

Impact of weather and well-timed cultural management techniques on organic weed control

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Weed management can be a tough challenge in organic cropping systems since growers don't have herbicides in their weed control arsenal. New research published in the journal *Weed Science*, though, shows that weather conditions and well-timed cultural management techniques can help fill the void by making crops more competitive.

A research team from the USDA's Agricultural Research Service (ARS) evaluated 18 years of weather data collected during a long-term, farming systems project at a site in Beltsville, Maryland. Their objective was to determine which meteorological and management factors most influence [weed](#) abundance and whether the impact was direct or indirect.

A structural equation analysis showed that precipitation during late vegetative or early reproductive crop growth had a strong positive effect on crop competitiveness, which in turn had an indirect, negative effect on weed cover. In addition, three commonly used cultural practices used in organic [crops](#) were found to have a positive impact on crop competitiveness and a negative impact on weeds—though to a lesser degree than precipitation:

- Careful rotary hoeing can improve crop competitiveness by reducing and delaying weed emergence relative to the crop.
- Delayed planting allows time for destruction of early emerging weeds and reduces emerged weed populations.

- Diverse crop rotations can dampen and diversify weed populations and improve soil fertility.

"Given the interrelationships of management techniques and [weather conditions](#) demonstrated by our analysis, it is clear organic growers need flexible approaches to [weed management](#) that respond to shifting conditions and changes in [weed populations](#)," says John Teasdale of the USDA ARS Sustainable Agricultural Systems Lab.

More information: John R. Teasdale et al, Meteorological and Management Factors Influencing Weed Abundance during 18 Years of Organic Crop Rotations, *Weed Science* (2018). [DOI: 10.1017/wsc.2018.15](#)

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