

Do undersowings in maize influence the development of larvae of the western corn rootworm?

Beeinflussen Untersaaten in Mais die Entwicklung der Larven des Westlichen Maiswurzelbohrers?

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Larvae of the western corn rootworm (*Diabrotica virgifera virgifera*) have to find suitable roots for feeding after hatching from overwintering eggs. We hypothesized that the roots of undersown plants, when mixed with the target roots of maize, would reduce the ability of larvae to localize the roots of their host plant, thus reducing the survival of larvae, resulting in less damage on maize roots.

We used perennial rye grass, Italian ryegrass, a mixture of Italian ryegrass and white clover, white clover, yellow mustard, and sunflowers as undersowings; the standard maize cultivar used in the experiments was Ronaldinho. For the experiments we used semi field plots simulating field conditions, filled with a silt loam and peat soil mixture. The containers were placed in a greenhouse and the larvae were extracted from the soil about 3 weeks after application of the eggs. Due to the quarantine status of the pest, the experiments needed to be terminated after this time span to avoid hatching of adults. Kempson extraction was used to extract and count the larvae developing in the different treatments.

Contrary to our hypothesis, most of the undersowings tested did not result in significantly lower number of larvae. When undersowing maize with clover even significantly more larvae than in the control were extracted. In case of dicots (yellow mustard or sunflower) lower larval numbers were extracted; however, only undersowings with sunflower caused a significant reduction of larval numbers recovered. All treatments with undersowings had no significant effect on larval dry weight nor did the undersowings significantly enhance or delay larval development.

In conclusion, undersowings do not provide an additional or alternative control measure against western corn rootworm larvae. Even in the case of sunflowers mixed with maize plants, it needs to be tested, whether the effects found in the greenhouse can be translated into field conditions.