



Corn earworm, *Helicoverpa zea*, a pest of hemp, *Cannabis sativa*, in Virginia

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Figure 1: Corn earworm larva on hemp

leaves of hemp plants, particularly leaves of flower bud portions. Eggs hatch in 3 to 4 days. Coloration of larvae can vary. Young larvae often are darker in color with prominent black bristles (**Figure 3**) and later instars may be pink, yellow, green, brown, or two-toned (**Figure 4**). Larvae molt through 6 to 8 instars in 2 to 3 weeks, depending on temperature. Once fully developed, larvae drop to the ground and burrow into the soil to pupate. Pupae are dark red/brown. The insect overwinters as a pupa. In Virginia, one to two generations are expected per growing season.

Corn earworm, *Helicoverpa zea* Boddie, is a common pest of corn, cotton, soybeans, and vegetables. It also appears to be one of the most prevalent and consistent pests of industrial hemp, *Cannabis sativa*, based on two years of surveying the crop in Virginia (**Figure 1**). In summer (mid-July to late August), moths (approx. 1 inch in size and tan in color) are actively laying eggs in host crops. Females lay cream colored-spherical eggs singly on plants (**Figure 2**). Eggs are typically laid on younger



Figure 2: Female corn earworm moth depositing an egg on a hemp plant.



Figure 3: Early instar larvae are dark in coloration

Historically, in Virginia and further north, relatively few pupae survive the winter. Large populations migrate annually from southern regions. Moth activity and relative population sizes can be monitored via the use of pheromone traps (Figure 5) or blacklight traps. Trap



Figure 4: Later instar larvae may vary in coloration

catch numbers indicate moths are reproducing and likely egg-laying on host crops, of which hemp appears to be quite attractive. Larvae are the pest stage of concern. Hemp plants grown for CBD (cannabidiol) oil are often very dense and larvae can be hard to find. If plants are planted on white plastic, frass (i.e., excrement) pellets can indicate presence in plants. Producers should confirm that there is an active population before taking any remedial action. Corn earworm have been observed in high

numbers in hemp since the crop was first grown in Virginia in 2016. The economic impact of corn earworm feeding will differ depending on the variety of hemp that is grown. Hemp grown for grain or CBD oil has the greatest potential for damage compared with fiber varieties. In hemp cultivated for fiber, the stem of the plant is the harvested material. Corn earworm preferentially feed on fruiting structures (seeds or flower buds) and are less likely to feed on stems. In grain varieties, mature seed is harvested. Corn earworm can damage or consume mature hemp



Figure 5: Pheromone traps can be used to monitor adult corn earworm populations

seeds (**Figure 6**) and immature seed buds, thereby decreasing seed yield. In hemp grown for CBD oil, flower buds are harvested. Corn earworm can tunnel into or devour floral bud material which leads to wilting and death of plant tissue. Later instar larvae can consume more plant material and have the potential to damage multiple buds. In the lab, corn earworm survives and develops from early instar to pupa solely on hemp plants and seeds. Larval development was similar to that of corn earworm fed on corn.

Management. There are no transgenic hemp varieties that protect plants against corn earworm feeding. This species is abundant in agricultural areas of Virginia, especially the eastern portion of the state. Virginia Department of Agriculture and Consumer Services is responsible for regulating pesticide use in hemp. Follow all state regulations and label instructions when applying any pesticide. Be aware that regulations differ for hemp that is consumed by people and animals.



Figure 6: Corn earworm can devour mature hemp seeds