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Reaction of CMS, restorer lines and hybrids of sunflower to *Alternaria helianthi*

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Tolerant reaction for Alternaria leaf blight has been observed in hybrid CMS 17A x RHA-857 and KBSH-44. Among lines, FMS R265A and restorer lines 6-D-1 and RHA-274 shown high degree of susceptibility with grades of 9 and remaining parents shown susceptible reaction with grade of 7 or 8. It indicates that it is possible to synthesize hybrids with reasonable degree of tolerance by involving susceptible parents also. The extent of resistance however, can be enhanced when allelic differences exist between parents and by subjecting above crosses to recurrent selection. The high yielding hybrids CMS 17A x 6-D-1P#2 and CMS 234A x 6-D-1P#2 exhibited some degree of tolerant reaction. Based on disease severity, CMS 17A x RHA-857, CMS 234A x 6-D-1P#2 and CMS 302A x VI-34 were termed as slow blighters, whereas hybrids, CMS 234A x VI-34, CMS 234A x 6-D-1, CMS 234A x VI-66, CMS 302A x R-16 and CMS 302A x V-20 could be termed as intermediate blighters.

Key words : Sunflower, PDI, AUDPC, Slow blighters

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INTRODUCTION

Sunflower has emerged as a competitive oilseed crop on account of its wide adaptabilities, high productivity, short duration, remunerative market price and excellent nutritional properties. Despite the rapid spread of the crop disheartening trend is that, the productivity is going down in recent years. The full potential of the crop is far from being exploited and the yield levels of the country (549 kg/ha) are the lowest in the world due to several biotic and abiotic factors. Among the several biotic limiting factors for sunflower production, susceptibility to diseases is one of the major constraints. Among these, Alternaria leaf blight caused by *Alternaria helianthi* (Hansf.) Tubaki and Nishihara has been considered as a potentially destructive disease in many parts of the sunflower growing countries (Allen *et al.*, 1983, Morris *et al.*, 1983). In India, the disease is particularly severe during the rainy season and is known to cause reduction in flower size, number of seeds per head, seed yield per plant, seed weight and oil content (Balasubrahmanyam and Kolte, 1980). The loss in yield varies from 11.30 to 73.33 per cent depending on the extent of infection (Reddy and Gupta, 1977). In Northern Karnataka, Alternaria leaf blight is known to cause more than 80 per cent of the yield loss under severe epiphytotic conditions (Hiremath *et al.*, 1990). There is no resistant source identified for Alternaria disease so far and no hybrid is released for Alternaria resistance. Breeding for resistance to *Alternaria* leaf spot faces the challenge of a gene pool containing only moderate levels of resistance. There is a strong need to screen the genotypes against *Alternaria* isolates of this geographical region and identify potential hybrid with genes for resistance/ tolerance to *Alternaria helianthi*.

RESEARCH METHODOLOGY

The base material for this investigation consisted of six cytoplasmic male sterile lines (CMS) and ten promising restorer lines. The six CMS *viz.*, CMS 302A, CMS 607A, 852A x NDOL2, CMS 17A, CMS 234A and FMS R265A were used for hybrid development with ten restorer lines *viz.*, RHA-857, RHA-274, 6-D-1, 6-D-1P#2, VI-66, VI-34, V-20, R-16, R-298 (Br) and R-298 (NB) in the L × T mating design. Sixty crosses along with their