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Short Note

Screening of maize germplasm against Fusarium stalk rot and common rust

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In India, maize is traditionally grown during the summer (monsoon) season. Cultivation of winter maize was started in mid sixties. Interestingly, during this season average grain yields of 6-8 t/ha has been realized against less than 2 t/ha obtained during summer season. Hence, winter maize with its high productivity potential has opened up a viable alternative for diversification of crop production leading to the sustainable agriculture in the country (Singh, 1998). However, among various constraints, diseases like common rust (*Puccinia sorghi*) and Fusarium stalk rot (*Fusarium moniliformae*) take a heavy toll of this crop. Though the diseases can be managed by the use of fungitoxicants (Sharma *et al.*, 1993), development of resistant varieties can be another alternative. The present studies were carried out during 1998-99 and 1999-2000 at experimental farm of HAREC, Dhaulakuan to find out suitable sources of multiple resistance for Fusarium stalk rot and common rust of maize.

The materials consisted of 114 hybrid and composite entries of maize [3342 (Y), 221267 (A), 221267 (D), 137868, BISCO-56, -90023, -9801, BH-46791, BIO-9803, -9815, -9820, -9691, -52331, -9696, -9637, -9801, COMP-9110, -9107, -(85154 X 8551), -(9107 X9113), -9102, -9108, -9116, C-900M, -633, -644, Deccan- 103, DRC Bulk, EH-43237, -43016, F-17, -7013, -855, GK-3014, -3026, -3010, HKH-1071, -1082, -1084, IC-9801, -9802, JH6845, -6954, -6948, -6985, -7023, -7060, -7058, -4193, -4095, JC-1433, -1454, -1478, JKMH-997, -157-2, -175-4, -4095, -316-2, -245, -7696, -8696, -245, -255, KH-5060, -510, -9451, -2001, -559, -410, -5367, -5354, -5361, Kiran, MMH-3816, -3504, -3506, -1765, -1725, -992, MWM-108, Navjot, PMZ-126, -125, PHS-4783, -4785, -4786, -4776, -4778, PM-127, PRO-324, -325, -311, Parbhat, PAC-9703, -9735, R-9802, -9801, -9502, -9601, -51, R-Evt-Comp, SC-94524, -94561, -95098, -95017, -94533, SSF-59018, -9374, Seed Tech-1423, -2324, X-1267F, -1328M, -1288B andX-25 received from Directorate of Maize Research, New Delhi. Each entry was planted in a 4 row plot of 5 mt length in the last week of October using recommended package of practices (Anon, 2003). For creating the epiphytotics of common rust the material was inoculated by spraying uredosporic suspension (10^3 uredospores/ml of water) of locally available isolate of *Puccinia sorghi* starting from second week of February at weekly interval. Rust severity was recorded on modified Cobb's scale.

Three rows in each entry were inoculated with 15 days old culture of *Fusarium moniliformae* 150 days after sowing. The data were recorded 21 days after inoculations on stalk rot reaction following the scale of Payak and Sharma (1981).

Three genotypes (C-644, JKMH-255 and KH559) were highly resistant and twenty two (137868, BIO 9637, GK 3026, JKMH-7696, JH-6948, -6985, -7023, -7060, KH-410, -559, -5354, -5361, MWM-108, MMH-3504, Navjot, PHS-4785, -4778, PRO-324, -325, R-9601, X-25, -1288B) were resistant to common rust and Fusarium stalk rot. Nine genotypes [3342 (Y), B10 9691, C-633, Deccan 103, KH-510, MMH-3816, PMZ-126, SSF-59018 and X-1328 M] were resistant to Fusarium stalk rot but showed moderately resistant against common rust. Cultivars possessing resistance against Fusarium stalk rot and common rust are available in the most of the countries (Sharma *et al.*, 1993 and Singh *et al.*, 2000). Sources of resistance against common rust have also been reported in Georgia (Shavliashavili and Zedginidae, 1967) and India (Roy and Prasada, 1966,

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Khera *et al.,* 1982, Kumar *et al.,* 1989). As has been observed in the present studies, the adult plant resistance to Indian pathotypes of common rust has also been reported in many cultivars and inbred lines (Sharma and Payak, 1979)

It is evident from the present studies that diversity for resistance against common rust and Fusarium stalk rot is present in the present day advanced breeding material which can be exploited for breeding resistant varieties.

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