TRENDS IN AGRICULTURE SCIENCE
Popular Article
Vol.4 Issue 02 Feb 2025, Page: 3042-3044

The Role of *Chrysoperla zastrowi sillemi* in Pulse Crops and Its Advantages as a Predator

Sumit Mehla*[1], Deepika kalkal[1a], Palvi Thakur[1], Ankit Saini[1] and Neeru Balda[2]
[1] PhD Scholar, Department of Entomology, CCS Haryana Agricultural University, Hisar-125004, Haryana
[1a] Assistant Scientist, Department of Entomology, CCS Haryana Agricultural University, Hisar-125004, Haryana
[2] PhD Scholar, Department of Genetics and Plant Breeding, CCS Haryana Agricultural University, Hisar-125004, Haryana
DOI:10.5281/TrendsinAgri.14967625

Abstract

Pulses such as lentils, chickpeas, peas and beans are vital sources of global food security and agricultural diversity. However, pulse crops are vulnerable to a range of insect pests that can cause significant damage, reducing yields and affecting the quality of the harvest. The reckless use of chemical pesticides in pulse farming can be costly, environmentally harmful, and unsustainable in the long run. To manage pest populations in pulse crops, biological control agents such as *Chrysoperla zastrowi sillemi*, a species of green lacewing mostly found in the Indian subcontinent, have gained recognition for their efficacy.

Keywords: crops, damage, pulses, predator and control agents.

Introduction

Chrysoperla zastrowi sillemi is a species of green lacewing belonging to the Chrysopidae family. Green lacewings are well known for their voracious appetite for pests, particularly during their larval stages. The larvae of *C. zastrowi sillemi* are natural predators of a wide variety of insect pests, including aphids, thrips, mealybugs, whiteflies, and other soft-bodied pest insects. These pests are common threats to pulse crops and *C. zastrowi sillemi* offers an environmentally friendly and sustainable way to control their populations in agro-ecosystem.

Role in Pulse Crops

Pulse crops are rich in protein and other essential nutrients. They are grown extensively in both developed and developing regions. Unfortunately, they face a host of insect pests that can reduce yields such as aphids, pod borers, and whiteflies. The presence of these pests not only harms the plants but can also lead to the transmission of diseases, further compromising crop health.

Chrysoperla zastrowi sillemi plays a vital role in mitigating pest damage in pulse crops by preying on a range of harmful insects and offering natural pest control. Here's how it contributes to pulse crop protection:

Published: 28 Feb 2025
ISSN: 2583-7850

- **Aphid Control**: Aphids are one of the most common pests that damage pulse crops like chickpeas and lentils. These tiny insects feed on the sap of plants, weakening them and potentially spreading viral diseases. *C. zastrowi sillemi* larvae feed on aphids at various stages of their lifecycle, reducing their population and the damage they cause to crops.
- **Whitefly Suppression**: Whiteflies are another significant pest in pulses, especially in crops like peas. They damage plants by feeding on the phloem and can transmit harmful plant viruses. *C. zastrowi sillemi* larvae help to control whitefly numbers by preying on both the adult and nymph stages of the pest.
- **Thrips Management**: Thrips are tiny insects that infest pulse crops, causing direct feeding damage and increasing the risk of disease transmission. *C. zastrowi sillemi* is effective in suppressing thrips populations by feeding on them during their developmental stages.
- **Control of Pod Borers**: The larvae of some pod borers such as the gram pod borer (*Helicoverpa armigera*), pose a significant threat to pulse crops. These pests damage pods and seeds, directly reducing yields. *C. zastrowi sillemi* larvae help by feeding on the eggs and young larvae of pod borers, reducing their population and preventing damage to the pods.

Stalked Eggs of *C.z.sillemi*

Larva has Mandibulo-Suctorial mouth parts

The larvae of *Chrysoperla* (green lacewings) have highly specialized mechanisms that enable them to effectively locate, capture, and consume various insect pests.

Advantages of *Chrysoperla zastrowi sillemi* as a Predator in Pulse Crops

- **Environmentally Friendly Pest Control**: One of the primary benefits of using *C. zastrowi sillemi* is its environmental compatibility. Unlike chemical pesticides, which can harm beneficial insects, pollinators, and even soil health,
- **Reduction of Chemical Pesticide Usage**: Over-reliance on chemical pesticides in pulse farming has led to concerns about pesticide resistance and environmental contamination. The introduction of *C. zastrowi sillemi* provides a sustainable alternative that reduces the need for

Published: 28 Feb 2025
ISSN: 2583-7850

synthetic chemicals, thus minimizing pesticide residues in crops and the surrounding ecosystem.

- **Cost-Effective Pest Control**: While there may be initial costs associated with the purchase and release of *C. zastrowi sillemi* larvae, over time, this biological control agent can reduce overall pest management costs. Farmers can lower their pesticide expenses while still effectively controlling pest populations, leading to long-term economic savings.
- **Enhanced Biodiversity**: The use of *C. zastrowi sillemi* in pulse crop management helps maintain biodiversity by protecting beneficial insects, selective predation and avoiding the destruction of non-target species.
- **Safety for Non-Target Species**: *C. zastrowi sillemi* primarily targets harmful pests, leaving beneficial species unharmed. This reduces the negative impacts on pollinators, soil organisms, and other beneficial insects.
- **Sustainable Pest Management**: The use of *C. zastrowi sillemi* as part of an integrated pest management program fosters long-term sustainability. By combining biological control with cultural practices and minimal pesticide use, farmers can achieve effective pest control without compromising the long-term health of the land, crops, or ecosystem.

Conclusion

Chrysoperla zastrowi sillemi is a powerful natural predator that plays a crucial role in the protection of pulse crops from a variety of insect pests. Its ability to control pests like aphids, thrips, whiteflies, and pod borers offers an effective, environmentally friendly, and sustainable alternative to chemical pesticide use. By integrating *C. zastrowi sillemi* into pest management practices, pulse farmers can reduce their reliance on chemicals, enhance biodiversity, and protect both crop yields and the environment. As part of a holistic approach to farming, *C. zastrowi sillemi* contributes to more sustainable, healthy, and economically viable pulse production.

References:

Gavloski, J. (2018). Integrated management of sap-feeding insects of pulse crops. *Annals of the Entomological Society of America*, **111**(4), 184-194.

Bakthavatsalam, N. (2011). Neuroptera as biocontrol agent in India: Present status and future thrust. *Entomology, Ecology & Biodiversity*, 394-449.

Roshan Lal, R. L., & Rohilla, H. R. (2007). Insect pests of pulses and their management, 67-81.

Saxena, H., Bandi, S., & Devindrappa, M. (2018). Pests of pulses. *Pests and Their Management*, 99-136.

Published: 28 Feb 2025
ISSN: 2583-7850