

# Herbicides may not be sole cause of declining plant diversity

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The increasing use of chemical herbicides is often blamed for the declining plant biodiversity in farms. However, other factors beyond herbicide exposure may be more important to species diversity, according to Penn State researchers.

If herbicides are a key factor in the declining diversity, then thriving species would be more tolerant to widely used herbicides than rare or declining species, according to J. Franklin Egan, research ecologist, USDA-Agricultural Research Service.

"Many ecotoxicology studies have tested the response of various wild [plant species](#) to low dose herbicide exposures, but it is difficult to put these findings in context," said Egan. "Our approach was to compare the herbicide tolerances of plant species that are common and plant species that are rare in an intensively farmed region. We found that rare and common plant species had roughly similar tolerances to three commonly used herbicides."

This could mean that herbicides may not have a persistent effect in shaping plant communities.

The researchers, who report their findings in the online version of the journal *Environmental Toxicology and Chemistry*, said that over the past several decades, in the same time that the use of herbicides was on the rise, other factors such as the simplification of crop rotations, segregation of crop and livestock and increasing mechanization have also

been rapidly evolving. In addition, the clearing of woodlots, hedgerows, pastures and wetlands to make way for bigger fields has continued apace and resulted in habitat loss.

While the findings are preliminary, the approach could be effective in clarifying the implications of herbicide pollution for plant conservation, Egan said.

"These findings are not an invitation to use [herbicides](#) recklessly," he said. "There are many good reasons to reduce agriculture's reliance on chemical weed control. But, for the objective of plant species conservation, other strategies like preserving farmland habitats including woodlots, pastures and riparian buffers may be more effective than trying to reduce herbicide use."

Provided by Pennsylvania State University

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