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Influence of sowing dates on development of phyllody on sesame, *Sesamum indicum* L.

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Abstract

The percentage incidence of phyllody was maximum in the crop sown on June 15 during both the years i.e., 11.4 and 8.5% in 2006 and 2007, respectively. There was a progressive decline in jassid population with the delay of sowing dates in both the years. The pooled data of the two years revealed that although the seed yield was maximum in the case of crop sown on July 30, but it was statistically at par with the seed yield obtained in the case of crop sown on July 15. There was a progressive decline in the incidence of phyllody and the jassid population with the delay of sowing dates.

Keywords: Phyllody, sesame, sowing dates

Introduction

Sesame (*Sesamum indicum* L.) is an important oilseed crop grown in India. It suffers from many diseases which play an important role in its yield reduction. Among these diseases, phyllody caused by a phytoplasma and transmitted by jassid, *Orosius albisectus* (Ghavri, 1966) is a major limiting factor in realizing full yield potential (Mayee, 1992). The losses as high as 90% has been reported by Gopal *et al.* (2005). The disease can primarily be managed by controlling the vector population with the use of insecticidal chemicals. However, it has been observed that the time of sowing has considerable influence in the population build up of jassid and consequently the spread of the disease. In the present studies, an attempt has been made to investigate the effect of date of sowing on disease incidence.

Materials and methods

A two years study was conducted at Punjab Agricultural University Research Farm during 2006 and 2007 crop seasons. The sesame variety Punjab Til No.1 was sown on four different dates viz., June 15, June, 30, July 15 and July 30 in a Randomized Block Design with three replications in a plot size of 5 x 3 m. Standard packages of practices, except sowing dates and spraying of insecticides, were followed for raising a good crop. Weekly data on the vector population/3 leaves from 10 randomly selected plants was recorded while the disease incidence data was recorded on per plot basis. At harvest the data on number of pods/plants, seed yield/plot and oil content was recorded.

Results and discussion

The percentage incidence of phyllody was maximum in the crop sown on June 15 during both the years i.e., 11.4 and 8.5% in 2006 and 2007, respectively (Pooled incidence 9.95%) (Table 1). The minimum disease incidence was recorded in the crop sown on July 30 i.e., 0.8 and 0.6% in 2006 and 2007 respectively (Pooled 0.7%). The disease incidence all the sowing dates was significantly decreased with the delay of sowing time. Almost similar trend was observed for jassid population/3 leaves on different sowing dates. There was a progressive decline in jassid population with the delay of sowing dates in both the years. The maximum jassid population of 3.6 and 2.3 jassids/3 leaves in 2006 and 2007, respectively (pooled 2.95 jassids/3 leaves) was recorded on crop sown during June 15 (Table 1).

The number of pods/plant were maximum in second sowing date (June 30) i.e., 53.0 and 56.1 pods/plant in 2006 and 2007, respectively (pooled 40.4 pods/plant) (Table 2). The number of pods in this sowing date was significantly higher than those in other three sowing dates. On the other hand the minimum number of pods were recorded in case of last sowing date (July 30) i.e., 34.6 and 39.5 pods/plants in 2006 and 2007, respectively (pooled 37.0).

Almost similar trend was recorded in the case of seed yield. It was maximum and significantly higher than the seed yield obtained in other sowing dates i.e., 1041 and 890 kg/ha in 2006 and 2007, respectively. However, the pooled data of the two years reveal that although the seed yield was maximum in the case of crop sown on July 30 (965.5 kg/ha) but it was statistically at par with the seed yield obtained in the case of crop sown on July 15 (865.5 kg/ha). On the other hand, the seed yield was minimum and significantly lower in June 15 sown crop compared to the other three sowing dates (576 kg and 543 kg/ha in 2006 and 2007, respectively: pooled 559.5 kg/ha). Similar trend was obtained with respect to oil content from different sowing dates. The maximum oil content of 49.9 and 48.8% in 2006 and 2007, respectively (pooled 48.9%) was obtained from crop sown on June 30 while the minimum was obtained from crop sown on July 30 i.e., 45.7 and 43.6% in 2006 and 2007, respectively (pooled 44.6%). The reduction in the seed yield under late sown conditions might be attributed to shorter reproductive phase of crop (Roy *et al.*, 2005).

Thus, from the present study it can be concluded that there was a progressive decline in the incidence of phyllody and the jassid population with the delay of sowing dates. However, keeping in view the yield and other growth parameters in addition to the disease and insect-pest incidence, the sesame cultivation should preferably be done in the first fortnight of July for higher productivity and profitability on sustainable basis and to minimize the insecticide applications.

Table 1 Effect of sowing dates on incidence of phyllody and jassid population

Sowing dates	Phyllody incidence (%)			Jassid population/3 leaves		
	2006	2007	Mean	2006	2007	Mean
June 15	11.4	8.5	9.95	3.6	2.3	2.95
June 30	6.9	4.03	5.46	2.4	2.0	2.20
July 15	3.1	1.6	2.35	1.8	1.5	1.65
July 30	0.8	0.6	0.70	0.2	0.1	0.15
CD (P=0.05)	0.23	0.39	1.21	0.59	0.23	0.53

Table 2 Effect of sowing dates on number of pods/plant, seed yield and oil content of sesame

Sowing dates	Pods/plant			Seed yield (kg/ha)			Oil content (%)		
	2006	2007	Mean	2006	2007	Mean	2006	2007	Mean
June 15	40.6	40.2	40.4	576	543	559.5	47.2	46.4	46.8
June 30	53.0	56.1	54.5	1041	890	965.5	49.9	48.0	48.9
July 15	49.6	50.9	50.3	925	806	865.5	46.8	48.5	47.6
July 30	34.6	39.5	37.0	756	644	700.0	45.7	43.6	44.6
CD (P=0.05)	3.4	10.4	5.3	110	75	116.8	1.0	0.5	0.8

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