

Springtail feeding on emerging crops (especially sugarbeet)

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Springtails are tiny soil insects that spring when disturbed. In Michigan, a very common species in field crops is greenish to purplish-gray in color, and the size of the period at the end of this sentence (Fig 1 & 2). Springtails are considered beneficial insects, eating decaying plant material, fungi, or bacteria, breaking down residue, and improving soil structure. They are often sampled in research projects as a bio-indicators of a healthy soils.



Figure 1. For a sense of their small size, these springtails are on corn residue



Figure 2. Close up of springtails, in the insect group Collembola. Note the appendage (the so called tail or furcula) at the back of the insect. To spring forward, the insect hooks the furcula to a structure on its underside and releases it.

In some seasons and in certain fields, springtail feeding on cotyledons is noticeable. This obviously occurs most frequently in fields with heavy crop residue on the soil surface, and under moist conditions. Most of the time, the feeding is incidental and plants rapidly grow past vulnerability to springtail feeding. For example, the pictures below show multiple springtails feeding on a soybean (left) and a cucumber (right) cotyledon. In both cases, feeding was limited to the cotyledons and had no impact on plant stand or growth.



In contrast, springtail damage has become a particular problem in sugarbeets in Michigan, where feeding is heavy enough to treat. On newly emerging beets, springtail damage occurs when populations are very high (thousands per square foot). This happens most often in fields with moist soil and high residue, or in early-planted fields under cool, wet conditions. Fields that have damage one year are at greater risk for damage in following years. In beets, springtails feed aboveground on foliage, damaging the cotyledons as they emerge, and leaving a scraped or scarred appearance on leaves (below, center). Sometimes they reduce stand in severe cases (below, right). There is no defined threshold for this pest in beets, but there is enough damage in some areas that growers do treat.



Healthy beet seedling



Springtail damaged beet seedlings



In other beet-growing regions, springtail populations are probably reduced by soil insecticides (such as Counter) used to control sugar beet root maggot. In Michigan, root maggot is not a pest, so we do not routinely use soil insecticides. There is little data on springtail control in other crops using foliar sprays, since springtails are typically not a problem in field crops. Spraying seems to reduce springtail damage, although none of the foliar insecticides registered for sugar beets specifically list this pest on the label. Although I do not have efficacy data from research plots, my sense is that the products below probably reduce springtail feeding enough to get beets past the cotyledon stage.

Product name (label rate)

Asana XL (5.8 to 9.6 oz/acre)**

Declare (0.5 to 0.75 pints/acre) **

Diazinon AG500 (0.75 to 1 pint/acre) **

Lannate 2.4LV (0.75 to 3 pints/acre) or 90SP (0.25 to 1 lb/acre)

Lorsban 4E (1.33 pints banded/acre) **

Mustang (2.4 to 4.3 oz/acre)

****A CAUTION IF TANK MIXING INSECTICIDE with MICRORATE HERBICIDES.**** Unacceptable crop injury may result from tank mixes of insecticides containing an oil base with microrate herbicide applications. The insecticides followed by a star (**) are formulated as emulsifiable concentrates with an oil base. Use caution when tank mixing these products with herbicides. The best option is to spray the insecticide separately.

Research has not been done to determine if spraying for springtails early in the season actually translates into yield protection at the end of the season. Unnecessary spraying certainly adds to the cost of production. Spraying early may also kill beneficial organisms that control insects later in the season. Thus care should be taken before spraying early in the season for springtails.