



COOPERATIVE EXTENSION

UNIVERSITY OF HAWAII AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE
AND HUMAN RESOURCES

Hawai'i Diamondback Moth Insecticide Resistance Management Program

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Background



DBM larva

Management of the most serious threat to Hawai'i's cruciferous crops, the diamondback moth (DBM), *Plutella xylostella* (Linnaeus), is critical to the success of the Chinese and head cabbage industries, which are among Hawai'i's top vegetables by value and weight. Controlling DBM is particularly challenging due to its propensity to develop insecticide resistance, which is caused by continuous exposure to insecticides with the same mode of action. Other pest management strategies, including cultural practices and natural enemies, provide inadequate control. Therefore, the rotational use of insecticides has become an indispensable tool in the long-term management of DBM and viability of crop industries in Hawai'i.



DBM damage in head cabbage

Extension's Response

Collections and assessments of DBM populations from major production areas to determine the levels of pesticide resistance through biannual bioassay tests are conducted, which facilitates the development of an insecticide class rotation system, thus achieving DBM control and maintaining efficacy of insecticides.

Growers are provided with insecticide rotation schedules every six months that are customized to the genetics and current insecticide resistance status of their local DBM populations.



Diamondback moth bioassay test

Oahu Rotation	
Month	Rotation Product
January	Botanigard or Mycotrol
February	Xentari
March	Torac
April	*Movento
May	Dipel or Crymax
June	*Exirel ^(RUP) or Harvanta
Maui Rotation	
Month of:	Rotation Product
January	Exirel
February	Movento
March	Torac
April	Rimon
May	Proclaim
June	Exirel

Insecticide rotation schedules for the DBM

Impacts

Reduced Crop Loss

Crucifer crop growers' annual crop losses due to DBM reduced from 40-60% to just 0-5%, therefore severe crop losses due to DBM can now be effectively mitigated.

Protection of Important Vegetable Industries

Insecticide rotation information helps protect more than \$6,000,000 worth of head cabbage and other crucifer crops in Hawai'i.

Improved Statewide Pest Management

- Increased grower knowledge of pesticide resistance management.
- Grower's adoption of regional insecticide resistance management programs by following insecticides spray rotation schedules.

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