Widespread Melonworm Infestations in Pumpkins Present in August 2025

By Aaron Cato

Melonworm was found infesting pumpkin plants in Arkansas on August 19th in Hope and on August 26th and 27th in Ft. Smith, Conway, and Newport. These reports indicate that melonworm have moved across the entire area and there is a high risk of infestations in all pumpkins, winter squash, and other cucurbit crops across the Mid-South. Melonworm larvae have primarily been observed feeding on leaves but fruit feeding was also observed at several locations. A large number of pupae and adults are currently present, indicating that infestations are likely to increase in severity soon. Larvae emerging in the next few weeks are much more likely to move to maturing fruit as aging leaves are less preferred. Based on the early arrival across the state, growers should expect a high risk of fruit injury this year.

Melonworm Arrival in the last 6 years

Year	First Melonworm Observation	State Impact
2020	9/03 in NW AR	**Sporadic losses**
2021	9/7 in NW AR (Likely mid-Aug arrival)	**Widespread losses**
2022	9/19 in NW AR	**Sporadic Infestations**
2023	10/10 in NW AR, 8/30 in SW	Few Issues (Some Damage in SW)
2024	**8/08** – in NW AR, 8/15 in SW	**Widespread losses**
2025	8/26-27 NW, C, and NE AR, 8/19 – SW AR	

Melonworm, *Diaphania hyalinata*, is a tropical moth species that occurs throughout Central and South America, as well as sub-tropical regions of the Southern United States. Melonworm is also referred to as rind worm or pickle worm, although the pickle worm is related species of cucurbit feeding caterpillar, *Diaphania nitidalis*, with a distinctly different biology and morphology that is not commonly found in most of the Mid-South. Melonworm larvae feed on the foliage and fruit of plants in the family Cucurbitaceae, including specialty crops such as squash, pumpkins, and watermelon. Melonworm immigrate to central and northern regions of the United States each year during the summer months and commonly occur in the Southeast. Melonworm can disperse as far north as the Great Lakes or northern regions of the Atlantic coast. In Arkansas, melonworm typically have the largest impact on fall cucurbit crops such as pumpkins and winter squash. This species does not overwinter in Arkansas and moves north from sub-tropical regions of the US across the summer, typically arriving in early fall.

Melonworm Biology

Adult melonworm moths lay eggs on cucurbit plants primarily at night, on the underside of new growth, stems, and even on flowers. Melonworm moths are often seen on plants during the day **(Picture 1)** and will readily fly short distances when leaf canopies are disturbed**.** Larvae take around 14 days to develop, from egg to pupation, and the pupal stage lasts from 9-10 days, resulting in a generation time of 25-30 days **(Picture 2 and 3)** (Panthi et al. 2016)**.** Immature melonworm are green caterpillars with two longitudinal, white stripes down their back and 4 sets of prolegs **(Picture 4).** Larvae can quickly defoliate leaves of cucurbit plants when at high density and leave a "skeletonized" appearance with only the leaf veins remaining **(Picture 5)** (Smith 1911). You can often find larvae hiding under rolled, or turned pumpkin leaves, encased in webbing **(Picture 6)**. Melonworm larvae can quickly begin to feed on the rind of pumpkin fruit and burrow under the stem/handle which can cause the stem to pull off when

picked up **(Picture 7).** Feeding on the rind results in the fruit ultimately becoming unmarketable **(Picture 8).** Many other species of caterpillars may be observed feeding on cucurbit leaves or fruit and could be confused with melonworm, including beet armyworm (*Spodoptera exigua*), cabbage looper (*Trichoplusia ni*), corn earworm (*Helicoverpa zea*), and garden webworm (*Achyra rantalis*).

Picture 1 – Melonworm adult moth perched on a ripe pumpkin. Photo by Ryan Keiffer.

Picture 2 – Melonworm larvae present on the underside of a pumpkin leaf. These larvae can be identified by their green color and the two white stripes on their back. Photo by Aaron Cato.

Melonworm Dispersal

Melonworm doesn't overwinter in the Mid-South, meaning their arrival each year depends on the climatic conditions throughout the Spring and Summer months. From 2020-2025 melonworm was observed in Arkansas on cucurbit crops as early as early August in 2021 and as late as mid-October in

2023. When and where melonworm is first observed is a key aspect of predicting their impact each year. Impactful infestations are usually widespread when the pest is first found in northern Arkansas during August or early September. Earlier arrival generally means increased impact as we observed successive generations and exponential buildup of the pest in the area prior to the main pumpkin harvest window. Melonworm tend to be more problematic in years where tropical storm systems track along the Mississippi river from the gulf coast. These large storm systems accelerate the dispersal of moths.

Scouting for Melonworm

Pumpkins, winter squash, and other fall cucurbit crops should be scouted for melonworm larvae and moths 1-2 times a week starting in late July when melonworm may occur. Focus early scouting efforts on the first signs of melonworm on vegetative plants, which include feeding on the underside of leaves (**Picture 9**) and in new growth (**Picture 10**). It's also important to keep an eye out for moths (**Picture 1**) and rolled leaves (**Picture 6**). Fruit injury can occur very quickly after melonworm arrive, so fruit should be scouted for injury even when melonworm haven't been observed (**Picture 7 and 8**). Melonworm presence in the plant canopy is often related to time of year and plant age. When plants are fully mature with maturing fruit, melonworm can be found on any structure, whereas melonworm are usually found in new growth and on leaves of younger plants with few maturing fruit (**Picture 9 and 10**).

Cultural Controls

Melonworm prefer to feed on pumpkins and winter squash, but can also be found on fall squash and zucchini. Variation among cultivars may exist and is most pronounced when several species of *Cucurbita* are used for one type of crop. For example, melonworm often prefer jack-o-lantern pumpkin varieties over some ornamental types grown and sold together. Preference is rooted in the *Cucurbita* species each pumpkin is derived from. Pumpkins planted to be picked in mid-September are less likely to be impacted by melonworm in some years, suggesting that planting date could be a useful way to help manage melonworm. However, planting date trials in years of early infestations suggest no benefit from planting early, even when pumpkins are picked in September. Row covers may be an option for home gardeners or small organic growers to prevent melonworm from laying eggs at night, although permanent row covers limit pollination, increase pests such as aphids, and are unlikely to remain free of holes throughout the entire season (Webb and Linda 1992). Melonworm trapping does not give a good indication of presence, as moths are hard to catch with sticky traps and no commercial pheromone lures exist for melonworm currently.

Insecticide Timing

Melonworm need to be managed with effective insecticides once they are observed. Data indicate that scouting for moths or larvae is the most sustainable way to time insecticide applications. In fact, melonworm dispersal seems to be relatively uniform in latitude and across geographically similar growing regions, which indicates that growers can consider infestations in nearby areas to time insecticide applications. For example, growers in Southeast Arkansas should consider insecticides when melonworm are found anywhere in Arkansas, or even just in other areas of southern Arkansas. However, growers in central Arkansas should only consider insecticide applications if melonworm is found in northern or central Arkansas and should only increase scouting efforts when melonworm is found in the southern area of the state. In most years we see melonworm move quickly into southern

portions of the Mid-South, especially Southeastern regions, but this does not always translate into early infestations in central and northern growing regions of the Mid-South.

Insecticide Selection

Several insecticides have been found to be effective in controlling melonworm in pumpkins and squash **(Table 1).** Once melonworm is found it is likely that infestation pressure will continue until harvest is completed, with some increases in infestation density noticeable as successive generations emerge. Due to prolonged infestation pressure, insecticides should be selected and scheduled based on the expected residual activity of the insecticide. Data at the University of Arkansas indicate that short-lived broad-spectrum insecticides, such as pyrethroids (bifenthrin, lambda-cyhalothrin, etc.) used to control cucumber beetles and squash bugs, will also suppress melonworm. These insecticides may only offer two to five days of residual, would need to be applied weekly, and should only be relied on when also managing other pests that necessitate their use.

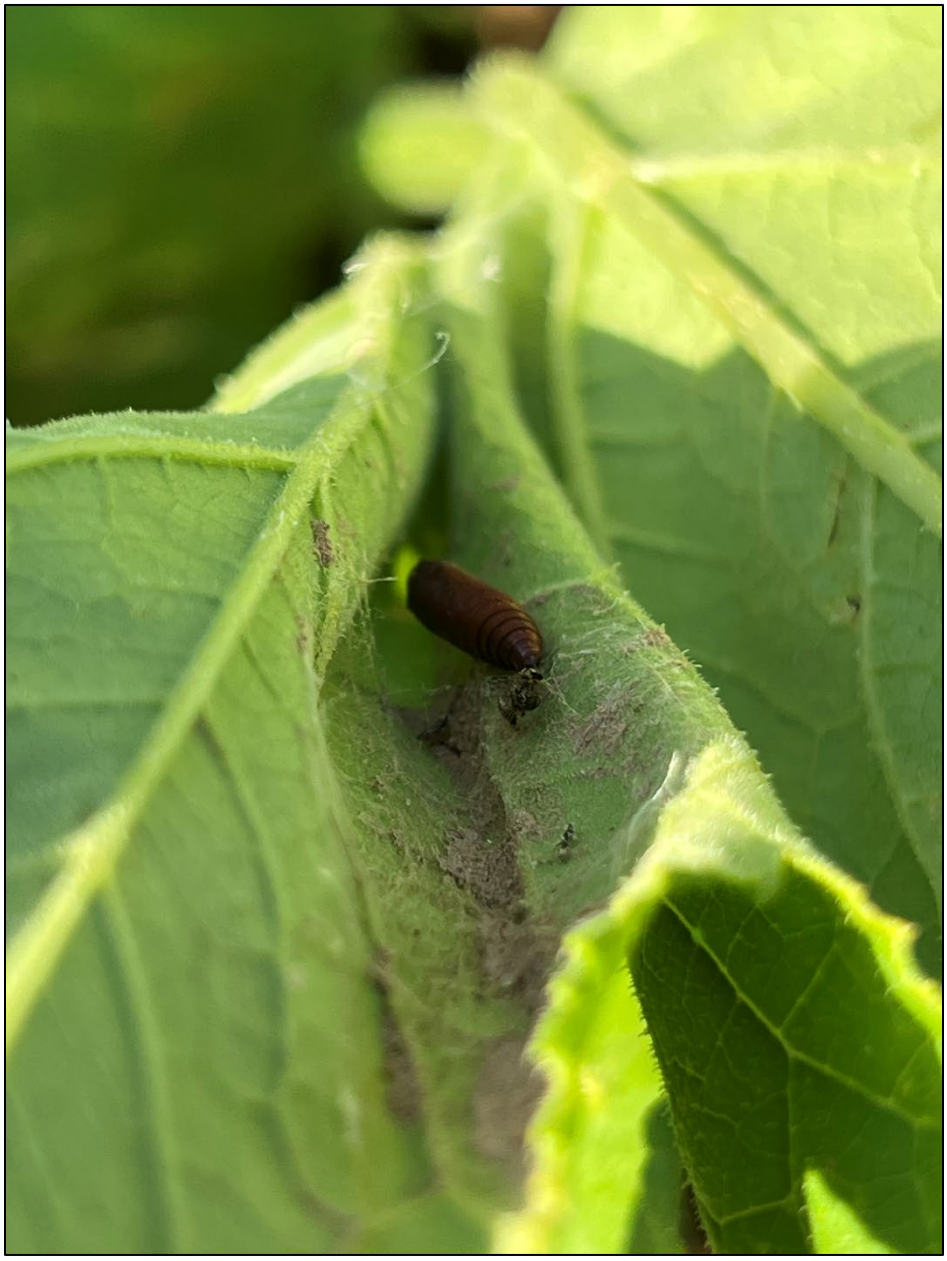
Broad-spectrum insecticides are not necessary for melonworm management and may do more harm than good, as they can flare melon aphids and spider mites. Many cucurbit operations open to the public are hesitant to apply insecticides to manage melonworm due to public perception. In these instances selective insecticides can be used to assuage any fears of any potential impact. Data form Arkansas indicate that several selective insecticides offer excellent suppression of melonworm when used appropriately. Diamide insecticides (Mode of Action Group 28), those containing chlorantraniliprole, cyantraniliprole, etc., are selective insecticides that primarily kill caterpillars and offer 21 to 28 days of residual activity. Our data indicate that only 1 to 2 applications of chlorantraniliprole containing insecticides would be necessary per year if applications were timed at first detection of melonworm and repeated on 21-28 day intervals. University of Arkansas data also indicate that very short-lived organic insecticides, such as those containing *Bt*, *Bacillus thuringiensis*, are effective when timed early and used weekly. Although we have not tested other organic options, we would expect those with proven efficacy on caterpillar pests, such as insecticides containing spinosad, to be effective when sprayed weekly.

Table 1. Insecticides that can be used to manage melonworm including insecticide class and mode of action (MOA) and estimated residual activity.

Trade Name	Active Ingredient	Insecticide (MOA)[1]	Residual (days)
Brigade	bifenthrin	Pyrethroid (3A)	<7
Warrior II	lambda-cyhalothrin	Pyrethroid (3A)	<7
Mustang Maxx	zeta-cypermethrin	Pyrethroid (3A)	<7
Sevin	carbaryl	Carbamate (1A)	<7
Coragen eVo	chlorantraniliprole	Diamide (28)	21+
Harvanta	cyclaniliprole	Diamide (28)	21+
Exirel	cyantraniliprole	Diamide (28)	21+
Intrepid	methoxyfenozide	Growth Regulator (18)	14-21
Radiant	spinetoram	Spinosyn (5)	<7
DiPel[2]	*B. t* subsp. *kurstaki*	Microbial (11)	<7
Entrust[2]	spinosad	Spinosyn (5)	<7

[1]The Mode of Action (MOA) listed corresponds to the IRAC Group (Insecticide Resistance Action Committee) number for each insecticide.

[2]Insecticides that can be used in organic production (OMRI approved)



Picture 3 – Melonworm pupae inside a pumpkin leaf previously folded together with silk. Photo by Aaron Cato.

Picture 4 – Melonworm larvae pictured on a pumpkin leaf with 4 sets of prolegs present on their abdomen, which is a way to distinguish them from other caterpillars such as cabbage looper which are common on pumpkin. Photo by Aaron Cato.

Picture 5 – Defoliation of pumpkin plants by high densities of melonworm larvae, which is usually characterized by “skeletonized” leaves that only have veins remaining. Photo by Aaron Cato.

Picture 6 – Melonworm larvae encased within a silken structure on the underside of a pumpkin leaf. Photo by Aaron Cato.

Picture 7 – Melonworm larvae feeding just under the handle/stems of pumpkins, with other common signs of melonworm presence including silk and excrement (frass). Photos by Aaron Cato.

Picture 8 – Unripe pumpkin fruit with several melonworm larvae feeding on the rind. Photo by Ryan Keiffer.

Picture 9 – Signs of melonworm feeding from young larvae present on the underside of pumpkin leaves. Photo by Ryan Keiffer.

Picture 10 – Melonworm larvae feeding on the shoots of cucurbit runners. Photo by Aaron Cato.