

Slug Management in Continuous No-Till

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Slugs can cause significant damage to corn and soybean. Slug pressure is generally greater in continuous no-till fields compared to conventionally tilled fields because there is greater surface residue in continuous no till. The pictures in figure 1 show typical damage caused by slugs.

Biology: The lifecycle of slugs is shown in figure 2. Slug eggs hatch from the beginning of May through early June. The juvenile slugs begin feeding soon after hatching and survive the entire summer. The adults lay eggs in the fall. In some instances adults can over-winter and adults that over-winter continue to lay eggs in the spring. The presence of residue on the soil surface provides a very favorable habitat for slugs. Slugs are most active at temperatures between 63 and 68°F.



Figure 1: Slug Damage to Corn and Soybean

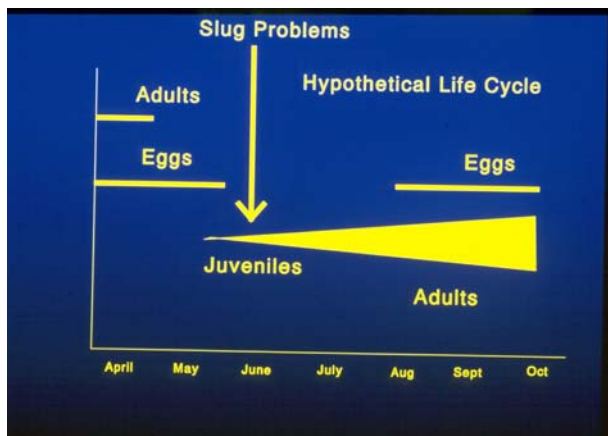


Figure 2: Generalized Life Cycle of Slugs

Damage to Corn: On field crops such as corn and soybean planted in the spring, the most severe injury, leaf feeding, is caused by large populations of juvenile slugs in late May and early June. Following egg hatch in mid-to-late May or early June, the juveniles begin to cause significant injury. Populations as high as 8-10 juvenile slugs per single corn plant have been seen. Injury causes a loss of vigor resulting in stunted, lower yielding plants, and if severe, can lead to death of the plant and stand losses. So far, we have not observed significant damage from adult gray garden slugs compared with the sheer numbers of heavily feeding juveniles to field crops in the spring.

Factors favoring development of slug outbreaks include the following:

1. Activities which provide a habitat of heavy residue (such as no-till or dense weed cover or addition of manure) are favorable to slug development.
2. Mild winters that may increase the number of overwintering stages, especially adult slugs.
3. Prolonged periods of favorable temperatures (63 to 68°F) combined with evenly distributed rainfall that maintains soil moisture at 75% saturation.
4. Cool growing conditions delaying crop development which extends the period of susceptibility of the crop to slug injury.

Management: If you have a stand loss, the decision becomes the need to replant. It is beyond the scope of this information sheet to discuss this need, other than to refer you to Agronomic Guidelines. However, because the slugs are probably still present after replanting, a molluscicide treatment may be warranted.



Figure 3: Typical Spreader Used for Slug Bait

The molluscicide recommended in the Virginia Cooperative Extension Pest Management Guide is metaldehyde (Deadline M-Ps). Best control is achieved with a broadcast application at 10-12 lb. per acre. Even coverage over the field is essential for good control. Numerous growers have made night-time applications of 28% nitrogen and other various materials for slug control. These applications have given some growers partial control. However, many other growers have had no success. If you decide to use such methods, you should be advised that control is not ensured.

Preventative Management: The foremost preventative management practice is tillage; yet this is contrary to the goals of conservation tillage. However, growers might want to consider some degree of tillage in those areas where slug problems have been severe. Tillage will aid in both the reduction of population size and enhancement of crop growth. How much or little tillage is necessary is currently unknown. Also, you should be aware that tillage might not offer complete control during the first year of use if the slug population size is extremely large. Another cultural or ecological practice that growers can put to their use is altering planting dates, at least if planting their crop early. For corn, we recommend planting before the eggs hatch or prior to when slugs begin their heavier feeding. Although it doesn't prevent slug injury to the plant, it at least allows the crop to grow larger and get a head start and possibly outgrow the injury. Additionally, if the crop is already emerged and growing, it becomes easier to observe slug feeding and make a more informed decision on need for taking action. However, this might not be possible with soybeans. If crops are planted at times after slug activity and feeding has started, altering planting dates probably is no longer as effective. It then may be more beneficial to hold off planting until the soil warms and the crop can emerge more quickly. Row cleaners or sweepers have been suggested for slug management. Experience suggests that row cleaners will not have much of an impact on the size of the slug population. However, row cleaners, by allowing for drier, warmer soils, will allow for quicker plant germination and growth and the possibility that the crop can outgrow any slug injury. In reality, any practice allowing for more vigorous plant growth will aid in slug management.