Effectiveness of biopesticides for aphid pest management in wheat

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DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Introduction

- Wheat is a potential crop that could meet the country's food requirements.
- Insect pests are the key source of yield losses in the wheat crop.
- Aphids are among the economic yield-reducing major pests of wheat.
- Insecticides are used exclusively to control pests.
- Increasing applications of synthetic insecticides have resulted in higher resistance and pest resurgence.

➡ Potential of botanicals as a preventive measure against aphid

Materials and Methods

Study Area: Wheat crops in the MNS-University of Agriculture, Multan experimental areas.

- Randomized complete block design under factorial
- 3 Replications and 7 Treatments
- Data was recorded before and after 24, 48, 72 and 168 hours.

Treatments: 1. Neem, *Azadirachta indica*, **2.** Kortuma, *Citrullus colocynthis,* **3.** Tobacco, *Nicotiana tabacum,* **4.** Silver nanoparticle spray, **5.** S1 bacteria (S1B), **6.** Biopesticide (Bio-N), **7.** Advantage

Figure 1: Spraying and data collection in wheat crop

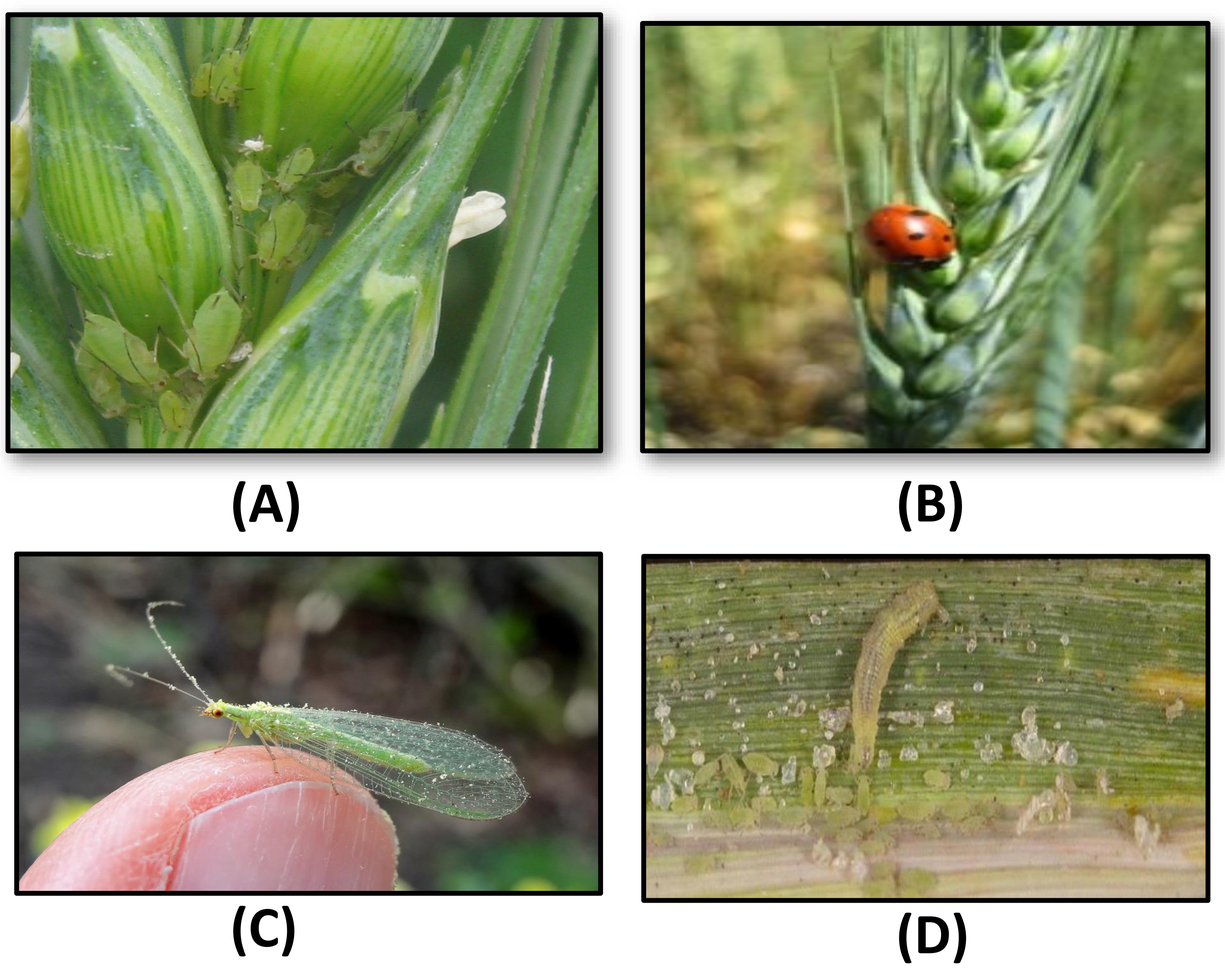

Figure 2: (A) Aphid (B) Ladybird beetle (C) *Chrysoperla carnea* (D) Sryphid fly larvae

Results

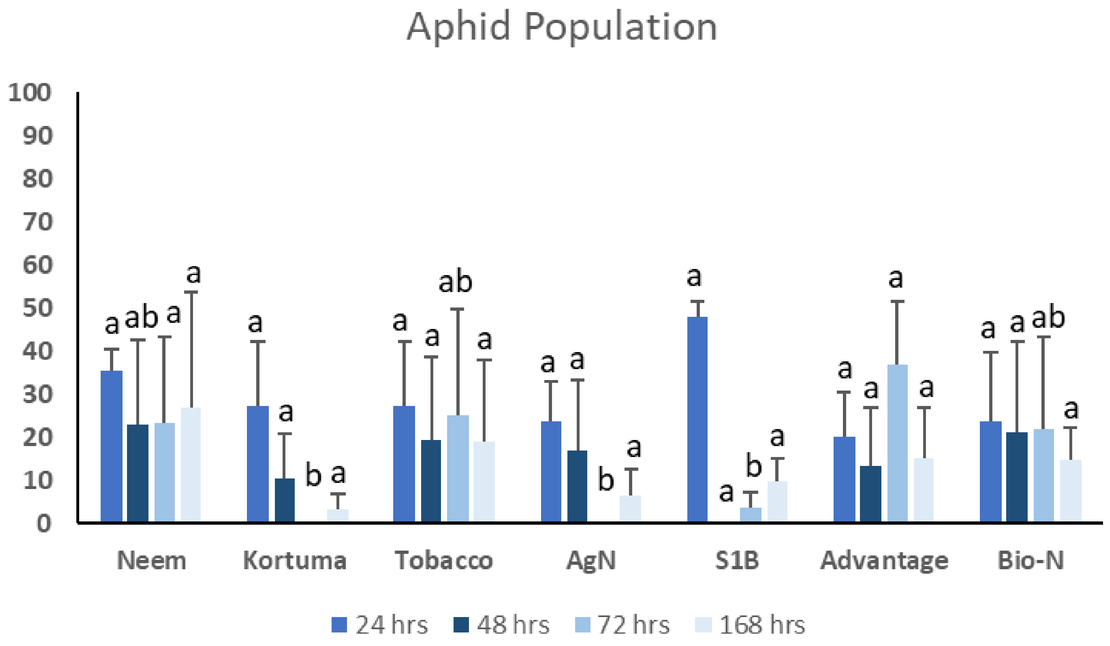

Figure 3: Effectiveness of biopesticides on wheat aphid population/tiller

- Research on the population dynamics of different species of aphids revealed significant differences in the treatments of kortuma, Ag nanoparticle, and Bio-N treatments.

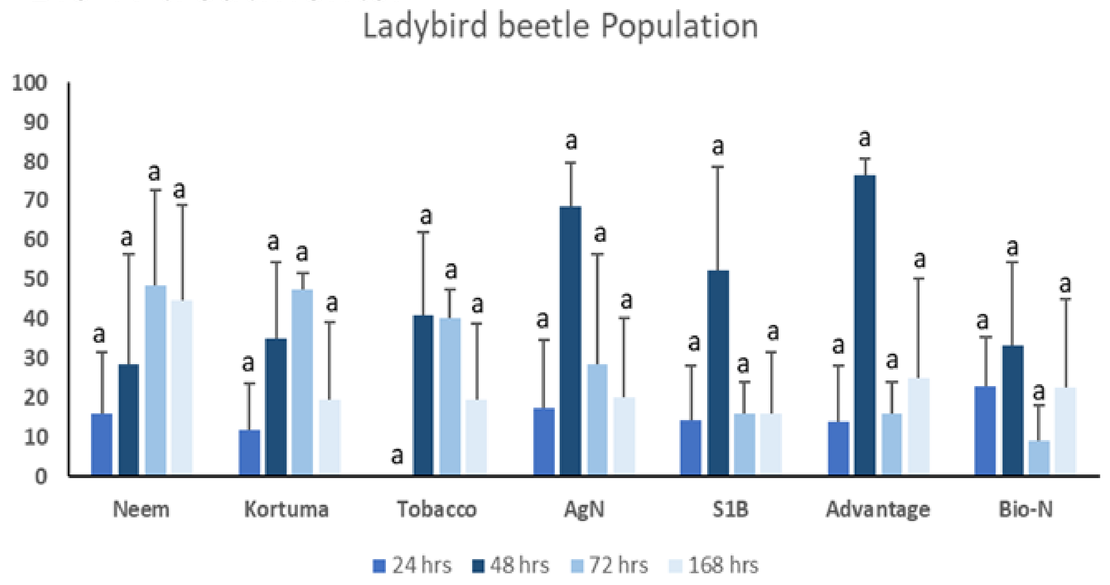

Figure 4: Effectiveness of biopesticides on ladybird beetle population/plant

- There was a significant population of ladybird beetle/plant found in the case of kortuma and sliver nanoparticle treatments.

Conclusions

- Ag nanoparticle, Bio-N and kortuma was relatively better as compared to all other treatments because of less resistance.
- Aphid populations were higher in the control case and certain other biopesticide treatments like neem, tobacco and S1 bacteria.
- Biopesticides had a considerably better effect than conventional treatments because of reduced resistance and the fact that it was produced under natural conditions.