



*Typical Harvest Weather-
Ted Taft strapping down a load at
CLEREL-Kim Knappenberger*

CROP UPDATE September 29, 2022

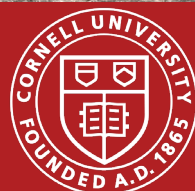



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How to reach us:

Jennifer Phillips Russo - LERGP Viticulture Specialist:

jjr268@cornell.edu
(716) 640-5350

Kevin Martin – LERGP Business Management Specialist:

kmm52@psu.edu
(716) 397-9674

Kim Knappenberger – LERGP NEWA and Vineyard Improvement Program Contact

ksk76@cornell.edu
716-792-2800 ext 209

Kate Robinson – Administrative Assistant

kjr45@cornell.edu
716-792-2800 ext 201



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Business Management

Kevin Martin, Penn State University, LERGP, Business Management Educator

How Bulk Harvesting Decreases Labor Cost

In the podcast this week we jumped into the variance across the region. The only consistent theme this week was rain. Even the rain, though, varied in some important ways. Nobody wants two inches of rain but four inches creates some real problems. Last year, for many growers, the justification for bulk harvesting was the premium on speed. Growers were trying to contain as much crop as possible. It was not that it took hours and hours to fill trucks, it was that turn times needed to be as fast as possible to harvest tonnage before a series of events that were likely to decrease harvested yields and revenue (first freeze, high winds, closed processing facilities).

This year for around 1/3 of acreage, the motivation can be to minimize paid labor per harvested acre. Many different type of field gondolas exist but Weber lane carts seem to be fairly common in a few areas where yields are lower. A 7,500 lb. capacity gondola is fundamentally different, when coupled with a modern harvester. It is taking 25 minutes to fill in low yield conditions and another 6 minutes to fill the bin on the harvester. Using one cart and one harvester a grower is able to fill a truck in 2.7 hours with low yields. This is about 10 minutes slower than using two carts or harvesting into bins. Running 2 shifts this gives one harvester a capacity of 330 acres per week or 1,350 acres per season. Since very few operations need or want to run two shifts, this is a capacity of 700 acres per season.

It makes sense that acreage capacity increases in low yield years. That is basically what growers report, unless you consider that higher yield years have longer harvest windows, which cannot always be counted on. The point is, when yields are low, having a 3rd or 4th laborer does not have a significant impact on the capacity of harvest operation, nor the number of hours worked. This flexibility lowers labor cost in yields where revenue will be lower. It is flexibility that does not really exist without the investment in bulk. A gondola must be emptied in less than 6 minutes to avoid a delay in harvesting. Unloading and loading boxes that quickly is not feasible. Some harvest operations are small enough so that a two-man crew using a loader would cause delays but actually result in lower costs. This could be true if harvesting less than 500 tons.



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Viticulture

Jennifer Russo, Viticulture Extension Specialist, LERGP

In the Vineyard

Every week I reach out to industry processors to get a weekly update from them to report on across the region. Today's reports that I received all had similar threads from four different processors. In regard to Concord, the farther east you go in the region the more sugar you find, including the Finger Lakes. One processor mentioned that yields to the west appear to be larger than expected and are struggling with sugar. Overall, the processor reported that sugars are average, around 15.5 Brix, but they may see a dip in sugar if the ripening doesn't improve in the western belt. Another processor stated that crop size seems to be lower than most growers anticipated, and the rain has made things a little challenging, but they are still taking fruit in on schedule. Consensus from industry is that the rain has made things difficult this week. Sugar is average or above to the east and lower on the western end of the belt. The east side of the belt has lighter crops (easier for the vine to ripen hence more sugar), which was anticipated given the larger crop last year that was delayed, slowed, or inadequate ripening. The western end of the belt experienced frost/freeze damage last year and performed the opposite with smaller crop and higher sugars.

All of the above are supporting the science behind vine balance. This is so important to what the vine can handle and production goals. Nelson Shaulis developed the balanced pruning method on Concord grapes, which took into account pruning decisions to achieve sustainable production (Shaulis, 1966). Vine balance is defined as the state at which the vegetative and reproductive growth lead to the most "balanced" vine. It can be measured taking your yield and dividing by the pruning weight to figure out your Ravaz index, which is the most commonly used crop load calculation. Using this research can go a long way to hitting quality standards at harvest.

Here is my shout out to the Viticulture Planning Calendar that LERGP members received. Please use the note section on the side as a data record. You know where your crops are heavier this year and where they are lighter. Report your yields capturing variation and then you can use that recorded data to direct efforts on taking pruning weights in those areas. This can help determine how many buds to leave up for the next season to ensure that vines remain balanced, and your production goals can be met. Below is a discussion on the research that was conducted on Concord to determine where vine balance occurs. This article that was published in Appellation Cornell in 2021, written by Dr. Terry Bates *et al*, [Click here to read the full article](#).

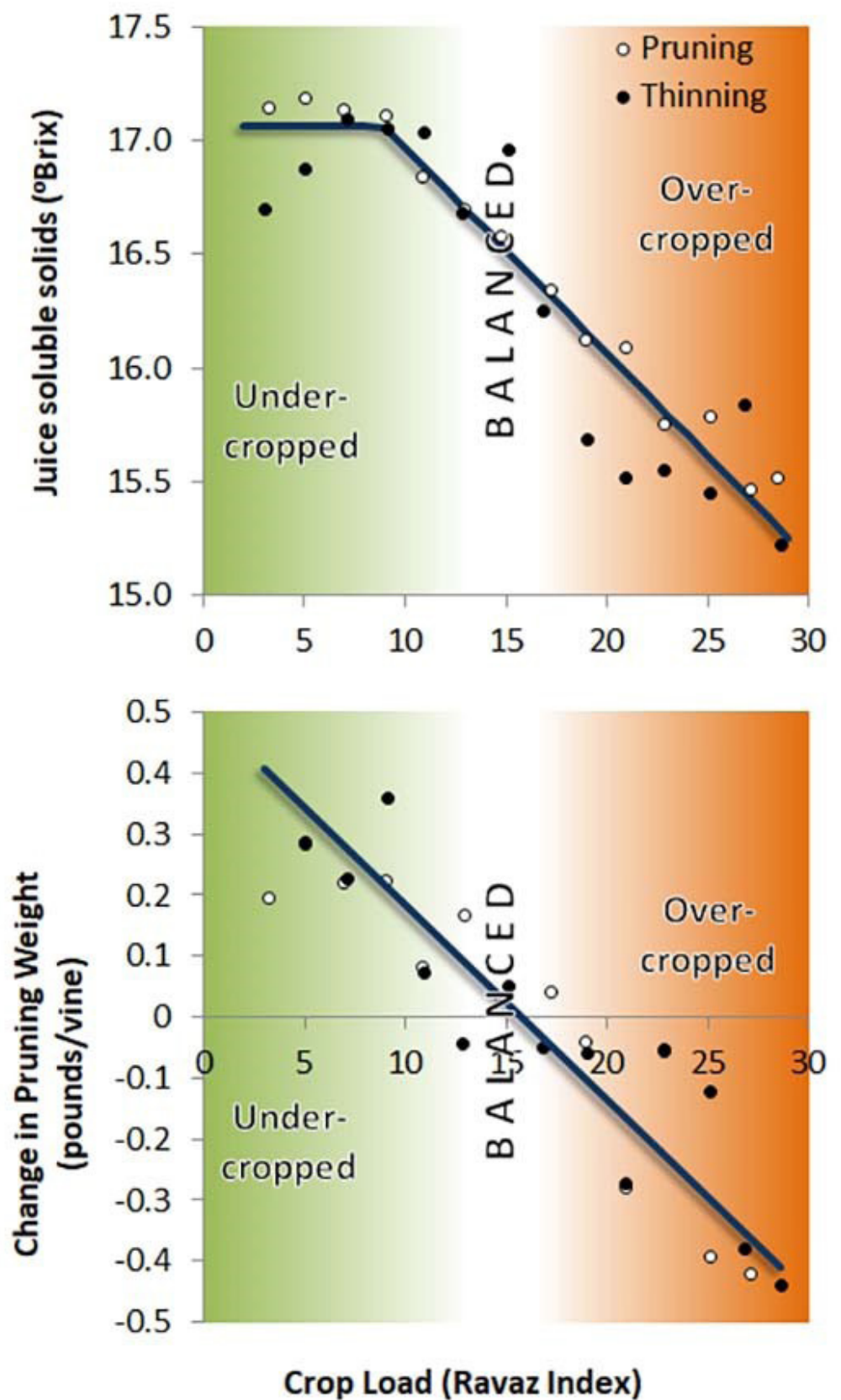
To meet processor standards and maintain economic viability, Concord growers need to manage vineyards so that they maximize tonnage, while reaching soluble solid levels of at least 16° Brix at harvest. To maintain vineyard health, they need to maintain adequate vine size. Our studies indicate Concord growers should strive for a yield: pruning weight ratio of 15 to 20 in an average season to maintain vine size and meet the 16° Brix standards. Attaining this goal often means leaving abundant buds during dormant pruning and adjusting crop load by shoot thinning or mechanical crop thinning during the growing season. New precision management tools will allow spatial crop load maps to guide management.

To achieve the wide range in crop load values, vines were either pruned to different levels (30+10, 60+10, or 100 nodes/vine) or pruned to 120 nodes/vine and then fruit thinned 30 days after bloom

to retain 25%, 50%, 75% or 100% crop. Black dots indicate a result from a thinning treatment and white dots a result from a pruning treatment.

The specific treatment effects: While **Figure 1** shows the big picture for crop load, **Figure 2** provides some more detail on specific pruning and thinning approaches that are common in Concord and their ability to achieve a 'balanced' production system.

Figure 1. The relationship between crop load (Ravaz Index, Y:PW) and harvest juice soluble solids (top) or the seasonal change in pruning weight (bottom) in Concord grapevines.



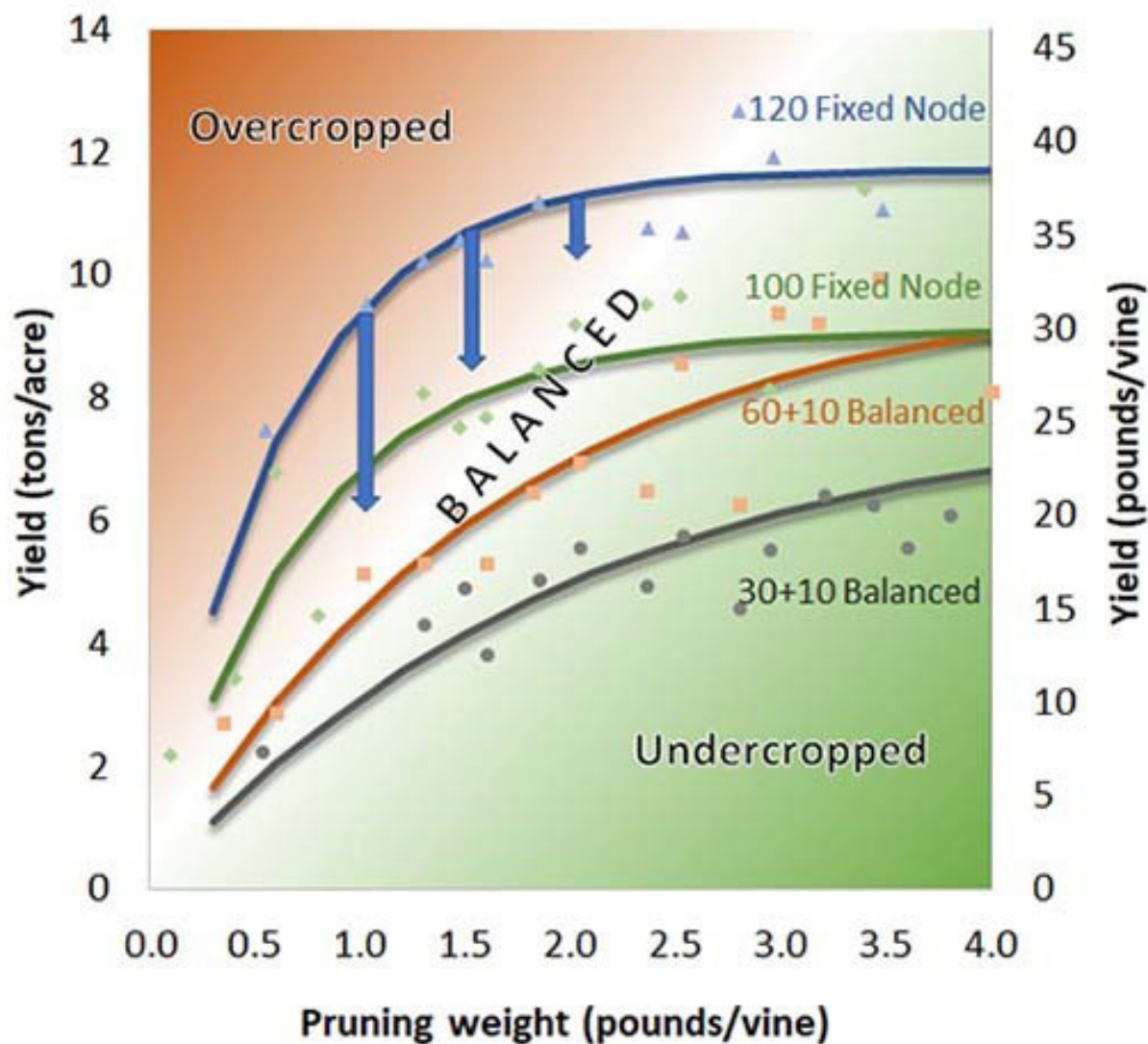


Figure 2. The relationship between pruning severity, the vine size-yield relationship, and crop load to achieve vine balance.

Conclusion

Measuring and managing vineyard crop load has the dual goal of achieving desired fruit maturity in the current season and providing adequate vegetative growth and fruiting potential for the next season. Vineyard managers need to consider how vines respond to crop load, how the grape market and production goals set their crop load targets, and how seasonal and spatial variation can adjust their management strategies. Based on pruning and fruit thinning studies in Concord, general crop load recommendations have been established with these considerations (Table 1).

Resources:

Bates, T., Jakubowski, R., Taylor, J. 2021. [Measure and Manage Crop Load to Meet Your Vine Balance Targets](#). Appellation Cornell Issue 44, March 2021.

Shaulis, N. J., T. D. Jordan and J. P. Tomkins. 1966. [Cultural practices for New York vineyards](#). Cornell Extension Bulletin 805: 33-34.

Y:PW	CATEGORY	PREDICTED Brix	MANAGEMENT
0-5	Severely undercropped	17.2	Juice soluble solids (JSS) maximized and vine size increased by 0.15-0.20 kg/vine. Severe undercropping, generally only observed in frost damaged vineyards, can be managed to increase overall vine size and crop potential for the following season.
5-10	Undercropped	17.0-17.2	JSS > 1.0 Brix above the 16.0 standard and vine size increased by 0.10-0.15 kg/vine. This crop load is not economically viable for long-term Concord production in NY and recommended only when attempting to build vine size in young or stressed vineyards.
10-15	Slightly undercropped	16.5-17.0	JSS 0.5 to 1.0 Brix above the 16.0 standard and vine size slightly increased by 0.03-0.09 kg/vine. This conservative crop load can be achieved with moderate balanced pruning, does not require fruit thinning, and will still mature to 16 Brix in cooler than average seasons.
	<i>Balanced in cool season</i>		
15-20	Balanced in average season b	16.1-16.5	JSS at or slightly above the 16 Brix standard and vine size maintained +/- 0.03 kg/vine
20-25	Slightly overcropped	15.7-16.0	JSS below the 16 Brix standard and vine size reduced by 0.03-0.09 kg/vine in an average season. Harvest delays and reduced crop potential for the following season are expected; however, vines will maintain balance in warmer and wetter than average seasons. This crop load recommended if mid-season fruit thinning is part of the management strategy. In cool and average seasons, the crop can be moderately thinned to maintain balance. In warm seasons, no thinning would be necessary.
	<i>Balanced in warm season</i>		
>25	Severely overcropped	<15.7	JSS well below the 16 Brix standard and, if left unthinned, will still require a significant period of ripening after harvest has started. Vine size will be reduced by > 0.1 kg/vine (0.25 lbs/vine) with a lower future yield potential and a lower return crop. It requires excessive fruit thinning to achieve vine balance mid-season, which has been shown to cause canopy damage in Concord and negates the positive effects of fruit thinning on vine size/health. This level of crop load stress is not recommended.
			a Predicted Brix in an average season at a standard harvest of 30 - 40 days after veraison. The given ranges reflect this spread of time.
			b An average season = 1455-1723 GDD (+/- 1 st. dev. from the 11 -year GDD mean). Cool season < 1455 GDD, Warm season > 1723 GDD.

Table 1. General crop load descriptions and management recommendations for Concord production in the Lake Erie AVA



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PA Update

Bryan Hed, Research Technologist, Lake Erie Grape Research and Extension Center

We have logged 6.9" of rain in September, well above our average of about 4". This September was our 2nd wettest in at least 20 years (we logged 7.43 inches of precip in September of 2006). Much cooler weather over the past 8 days has brought growing degree accumulations to a crawl. Nevertheless, we will accumulate about 460 growing degree days (gdds) in September, just ahead of our long term average of about 441. By the end of the month, we will have accumulated just over 2800 gdds since April 1, making 2022 the fifth hottest season for us, in at least the last 20 years or so. The short-term forecast predicts dry weather over the next several days, but it will remain rather cool, with high temperatures in the low 60s, and lows in the low 50s/upper 40s.

Phenology: Brix accumulation in our Concord blocks here has paused since all that rain we got (about 4") on the 25-26th, and we are still testing a bit below 16 brix. However, the dry weather ahead should allow brix accumulation to continue to the finish line.



CLEREL team harvesting an experiment

Back in the day.....

Can you help us?

We want to include a picture of an old piece of grape farming equipment or a nostalgic photo of back in the day grape farming on each month of our 2023 LERGP calendar. We would love to have your photos for our calendar!

If you would like to share a photo, email it to me at kjr45@cornell.edu

