

WALNUT ROOTSTOCK ORCHARD TRIALS – YUBA COUNTY

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GROWTH AND PERFORMANCE OF CLONAL PARADOX ROOTSTOCKS TOLERANT TO PHYTOPHTHORA

Research cooperators: Samuel Metcalf and Claudia Negron

Grower/cooperator: Doublenut Farms, Yuba County.

Established: May 23-24, 2005

Design: 5 rootstocks – 4 clonal Paradox, VX211, AZ2, NZ1, JX2, and one seedling Paradox control. Rootstocks are replants in an orchard with severe tree loss from *Phytophthora*, randomized complete block design, 12 single tree replicates.

2005 and 2006 Water Potential, Growth and Survival Results

All rootstocks generally grew well except AZ2. Midday stem water potential measurements suggest that replants and adjacent orchard trees were generally in a similar range to the replants. AZ2 did not grow well despite having midday stem water potentials in a similar range to adjacent trees and the other replants. There was 100% survival of all replant sources.

Treatment	June 2005 Growth Rating*	June 2005 Diameter (mm)	Dec. 2005 Diameter (mm)	Nov. 2006 Diameter (mm)	% Change (June 2005 to Nov. 2006)
VX211	3.0	29.0	31.2	42.5 a	+46.6
AZ2	2.0	26.9	28.5	26.2 c	-2.6*
NZ1	2.9	23.5	25.8	35.6 b	+51.4
JX2	2.2	23.7	26.4	35.2 b	+48.5
CONTROL	1.4	20.5	22.4	30.0 bc	+46.3

* rootstocks were headed near or below 2005 diameter measurement point. 2006 measurement is on new shoot growing above previous cut.

- * Growth rating descriptions:
- 0 No growth
 - 1 Just breaking
 - 2 Moderate growth
 - 3 Vigorous growth

2006 midday stem water potential of replants versus adjacent mature trees

Treatment	Midday stem water potential June 2, 2006 (bars)			Midday stem water potential August 8, 2006 (bars)		
	Replant	Adjacent	Difference	Replant	Adjacent	Difference
VX211	-5.97 a	-6.78 a	-0.78 a	-8.04 a	-7.65 a	0.40 a
AZ2	-6.84 a	-6.77 a	0.07 a	-7.29 a	-7.65 a	-0.35 a
NZ1	-5.93 a	-6.97 a	-1.02 a	-8.97 a	-7.65 a	1.32 a
JX2	-6.93 a	-6.79 a	0.30 a	-7.46 a	-7.65 a	-0.19 a
CONTROL	-6.58 a	-6.68 a	-0.09 a	-7.57 a	-7.65 a	-0.07

WALNUT GRAFT COMPARISON

Cooperator: Joe Conant

Established: 2005

Design: Unreplicated comparison between six year old nursery grafted Chandlers (NG) on Paradox, own-rooted Chandlers (OR), and field grafted Chandlers on Paradox (FG, grafted same year as planted). Ten trees per treatment were measured. Yield data was collected in one middle between two treatment rows and represented five trees.

2005-06 results are the means of ten trees; yield is in lbs/tree.

Treatment 2005	Circumference Cm	X Sect area cm²	Dry In-shell (lbs)	Yield Efficiency	# Nuts/lb
NG	62.9	315.0	82.3	.26	47.2
OR	65.9	345.7	66.6	.19	44.1
FG	65.4	340.5	64.6	.19	41.0
Treatment 2006	Circumference cm	X Sect area cm²	Dry In-shell (lbs)	Yield Efficiency	
NG	68.5	373.6	80.7	.22	
OR	72.6	419.7	72.6	.17	
FG	73.7	432.5	81.0	.19	

