



Sometimes it isn't what it seems

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Photo credits: Marthe Elting, Nettle Forest Farm

Have you ever pulled up a stunted broccoli or bok choy plant only to find shiny curly worm-like critters making a meal out of the roots and crown of the plant? The critters in the photograph are a type of millipede- technically considered a non-insect arthropod. Millipedes have many legs, with two pairs per segment, and are often tube shaped. Another defining characteristic of millipedes is that they are detritivores, meaning that they eat rotting organic matter and thus are beneficial components of the soil microflora as they break down material releasing nutrients. Herein lies the dilemma- healthy living plant tissue should not be the meal of choice for a detritivore.



In most cases when farmers report millipede pest problems, we find that the millipedes are not eating the fresh tissue. Instead, they are consuming tissue that is rotting due to damage caused by another pest. The most often reported associations are the cabbage root maggot, or slug-damaged strawberries, but millipedes may be found feeding on crops damaged by wireworms, slugs and other pests that feed on plant parts in or near the soil.

This past summer Jenny Glass, Diagnostician at the WSU Plant and Insect Diagnostic Lab in Puyallup, was contacted by a farmer who presented an example where millipedes were the primary pest. The farmer had lost a whole bed of brassica seedlings to millipede damage. A search of the literature turned up examples of farmers in the Midwest reporting occasional but significant damage from millipedes on germinating crops of soybeans and corn, and farmers in Ontario that found damage to carrots, sweet potatoes and other crops.

The millipede that has been identified on local farms is a type of snake millipede, *Cylindroiulus latestriatus* (Curtis, 1845). This is a European species that has become widespread across the globe. An 'Atlas of European millipedes 2: Order Julida (Class

Diplopoda)' entry describes the millipede as occurring in some wild habitats but being strongly associated with agricultural landscapes. These millipedes lay eggs in the spring, which typically hatch in 2 weeks.

Millipedes of varying sizes can be found living together, as individuals may grow at varying rates. They go through 8 to 13 molts (a process in which they shed their skin in order to add more body segments and grow in size) over their lifetime. The typical lifespan for these millipedes is 2-4 years, but may be as long as 8.

Primary pest pressure from millipedes is not a widespread problem, and in fact it only seems to occur in very specific conditions. Millipedes prefer cool moist habitats that are high in organic matter and protected from the sun. All of the reports of millipede problems (whether primary or secondary) that we have received have come from farms that use low or no-till and deep-mulch farming methods. The cases reported on large soybean and corn farms in the Midwest were associated with cool rainy years in no-till systems that had high levels of residual crop residue. Researchers in Canada have reported millipede damage to some no-till crops even in dry years. Moist, organic-rich conditions favor millipede population increases. Jenny Glass believes that "primary pest versus secondary invader for millipedes is going to be quite situational. Small plants, lots of organic matter- the feeding done will be more intense than if the plants were at later stages of growth."



If you find millipedes invading the roots of your crops, here are some things that you should consider:

- Check to see if there is another pest at work, such as cabbage root maggots, slugs or wireworms and focus management on those primary pests
- Allow the soil surface to dry out between irrigation, and remove places where millipedes may seek refuge. Pull mulch or crop residue away from crops, dispose of cull piles away from crops, and move unnecessary weed cloth, organic debris piles, etc. away from crops
- Try planting later when the soil is warmer and drier, if it is appropriate for the crop.
- Employ occasional spring tillage to disrupt reproduction and bring millipedes to the surface where they are vulnerable to desiccation and predators.
- Try monitoring your millipede population using pitfall traps. See *Millipedes in Carrots and Sweet Potatoes* in the resource list below for instructions. Some methods suggest filling the cup with soapy water or a preservative, but I prefer to add some soil clods to the cup for the trapped critters to use as cover, and check/empty the trap more often than once per week. Currently there isn't a research based standard for assessing probability of crop damage based on millipede population levels, but deploying pitfall traps can be a good way to see what's crawling around in your fields, and to compare populations over time.
- The use of insecticides is typically not recommended for millipedes due to low efficacy
- If you have questions or need an extra set of eyes to assess your situation, contact us using the Regional Small Farms Program technical assistance portal.



Resource list:

Jenny Glass, Diagnostician for the WSU Puyallup Plant and Insect Diagnostic Lab
Dr. Paul E. Marek, Associate Professor and Curator, Virginia Tech Insect Collection
Department of Entomology, Virginia Tech

Millipedes in Gardens, Plant Leaflet Series-15

<https://puyallup.wsu.edu/plantclinic/pls/>

Millipedes in Carrots and Sweet Potatoes, Fact Sheet 09-009W

<http://www.omafra.gov.on.ca/english/crops/facts/09-009w.htm>

Iowa State University Extension and Outreach, Integrated Crop Management News.

<https://crops.extension.iastate.edu/cropnews/2020/03/management-considerations-millipedes-and-isopods-do-insecticides-work>

Voigtlander, Karin. 1996. *The Lifecycle of Cylindroiulus latestriatus* (Curtis, 1845). Mémoires du Muséum national d'histoire naturelle. Vol. 169, pp. 501-508