Differences between independently invading and crossed populations of the alien maize pest *Diabrotica virgifera virgifera*

Unterschiede zwischen unabhängig einwandernden und gekreuzten Populationen des neuen Maisschädlings Diabrotica virgifera virgifera

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The chrysomelid beetle *Diabrotica virgifera virgifera* is an emblematic example of a highly successful invader. From the 1980s until early 2000s, *D. virgifera virgifera* has been introduced several times from North America into Europe resulting in several genetically differentiated outbreaks. A major outbreak currently spreads throughout central and southeastern Europe and another one throughout north-western Italy.

This study aimed to compare the neutral genetic as well as phenotypic traits between pure and crossed *D. virgifera virgifera* populations in order to understand the role of genetic variability in shaping phenotypes in *D. virgifera virgifera* and its invasion success. There are only very few hints that crossed invading populations may be different from independently invading or from source populations. Usually, the traits of the crossed populations appeared similar or the average of those of the parental populations. However, the overall phenotypic coefficient of variation of all measured traits was slightly larger in crossed populations than in parental populations. Also the allele richness was found to be slightly elevated in crossed populations compared with the parental populations (not proven for heterozygosity).

The found slightly higher variability in crossed populations may increase adaptability and may therefore render the invasion of this alien maize pest in Europe more successful and therewith more problematic. However, also the independently invading populations are highly invasive despite their comparatively lower genetic and phenotypic variability than the crosses of invading populations or than the source populations. Conclusively, there might exist more relevant factors behind an invasion success than variability, e.g. the lack of specific natural enemies (enemy release theory).

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