Hornworm vs. Hickory Horned Devil

By Susan Camp

"Stop by my shed and look down at the ground next to a yellow poplar leaf. Tell me what you see," Jim called out to me as we passed each other, each carrying loads of small debris left from a recent storm.

"Not a snake, I hope," I muttered to myself as I walked toward the shed.

No, it wasn't a snake, but a large, plump, apple green caterpillar with interesting black and white markings on its sides and pairs of prominent black-tipped red horns at the head end. It also bore tiny, horn-like, black spines at intervals across its back.

As I walked back toward Jim, I said, "It's a tomato hornworm. You had better squish it and go check your tomatoes, but if you find one with little white projections on its back, don't kill it. Those are the larvae of a braconid wasp and will kill the worm when they hatch."

I continued working, but something was nagging at me, so I walked back to the shed and looked at the caterpillar again. I remembered that tomato hornworms and their tobacco-eating cousins don't have spines on their backs. I snapped a photo and googled it to find that this colorful creature is a hickory horned devil, the largest caterpillar in North America at up to 5.5 inches and the larvae of the regal or royal walnut moth (Citheronia regalis). The adult regal moth has gray forewings with rust-colored veins and irregular yellow spots.

The hickory horned devil looks like a miniature dragon, but it is totally harmless and not considered a threat to the leaves of various species of hickory, walnut, pecan, and butternut trees that make up its diet. The spines are dull and nonpoisonous.

In July and August, the mature caterpillars burrow into the ground to pupate throughout the winter. Adult moths emerge in spring, and the females broadcast pheromones to attract males. After mating, female moths lay their eggs on the host trees. Both males and females die within a week.

The tomato hornworm (Manduca quinquemaculata) and its cousin, the tobacco hornworm (Manduca sexta) superficially resemble the benign hickory horned devil, but the behaviors of the three caterpillar species leave no room for confusion. The hornworms are ruthless destroyers of not only tomatoes and tobacco, but also other members of the nightshade family. This means that the leaves, new stems, and unripe fruit of your peppers, potatoes, and eggplants are in jeopardy of being eaten by these marauders.

It isn't crucial for the home gardener to distinguish a tomato hornworm from a tobacco hornworm. Both are apple green. The tomato hornworm is recognizable by the red horn on its rear end and eight pairs of V-shaped stripes along its sides. The tobacco hornworm has a black horn with seven pairs of diagonal lines along the sides. Neither hornworm species has black

spines on its body. These caterpillars can reach four inches in length. Hornworm moths are gray-brown with yellow markings on the abdomen.

Hornworms overwinter in the soil and appear in June, but most hornworm damage occurs in July and August, so these are the best months to attempt various controls. If you find only a few caterpillars, you can handpick them and immerse them in soapy water. VCE Publication 456-018 "2025 Pest Management Guide: Home Grounds and Animals 2-22 Home Vegetables: Insects" offers information on cultural, biological, and chemical controls.

A female braconid wasp may parasitize a hornworm by laying its eggs just under the skin of a caterpillar. When the eggs hatch, the larvae feed on the nonessential tissue of the caterpillar without killing it. As the larvae mature, the cocoons that encase them emerge as white spikes on the exterior of the hornworm's body. The caterpillar is weakened by the attack and soon dies.

See VCE Publication ENTO-20P "Hickory Horned Devil" and NC State Extension article "Insects—Tobacco and Tomato Hornworm" for more information.