

2,4-D Choline Herbicide in Muscadine Grape

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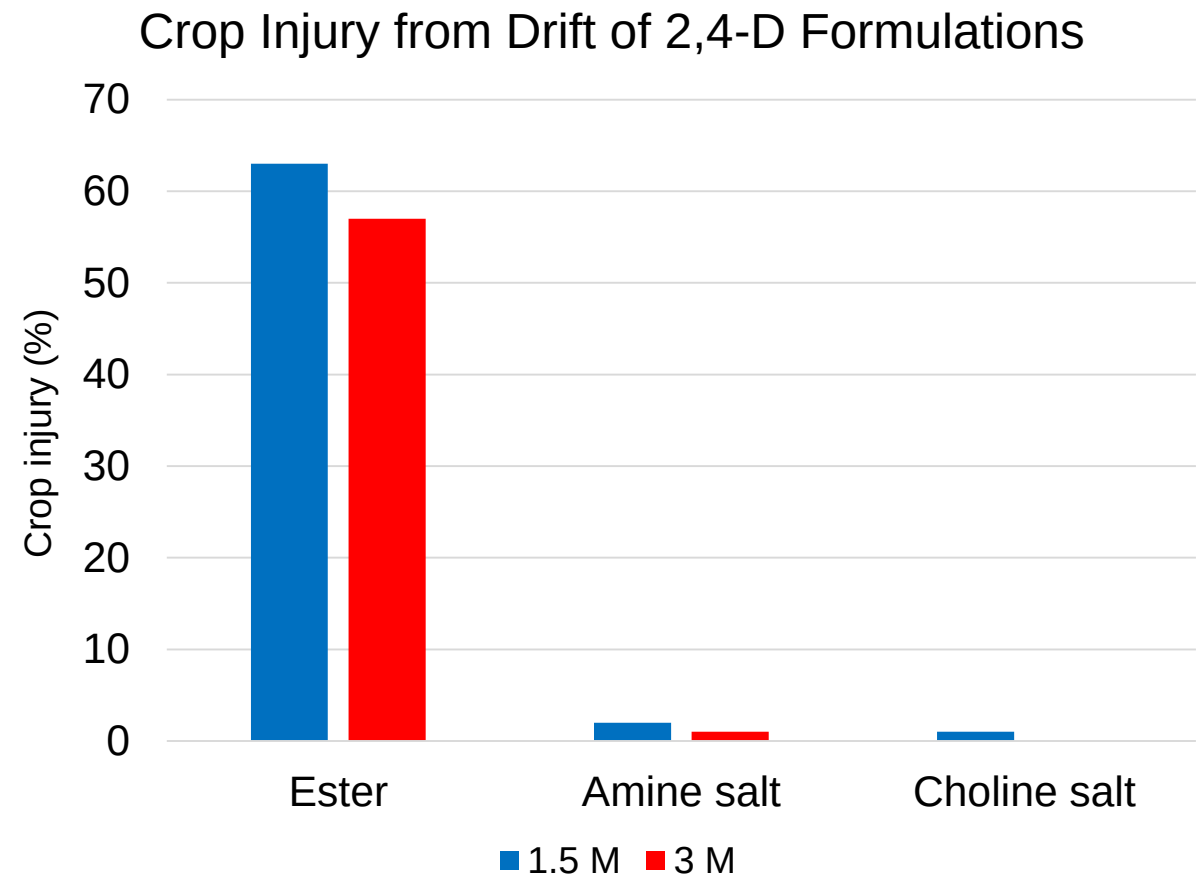
Things to Remember – Resources

- Southern Region Small Fruit Consortium
 - <http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>
- NCSU Horticultural Science Weed Management
 - Wolfpackweeds.com
- Virginia Tech Weed ID
 - <http://www.ppws.vt.edu/weedindex.htm>
- CDMS for pesticide labels
 - <http://www.cdms.net/LabelsMsds/LMDefault.aspx?t>
- NCSU Plant Disease and Insect Clinic
 - <http://www.cals.ncsu.edu/plantpath/extension/clinic>

How does muscadine grape tolerate 2,4-D

How does muscadine grape tolerate 2,4-D choline when applied to row middles?

- Will it affect...?
 - Crop growth
 - Yield
 - Fruit quality
- Why 2,4-D choline?
 - Minimal drift
 - Excellent weed control



Major Weed Concerns



Materials and Methods – 2018

- Commercial farm in Lincoln, NC
- Herbicides applied to vegetation-free strip under vine row on both sides
 - May 31 and July 27, 2018
- 2 vines per plot
- Each treatment replicated 4 times
 - 1, 2, 3, 4 pt/A
- Data collected
 - Visual injury
 - Growth parameters
 - Estimated yield (weight)
 - 50 mature berries from each plot for analysis of brix and titratable acidity



Results

- Crop injury
 - Very little difference



Results

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- Yield
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Effect of 2,4-D choline application rate and timing on muscadine grape yield^a

	Harvest 9/11/18	Harvest 9/18/18
Application rate (kg ai ha ⁻¹)	(g per 50 ripe berries)	
0.53	402	420
1.06	369	407
1.60	410	409
2.13	401	419
P value	0.924	0.864
Application timing		
5/31/2018 (App A)	401	410
7/27/2018 (App B)	403	418
P value	0.871	0.535
R*T P value	0.884	0.345

^aMeans within columns are not significantly different according to Fisher's protected LSD ($\alpha = 0.05$)

Results

- Crop injury
 - Very little difference
- Yield
 - No difference
- Fruit quality
 - No difference

Effect of 2,4-D choline application rate and timing on muscadine grape fruit quality^a

	Harvest 9/11/18			Harvest 9/18/18		
Application rate (kg ai ha⁻¹)	SSC^b	TA^c	pH	SSC	TA	pH
0.53	13.8	0.5	3.61	14.8	0.36	3.80
1.06	13.1	0.56	3.55	14.8	0.38	3.78
1.60	13.1	0.54	3.55	14.7	0.40	3.74
2.13	13.1	0.55	3.54	14.6	0.39	3.78
P value	0.264	0.165	0.425	0.799	0.347	0.575
Application timing						
5/31/2018 (App A)	13.4	0.57	3.56	14.6	0.37	3.79
7/27/2018 (App B)	13.1	0.53	3.57	12.8	0.38	3.76
P value	0.242	0.559	0.739	0.328	0.330	0.325
R*T P value	0.514	0.212	0.826	0.983	0.681	0.612

^aMeans within columns are not significantly different according to Fisher's protected LSD ($\alpha = 0.05$)

^bSSC = soluble solids content

^cTA = titratable acidity, measured g tartaric/100 ml

Materials and Methods – 2019

- Commercial farm in Duplin County
- Herbicides applied to vegetation-free strip under vine row on both sides
 - May 16 and July 18, 2019
- 2 vines per plot
- Each treatment replicated 4 times
 - 1, 2, 3, 4 pt/A
- Data to be collected
 - Visual injury
 - Growth parameters
 - Estimated yield (weight)
 - 50 mature berries from each plot for analysis of brix and titratable acidity



Results

Mean foliage injury on grape after 2,4-D choline applications.

		Foliage Injury (%)						
Rate (kg ha ⁻¹)		After application A				After application B		
App A	App B	1 WAT	2 WAT	4 WAT	8 WAT	1 WAT	2 WAT	4 WAT
0.53		0	0	0	0	0.25	0	0
1.06		0	0	1.25	1.50	2.70	0	0
1.60		0	0	1.75	1.25	3.00	0	0
2.13		0	0	1.50	2.75	5.25	0.25	0
0.53	0.53	0	0	0	0.50	0.75	0	0
1.06	1.06	0	0	0.75	1.50	2.50	0	0
1.60	1.60	0	0	0.25	0.25	1.50	0.25	0
2.13	2.13	0	0	1.50	2.00	1.00	0	0.25



Future Research



- Conduct same study on young/non-bearing vines

QUESTIONS?

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