

CALANDER OF APPEARANCE OF KEY INSECT-PESTS OF RAPESEED

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Abstract

Rapeseed, Brassica campestris var. brown "sarson" crop can conveniently be divided into 5 distinct stages of its growth. Out of these stages, the inflorescence stage /6-8 weeks after germination/ and green siliqua stage /9-13 weeks after germination/ formed the most vulnerable stages of the crop growth, when the maximum pressure of key pests occurred on the crop. Out of 23 insect-pests recorded associated with this crop, 5 insect-pests viz. mustard aphid, Liothia edwardsi /Kait/; green peach aphid, Myzus persicae Sulzer; diamond back moth, Plutella xylostella Linn; hairy caterpillar, Spilosoma sp. and pea leaf miner, Polycaya horticola /Goureau/ were identified as the key pests. Outward, Agrotis segetum Denis and Schiffer muller, mustard sawfly, Amelita proxima Klug., and painted bug, Bagrada cruciferarum Kirk., could also be included in the group of key-pests but their severity was low as the clean cultivation resulting into regular disturbance through interculture did not allow the rapid multiplication of these potential pests. Plutella xylostella appeared as a regular pest and was found feeding on foliage, stem, inflorescence and the developing grains inside the green siliqua throughout the crop growth.

Introduction

Rapeseed and mustard are the traditional and commercially important winter oilseed crops in India. Brown "sarson" Brassica campestris L. has the prestigious position among Brassica group because of its oil quality but

the crop is highly susceptible to the incidence of various insect-pests /Rai, 1976; Bakhetia and Labana, 1978; and Singh and Singh, 1983/. However, the information on the pattern of succession and economic status of various insect-pests in different agro-climatic zones of India, is still lacking.

This information has to be made available for evolving a successful pest management programme. The following studies were attempted in the same direction at Haryana Agricultural University, Hisar, India.

Material and methods

The variety "BSH-1" of B.campestris was sown on 22-10-1979 and 31-10-1980 for 2 years, respectively in a plot size of 5.1m x 5.0m and replicated 6 times under 4 agronomic practices, i.e. fertilized /60kg N/ha / and irrigated /one irrigation 45 days after sowing/, fertilized and unirrigated, unfertilized and irrigated and unfertilized and unirrigated. The distances of 30 cm between 2 rows of plants and 10-15 cm between plants were maintained. The observations of the populations of various insect-pests were recorded on the first day of every standard week between 9 a.m. to 1.30 p.m. starting from germination till harvesting of the crop in the both years. In all 60 pre-determined plants were used for the purpose of recording the absolute population of various insect-pests per treatment /Pradhan, 1964; Singh and Singh, 1978/.

Results and discussion

For evolving an effective pest management system, it is essential to know the insect-pest complex attacking a crop in a particular agro-climatic zone /Singh and Singh, 1978/.

Twenty three insect-pests of different groups appeared in succession at different stages of crop growth in B.campestris.

Of which, Homoptera represented 7, Lepidoptera 5, Hemiptera and Thysanoptera 3 each, Hymenoptera 5, Coleoptera Orthoptera and Diptera 1 species each. Rai /1976/ reported 24 insect species of which L.erysimi, A.proxima and

B.cruciferarum were the pests of economic importance. During present studies out of these only L.erysimi was recorded as a major pest. Besides, P.xylostella and P.horticola were observed as major pests of regular occurrence. The other sporadic pest viz; A.segetum and Spilosoma sp. were found causing considerable damage to this crop. A.proxima and B.cruciferarum appeared in quite low numbers because of clean cultivation, interculture and optimum sowing time. C.binotalis appeared as a casual pest. It had not been earlier reported from Northern India. M.persicae appeared in large numbers on brown "sarson" and could become a serious problem in the near future. Four species of leaf hoppers, three species of Thrips and Monomorium sp. are the new records of insect-pests attacking this crop. P.xylostella appeared as a major pest. It had been reported so far as a minor pest in India /Mehta and Purohit, 1957; Srivastava et.al., 1962/. This pest also has been reported as a major pest of Brassica crops from Taiwan /Lee, 1968; Su and Rose, 1977/ and Hungary /Saringer, 1967/. This pest was found feeding on tender foliage, stem, siliqua and immature seeds.

The inflorescence stage /6 to 8 weeks after germination/ and green siliqua stage /9-13 weeks after germination/ of brown "sarson" were found as the vulnerable stages where maximum pressure of key pests occurred. Five insect-pests viz; L.erysimi, M.persicae, P.xylostella, Spilosoma sp. and P.horticola were identified as key pests /Table 1/. A.segetum, A.proxima and B.cruciferarum could also be included in the group of key pests but their severity was low as the clean cultivation resulting in regular disturbance through interculture did not allow the rapid multiplication of these potential pests.

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Table 1 Key insect-pests associated with various stages of crop growth in Rapeseed

Stage of crop growth	Weeks after germination	Average number of leaves on main shoot	Average Plant height (cm)	Key insect-pests
Seedling	1-2	6*	4.5*	<u>Agrotis segetum</u> , <u>Plutella xylostella</u> , <u>Phyllotreta cruciferae</u> .
Vegetative	3-5	12	11.25	<u>Spilosoma</u> sp., <u>P. xylostella</u> , <u>Athalia proxima</u> , <u>P. cruciferae</u>
Inflorescence	6-8	16	87.50	<u>Lipaphis erysimi</u> , <u>Myzus persicae</u> , <u>Phytomyza horticola</u> , <u>P. xylostella</u> <u>Spilosoma</u> sp.
Green siliqua stage	9-13	20	155.00	<u>L. erysimi</u> , <u>M. persicae</u> , <u>P. horticola</u> <u>P. xylostella</u> .
Siliqua stage (leaf shedding)	14-17	4	160.00	<u>L. erysimi</u> , <u>M. persicae</u> , <u>P. horticola</u> , <u>P. xylostella</u> .
Harvesting	18-19	2	160.00	<u>L. erysimi</u> , <u>M. persicae</u> , <u>P. xylostella</u> , <u>Bekrada cruciferarum</u>

*Average of 60 plants

Sowing of crop = End of October

Harvesting of crop = First week of March.