

'Cynthiana' Grape Cultivar Propagation Study - 2003

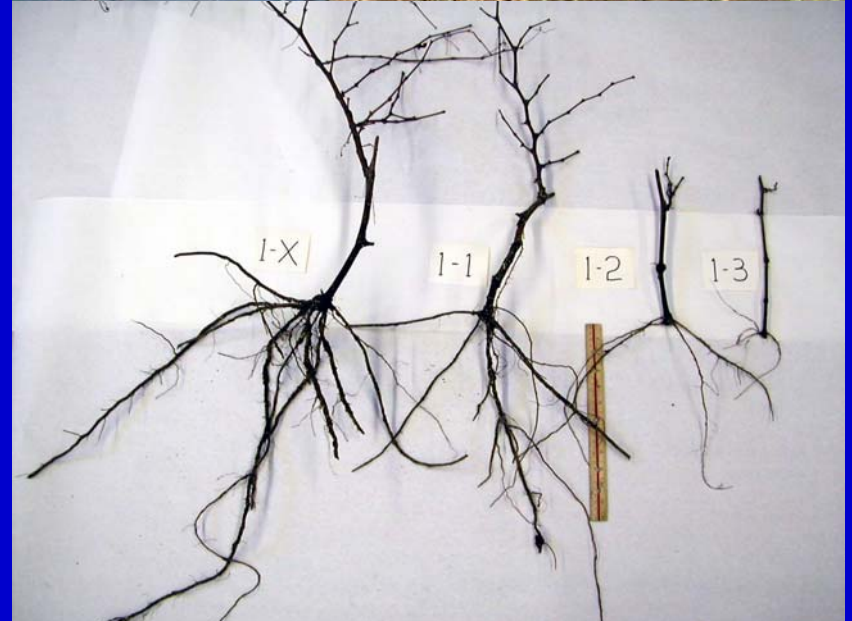
Casey Barickman (undergrad student),
Craig Dilley, Paul Domoto &
Gail Nonnecke

'Cynthiana' Grape Propagation

'Cynthiana' (Norton) grape has shown promise as a wine grape for adapted regions of Southern Iowa, but unlike most grape cultivars, it is difficult to propagate from cuttings. Studies have found that rooting can be improved with rooting hormones such as indole-3 butyric acid (IBA). The use of bottom heat to simulate root development before bud break has also been shown to be beneficial. Experiment 1 was a repeat of the study conducted by Darin Enderton in 2002 to evaluate the effect of bottom heat in combination with rooting hormone treatments on the rooting of 'Cynthiana' grape cuttings.

'Cynthiana' Grape Propagation

Refer to the 2002 presentation for details on procedures.



Experiment 1

Pre-treatment - all combinations of:

- + or – Bottom Heat
- Rooting hormone in 50% ethanol
 - 0.0 % IBA (control)
 - 0.5 % IBA
 - 1.0 % IBA
 - 2.0 % IBA

% Rooting after Pre-treatment 2003*

Treatment	Roots		Initials		Total	
Bottom Heat						
0 % IBA	1	a	52	a	53	a
.5 % IBA	6	a	50	a	56	a
1 % IBA	8	a	52	a	60	a
2 % IBA	7	a	38	a	45	a
No Heat						
0 % IBA	0	a	0	b	0	b
.5 % IBA	0	a	0	b	0	b
1 % IBA	0	a	0	b	0	b
2 % IBA	0	a	0	b	0	b

* Mean Separation by Tukey's HSD ($P = .05$).

% Rooting after Pre-treatment Compared to 2002 Results

Treatment	Roots		Initials		Total	
	2003	2002	2003	2002	2003	2002
Bottom Heat						
0 % IBA	1	2	52	9	53	11
.5 % IBA	6	21	50	17	56	39
1 % IBA	8	25	52	22	60	47
2 % IBA	7	29	38	22	45	51
No Heat						
0 % IBA	0	0	0	0	0	0
.5 % IBA	0	0	0	0	0	0
1 % IBA	0	0	0	0	0	0
2 % IBA	0	0	0	0	0	0

% Field Rooting & Grade 2003*

Treatment	Total	GRADE						
		1-X & 1-1		1- 2		1- 3		
Bottom Heat								
0 % IBA	47	a	29	b	8	a	10	a
.5 % IBA	58	a	36	a	11	a	11	a
1 % IBA	56	a	33	a	16	a	7	a
2 % IBA	51	a	36	a	8	a	7	a
No Heat								
0 % IBA	29	a	2	c	7	a	20	a
.5 % IBA	31	a	3	c	8	a	20	a
1 % IBA	32	a	10	bc	5	a	17	a
2 % IBA	39	a	14	bc	14	a	11	a

* Mean Separation by Tukey's HSD ($P = .05$).

% Field Rooting & Grade Compared to 2002 Results

Treatment	Total		GRADE					
			1-X & 1-1		1- 2		1- 3	
Bottom Heat	2003	2002	2003	2002	2003	2002	2003	2002
0 % IBA	47	22	29	4	8	10	10	8
.5 % IBA	58	27	36	13	11	9	11	5
1 % IBA	56	41	33	23	16	11	7	7
2 % IBA	51	36	36	28	8	8	7	1
No Heat								
0 % IBA	29	15	2	1	7	6	20	8
.5 % IBA	31	16	3	4	8	4	20	7
1 % IBA	32	19	10	5	5	7	17	8
2 % IBA	39	23	14	7	14	9	11	8

Experiment 2

Is there an easier way to root Cynthiana cuttings?

- Rooting hormones (IBA) are synthetic auxins.
- Natural auxins act to inhibit bud break on developing shoots.
- The problem in rooting Cynthiana cuttings is that the shoots begin to grow before the roots develop.
- Can we use synthetic auxins (IBA) to inhibit bud break on Cynthiana cuttings?

Is there an easier way to root Cynthiana cuttings?

- Exposing Cynthiana cuttings to a bottom heat pre-treatment increases the percentage of rooted plants.
- Can we by-pass the bottom heat pre-treatment by heating the soil with a clear plastic mulch?

Treatment + or – Clear Plastic Mulch



IBA Top Dip

0 ppm

25 ppm

50 ppm

100 ppm

1000 ppm

Bottom Dip:

1 % IBA



Effect of Clear Plastic Mulch & IBA Top Dip on % Field Rooting

Treatment	Total		GRADE					
			1-X & 1-1		1 - 2		1 - 3	
Clear Plastic Mulch:								
No Mulch	1.8	b	.0	a	.0	a	1.8	b
Mulch	13.0	a	2.3	a	2.0	a	8.8	a
IBA Top Dip:								
0 ppm	6.3	a	.6	a	.0	a	5.6	a
25 ppm	6.9	a	.6	a	1.3	a	5.0	a
50 ppm	7.5	a	.0	a	1.3	a	6.3	a
100 ppm	9.4	a	1.3	a	1.3	a	6.9	a
1000 ppm	6.9	a	3.1	a	1.3	a	2.5	a

* Mean Separation by Tukey's HSD ($P = .05$).