DIAMONDBACK MOTH (DBM)

Plutella xylostella

Description:

Adults:

Adults are greyish brown, with a small, slender body that is approximately 0.2-0.4 in (6-10 mm) long and pronounced antennae. A broad cream or light brown band along the back sometimes constricts to form one or more light-colored diamonds on the back. When viewed from the side, wingtips turn upward slightly.

Eggs:

Tiny and roundish, laid singly on the underside of leaves. Yellow or pale green in color. Eggs are often difficult to find or detect.

Larvae:

Larvae are colorless in the first instar and are pale green thereafter. Mature larvae rarely exceed 0.4 in (11 mm) in length. The body tapers at both ends, and a pair of prolegs protrudes from the posterior end forming a distinctive "V". Wriggle actively when disturbed, and spin down from the plant on a strand of silk.

Pupae:

Yellowish in color and 0.27-0.35 in (7-9 mm) in length. Pupation occurs in a loose silk cocoon, usually formed on the lower or outer leaves. Pupation averages from 5-15 days.

Above left: adult DBM; Above right: DBM larva feeding on leaf creating a "windowpane"; Left: DBM pupa covered in loose silk cocoon (source: Lyle Buss, University of Florida).

Hosts:

All plants in cruciferous vegetable family including broccoli, Brussels sprouts, cabbage, cauliflower, collard, kale, kohlrabi, mustard, radish, turnip, and watercress. Not all are equally preferred hosts.

Damage:

- Damage is caused by larval feeding.
- Larvae chew small circular holes in leaves from the underside, creating windowpanes from feeding. Sever damage can cause complete removal of foliar tissue leaving only leaf veins.
- Serious damage occurs when larval feeding disrupts the head formation of cabbage, broccoli, and cauliflower.
- Larvae may also bore into heads of broccoli or cauliflower, causing economic injury and contamination, making them unmarketable.

Left: DMB larval feeding damage on cabbage (source: Western Australia Agriculture and Food). Right: Larval feeding damage (source: A. Sparks, Jr., University of Georgia).

Phenology:

- Number of generations per year depends on weather and location, and generation time varies with temperature.
- Adults overwinter in colder climates. In colder climates, adults cannot overwinter, and annual infestations arise from adult migration from warmer regions in the spring.
- Up to 4 to 6 overlapping generations in colder climates and 10-14 generations in the tropics.

Lure Type and Maintenance:

- PHEROCON® DBM controlled release septa.
- Replace PHEROCON® DBM lures every 4 weeks.

Lure Storage:

- Store in unopened factory sealed packages in a cool place (< 74° F or 24° C maximum) for short periods or refrigerate longer term.
- Refrigerate or freeze unopened packages to carry over for annual storage.

Trap Design:

- PHEROCON® 1C, PHEROCON® VI DELTA, or PHEROCON® Bucket trap.

Placement Time:

- Place traps in the field early, prior to seedling stage.
- Monitor throughout the entire season.

Placement Pattern:

- Place along the edge of the field, 1.6-2 ft (0.5-0.7 m) off the ground.
- Traps should be spaced a minimum of 328 ft (100 m) apart.

Trap Density:

- Never use less than two traps per field.
- Use a minimum of one trap per 10 acres.

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DIAMONDBACK MOTH (DBM), *Plutella xylostella*

Trap Maintenance:

- Check traps twice per week during seedling stage or right after transplanting, at thinning, and just before heading.
- Replace trap liners monthly or when fouled with dust or insect debris.

Recommendations:

- In addition to checking traps, fields should be scouted in several locations throughout the field for the presence of larvae or sampled with sweep nets.
- Rotate out of cole crops so that they do not grow in the same field in consecutive years.
- In cabbage, regularly monitor wrapper leaves for damage after heading. Adults frequently migrate in from fields being harvested, so carefully check border rows.
- DBM has developed resistance to multiple insecticides with different modes of action. Rotate chemical classes to manage this pest.
- Each crop field requires independent monitoring due to significant variation among locations.

Source: Recommendations and certain other sections were sourced from UC IPM Cole Crops Management Guidelines for Diamondback Moth, University of Florida IFAS, and CABI Invasive Species Compendium for Diamondback Moth.

Note, always:

- Use only one lure per trap.
- Count and record captures as recommended.
- Change trap as needed.
- Discard lures in trash far from the area of use and remove trash afterwards.
- Follow recommendations.
- Contact local extension authorities and consultants for regional advice.

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