


Cynthiana Grape Cultivar Propagation Study - 2002

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The grape cultivar Cynthiana (Norton) has shown promise as a wine grape for adapted regions of Southern Iowa. Unlike most grape cultivars, Cynthiana that is thought to be pure *Vitis aestivalis*, has been found difficult to propagate from cuttings. Studies have found that rooting can be improved by treating the cuttings with rooting hormone such as indole-3 butyric acid (IBA). The use of bottom heat to simulate root development before bud breaks has also been shown to be beneficial. This study was established to evaluate the effect of bottom heat in combination with rooting hormone treatments on the rooting of 'Cynthiana' grape cuttings.

'Cynthiana' prunings were collected from Bill Brown's vineyard, near Leon, IA, in April. The canes were sectioned, bundled, and kept in humidified cold storage with periodic wetting until the treatments were initiated. Canes were sectioned into 3 to 4 bud cuttings with a fresh cut made on the basal section just prior to treatment. Rooting hormone treatments consisted of 0, 0.5, 1.0, and 2.0% IBA, dissolved in 50% ethyl alcohol. For each treatment, 100 cuttings were dipped in an IBA solution, and were then stuck in a 6-inch deep portable sand bed that were moistened, and placed in a walk-in cooler. One half of the cuttings received bottom heat from heating cables placed at the bottom of the rooting bed. The temperature of the heated bed was maintained at approximately 80° F and the unheated bed was maintained at a room temperature of approximately 55° F. After two weeks, the cuttings were removed from the sand and were examined for root development (Table 1 and figure 1). On June 5, the cuttings were planted a nursery on a Clarion loam soil. The field experimental design was a randomized complete block arranged as split plot with rooting bed temperature as whole plots and IBA treatment split plots replicated three times. Black plastic mulch and trickle irrigation were used to maintain the plot during the growing season. On November 8, the cuttings were dug from the nursery with an under-cutter attachment. The cuttings were then rated for quality following standard nursery grading guidelines (Table 2 and figure 2).

Table 1. Percentages of 'Cynthiana' grape cuttings showing roots or root initials after two weeks in temperature regulated rooting beds.^z

Temp / IBA (%)	Percentage with			Figure 1. Roots and root initials.
	Roots	Root initials	Total	
Bottom heat:				
0.0	2.0	8.7	10.7	
0.5	21.3	17.3	38.6	
1.0	25.3	21.7	47.0	
2.0	28.7	22.3	51.0	
No Bottom heat:				
0.0	0.0	0.0	0	
0.5	0.0	0.3	0	
1.0	0.0	0.0	0	
2.0	0.0	0.3	0	

^z Means of three replications

Table 2. Effect of bottom heat and IBA concentration on root rooting and quality of 'Cynthiana' grape cuttings.^z

Temp / IBA (%)	Total % Rooting	Percentage of rooted plants in each grade ^y		
		1-X + 1-1	1-2	1-3
Bottom heat:				
0.0	21.7	3.8	9.6	8.3
0.5	26.7	12.5	9.2	5.0
1.0	40.9	23.3	10.8	7.1
2.0	36.3	27.5	7.5	1.3
No Bottom heat:				
0.0	14.5	1.3	5.8	7.5
0.5	15.5	4.2	4.2	7.1
1.0	18.8	4.6	6.7	7.5
2.0	23.0	6.7	8.8	7.5

^z Means of three replications^y 1-X = one year, premium grade, 1-1 = one year, number 1 grade, 1-2 = one year, number 2 grade, 1-3 = two year nursery candidate.

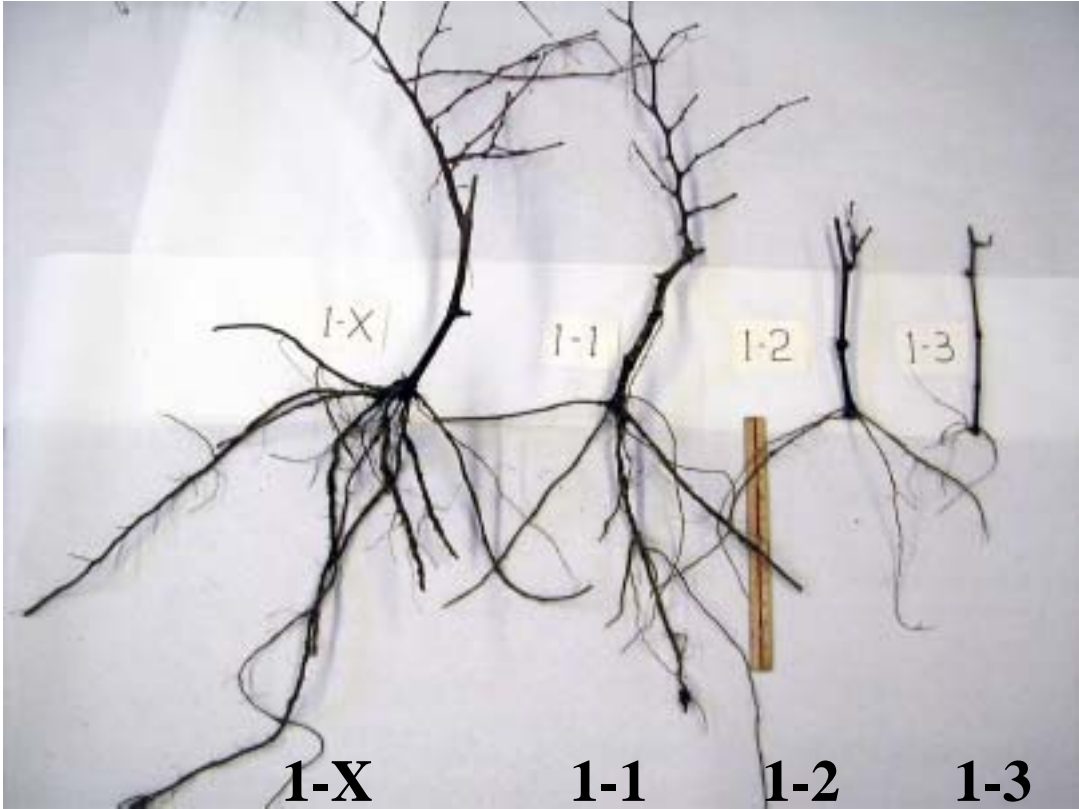


Figure 2. Examples of grade categories used in 'Cynthiana' grape propagation study.