

Research Article

ECO-FRIENDLY MANAGEMENT OF INSECT PESTS OF CABBAGE

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ABSTRACT

Cabbage cultivation is often constrained by severe infestation of insect pests such as the diamondback moth, cabbage butterfly, aphids, and leaf Webbers, which significantly reduce yield and quality. KrishiVigyan Kendra (KVK), Chandel has undertaken a series of location-specific interventions to promote eco-friendly management of insect pests in cabbage cultivation. Through capacity-building programmes, frontline demonstrations, and the dissemination of improved production technologies, farmers were encouraged to adopt sustainable practices that reduce dependence on chemical pesticides. Emphasis was placed on integrated approaches combining cultural, biological, and botanical methods for effective pest suppression. One of the key strategies promoted was the use of trap cropping, wherein two rows of mustard were planted at the beginning and after every 25 rows of cabbage to attract and divert major insect pests, thereby minimizing damage to the main crop. Crop rotation with non-cruciferous crops was also advocated to break the life cycle of pests and reduce their build-up in the field. In addition, the application of neem-based products, particularly neem cake powder, was demonstrated as an eco-friendly input that not only improves soil fertility by supplying essential nutrients but also acts as a natural pest repellent. The adoption of these practices resulted in reduced pest incidence, lower input costs, and improved yield and quality of cabbage. The interventions by KVK, Chandel highlight the effectiveness of eco-friendly and sustainable pest management strategies, contributing to enhanced farmer income, environmental safety, and long-term agricultural sustainability.

Keywords: cabbage, ecofriendly, insect pest.

INTRODUCTION

Cabbage (*Brassica oleracea* var. *capitata*) is an important leafy vegetable widely grown for its nutritional value and market demand. Eco-friendly cultivation integrates organic inputs, biological pest control, and resource conservation to ensure long-term productivity and environmental safety. Cabbage grows best in a cool, moist climate with temperatures between 15–25°C. It prefers well-drained loamy soils rich in organic matter with a pH of 6.0–7.5. When Cabbage heads are ready for harvest 70–120 days after transplanting, depending on the variety. Harvest when heads are firm and compact. Avoid delay to prevent splitting.

Advantages Cabbage Cultivation

- Improves soil fertility and structure
- Reduces environmental pollution
- Produces safe and chemical-free food
- Enhances biodiversity
- Reduces input cost in the long term

Rich Source of Nutrients

Cabbage is low in calories but high in essential nutrients such as:

- Vitamin C (boosts immunity)
- Vitamin K (important for blood clotting and bone health)
- Vitamin B6 and folate
- Minerals like potassium and calcium

Challenge:

Cabbage is one of the most popular cole crops. It can be grown throughout the year and also widely grown in north eastern region. It is nutritious and a rich source of vitamin A, B, C and also contains minerals. The insect pest is the major constraints in cultivation of cabbage. The insect pests damage the quality of head of cabbage unfit for marketable and human consumption. So for the increase of productivity application of chemical pesticides has always first choice. But ever increasing resistance of pest to pesticides and residue remains of these pesticides leads to a major concern about human health, animals, mammals and environment health hazards.

Initiative:

KrishiVigyan Kendra, Chandel District had conducted training cum demonstration programmes. The farmer's problem like lack of knowledge about improved technology, variety, seed rate, spacing, sowing time, lack of knowledge of IPM technologies, and lack of proper irrigation facilities since vegetable cultivation requires abundant water for irrigation, especially during at initial stage of crop growth. Before intervention their income was very low due to unscientific farming practices and non-implementation of improved agricultural varieties and practices but after attending the training programme on "improved production technology of vegetable crops", organized by ICAR-KVK Chandel, Manipur Centre. They are very keen to adapt new technology of scientific farming practices and also timely supply quality seeds and other inputs from ICAR-KVK Chandel, Manipur Centre.

Key result/insight/interesting fact:

Vegetable crops like cabbage frequent irrigation throughout the season. Especially cabbage is sensitive to drought stress during the period of head formation through harvest. Overwatering or irregular watering can result in burst heads. Moisture deficiencies occurring

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early in the crop cycle may delay maturity and reduce yields. Shortages later in the season often lower quality as well as yields. Applying the proper amount of water at the correct time is for achieving the optimum benefits from irrigation.

Impact:

The farmers of Panchai village and Lambung village, Chandel District who were unscientific farming practices and non-implementation of improved agricultural varieties and practices. They faced problems like lack of knowledge about improved technology, variety, seed rate, spacing, sowing time, lack of knowledge of IPM technologies, and lack of proper irrigation facilities since vegetable cultivation requires abundant water for irrigation, especially during at initial stage of crop growth. Before intervention their income was very low due to unscientific farming practices and non-implementation of improved agricultural varieties and practices. To overcome the problem KVK, Chandel had carried out different kinds of training programmes, demobstrations, use of improved varieties and the efforts use of crop trap two rows of cabbage is planted with mustard as trap crop at the beginning and after 25 cabbage rows and crop rotation with non cruciferous crops. Application of neem based products like neem cake powder also provides the plant with all the necessary nutrients and also helps to control pests due to their ability to paralyse the insect immediately after contact. Hence, these neem based products emerged as the most effective biological agent in the control of challenging pests and internal borders. Yellow sticky traps install @ 10 traps per hectare for monitoring whiteflies, thrips, etc. Therefore, at present the eco-friendly insect-pests management is economically best controlled techniques. The adoption of new technology cultivation of cabbage in their locality was the first time. Now, they are very much satisfied and also planned to extend the area in the next season. Moreover, by seeing their success, around 4-5 nearby farmers were also interested for cultivation of cabbage in the next season. As an impact of intervention they are getting gross income of Rs.3, 00,000/- In addition, they are having a net income of Rs. 2, 32,000/- from their field. Their yearly income has increased from a meagre income.

Lessons learnt:

Eco-friendly management of insect pests is benefits from human health and environment health hazards. Use only environment friendly production techniques. Therefore, eco-friendly management of insect pests incorporated to enhanced yield in cabbage.

Supporting quotes and images:

The farmer who inherited the farming from her forefathers said that "I grow my own vegetable crops and herbs. I like being able to tell people that the lunch I'm serving started out as a seed in my garden" have been successful my dreams into reality and nearby farmers were also interested to practice in the next season. (Farmer: Mrs.Ws. Shangjang, Panchai village, Chandel District)

Eco-friendly practices does not require to purchase for chemical fertilizers and when we heal the earth we heal ourselves (Farmer: Mrs. Dy. Shangam Lambung village, Chandel District). As Eco-friendly cabbage cultivation is a sustainable approach that balances productivity with environmental conservation. By adopting organic inputs, biological pest control, and proper crop management practices, farmers can achieve healthy yields while preserving natural resources and ensuring long-term agricultural sustainability.



Fig: vegetative stage of cabbage



Fig: Ready to harvest of cabbge



Fig: Head formation stage

CONCLUSION

Eco-friendly cabbage cultivation offers a sustainable and practical approach to vegetable production by combining environmental protection with economic viability. By relying on organic manures, bio-fertilizers, and biological pest management, farmers can reduce dependence on harmful chemicals while maintaining soil health and biodiversity. Although initial yields may be moderate, long-term

benefits such as improved soil fertility, reduced input costs, and production of safe, chemical-free food make this system highly beneficial. Overall, adopting eco-friendly practices in cabbage cultivation ensures stable productivity, better farmer income, and contributes to a healthier ecosystem for future generations.

REFERENCES

- Indian Council of Agricultural Research (ICAR). 2013. Integrated Pest Management in Vegetables. New Delhi: ICAR Publications.
- Food and Agriculture Organization (FAO). 2014. Integrated Pest Management for Sustainable Agriculture. Rome: FAO.
- G.S. Dhaliwal, Ramesh Arora & B.S. Dhawan. 2010. Integrated Pest Management: Concepts and Approaches. New Delhi: Kalyani Publishers.
- National Centre for Integrated Pest Management (NCIPM). 2015. Eco-friendly Pest Management Practices for Vegetable Crops. New Delhi: NCIPM.
