Sweet Corn

Dusky Sap Beetle

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*Dusky Sap Beetle*

**Identification (and life cycle/seasonal history)**

Dusky sap beetle (DSB) is a dark gray beetle, about 3/16” in length. The wing covers are shorter than is typical for most beetles and do not extend to cover the tip of the abdomen. Larvae are creamy white, worm-like and have a brown head capsule.

Dusky sap beetle larvae develop in all manner of rotting vegetation. Discarded fruit and debris from vegetable fields can be common breeding sites. In wooded areas dusky sap beetles will feed on bacterial ooze from trees and in pockets of decay. During midwinter DSB survives as a pupa in the soil or as an adult in protected sites. Adult DSB are active into late fall and become active again in early spring present year round. In sweet corn, adults may feed on tassels and pollen that collects in leaf axils.

The life cycle involves eggs, 3 larval instars, a pupa, and adult. Development from egg laying to the adult emergence takes about 7 weeks at 65°F but can be completed in about 3 weeks at 85°F. Sap beetle larvae can be visible to the naked eye in as short as three days after eggs, during conditions of high summer temperatures. Eggs are elongate, creamy white, and barely visible to the unaided eye. They are laid loosely under the husk or between kernels. Adults may hollow out kernels near the tip, and larvae can be found within these sites after eggs hatch. Larvae can also attack intact kernels and feed within them.

Although dusky sap beetles can be found in sweet corn shortly after silking begins, fields are not highly attractive to beetles until about 15 days later. Sap beetles enter the ears when sugar production begins within the kernels and kernels begin increasing in size. The great majority of eggs are laid in the ears after this point. Sap beetle adults are very mobile in the field and they often move from the ears after picking. When mature corn is picked and placed in a box, most sap beetles will leave the ears and move around within the box.

**Other Sap Beetles**
Other sap beetles and some other insects may be associated with sweet corn ears. The >picnic beetle= group commonly visit wounds of many plants. They are shiny and spotted. These beetles, however, do not enter intact ears as do the dusky sap beetles.

**Plant Response to Damage**

Dusky sap beetle produces little damage to sweet corn kernels, and damage is much less conspicuous than caused by corn earworm. However, the presence of sap beetle larvae or adults in corn ears is unacceptable for most markets.

Although dusky sap beetle very commonly follow pre-existing wounds to enter sweet corn ears, they can be found in sweet corn that is not damaged by corn earworm or other insects. Varieties with a loose, open tip are more susceptible to infestation.

**Management Approaches**

**Cultural Control**

Field location can be important in risk from damage by dusky sap beetle. Fields located near favored breeding sites (vegetable/fruit dumps, woodlots with bacterial ooze) will likely be more heavily infested than more distantly located fields. Sap beetles tend to be attracted to earlier maturing sweet corn. Sweet corn that matures after surrounding field corn has dropped pollen tends to have lower infestation.

- Sweet corn varieties with tight, long husks are less likely to be entered by dusky sap beetle. Particularly susceptible varieties with open tips should not be planted at times that allow silking to occur when peak flights of sap beetles are present in early summer.

- Since sap beetles can develop high populations in decaying plant matter, sweet corn and vegetable fields should be disked or plowed as soon as possible after harvest. Plant debris that dries rapidly or is deeply incorporated into the soil will be less suitable for sap beetle breeding and thus suppress local populations.

**Trapping**

A pheromone trap is available that is highly attractive to dusky sap beetle. The traps involve use of some attractive food base (fermenting fruit juice, bread dough, rotting fruits) combined with a lure containing an aggregation pheromone used by the beetles. Both the food base coattractant and pheromone lure are required to be highly attractive to dusky sap beetle. Beetles are lured into a collecting vessel, usually with some funnel entrance to the attractants.

The aggregation pheromone is more stable than the lure used for corn earworm and can be used for about a month before it should be replaced. Sap beetle pheromone traps can
capture thousands of beetles in a short period of time, but it is difficult to use trap captures as an indicator of beetle infestation within a sweet corn field. It appears that the best indicator of larval infestation is adult sap beetle counts within fields beginning about ten days before harvest. If mass trapping of sap beetles is attempted, it is critical to manage the coattractant (food base material) so beetles are more attracted to it than the crop which is being protected.

**Chemical Control**

Sweet corn becomes particularly attractive to dusky sap beetle as the kernels swell. Control is particularly important in the ten days prior to harvest, during the period when the great majority of eggs are produced. Unlike corn earworm, dusky sap beetle egg laying in sweet corn increases as harvest approaches. A program that utilizes daily sprays beginning seven days prior to harvest has been effective in keeping sap beetle larvae at an acceptable level. The spray program terminates three days before harvest. It is important that harvest is timely after the end of the spray program. Harvested sweet corn must be kept cold to stop development of small sap beetle larvae within the ears.

Diazinon, lambda-cyhalothrin, and zeta-cypermethrin have been identified as being effective for control of dusky sap beetle. However, some products labeled for control of sap beetles (e.g., esfenvalerate) may not have great activity against dusky sap beetle.

**Honeybee hazard caution:** Honey bees will forage for corn pollen and applications made during pollen shed have risk to area honey bee hives. Avoid using products of highest hazard to honey bees (e.g., Penncap-M, certain carbaryl formulations) and work with area beekeepers to limits pesticide application hazards to sweet corn.

**Product List for Dusky Sap Beetle on Sweet Corn:**

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Lbs Active Ingredient Per Acre (fl. oz. or oz. product)</th>
<th>(Preharvest Interval), Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrior</td>
<td>0.02-0.03 lb (2.56-3.84 fl. oz.)</td>
<td>(1 day, 24 hour reentry) Maximum application of 3.84 pt/acre of product per season.</td>
</tr>
<tr>
<td>Mustang/Fury</td>
<td>0.028-0.05 lb (2.4-4.3 fl. oz.)</td>
<td>(3 days, 12 hr reentry). Maximum of 0.3 lbs ai/acre per season.</td>
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<tr>
<td>Lannate 2.4LV</td>
<td>(1-1 1/2 pt)</td>
<td>(1 day PHI, 48 hours reentry).</td>
</tr>
<tr>
<td>Lannate 90SP</td>
<td>(1/3-1/2 lb)</td>
<td>Maximum application of 6.3 lbs AI/acre per season</td>
</tr>
<tr>
<td>Diazinon</td>
<td>as labeled, many formulations</td>
<td>(7 days PHI, 24 hour reentry)</td>
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Categories: Sweet Corn, Insects, Dusky Sap Beetle

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