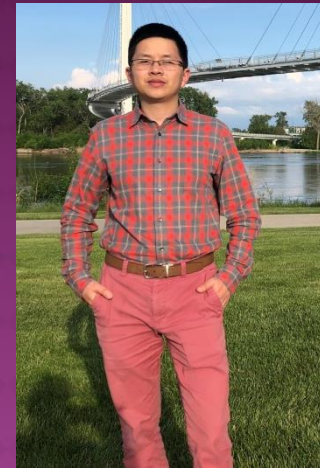


CROP LOAD REDUCTION STUDY



Paul Read



Changmou Xu



Stephen Gamet



Ben Loseke



Xiaoqing Xu

OBJECTIVE

- ◉ To determine if crop load has a direct correlation to wine quality.
- ◉ If so, at what point does production quantity affect the fruit quality?
- ◉ Does plant vigor and canopy size factor into the quantity versus the quality scenario?
- ◉ Ultimate goal is to optimize vineyard production and quality in order to produce the best quality wine at the most profitable crop load.

METHODS

- Control crop load at three different levels for four different cultivars of grapes in commercial vineyards.
- Apply best canopy management practices for the different cultivars based on their individual growth characteristics.
- Treatment of the selected plants are to be treated the same as the rest of the vineyard.

METHODS

- Establish if crop load affects ripening time and thus harvest date.
- Determine the best crop load that produces the best quality wine by cultivar and maintaining optimum profitable production.



IMPLEMENTATION

- ◉ Select two locations
- ◉ At each location test two cultivars, one red and one white.
- ◉ Each cultivar broken into 5 reps of 6 plants.
- ◉ Each rep is randomly placed within the field.
- ◉ The six plants are then broken into 3 groups of 2 plants.
- ◉ 2 plants drop 50% of crop, 2 plants drop 25% of crop and 2 plants (control) drop 0% of crop.
- ◉ These plants are randomly placed in the rep.

IMPLEMENTATION

- Soon after berry set we did our first drop.
- Then two weeks later went back to confirm our count and if necessary make adjustments.
- Then harvest the day before vineyard harvest of the crop.
- Count clusters per plant, record plant production weight, take 100-berry-sample for analysis.

ANALYSIS

- Test °Brix, pH, TA
- Color Analysis
- Sensory Evaluation
 - Aroma
 - Acidity
 - Bitterness
 - Alcohol
 - Overall



SITES

Miletta Vista Winery, St Paul, Nebraska

- Selected two cultivars
 - Itasca
 - Frontenac

Prairie Creek Vineyard and Winery, Central City, Nebraska

- Selected two cultivars
 - La Crescent
 - Marquette

RAW FIELD DATA

ITASCA



Milletta Vista

Itasca				8-Jun		22-Jun		Harvest		
Rep 5	Row 15			Original Count	Drop	Final	Adjusted Count	Notes	11-Aug	weight
									Cluster Count	Pounds
Plant	19	Yellow	Control	102	0	102	98		114	19.8
Plant	20	Yellow	Control	139	0	139	122		142	22.1
Plant	21	Pink	50%	99	49	50	47		50	10.5
Plant	22	Orange	25%	148	37	111	109		111	19.5
Plant	23	Orange	25%	58	14	44	40	Lost 2 large shoots	36	5.3
Plant	24	Pink	50%	118	59	59	59	Removed 12 clusters	67	10.7

FIELD AND LAB DATA

ITASCA

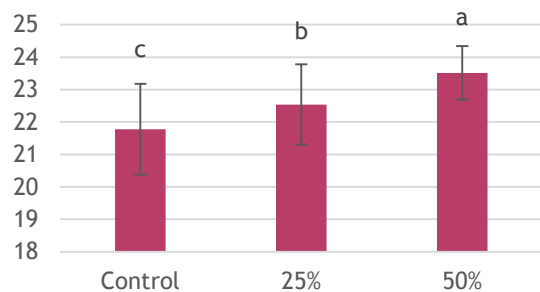


Miletta Vista						
Itasca	22-Jun	11-Aug	Weight			
50%	Adjusted Count	Harvest count	Lbs	°Brix	pH	TA
Average per Plant	42.6	51.3	7.66	23.5	3.49	1.17
		Total Weight	76.6			
		Average Cluster Weight	0.15			
25%	22-Jun	11-Aug				
Average per Plant	63.1	66.1	10.56	22.5	3.495	1.17
		Total Weight	105.6			
		Average Cluster Weight	0.16			
Control	22-Jun	11-Aug				
Average per Plant	89	94	14.45	21.85	3.485	1.176
		Total Weight	144.5			
		Average Cluster Weight	0.15			

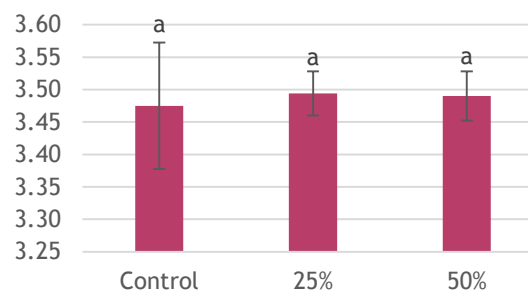
ITASCA LAB RESULTS



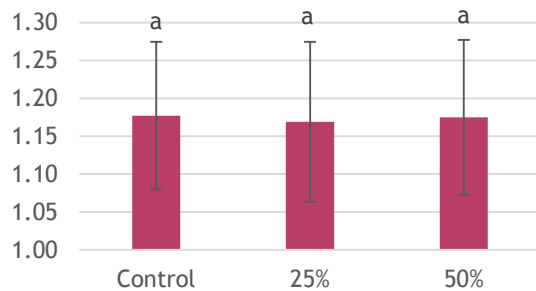
° Brix



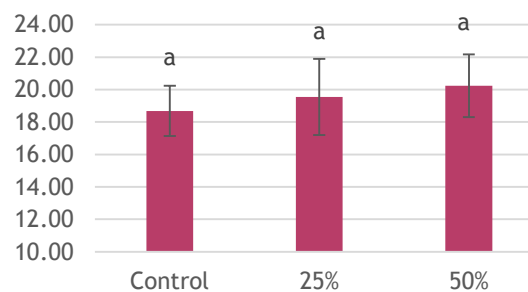
pH



Titratable acidity (TA)



° Brix to acid ratio



FIELD AND LAB DATA LA CRESCENT



Prairie Creek						
La Crescent	29-Jun	19-Aug	Weight			
50%	Adjusted Count	Harvest count	Lbs	° Brix	pH	TA
Average per Plant	57.8	56.8	5.75	20.75	3.19	1.15
		Total Weight	57.5			
		Average Cluster Weight	0.1			
25%	29-Jun	19-Aug				
Average per Plant	97	93.3	7.95	20.88	3.17	1.1
		Total Weight	79.5			
		Average Cluster Weight	0.09			
Control	29-Jun	19-Aug				
Average per Plant	100.3	102	9.3	21.1	3.18	1.19
		Total Weight	93			
		Average Cluster Weight	0.09			

FIELD AND LAB DATA FRONTENAC



Milletta Vista		3.97				
Frontenac	22-Jun	31-Aug	Weight			
50%	Adjusted Count	Harvest count	Lbs	° Brix	pH	TA
Average per Plant	36.1	27.1	6.02	22.8	3.49	0.94
		Total Weight	60.2			
		Average Cluster Weight	0.22			
25%	22-Jun	31-Aug				
Average per Plant	47.7	27.4	5.16	22	3.41	0.93
		Total Weight	51.6			
		Average Cluster Weight	0.19			
Control	22-Jun	31-Aug				
Average per Plant	64.6	44	7.78	22.8	3.41	0.95
		Total Weight	77.8			
		Average Cluster Weight	0.18			

FIELD AND LAB DATA MARQUETTE



Prairie Creek						
Marquette	29-Jun	31-Aug	Weight			
50%	Adjusted Count	Harvest count	Lbs	°Brix	pH	TA
Average per Plant	60.4	56.9	4.72	21.2	3.46	0.71
		Total Weight	47.2			
		Average Cluster Weight	0.08			
25%	29-Jun	31-Aug				
Average per Plant	93.6	87.5	7.18	21.2	3.48	0.71
		Total Weight	71.8			
		Average Cluster Weight	0.08			
Control	29-Jun	31-Aug				
Average per Plant	105	94.3	6.78	21.1	3.41	0.72
		Total Weight	67.8			
		Average Cluster Weight	0.07			

FACTORS WE RAN UP AGAINST

⦿ Weather

- Hotter than usual
- Lower rainfall
- Resulting in lower productions across the state

⦿ COVID-19

- Initial shut down
- Strict travel restrictions
- Lab restrictions



2021 SEASON

- ◉ Repeat with same cultivars if possible
- ◉ Use the same parameters
- ◉ Look at Economic impacts
 - Cost to the grower
 - Winery impact

