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ECB populations. Results to date indicate, that despite low densities, ECB females show a high degree of mating frequency, generally >85%; this frequency is similar or higher than mating estimates recorded prior to ECB suppression. Interestingly, however, most of the locations indicated a shift toward a female-biased sex ratio (mean proportion; 0.56F; 18 locations), ranging from 0.53-0.74 female in 2010, compared to an assumed 50:50 ratio. With fewer male moths available for mating, females apparently remain efficient in attracting males. The role of *Nosema* as a biological control agent in the ECB system may be critical to maintaining sustainable ECB management that does not rely solely on *Bt* maize. For 2009-2010, we found a relatively high frequency of *Nosema* infected female moths (mean: 0.38; range: 0.06-0.87). In addition there was a weak but positive relationship between increasing *Nosema* infection with increasing frequency of female biased sex ratios. The high level of *Nosema* infection was somewhat surprising given the low overall ECB population densities, as larval-larval (horizontal) *Nosema* transmission is likely to have been quite low, particularly during the past 8 years when larval infestations have been historically low (<10 larvae/100 plants) during the annual autumn surveys. Additional analyses are underway to assess the impact of current mortality factors on ECB population dynamics.

Session 10: Population dynamics of maize pests and implications for pest management

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

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In Bavaria there are areas which are regularly flooded by rivers. In these specific areas intensive maize growing has tradition. Out of 35,000 ha of maize in monoculture in Bavaria about 20,000 ha (57%) are located in high water endangered areas (Zellner, personally communication 2008). That makes sense. The maize has high tolerance against flooding contrary to other crops like cereals. In these flooding areas there is a higher level of fungal infestation (e.g. *Fusarium* of cereals) on others than maize crops. Up to now no information was available on the influence of flooding on the mortality of larvae of the Western corn rootworm under Bavarian conditions. It was supposed that a longer period of flooding could have an impact on the mortality of the larvae. This impact is supposed to be stronger on the first larval stage than on the second or third larval stage. Therefore the time of the year and the duration of flooding could influence the result.

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Flooding of artificially infested maize plants with 600 eggs per plant were studied in climate chambers under quarantine conditions. The flooding data of June high water from the typical year 2009 in South Bavaria were used for the trial. Under these conditions flooding for 24 hours and for 96 hours with a water temperature of 13 °C in mid of June was simulated. At that time the larval stages two and three are present which mostly can be found in the roots. The first year results from 2010 presented no significance in the number of hatched beetles. The first year results were a surprise and had not been expected. The time of flooding and the water temperature could have strong influence on the result. This influence could be stronger on the first larval stage than on the second or third larval stage. Furthermore the larval stages two and three are mainly in the roots where they are tunneling within root. It is assumed that the tunnels might have stored air which helps larvae to survive.

The repetition of the trial but with a reduction of the egg number of 200 eggs per plant is still running in 2011 and will be prepared in 2012 as well. Also the results of the second year will be presented.

On the host-plant specificity and the impact of insecticides and tillage on *Diabrotica* populations

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All trials presented have been carried out in fields around Timișoara, Romania, where *Diabrotica virgifera virgifera* LeConte (Col.: Chrysomelidae) is present in significant population densities. Three years studies in cages covering 1 m² ground surface, showed no hatching of *D. virgifera* larvae in winter wheat and spring barley. Corn seed treatment with clothianidin and the application of insecticidal-granules containing tefluthrin or thiacloprid reduced the number of adult beetles compared to the untreated control plot. Results out of two years trials indicated an influence of different cultivation methods (plough, grubber, disc harrow) in autumn and spring on the population density of *D. virgifera*. The results have to be verified in the next trial season.