

Effect of different nutrients and cropping-sequences on the incidence of pea leaf miner (*Phytomyza atricornis* Meig) in mustard

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ABSTRACT

An experiment was laid out in the field at Oilseeds Research Farm Kalyanpur, Kanpur during *rabi* 2002-03, to find out the effect of different nutrients and cropping sequences on the incidence of pea leaf miner (*Phytomyza atricornis* Meig) in mustard. Mustard sown after bajra have lowest population (2.69 larvae/pupae per 10 plants) of *Phytomyza atricornis* Meig and provided maximum yield (32.69 q/ha). The plot treated with 112.50 kg N/ha, 56.25 kg P/ha, 56.25 kg K/ha + 2 tonne FYM/ha + 40 kg sulphur/ha + 25 kg ZnSO₄/ha + 1 kg boron/ha, was suitable for management of *Phytomyza atricornis* Meig, having only 1.77 larvae/pupae per 10 plants and provided maximum yield 34.03 q/ha. Bajra-mustard with fertility level. 112.50 kg N/ha, 56.25 kg P/ha, 56.25 kg K/ha + 2 tonne FFYM/ha + 40 kg sulphur/ha + 25 kg ZnSO₄ / ha was superior in reducing the population of *Phytomyza atricornis* Meig, having only 1.66 larvae/pupae per 10 plants in mustard.

Key words : N.P.K., FYM, Sulphur, ZnSO₄, Boron, *Azotobactor*, Pea leaf miner (*Phytomyza atricornis* Meig.), mustard.

INTRODUCTION

Indian mustard (*Brassica juncea* L. Czern and Coss) is major *rabi* oilseed crop of India. Its seed contains 37-49% oil. The oil and seeds are used as condiment in the preparation of pickles and for flavouring curries and vegetables. The oil is utilized for human consumption throughout northern India in cooking and frying purposes. It is also used in the preparation of hair oils and medicines. The oil cake is used as cattle feed and manure, which contains about 4.9% nitrogen, 2.5% phosphorus and 1.5% potash. Green stems and leaves are good source of green fodder for cattle. The leaves of young plants are used as green vegetables as they supply enough sulphur and minerals in the diet. India is the second largest producer of rapeseed and mustard in the world and contributes about 19% share of the total world production (Singh, 1998). The area of rapeseed and mustard in India is about 4.50 million hectares, which produce about 4.20 million tonnes with average productivity of 8.26 quintal/ha (Anonymous, 2002), which is very low. Amongst many yield limiting factors the insect pests are major. Pea leaf miner (*Phytomyza atricornis* Meig) is among them. To get rid off this problem without any chemical hazards the present investigation was carried out to prevent the damage of *Phytomyza atricornis* Meig, by different crop sequences and amendments.

MATERIALS AND METHODS

A field experiment was carried out during *rabi* 2002-2003 at Oilseeds Research Farm Kalyanpur, Kanpur. Treatment comprised Nitrogen (N) @ 150 & 112.5 kg/ha, Phosphorus (P) @ 75 & 56.25 kg/ha, Potash (K) @ 75 and 56.25 kg/ha, Farm Yard Manure (FYM) @ 2 tones, sulphur @ 40 kg/ha, ZnSO₄ @ 25 kg/ha Boron @ 1 kg/ha and *Azotobactor* @ 10 gm/kg of seed. Thus 12 treatment combination were tested in 3 replicated Split Plot Design. Crop was sown on 26 September 2001 in a randomized layout with plot size 2.5 m x 4.0m. The mustard (cv. Urvashi) seeds were sown in rows and at the time of thinning the spacing was maintained at 50cm. (row to row) x 20cm. (Plant to Plant). The population of *Phytomyza atricornis* Meig. was estimated by counting the number of larvae and pupae on six leaves (two upper, middle and lower portion of each plant) as suggested by Barar and Sandhu, (1973). Ten plants were randomly selected in each plots.

RESULTS AND DISCUSSION

It is clear from the Table-1 that in three cropping – sequences, bajra-mustard was best in minimizing the *Phytomyza atricornis* Meig. having only 2.69 larvae/pupae per 10 plants and provided maximum yield 32.69 q/ha. Fallow-mustard was not very effective in reducing the population of this pest having 3.19 larvae/pupae per

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