

Selecting and Managing Vineyard Cover Crops to Reduce Water Use

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A decline in the Paso Robles Groundwater Basin has increased awareness of water conservation practices in vineyards. Cover crops can improve water infiltration from precipitation while also preventing erosion and building organic matter in soil. However, the cost of those cover crops in terms of water use is not well understood in the Central Coast. Grant funding from Western Sustainable Agriculture Research and Education (WSARE) was awarded to the Vineyard Team for a 2-year study to evaluate cover crop species and management of grass cover crops to reduce net water consumption.

The Experiments

This project consists of two experiments:

1. Measure the effect of five species of cover crop (plus clean cultivation as a control) on soil moisture.
2. Measure the effect of six different techniques and timings of cover crop termination on soil moisture.

Experiments 1 and 2 were replicated at two and three sites on the east side of Paso Robles, respectively, with randomized complete block designs.

EXPERIMENT 1	EXPERIMENT 2
Cover Crop Comparison	Cover Crop Termination
Clean cultivation	Clean cultivation
Barley (UC 937)	No till, mow after seed set
Medic (Paraggio)	Mow at bud break
Triticale (Trios 888)	Mow and disk at bud break
Brome (Blando)	Mow 30 days after bud break
Peas (Dundale)	Chemical mow at bud break

Data Collection and Processing

Soil samples were collected in late April of 2015 and processed at Cal Poly SLO. The gravimetric soil moisture content of the samples was determined and a dataset for analysis was created.

Results

1. The timing and manner of terminating a cover crop were not different in terms of soil moisture.
2. The species of cover crops planted were not different in terms of soil moisture.

Discussion

At this point in the experiment, the timing and manner of terminating a cover crop in a vineyard does not appear to affect soil moisture. This is especially interesting given that one of the treatments was clean cultivation. One would expect less soil moisture in plots where a cover crop was grown compared to plots with no surface vegetation in the vineyard middles. This is not the case, suggesting that the presence of a cover crop in a vineyard middle during the winter and spring months does not increase the quantity of water that must be supplied to vines through irrigation.

One factor which could have affected this experiment is the lack of rainfall during the winter of 2014- 2015. If more water had been available during the growth of the cover crop differences between the treatments might have been observed. Additional data must be collected in seasons with higher rainfall to determine if seasonal rainfall is a factor.



Cover crop varieties evaluated at three vineyard sites in Paso Robles area: A) Triticale "Trios"; B) Brome "Blando"; C) Barley "UC 937"; D) Field Pea. Clean cultivation not shown.



Experimental plot showing four of six treatments at bud break including A) Mow seeded grass at bud break, B) Mow seeded grass 30 days after bud break, C) No-till, resident reseeding - mow at seed maturity/bud break, and D) Disk seeded grass at bud break.

Disking in Blando Brome cover crop before bud break on the east side of Paso Robles.



Soil samples being taken for gravimetric soil moisture measurements. Samples were taken at 18 and 36 inches.

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