The Effects of Heat Treatment on Grapevine Performance in a Chardonnay Vineyard

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Background:

Agro-thermal heat-treatment technology in grapevines has been shown to increase yield, decrease the use of agro-chemicals used to fight pests, enhance wine quality and improve profits, but this technology has not been tested in the Okanagan Valley or Canada. Heat treatment is applied by driving a tractor through the vineyard rows that blows extreme heat into the canopy. During the growing seasons of 2019 and 2020, heat treatment was applied to a Chardonnay vineyard in the Okanagan valley six times during the growing season with application ten days apart from each other. In fall of each year, the number of clusters, yield (kg) and the average cluster weight (kg) were assessed. Treatments were:

1. Heat (red)

2. Control (no heat, green)

The hypothesis is that heat treatment will improve grapevine performance.

Cluster = grapevine bunch

Subsample = individual treatment vine

The variables were measured as follows:

Number of clusters: all clusters of each treatment vine were harvested in October of each year and the clusters counted for each vine.

Yield: all clusters of each treatment vine were harvested in October of each year and the clusters weighed for each vine (kg).

Average cluster weight: total grapevine yield was divided by number of grape clusters

Experimental design:



Treatments were applied into the whole rows (about 60-80 vines), always two rows at a time, but samples were only taken from four treatment vines/row (subsamples). Treatment vines were chosen randomly. Treatments were randomized within each block. Blocking is important, as there can be gradients (water/nutrients…) within the vineyard that influence the results.

Please note, during the first year we assessed the blue treatments as well, but we ran into problems and did not include the data for the second year. For now, only the red (heat) and green (control) plots need to be considered for both years.

**Note**: I’m interested in the effects heat had on the measured variables for each year individually, but also if there was an effect if both years were combined in the analysis. The same treatment vines were used for each year. We flagged them with tape so we were able to identify them each year.