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Short Communication

MULTIPLE DISEASE RESISTANT REACTION TO BARLEY GERMPLASM UNDER NATURAL EPIPHYTOTIC CONDITION

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Four hundred forty one barley germplasm were screened under natural epiphytotic condition to find suitable sources of multiple resistance for major barley diseases such as yellow rust, brown rust, barley blight and cover smut. Ninety two lines were found free from all the four diseases and were characterised as highly resistant and can be utilized for evolving disease resistant varieties.

Key words : Barley, germplasm, epiphytotic, inoculation, multiple resistance

Barley is popularly grown in Himachal Pradesh due to its increased demand as well as low cost of cultivation. However, its yield potential is limited due to many maladies. Among these rusts, blights and smuts are most devastating. The yield losses due to yellow rust may be as high as 38 per cent under natural epidemics (Suryanarayan, 1979). Because of non-availability and popularity of chemical control, the resistant varieties are the best and the cheapest method of disease control. 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 sativum*) and covered smut (*Ustilago hordei*).

A large number of cultivars/lines and exotic materials were sown in a single row plot of 3 meters length at Regional Research Station's Experimental Farm (HPKV) Bajaura, which is known as hot spot for barley diseases. This centre provides good feasibility for screening the germplasm of barley especially for yellow rust because disease appears in sufficient spectrum for viable screening of germplasm. The incidence of different diseases on each entry was recorded on standard scales. The germplasm plot were screened 2-3 times during growth and development period for incidence of diseases during *rabi* 1997-98.

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

BCU-6, BCU-4, BCU-43, BHS-150, BHS-325, BHS-362, BHS-279, BHS- 269, BHD-223, BHS-260, VLB-260, VLB-49, VLB-120, VLB-23, VLB-135, VLB-133, VLB-33, VIB-105, VLB-126, SP-48, SP-51, SP-38, BON-18, BON-169, BBM-160, BBM-1640, BBM-76, BGN-1BON, EIBGN-MRA-9, BVU-9, C-138, VLB-57, GHS-440, AZAD,H-23, BH-454, BH-441, DWR-17, UBE-215, H-19, BH-393, BH-455, DWR-12, HBL-339, HBL-166, Sonu, HBL- 150, HBL-113, HBL-246, AHAR-34, SONU-3-KR, HBL-316, HBL-105, HBL-258, HBL-313, HBL-69, HBL-103, IBON-11, IBON-12, IIWFBYT-20, IWFBON-99, IBON-53, IBON-26, IBON-179, IBON-10, IBON-129, USAD- 97, RD-2521, RH2456, RD-2484, RD-2431, BUDU-69, BYLYR-79, BCU- 220, BCU-22, BHAS-39, SP-37, SP-65, NBDSN-K-587, RD-3772, IBON-16, BYDB-45, IBYT-19, IBWFA-45, IBOW-11, IBON-34, IBON-33, BON- 52, BYDB-95, BYDV-123,

BYDV-1, IBON-55, IBON-36, IBYT-11, BEIGB-95-96-IBON, BEIGB-ISBOW-LRA-237, BEIGB-BSP-17, BEIGB-IBON-124, BOM (MON)-MRA-62, BEIGB-BH-425, BEIGB-ISBON-LRA-34 and, BEIG-ISBON-LRA-138.

These lines showed a good promise for multiple resistance for the barley diseases and can be utilized for evolving disease resistant varieties. The similar types of reports have also been reported earlier (DWR, 1998). Breeding for disease resistant cultivars has been taken up by different centres under All India Co-ordinated Barley Improvement Project (AICBIP) since its inception in 1966-67. Many sources of resistance to major disease of barley have been identified from the exotic as well as indigenous barley germplasm and their genetics have also been studied (Luthra *et al.* 1991).

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