

Fewer aphids in organic crop fields

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Farmers who spray insecticides against aphids as a preventative measure only achieve a short-term effect with this method. In the long term, their fields will end up with even more aphids than untreated fields. This has been reported by researchers at the Biocenter of the University of Würzburg in the scientific journal *PLoS One*.

What's the status of the biodiversity in differently managed triticale fields? This is what the biologists at the Department of Animal Ecology & Tropical Biology wanted to find out. Triticale is a cross between wheat and rye. The cultivation of this crop is on the rise across the globe, because it delivers good yields even in poor soil conditions.

When comparing conventionally managed [crop fields](#), which were either sprayed with insecticides or were left untreated, Jochen Krauss, Iris Gallenberger and Ingolf Steffan-Dewenter made a discovery, which should catch the attention of every farmer: "According to our results, the preventative application of insecticides against aphids does not produce any advantages even though it consumes a lot of time and money," Jochen Krauss sums up.

The scientists studied five triticale fields that were sprayed with insecticides against aphids, comparing them to ten other fields without any such treatment. "To be sure, the application of the insecticide led to a short-term decrease of the pest density," says Krauss. "After four week's time, however, significantly more aphids could be found in these fields than in insecticide-free fields. This also astonished the [farmers](#) who made their fields available for our study."

More aphids as a result of a decrease in natural enemies

The scientists offer two possible explanations for this phenomenon. One possibility is: The insecticides indiscriminately kill off beneficial animals that feed on the aphids, such as ladybugs or the larvae of lacewings and hoverflies. Because their enemies are missing, the aphids find it easier to return and proliferate than in insecticide-free fields.

Another possibility is an indirect effect: The insecticide just kills the aphids, after which their enemies leave the field for a lack of prey. Final result: In this scenario, the aphid population can also recover better after their return because the [natural enemies](#) are missing.

Greater biodiversity in organic crop fields

In conventional fields that have not been sprayed with [insecticides](#), the pest control through natural enemies seems to work better – thanks to the higher biodiversity in these fields. The biodiversity is far greater still in fields under organic management, as reported in *PLoS ONE* by the Würzburg scientists.

The researchers found five times as many plant species and 20 times more types of pollinating insects in the 15 organic crop fields included in the study than they did in conventional fields. Furthermore, they detected three times as many natural enemies of aphids and five times fewer [aphids](#) in the organic fields than in the conventional fields.

More information: "Decreased functional diversity and biological pest control in conventional compared to organic crop fields", Jochen Krauss, Iris Gallenberger und Ingolf Steffan-Dewenter, PloS One, 18 May 2011

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