Effects of the biomass boom on the crop pest ECB

- About the role of landscape structure and the handling of pest infestation -

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The increasing use of corn as a bioenergy crop has led to strong increase of corn production in Germany. This increase in production has led to a homogenization of the agricultural landscape. Our hypothesis is that this homogenization of the landscape led to improved dispersal conditions for pest species and in turn to an increasing pest pressure.

We study this effect at the example of *Ostrinia nubilalis* (European Corn Borer, ECB) which has become a significant pest in Germany over the last years. Crop losses can be significant, in case of infestation 250-1000 kg/ha crop failure can be expected.

In our studies, we investigate the spatio-temporal dispersal of the ECB on a regional scale (Saxony) in the period 1996-2011 using zero-inflated generalized linear models and spatio-temporal statistics. We examined the question whether the homogenization of the agricultural landscape with respect to corn had a significant impact on the spread dynamics of the ECB in Saxony.

Our results show that besides climate effects and other surrounding conditions the increasing demand of corn is a driver of pest occurrence and thus a potential adjusting lever for pest control.

There is a bunch of possible measures to reduce ECB infestation like the use of pesticides, natural and artificial biological pest control, mechanical treatments and the use of Bt-maize. With our analysis we drive at exploring the potential of spatio-temporal agricultural landscape configurations to avoid crop losses by pests in an environmentally sound way.