

Report on harvester vs harvest rots trial, 2024

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The purpose of the trial was to replicate work in New Zealand that was reported at OFVC in 2023 by Mark Krasnow. In their research, they found that running a harvester through the vineyard before bunch closure reduced the amount of Botrytis bunch rot. Further, they found that the skins of treated berries were tougher, as measured by the force required to penetrate the berries. To this end we collaborated with Cave Spring winery to test this out.

Materials and methods

The trial was conducted on Pinot noir (flat cane) and Riesling (pendelbogen) at Cave Spring vineyard on July 4 when vines were at pea size berry. The vineyards had previously been treated with a Collard leaf blower at bloom. 4 rows in each block were treated with a Gregoire GL8 harvester operated at 5 km/ha with the pinch set at 27/100. The beater speed was 450 for the Pinot noir and 430 for Riesling. One picking rod was at trunk height and two were 10 cm above the fruiting zone. In order to keep 2 picking rods 10 cm above the fruiting zone in the pendelbogen-trained Riesling, the lower of the upper 2 rods was raised.

After treatment, 25 clusters were randomly collected into individual sealed plastic bags from the rows treated with the harvester and adjacent untreated rows. Each cluster was vigorously shaken for 10 seconds to dislodge all debris. The debris and any berries that were removed in the process were weighed.

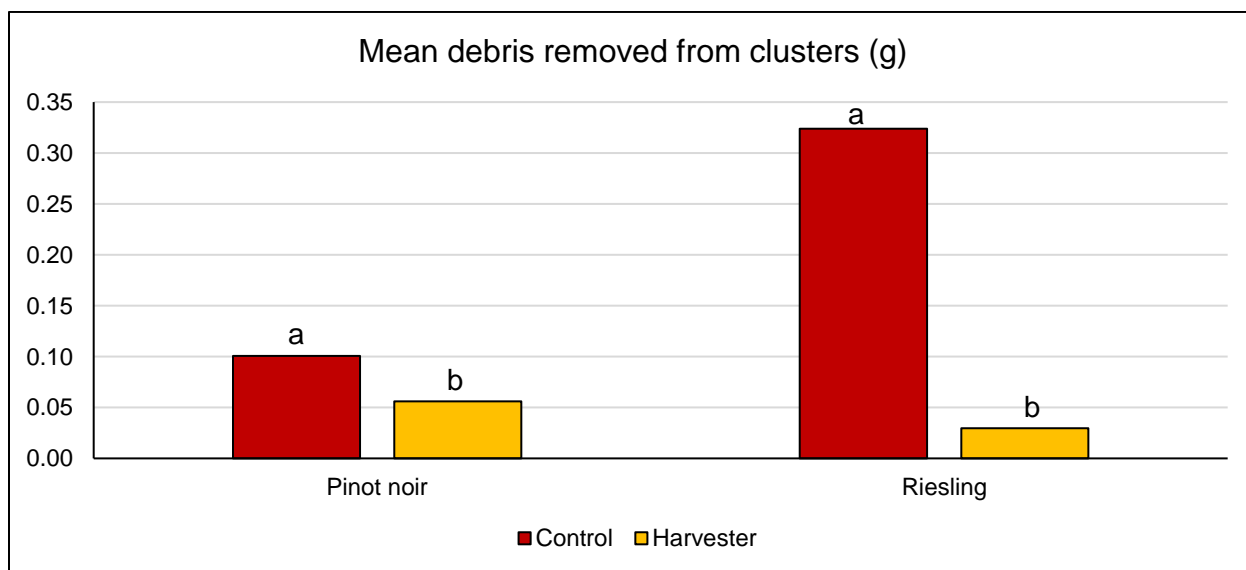
At commercial harvest, two rows of each treatment per variety were divided into 4 “reps” by dividing the rows into 4 along the length. In each rep, 25 clusters were sampled, half from the east and half from the west side of adjacent rows. Severity of rot (Botrytis and sour rot combined) was evaluated. From each of 3 clusters of the 25, 10 berries were removed with the pedicel intact. A digital fruit firmness tester was applied to the side cheek of each berry and the pressure required to penetrate the skin recorded.



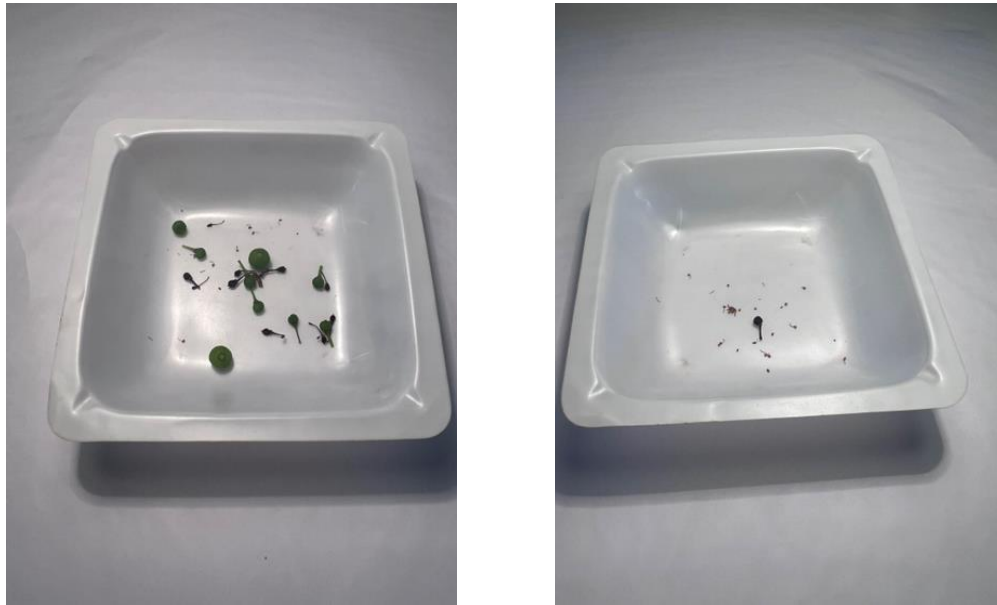
Testing resistance to puncture using the fruit pressure tester.

Results

Treatment with the harvester significantly reduced the amount of debris in the clusters for both Pinot noir and Riesling.

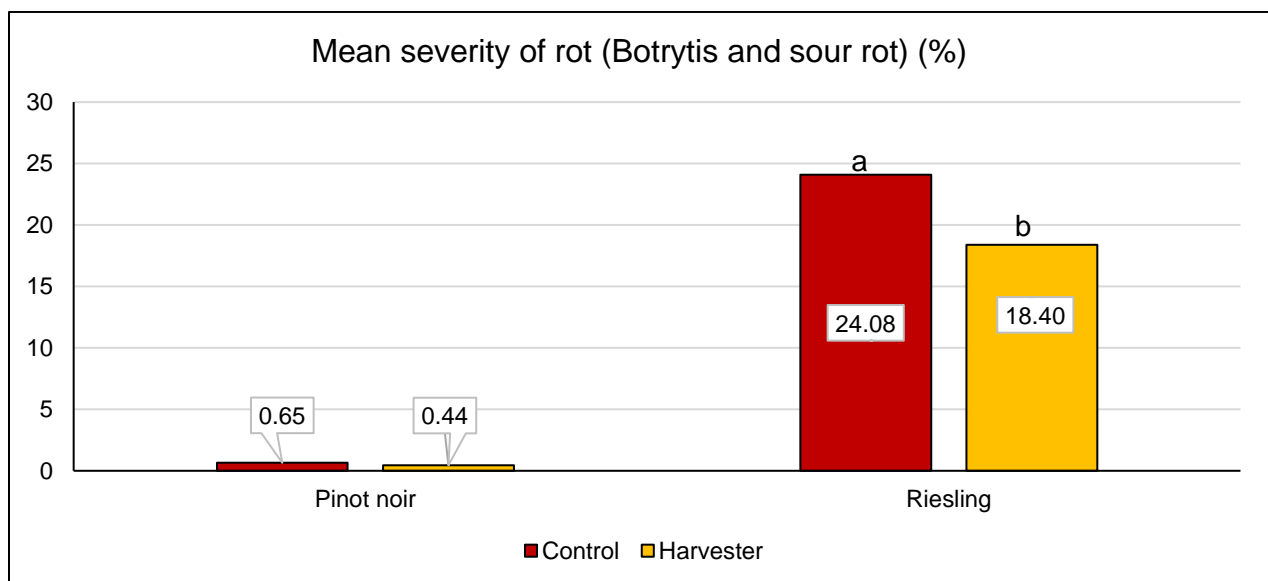


The images below represent trash from control (left) and harvester treatment (right) from single clusters

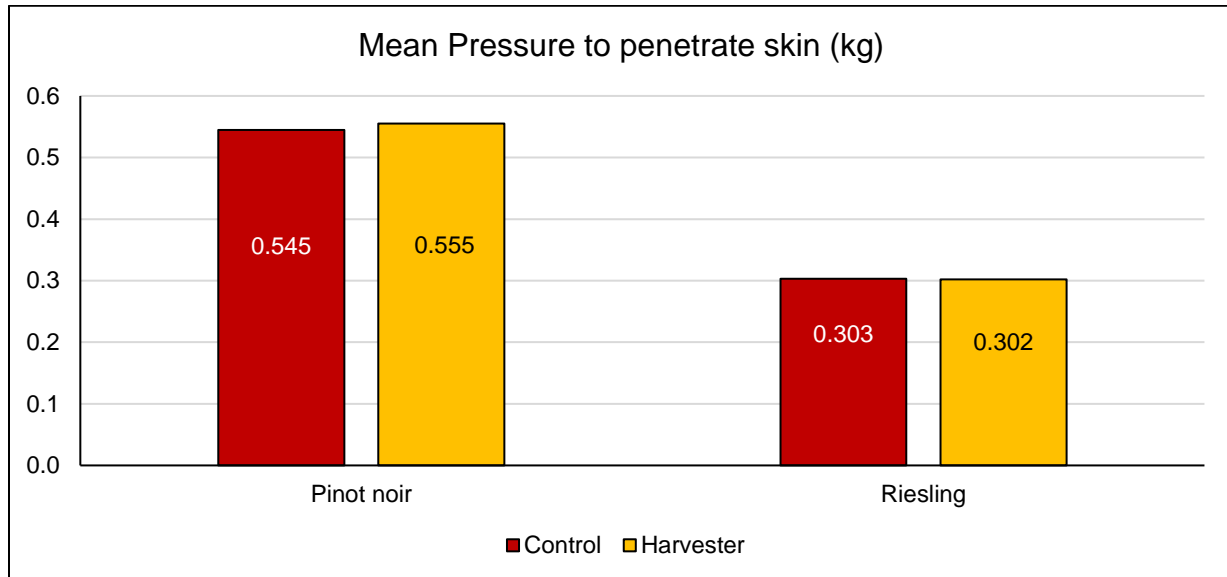


Pinot noir was harvested Sept 17 with a mean Brix of 22.1 and Riesling was harvested October 1 with a mean Brix of 17.1.

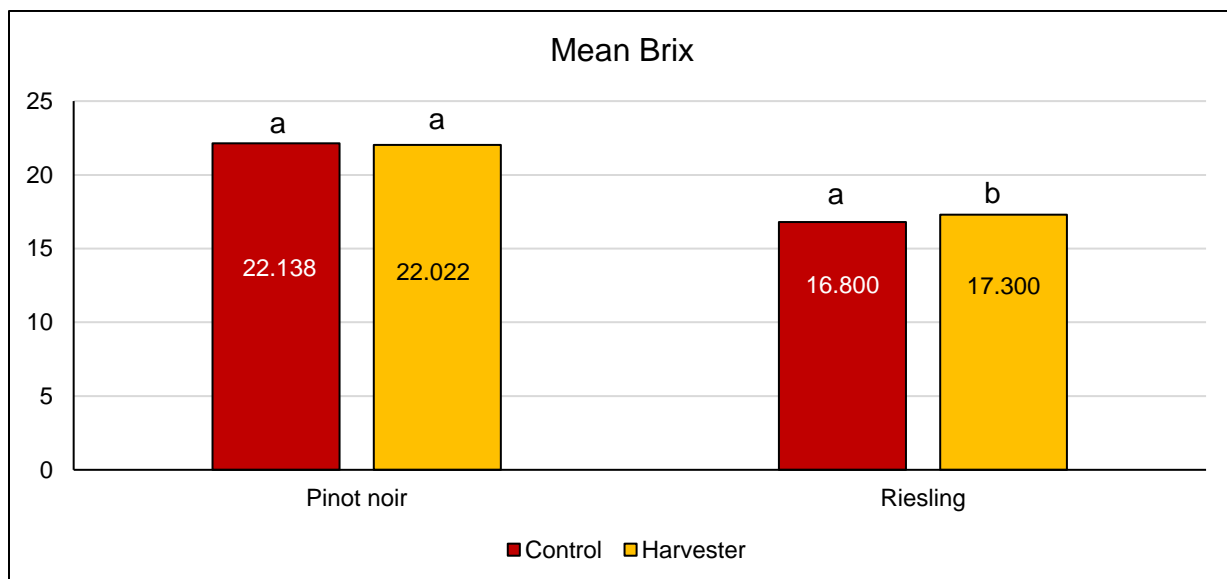
Disease was very low in Pinot noir and what was present was primarily sour rot. Although the difference between control and harvester treated was not significantly different, the mean sour rot severity was greater in the control than in the harvester treatment. At harvest, Riesling had both sour rot and Botrytis so the rots were combined. The harvester treatment resulted in significantly less rot than the control.



There was no difference between the control and harvester with respect to the pressure required to penetrate the skin in either variety. The number was slightly higher in the harvester treatment in the Pinot noir. It was difficult to find Riesling berries without splits to do the pressure measurements.



An unexpected finding was that the Brix in the harvester treatment was higher than the control in the Riesling plots.



Conclusions

- Treatment of clusters with the harvester at pea size berry resulted in less debris in the clusters, despite treatment during bloom with a Collard leaf blower. The

difference between control and harvester would likely have been much more if the Collard treatment was not applied first, as was the case in the New Zealand study.

- The effect of the harvester treatment on cluster rot was significant in the Riesling but not in the Pinot noir. This could be because the weather was much more conducive to rot development in the preharvest period for Riesling with frequent heavy rains causing significant berry splitting which promoted the development of rots.
- There was no difference in the pressure required to penetrate the skin of either variety. The fruit pressure tester tip that was used in New Zealand was 0.8 mm diameter while the one that was fabricated for this trial was 1.2 mm. The difference of 0.4 mm could have made a difference. If this trial is repeated, a 0.8 mm tip will be fabricated.

Future Studies

- Compare the harvester treatment vs no treatment (with Collard) as well as with the Collard at bloom. This is especially important because Collard treatment at bloom is not the industry standard. Possible collaboration with custom operators and other vineyards?
- Include other varieties, especially comparing early vs mid season harvest varieties since weather likely played a large role in the severity of rot in the two varieties studied.
- Install tarps below the vines treated with harvester to determine the amount of debris dislodged with treatment
- Determine whether cluster tightness is affected by treatment. Probably not.