

Pest Management in Mustard Crop

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Abstract

Mustard is a versatile condiment derived from mustard plants in the Brassicaceae family. Its seeds come in different colors and types such as black, brown, and white, typically measuring 1 to 2 millimeters in diameter. It is cultivated in temperate regions globally. Mechanization of mustard crop production is important in primary cultivating regions. Toria, gobhi sarson, and taramira are classified as rapeseed, while raya and African sarson are categorized as mustard. Mustard is significant as a key oil-seed and fodder crop. The article provides recommendations for enhancing mustard crop production to mitigate economic losses for farmers.

Introduction

Mustard has been utilized as a culinary oil and skin moisturizer in traditional Indian households since ancient times. The seeds come in different colors and sizes, and are sourced from various mustard plant species, making mustard a widely traded spice globally. It has a long history and is traded globally as a popular spice. At the end of fiscal year 2023, these seeds are a significant spice in many regional cuisines and are sourced from three main plant species: black mustard (*Brassica nigra*), brown mustard (*B. juncea*), or white mustard (*Sinapis alba*). India is estimated to produce more than 12 million metric tons of rapeseed and mustard. (Statista)2023. Area under mustard in the current rabi-season has been reported at a record 9.8 million hectare (MH) which is 64% more than last five years' average sown area of 6.4 MH. Toria, gobhi sarson, and African sarson are specifically cultivated in irrigated conditions, while raya can thrive in both irrigated and rainfed environments. Taramira, conversely, is exclusively cultivated as a rainfed crop. The term canola is widely recognized internationally for Brassica varieties or hybrids that contain less than 2% erucic acid in the oil and less than 30 micromoles glucosinolates per gram of defatted meal. These varieties, also referred to as double low ('00'), are favored for their health-promoting properties. Notably, the removal of long-chain erucic acid from canola oil leads to a higher proportion of desirable monounsaturated fatty acids (MUFA), rendering it a beneficial option for dietary use. The Punjab Agricultural University (PAU) recommends specific

varieties and hybrids of rapeseed-mustard, such as RLC 3 and RCH 1 varieties of raya, GSC 6 and GSC 7 varieties of gobhi sarson, and PGSH 1707 and Hyola PAC 401 hybrids of gobhi sarson, all of which exhibit characteristics akin to canola. Anonymous(2023a).

Health benefits of using mustard oil for cooking food

Mustard oil is a multipurpose ingredient with various benefits for health and beauty. Benefits of mustard oil include relief from joint pain, cold and congestion, and benefits for hair and skin. Canola oil, abundant in oleic acid, is acknowledged as a nutritious choice for human consumption, while the defatted meal derived from such varieties is suitable for animal feed. Overconsumption of mustard oil can lead to serious side effects like rashes, gastrointestinal diseases, and skin and eye irritation. Mustard oil can be used in cooking to enhance flavors. Canola oil is considered a healthy option for human consumption due to its high content of monounsaturated fatty acids. Canola, on the other hand, refers to specific varieties or hybrids of Brassica plants that have lower levels of erucic acid and glucosinolates in the oil and meal.

Plant Protection from Insect Pests

1. Painted bug (*Bagrada hilaris*): It is serious on the germinating crop in October and again on mature crop in March-April. The nymphs and adults suck the sap from the foliage and siliquae which subsequently dry up. Application of first irrigation 3-4 weeks after sowing reduces the painted bug population significantly. Anonymous(2023b).

2. Mustard sawfly (*Athalia lugens proxima*): The larvae attack the young crop, bite holes into the leaves and may eat all the leaves in case of heavy attack. It can be managed by spraying 250 ml Ekalux 25 EC (quinalphos) in 60-80 litres of water per acre.

3. Mustard aphid (*Lipaphis erysimi*): Cold and cloudy weather is very favorable for the development of mustard aphid. The green plant lice become innumerable, covering the inflorescence and siliquae). They suck the plant sap in huge quantities and as a result, the plants remain stunted, siliquae shrivel up and seeds do not develop. Recommended integrated pest management program for effective and economic pest control. The use of insecticides and seeds should be coordinated according to economic thresholds.



Painted bug



Mustard sawfly



Mustard aphid attacking flowering of mustard crop



Green peach aphid



Leaf miner



Hairy caterpillar

Begin observing 12-16 plants per acre twice per week in January. Insecticides should be sprayed when aphid populations reach specific thresholds. Start monitoring fields for aphid incidence at the beginning of January and spray late afternoon when pollinators are less active. Recommended insecticides include Actara 25 WG, Metasystox 25 EC, Rogor 30 EC, and Dursban/Coroban 20 EC.

4. Green peach aphid (*Myzus persicae*): The green peach aphid attacks mustard flower tips from December to March with peak activity during February. After the appearance of inflorescence, the aphid congregates on terminal buds and feeds there. (John Capinera ,1969) As a result there is flower shedding, poor siliqua formation and shriveling of grains. For its control, sow the crop in second week of October and spray 200 ml Rogor 30 EC (dimethoate) or 250 ml Metasystox 25 EC (oxydemeton methyl) in 100 litres of water per acre in third week of February when this aphid starts congregating on top flower buds.

5. Leaf miner (*Chromatomyia horticola*): Larvae feed by making mines into the leaves and cause heavy

damage. Systemic insecticide Rogor 30 EC (dimethoate) recommended for control of mustard aphid should be used for controlling the leaf-miner or apply 13 kg Furadan 3 G (carbofuran) per acre followed by light irrigation.

6. Hairy caterpillar (*Spilosoma obliqua*) and cabbage caterpillar (*Pieris brassicae*): The caterpillars feed on leaves, young shoots and green siliquae. When young, they feed gregariously but the grown-up caterpillars migrate from one field to the other. when in the gregarious stage, they can be easily controlled by picking and destroying the infested leaves.

Note: • Mustard aphid becomes a serious issue around mid-January. Vigilance is needed from the first week of January to monitor its population regularly. Control measures should be decided based on monitoring results. Spray in the afternoon when pollinators are less active. Wait for specific periods after spraying different chemicals on Saag crop: 7 days for thiamethoxam 25 WG, 20 days for chlorpyrifos 20 EC and dimethoate 30 EC, and 30 days for quinalphos 25 EC.

Conclusion

Exploring flavorful recipes incorporating mustard oil can enhance culinary experiences. Given its significance in dietary practices, ensuring proper crop protection and preservation from pest infestations is crucial for farmers. This article provides insights into the management practices for mustard crops, aiding farmers in cultivating them in a safe and efficient manner.

References

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