

# Reducing pesticide use in Iowa vineyards: Alternatives to herbicides for vineyard weed management

**Abstract:** Mulches can play a role in vineyard management. This project explored the optimum uses and practices for applying various mulches to grape agroecosystems.

*Knowledge of optimal ways for achieving weed management in Iowa vineyards will enable growers to sustainably manage this unique agroecosystem. Methods of weed control that jeopardize soil quality and grapevine productivity can be avoided. Sustainable weed management that includes living or soil mulches minimizes some of the environmental risks of pesticide usage and maintains soil quality and grape productivity. The long-term success of Iowa's grape and wine industry promotes increased diversification of Iowa's farming enterprises that strengthen the state's economy.*



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## What was done and why?

Previous research supported by the Leopold Center suggests the alternative practices of straw and living mulches accomplish these goals of productivity and protection. However, living mulches may compete with grapevines for water and nutrients jeopardizing grapevine performance.

The overall objective of this project was to investigate weed management practices that minimize some of the risks associated with herbicide use, maintain grapevine performance, and promote soil quality in Iowa vineyards. Specific objectives were to:

- Evaluate two conventional and two alternative weed management systems and their effects on weed control and selected chemical, physical and biological indicators of soil quality within grape agroecosystems in Iowa.
- Evaluate conventional and alternative (living mulch) weed management systems and the influence of trickle irrigation on weed control, grapevine growth and development, and soil quality.
- Raise the level of awareness among Iowa fruit and growers about alternatives to herbicides for vineyard weed management in Iowa and its impact on soil quality.

## What did we learn?

Both alternative weed management practices of straw and living mulches controlled weed populations. Grapevine performance was maintained under both mulch systems, while fruit quality was slightly reduced in grapes receiving the straw mulch treatment. Several indicators of soil quality were improved in both mulched plots, most notably infiltration and earthworm counts. No evidence of competition between the living mulch and grapevines was found. Abnormally wet growing seasons during the period in which the study was conducted may have masked any competition that could occur under normal climactic conditions.

## Investigators:

Gail Nonnecke  
Lisa Wasko DeVetter  
Thomas Loynachan  
Paul Domoto  
Iowa State University