European Journal of Experimental Biology
ISSN: 2248-9215

Open access Short Communication

An In-depth Exploration of Pests Used on Plants in Agriculture and Horticulture

Evgenios Agathokleous*

Department of Ecology, Nanjing University of Information Science and Technology, China

INTRODUCTION

In traditional farming and gardening practices, pests are generally considered adversaries that need to be eliminated. However, some pests can serve as allies in promoting beneficial ecological interactions and improving crop yield and quality. This article explores various types of pests intentionally used on plants, known as "beneficial pests" or "biocontrol agents." We will delve into their specific roles, mechanisms of action, and advantages in sustainable agriculture and horticulture. Ladybugs are among the most well-known and widely used beneficial insects for controlling aphids, mealybugs, and other soft-bodied pests. Adult ladybugs and their larvae are voracious predators, consuming large numbers of harmful insects, protecting crops from infestations. Lacewings are another popular choice for biological control. Their larvae, often called "aphid lions," prey on aphids, thrips, mites, and small caterpillars. Lacewings can be introduced into greenhouses or gardens to help maintain pest populations at manageable levels. Praying mantises are generalist predators that feed on a wide range of insects, including caterpillars, grasshoppers, and even small rodents. Although they can be introduced to control pests, their effectiveness may vary depending on the target species and the environment. Parasitoid wasps are essential natural enemies of many pest insects [1-3]. These tiny wasps lay their eggs inside or on the host insect, and their larvae develop by consuming the host from the inside, eventually killing it. They are highly effective in controlling caterpillars, grubs, and other harmful insects. Trichogramma wasps are minute parasitoids that target the eggs of various pests, including moths and butterflies. They lay their eggs inside the host eggs, preventing the development of the pest's next generation.

DESCRIPTION

Bacillus thuringiensis is a bacterium widely used as a bio pesticide. It produces protein crystals toxic to specific insect groups, such as caterpillars and certain beetle larvae. But is particularly effective against Lepidopteran pests while being safe for non-target organisms. Various species of entomopathogenic fungi, such as Beauveria bassiana and Metarhizium anisopliae, infect and kill insects by penetrating their cuticles. These fungi have potential as bio pesticides to control a range of pests, including aphids, whiteflies, and thrips. Entomopathogenic nematodes are tiny, soil-dwelling organisms that parasitize and kill insect pests. When applied to the soil, these nematodes search for suitable hosts and release symbiotic bacteria, which lead to the host's death. They are effective against soil-dwelling pests like grubs, caterpillars, and weevils. By introducing beneficial pests, farmers and gardeners can reduce the use of chemical pesticides, thus minimizing potential harm to beneficial insects, wildlife, and the environment. Beneficial pests can offer long-term, sustainable pest control by establishing natural ecological balances, leading to healthier plants and improved crop protection. Using beneficial pests can be more cost-effective than employing chemical pesticides, especially in Integrated Pest Management (IPM) strategies. The efficacy of using beneficial pests can vary depending on factors such as pest species, environmental conditions, and the presence of alternative food sources [4,5]. Introducing non-native beneficial pests can potentially disrupt native ecosystems and negatively impact local biodiversity. The use of living organisms, even if they are pests, raises ethical questions about animal welfare and the potential suffering of these organisms.

CONCLUSION

Intentional use of pests on plants in agriculture and horticulture can be an environmentally friendly and sustainable approach to pest management. By understanding the types of beneficial pests available and implementing them in integrated pest management strategies, growers can strike a balance between effective pest control and preserving the ecosystem's health. Continued research and monitoring are essential to

Received:	31-May-2023	**Manuscript No:**	EJEBAU-23-17045
Editor assigned:	02-June-2023	**PreQC No:**	EJEBAU-23-17045 (PQ)
Reviewed:	16-June-2023	**QC No:**	EJEBAU-23-17045
Revised:	21-June-2023	**Manuscript No:**	EJEBAU-23-17045 (R)
Published:	28-June-2023	**DOI:**	10.36648/2248-9215.13.2.13

Corresponding author Evgenios Agathokleous, Department of Ecology, Nanjing University of Information Science and Technology, China, E-mail: a_evgenios@nuist.edu.cn

Citation Agathokleous E (2023) An In-depth Exploration of Pests Used on Plants in Agriculture and Horticulture. Eur Exp Bio. 13:13.

maximize the benefits of using beneficial pests while minimizing potential risks.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

REFERENCE

1. Bolker BM, Brooks ME, Clark CJ, Geange SW, Poulsen JR, et al. (2009) Generalized linear mixed models: A practical guide for ecology and evolution. Trends Ecol Evol 24(3): 127-135.
2. Dale AG, Frank SD (2018) Urban plants and climate drive unique arthropod interactions with unpredictable consequences. Curr Opin Insect Sci 29: 27-33.
3. Goddard MA, Dougill AJ, Benton TG (2010) Scaling up from gardens: Biodiversity conservation in urban environments. Trends Ecol Evol 25(2): 90-98.
4. Nowak DJ, Greenfield EJ, Hoehn RE, Lapoint E (2013) Carbon storage and sequestration by trees in urban and community areas of the United States. Environ Pollut 178: 229-236.
5. Avelino J, Gurdián AR, Cruz-Cuellar HF, Declerck FAJ (2012) Landscape context and scale differentially impact coffee leaf rust, coffee berry borer, and coffee root-knot nematodes. Ecol Appl 22(2): 584-596.