

## The effect of flooding on the mortality of larvae of *Diabrotica virgifera virgifera* under Bavarian conditions

*Der Einfluss von Überschwemmungen auf die Mortalität von Diabrotica-Larven unter Bedingungen in Bayern*

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DOI 10.5073/jka.2014.444.034

Bavaria has a lot of areas threatened by flooding in continuous maize. According to Zellner (oral communication, 2008) 20,000 ha (57%) out of 35,000 ha in continuous corn are grown in such areas. There was no information available on the effect of flooding, which usually occurs in Bavaria in June, on larvae. The flood from 19 to 21 June 2009 in lower Bavaria was simulated in a laboratory trial. Water temperature was 13 °C. It has a detrimental impact on the mortality rate of the larvae in case of flooding. The higher the temperature, the higher the mortality (WYATT HOBACK *et al.*, 2002). In 2010, first laboratory experiments on the effect of flooding on population development gave surprising results. Although 2<sup>nd</sup> and 3<sup>rd</sup> larval stages (L2/L3) were exposed to 24-h or 96-h flooding at 13 °C, the numbers of hatched beetle did not differ significantly. 2011 showed a tendency to reduction with increasing duration of flooding, although non-significant. This may result from various reasons. The larval stages L2 and L3 are more robust, and living in the roots (survival reservoir for oxygen and nutrition) makes them less sensitive to flooding. This conclusion must not be applied to the first larval stage, which is assumed to be very sensitive and shows high natural mortality already. Furthermore, the first larval stage occurring in the soil and feeding on root hairs is directly exposed to flooding. The experiments on flooding were continued in 2012 to be able to provide three years results.



**Fig. 1** The 3<sup>rd</sup> larval stage of the western corn rootworm is boring into the roots of maize which presented a refuge to survive (survival reservoir for oxygen and nutrition) thus making it less sensitive to flooding in this stage (photo taken in quarantine laboratory, 2011).

**Abb. 1** Larven des 3. Larvenstadium des Westlichen Maiswurzelbohrers bohren sich in Maiswurzeln, die den Larven Schutz für das Überleben bei Überschwemmung bieten (Sauerstoff- und Futterreservoir). Foto aufgenommen im Quarantänelabor, 2011.

This project was part of the German Diabrotica Research Program. It was partly funded by the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV).

### Reference

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