm lines including exotic material in barley were screened under epiphytotic conditions to find out suitable sources of multiple resistance for major barley diseases (yellow rust, brown rust, barley blight and loose and covered smuts). Ninety two entries (6 & 2 rowed barley accerries) were found free from all the five diseases and were categorized as highly resistant. These can be utilized for evolving disease resistance varieties.

Key words: Barley, germplasm, epiphytotic, multiple resistance

Barley is popularly grown in Himachal Pradesh due to its increased demand for food, feed and industrial use; as well as low cost of cultivation. However its yield potential is limited due to many maladies. Among these, rusts, blights and smuts diseases are most devastating. The yield losses mainly due to yellow rust may be as high as 38 per cent under natural epidemics (Suryanarayana, 1979). The present studies were carried out to find suitable sources of multiple resistance for major barley diseases such as yellow rust (*Puccinia striiformis hordie*), brown rust (*Puccinia hordei*), barley blight (*Helminthosporium gramineum*) and loose and covered smuts (*Ustilago nuda* and *U. hordei*).

A total of 441 cultivars/lines and exotic material were sown in a single row plot of 3 meter length at the Regional Research Station's Experimental Farm (HPKV), Bajaura during *rabi* 1997-98, which is known as hot spot for yellow rust and several other barley diseases. As such this centre provides good feasibility for screening the germplasm of barley especially for yellow rust because of the appearance of the disease in sufficient spectrum for effective screening of germplasm. To increase the disease pressure, artificial inoculation of the materials was done with locally available inoculation of yellow rust. The incidence of different diseases on each entry was recorded on standard scales. The germplasm plot were screened 2-3 times during the growth and development period for incidence of diseases.

Out of the 441 germplasm lines screened a total of 92 entries listed below, were found free from all the five diseases and were categorized as highly resistant :

6 - Rowed

AHAR-34, AZAD, BBM-76, BBM-160, BCU-6, BCU-23, BCU-34, BCU-220, BEIGB-95-96, IBON-23, BEIGB-IBON-124, BEIGB-ISBON-LRA-138, BEIGB-BH-425, BEIGB-ISBOW-LRA-237, BH-393, BH-441, BH-454, BH-455, BHS-150, BHS-233, BHS-260, BHS-269, BHS-279, BHS-325, BHS-362, BON-18, BON-52, BON-169, BYDV-45, BYDV-123, C-138, DWR-12, HBL-103, HBL-105, HBL-150, HBL-246, HBL-258, HBL-313, HBL-339, IBON-10, IBON-11, IBON-12, IBON-16, IBON-26, IBON-33, IBON-36, IBON-53,

IBON-55, IBON-129, IBON-179, IBOW-11, IBYT-11, IBFYT-20, IWFBON- 99, RD-2431, RD-2456, RD-2484, RD-2521, RD-3772, SP-38, SONU, SONU-30 KR, USAD-97, VLB-23, VLB-35, VLB-49, VLB-57, VLB-105, VLB-120, VLB-126, VLB-133 and VLB-135.

2 - Rowed

BBM-2640, BCU-4, BEIGB-BSP-17, BEIGB-ISBON-LRA-34, BGN-IBON-134, BHS-39, BOM (MON)-MRA-62, BUDU-69, BYDV-1, BYDV-95, BYLYR-79, DWR-17, EIBGN-MRA-9, GHS-440, H-19, H-23, HBL-113, HBL-166, IBON- 34, IBYT-34, IBYT-19, K-587, S-37, SP-48, SP-65, UBE-215 and VLB- 267.

These lines showed a good promise for multiple resistance for the barley 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 Barley Improvement Project (AICBIP) since its inception in 1966-67. Therefore, the present results will be very useful to the barley breeders of the country. Earlier too, some sources of resistance to major disease of barley were identified from the exotic as well as indigenous barley germplasm and their genetics was also studied (Luthra *et al.* 1991).

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