

Effect of different sowing dates on disease intensity of sclerotinia stem rot of sunflower caused by *Sclerotinia sclerotiorum* L.

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Abstract

Sclerotinia stem rot caused by *Sclerotinia sclerotiorum* L. of Sunflower is a significant yield limiting problem in India. The disease caused by the fungus varies in incidence and severity from year to year because of its sensitivity to weather conditions. Losses because of Sclerotinia stem rot can be substantial when environmental conditions and management practices favor high yield potential. Employing a disease management plan based on knowledge of field history and best disease management can help reduce losses from sclerotinia stem rot. An study on the basis of experiment conducted during 2010-2011 and 2011-2012 for impact of sowing dates on disease incidence reveals that a particular variety were sown in selected fields at different dates starting from 3rd week of September to 3rd week of November and results shows that less disease intensity (23.43 and 24.86%) occurred in late season crop on 3rd week of November as compare to other sowing dates

Keyword: Sunflower, sowing dates, *Sclerotinia sclerotiorum*, Stem rot.

Introduction

Sunflower (*Helianthus annuus* L.) is an important oilseed crop of India occupying a prominent place in the country's vegetable oil scenario. In India total sunflower production is 13.4 m tonnes accounting for about 22.6 m ha of area where Uttar Pradesh contributed 1.4 m tonnes in an area of 2.9 m ha during 2011-2012 (Anonymous 2012). Among the oilseed crops, sunflower has a important place because of its high oil content, short duration, high digress of adoptability and good quality of oil. It contains high proportion of poly unsaturated fatty acids which are good in preventing heart diseases. Sunflower cake or meal after oil extraction contains 40% high quality protein which is valuable as cattle & poultry feed. Apart from this its oil has a variety of industrial uses for instances, in the manufacture of soap, cosmetic & baby foods. Keeping in view the above facts clearly reveals that there is dire need of coordinated effort by the scientists for improving this oilseed crop in average productivity. A critical review of the causes for low yield indicates that diseases are the major limiting factor in the successful cultivation of this crop

apart from other reasons. Like other crops sunflower also suffers from several fungal, bacterial, viral and nematodal diseases during the crop period. Among several fungal diseases Sclerotinia stem rot of sunflower caused by *Sclerotinia sclerotiorum* L. de Bary was found to be prevalent on important cultivars of this crop in moderate to heavy form causing substantial yield loss especially during kharif crop. Therefore keeping in view the seriousness of the disease an experiment was carried out with the objective to obtaining higher yield of good quality.

Materials and Methods

The present Investigation was carried out during Rabi crop season 2010-2011 and 2011-2012 at oilseed research farm Kalyanpur, Kanpur and different locations of Uttar Pradesh. Sick plots (3x2 m) with recorded previous history were taken. Sunflower seeds were sown in different sowing dates viz. 1st week of October, 2nd week of October, 1st week of November, 3rd week of November, 1st week of December and 3rd week of December. After germination only 25 plants were maintained in each plot for further observation. Each treatment was replicated thrice and irrigated as and when required. Data were recorded in both the years.

Results and Discussion

In order to determine the effect of alternation of sowing on disease intensity. The observations were made in the field experiment with five dates of sowing during 2010-2011 and 2011-2012. Sterilized seeds of variety Modern were sown in selected fields at different dates starting from 3rd week of September and every 1st

and 3rd week of October and November during the crop season. The routine agricultural practices were adopted to raise good crop and allowed for the development of disease under natural conditions. Disease intensity was recorded at the maturity of the crop and data were analyzed statistically and the results are summarized in the table 1.

Table 1 Effect of alternation in sowing time on disease intensity

SN	Date of sowing	2010-11		2011-2012	
		Average Disease intensity	Yield /q	Average disease intensity	Yield /q
1	3 rd week of September	39.60 (39.00)	6.24	41.24 (39.95)	6.02
2	1 st week of October	41.35 40.01	5.90	42.46 (40.69)	5.75
3	3 rd week of October	34.86 (36.20)	8.24	35.62 (36.63)	8.18
4	1 st week of November	29.28 (32.77)	10.25	30.75 (33.65)	10.94
5	3 rd week of November	23.43 (28.95)	14.14	24.86 (29.93)	13.98
CD at 5%		2.81	1.59	2.46	1.42

The data shows in the table that sowing time of the crop was adjusted in such a manner so that the temperature and moisture conditions may prevail for rapid growth of the host to escape the critical period of disease incidence. The different sowing dates exhibited marked difference in per cent disease intensity and yield. Less disease intensity (23.43 and 24.86%) occurred in the late sown crop on 3rd week of November during 2010-11 and 2011-12, respectively as compare to other sowing dates. The reason for minimum disease intensity in 3rd week of November

appears to be due to relatively high temperature and low relative humidity at the maturity of crop. The crop sown in 3rd week of November exhibited maximum yield (14.14 q/ha) in 2010-11 and (13.98 q/ha) during 2011-12. It was clear from the experiment that alternation in date of sowing would help in minimizing the sclerotinia stem rot of sunflower. The results shown in the table have similarity with the findings of Berglund (2007), Ghasolia *et al.* (2004), Palat (2001), Singh (1995), Singh & Tripathi (1995).

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