



EVALUATING AN INTEGRATED PEST MANAGEMENT (IPM)

APPROACH TO CONTROL DIAMONDBACK MOTH (DBM) IN CABBAGE

Arjane Zaynah¹, Unmole Lalini², Sumboo Mishtee¹, Sauzier Jacqueline¹,
Theeroovengadam Nivershee¹, Naojee Kaminibye²

¹ Mauritius Chamber of Agriculture, Vivéa Business Park, Saint-Pierre, Republic of Mauritius

² Food and Agriculture Research and Extension Unit (FAREI), Reduit, Moka, Republic of Mauritius
smartagri.ap@mcamu.org

Introduction

Diamondback Moth (DBM), *Plutella xylostella* (Linnaeus), poses a significant threat to cabbage crops due to its foliage damage. The objective of the case study was to explore and evaluate the effectiveness of Integrated Pest Management (IPM) for controlling the population of DBM with the aim of reducing reliance on pesticides while maintaining or improving crop yields.

Materials and techniques used

Several methods were adopted to implement the IPM on a cabbage field of 1,055 m², variety Taiki. Biopesticides, environmentally- friendly alternatives to chemical pesticides with reduced risks to non-target organisms were used when the threshold levels of insects went beyond economic threshold and needed a curative action.

1. Beneficial plants



Indian Mustard (*Brassica juncea*)
"Leguminous"

- Set along one border of field 1 week prior to transplantation of cabbage
- Rapid propagation
- Attracts pollinators and pest thrips
- Attracts parasitoids of DBM larvae, *Cotesia vestalis*



Billygoat (*Ageratum conyzoides*)
"Asteraceae"

- Spontaneous weed left in situ
- Rapid propagation
- Attracts ladybugs and scale insects
- Attracts parasitoids of DBM larva, *Cotesia vestalis*

2. Augmentorium

- 1 Augmentorium placed on the perimeter of the plot
- For sanitation purposes, infested fruits collected on the plot were deposited in the augmentorium.



3. Traps

- 16 Delta traps + pheromone septa to attract adult DBMs
 - 30 cm above the cabbages
 - 10 m between each delta trap
- Weekly counting of adult DBMs trapped in the delta traps
- Renewal of pheromones every 15 days for maximum effectiveness

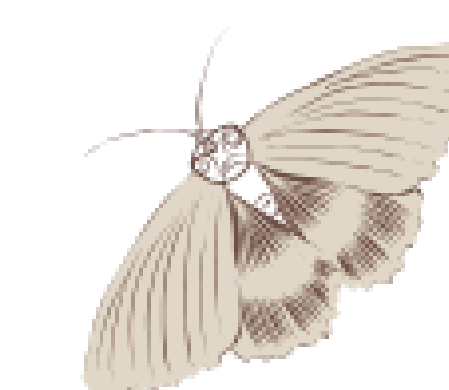


Results

Number of insects trapped over 6 weeks (June to July 2021)



32 DBM larvae

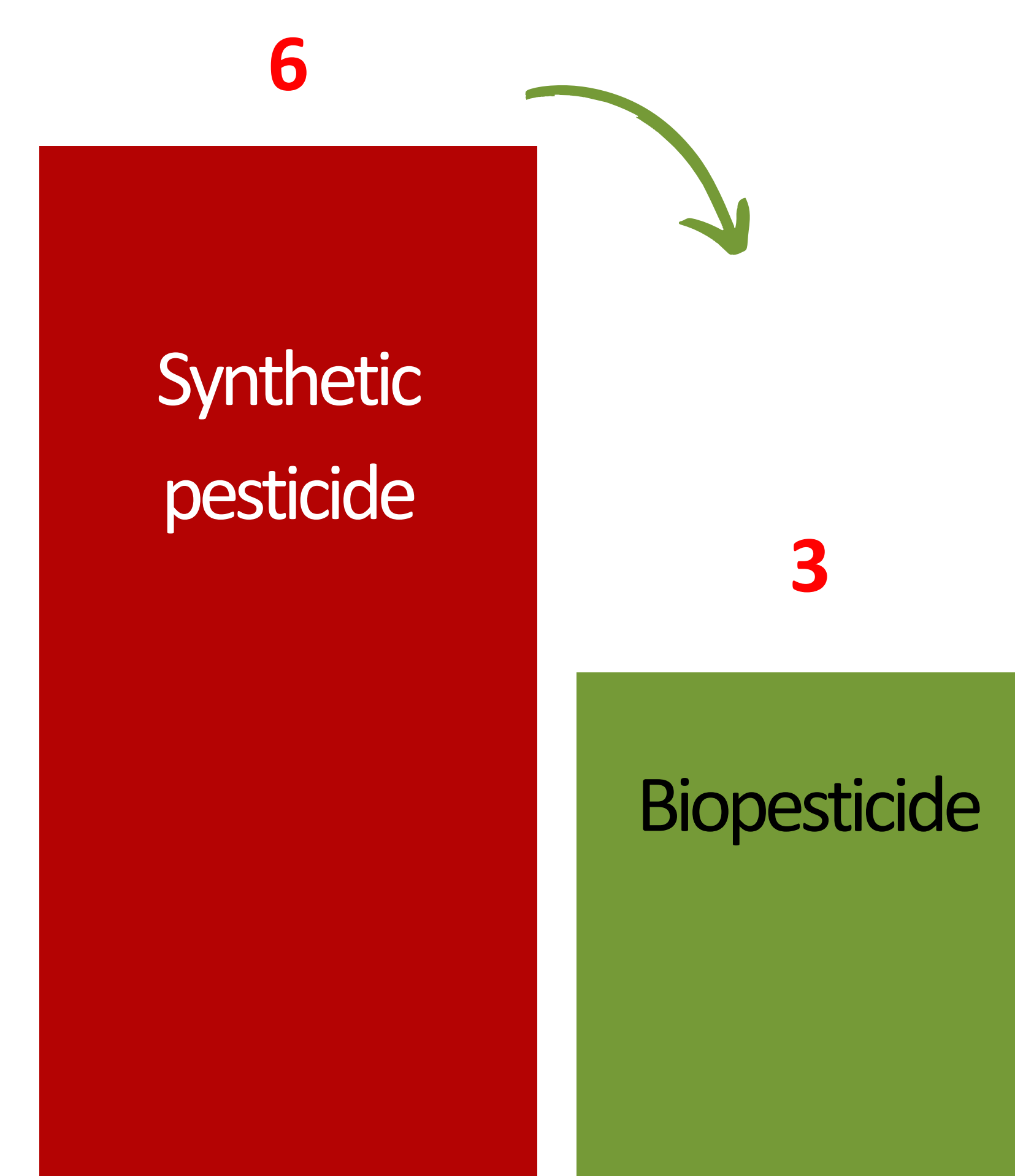


512 DBM adults

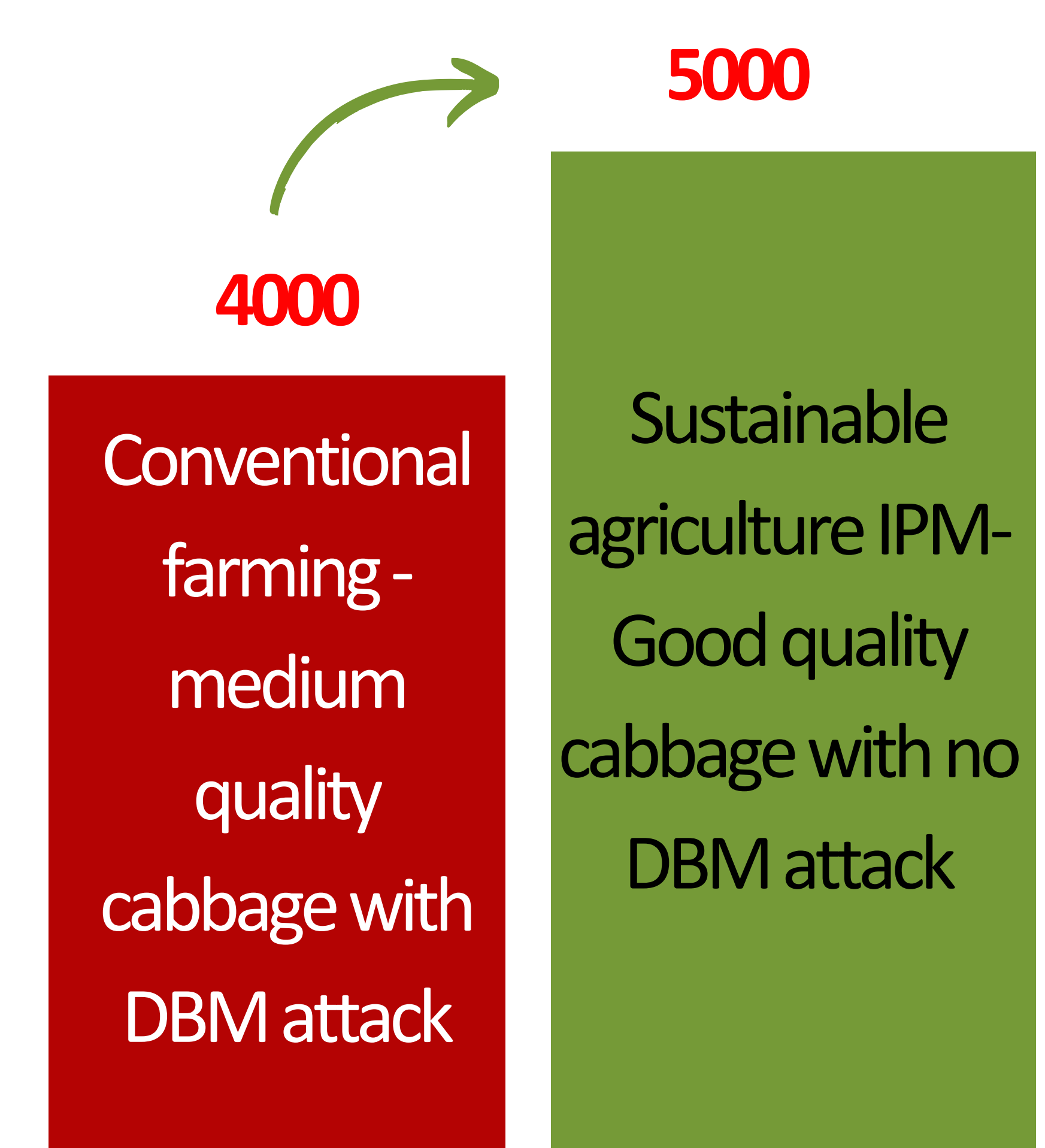


2 pupae of *Cotesia Vestalis*

Pesticides applications



Effect of IPM on cabbage yield



Discussion

- This pilot study was conducted in a microclimate with the IPM approach being compared to the farmer's past conventional pesticide application and yield figures.
- Although we observed parasitoids, their numbers were still low, indicating the need for more observations and experimental trials comparing both conventional and IPM approaches.
- The effectiveness of augmentorium and trap crops could not be quantified in this first-of-its-kind study.

Conclusion

Proper use of agricultural techniques in IPM helped to effectively control the DBM populations without using harmful, synthetic pesticides, to improve yields and to avoid economic losses.

We recommend more field tests in different microclimates to be done to measure the effectiveness of each IPM technique used and ensure the replicability of the positive results obtained.



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