

Tomato Hornworms

by Bob Bauernfeind

Well tended tomato plants grow prolifically, and have lush green foliage. However, a plant which looks relatively healthy one day (Figure 1) can rapidly go downhill within several days (Figure 2). The leafless condition was caused by “green worms”. Most times, the green worms are not casually observed. However, with patience, one can find the usually motionless worm(s) which blend(s) into the background foliage (Figure 3).



Figure 1

Figure 2



Figure 3

The “green worms” are either tomato hornworms or tobacco hornworms. It is of academic interest as to which is which. In fact, both species may be present at the same time. While being described as “green worms”, there are varying degrees of green depending on genetic background. Thus either species may be light or dark in color. There are, however, consistent distinctive markings which are characteristic of each species. In a side by side comparison, the tomato hornworm larva has a black horn and 8 diagonal stripes which hook backwards to form an “L” or “V” (Figure 4, upper). The tobacco hornworm has a red tail and 7 diagonal stripes with no backward hooks (Figure 4, lower).



Figure 4

People often wonder where these big larvae came from ----- thinking, “Well, they weren’t there yesterday, so they must have invaded my garden from some outside source”. In actuality, the larvae were present for at least the past month. And although feeding ravenously throughout that period of time, their feeding went unnoticed because they were small and because tomato foliage was very thick/lush. It is not until larvae approach the end of their feeding cycle that they quickly defoliate vines to a degree that captures our attention.

“Hornworms” are the larvae of sphinx moths, sometimes referred to as hawk moths and/or hummingbird moths. In Kansas, there are two generations of tomato and tobacco hornworms each season. They overwinter as pupae enclosed in earthen cocoons. Many times, people unearth these cocoons when they prepare the soil in their gardens. The earthen cocoons are 2-3-inches long (Figure 5). Inside of the cocoon is the actual overwintering pupa (Figure 6). A very characteristic feature of sphinx moth pupae is the prominent tongue case (often times referred to as a “pitcher handle”) (Figure 7).



Figure 5



Figure 6



Figure 7

Moth emergence may begin as early as late May, but certainly in June. For all practical purposes, the moths of both the tomato and tobacco hornworms have the same general size (4 to 5-inches from wingtip to wingtip) and coloration (Figure 8). They are most active during evening hours, and therefore go unnoticed. Eggs also go unnoticed because they are deposited on lower leaf surfaces, and because (of their greenish coloration) they somewhat blend in with the green leaves on which they are deposited (Figure 9). As stated above, larvae are not detected until they are of sufficient size (return to Figure 2) so as to cause significant defoliation.



Figure 8



Figure 9

If hornworms are encountered, several choices can be made as to how to deal with them, the first being the “do-nothing” approach. Merely look at the beauty of the larva (Figure 10), and allow it complete its feeding cycle. If there are several to many hornworms, they can be hand-picked and disposed of. Although hornworms may thrash about and “spit”/regurgitate their stomach contents, they do not bite. Nor are they capable of stinging or piercing your skin with their “horn”. Larvae which should not be discarded are those carrying small white cocoons (Figure 11). The cocoons contain the pupae of a small wasp which parasitizes hornworm larvae.



Figure 10



Figure 11

For those who are insistent on using insecticides against hornworms, various materials are registered for use. Visit a nursery or garden shop for the product availability. People wishing to follow an organic insect control program can utilize Bt products. However, those materials must be applied as preventative treatments throughout the entire growing season. The effectiveness of the *Bacillus thuringiensis* endotoxin crystals is dependent upon their being ingested when larvae are small and in their early developmental stages.

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