

# Vineyard cover crops reduce expense, save environment

July 26 2016, by Melissa Osgood

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Cornell researchers have advice for vineyard managers in cool and humid climates like the Northeast: cover up.

Maintaining bare soil beneath vines has long been accepted management practice used to stifle competition and preserve water and nutrients for grapevines. Exposing soil beneath trellises has been achieved by using extensive herbicide treatments, a practice that is expensive and potentially damaging to the surrounding vineyard ecosystem and locations downstream, due to runoff. What's more, excessive vine growth can result as a function of the lack of competition for water and nutrients, requiring costly canopy management practices in the vineyard to maintain fruit quality.

Planting cover crops under grapevines instead can remediate these problems, according to researchers at Cornell's New York State Agricultural Experiment Station in Geneva, NY. A series of studies led by Justine Vanden Heuvel, associate professor in the Horticulture Section of the School of Integrative Plant Science, provides vineyard managers with an environmentally sustainable alternative to herbicide treatments in cool and humid climates, while tamping down the cost associated with unnecessary herbicide use.

Researchers grew buckwheat, annual ryegrass, white clover and an assortment of local plants known as native vegetation over a period of three or four years, in a one-meter wide strip to see how the [grape vines](#) fared as an alternative to maintaining bare ground through either

herbicide or cultivation.

Their findings showed that growing cover crops beneath grape vines reduced nitrogen leaching through the soil compared to the herbicide plots. Dissolved organic carbon (a proxy for soil breakdown) was lower in the cover crop plots, and the neonicotinoid insecticide Imidacloprid—which has garnered attention for its harmful impacts on honey bees and other pollinators—was found in fewer leachate samples and at lower concentrations in the cover crop plots compared to the herbicide treatments.

Not only does a reduction in herbicide benefit the environment, it also has economic ramifications for vineyards as well. Vanden Heuvel said the cost of seeding and maintaining most cover crops is estimated to be less than using herbicides, saving vineyards money while protecting the environment from excessive herbicide applications.

"With the ample precipitation that the Northeast receives in most years, there is little reason to be using herbicides in mature winegrape vineyards," said Vanden Heuvel. "This work has shown that cover crops can reduce vineyard expenses while improving environmental sustainability compared to herbicides."

Some of the cover crops also proved a useful tool for reducing vine growth in newer vineyards. Excessive vine growth, known as vigor, can shade the fruit from the sunlight it needs to produce desirable flavors and aromas. While cover crops had little impact on mature vineyards, the researchers found reduced vine growth and yield in younger vineyards, likely as a result of shallower root systems competing with the cover crops. Both those qualities can prove advantageous: less dense vines increases sun exposure on the fruit, improving quality of the grape, and many winemakers prefer lower yields. Deploying [cover crops](#) in a vigorous vineyard could potentially provide a level of control that helps

growers achieve a balanced vine, according to Vanden Heuvel.

The studies were published in the journals *HortTechnology*, the *American Journal of Enology and Viticulture* and the forthcoming issue of *HortScience*.

Provided by Cornell University

Citation: Vineyard cover crops reduce expense, save environment (2016, July 26) retrieved 6 May 2024 from <https://phys.org/news/2016-07-vineyard-crops-expense-environment.html>

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