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COLLEGE OF NATURAL AND AGRICULTURAL SCIENCES
CITRUS RESEARCH CENTER AND
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2nd Ltr

March 13, 1989

Mr. Chris Taylor, Research Director
Limoneira Associates
1141 Cummings Rd.
Santa Paula, CA 93060

Dear Chris,

As you recall, we would like to plant another cooperative rootstocks trial for lemons with Limoneira Associates. In general, the same conditions would apply as with the previous trial: you manage the plot as you would any other grove, and harvest (using your picking crew) when you wish. Notify (Nick Sakovich or myself) us at least a week before harvest (2 weeks would be better) and one of us will record the yields.

The trees for this trial are being grown by Brokaw Nursery and should be ready to plant in late April or May, but could be held later. I would rather wait until at least May to plant because we will be quite busy with other plantings during April. The individual rootstocks and some of their expected characteristics are listed on the attached page. Basically, there are several new rootstocks which have been promising in other areas, plus those which have looked best at Lindcove.

Spacing should probably be at least 20 x 20, but this could be adjusted depending on the land available. Plot layouts:

1) Allen Eureka lemon. 13 rootstocks x 9 trees each - 117 trees. I would prefer to have 3 replications with 3 trees of each rootstock comprising 1 plot. These 3 trees would be harvested together.

2) Limco 8A Lisbon lemon. 14 rootstocks x 15 trees each = 210 trees. We could have 5 replications of 3 trees each, or 3 replications of 3 trees each. Again, the 3 or 5 trees of each rootstock within a replication would be harvested together.

Some possible plot maps are attached. We may want to add guard rows if the edges of the plot will be exposed. It would be convenient but not essential for the Eureka and Lisbon plots to be adjacent or at least near each other. You should contact Nick concerning a possible site, and if he approves, I'm sure it will be fine.

Best regards.

Sincerely,

Mikeal L. Roose

Mikeal L. Roose
Assistant Professor

cc: Nick Sakovich

Rootstocks for new trial with Limoneira Associates - 1989 planting.

Yuma Ponderosa lemon - vigorous, precocious. Resistant to Phytophthora root rot, susceptible to nematodes and gummosis (?). Tristeza tolerant. Probably very intolerant to poorly drained soils.

C-32 citrange - vigorous. Resistant to Phytophthora root rot and gummosis, nematodes, and tristeza. Compatibility with Eureka is unknown.

Rangpur x Troyer - a new rootstock from Florida. Trees partially dwarfed, but larger than trees on Flying Dragon. Precocious. Tolerant to tristeza, but more susceptible to Phytophthora parasitica than Carrizo. Some cold tolerance.

Schaub rough lemon - a standard rough lemon except that it is somewhat Phytophthora tolerant.

Tosu - a rootstock which has not performed well at Lindcove, but a few trees planted in Ventura Co. have yielded well some years.

C. macrophylla - standard rootstock for lemon

Benton citrange - a citrange from Australia. Resistant to Phytophthora citrophthora and tristeza. Tree size will probably be similar to that of trees on Troyer. Compatible with Eureka lemon.

C-35 citrange - excellent resistance to all major diseases. Should reduce tree size somewhat. Compatibility with Eureka is unknown.

4475 (Swingle) citrumelo - excellent resistance to all major diseases. Not compatible with Eureka and no trees of this combination will be planted.

India lemon - a vigorous and productive lemon type rootstock. Fairly tolerant to nematodes and P. citrophthora root rot, but somewhat susceptible to P. parasitica root rot.

Koethen sweet orange - a standard sweet orange rootstock.

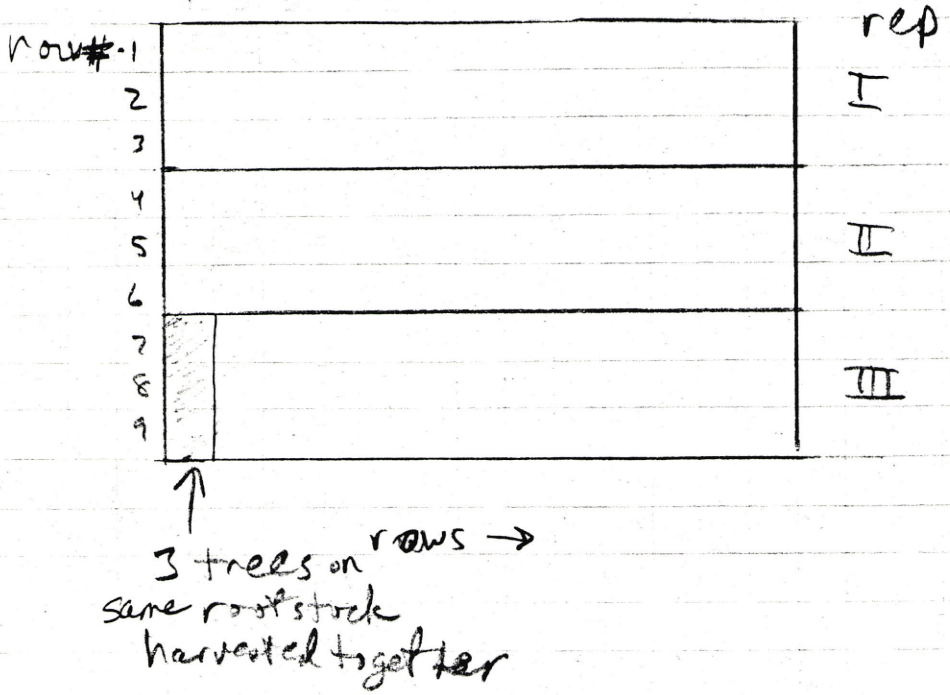
Volkameriana - a vigorous lemon-type rootstock. Somewhat susceptible to Phytophthora and nematodes.

Sun-Chu-Sha-Kat - a mandarin which has performed well in some Florida trials, especially on magnesium deficient soils. It is tolerant to tristeza, and Phytophthora parasitica. Seems to be somewhat blight tolerant. Tree growth rate is moderate. Compatibility with lemons is unknown.

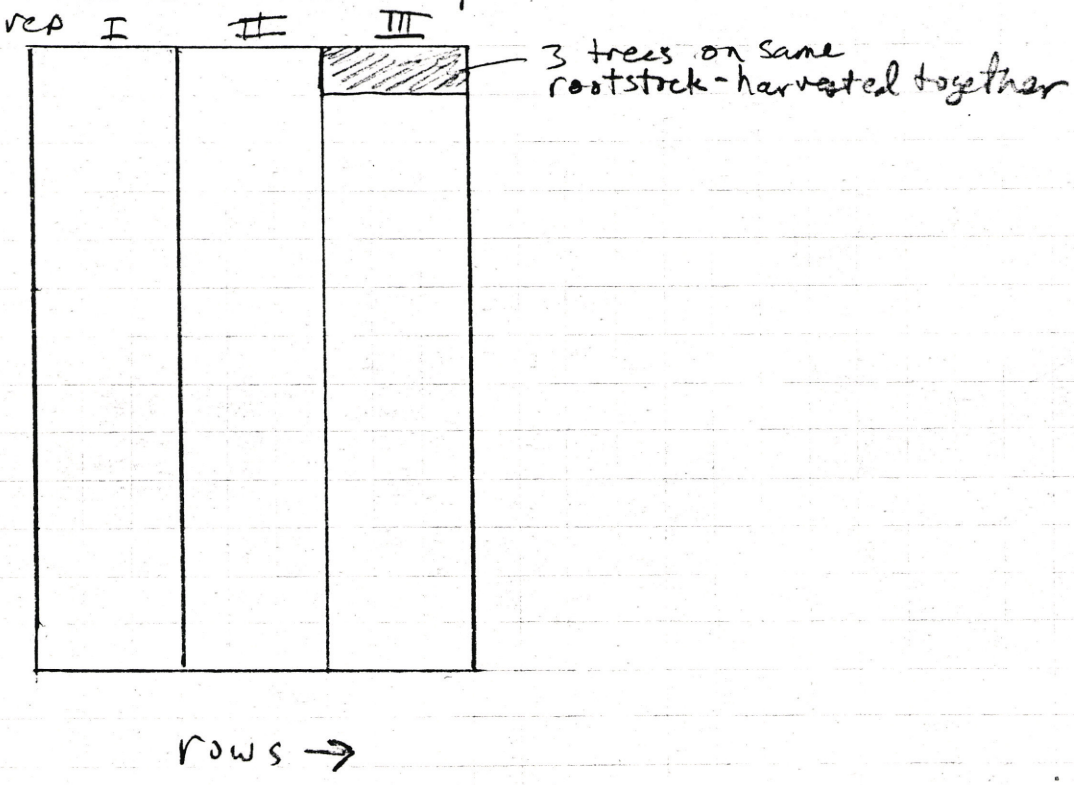
Vangasay (HRS-807) lemon - a rough-lemon type from Florida. Should be somewhat resistant to Phytophthora.

Allen Eureka plot

1) 9 rows - 13 trees/row

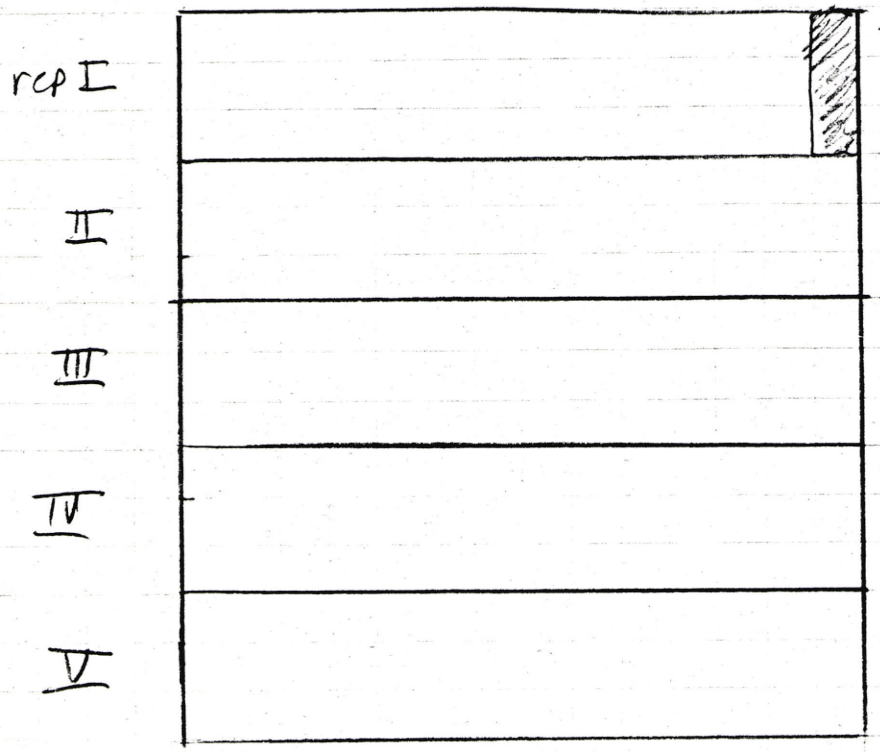


2) 13 rows - 9 trees per row



LISBON PLOT MAPS

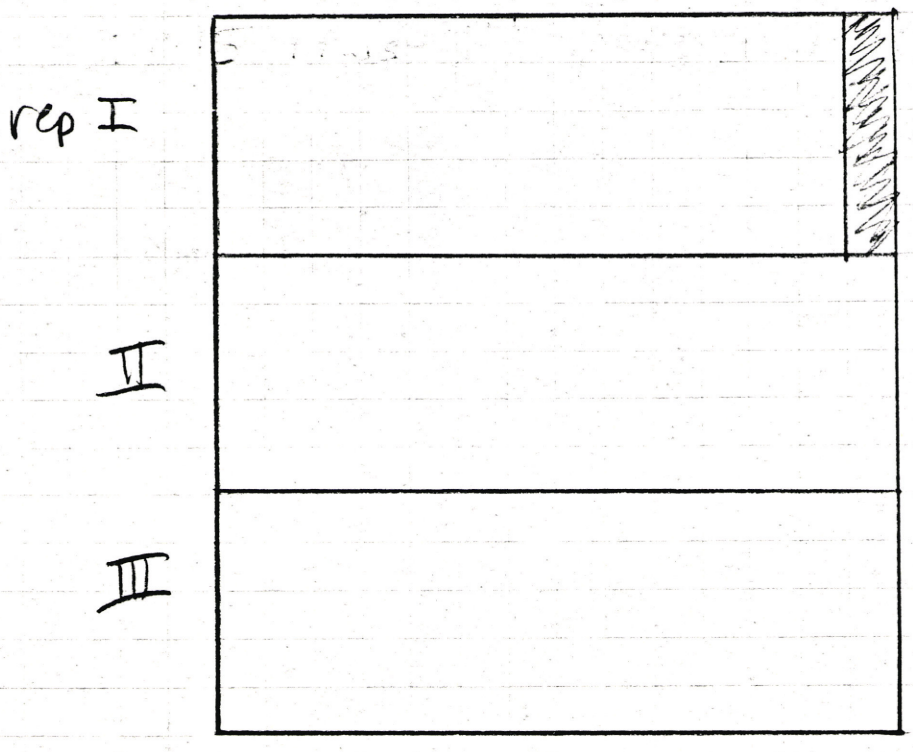
1) 15 rows - 14 trees/row - 5 replications



- 3 trees on same rootstock - harvested together

2) 14 rows - 15 trees/row - 5 replications (as for Eureka)

3) 15 rows - 14 trees/row - 3 replications



- 5 trees on same rootstock - harvested together.

Seed samples for lemon rootstock trials in Ventura Co. - sent to Nick Sakovich March 17, 1987 for planting by Brokaw Nursery. Trial to be planted at Limoneira Associates (contact Dan Galbraith). 100 seed each, except 50 of F80-18 citrumelo.

Rootstock	Source	Lisbon	Eureka
Yuma Ponderosa lemon	CRC	x	x
Benton citrange	FLA (S. Af.)	x	x
C-32 citrange	CRC	x	?
C-35 citrange	CRC	x	?
Rangpur x Troyer	FLA	x	?
F80-18 citrumelo	FLA	x	-
Schaub rough lemon (6A-35)	CRC	x	x
India lemon (12A-8-3)	CRC	x	x
807 rough lemon	FLA	x	x
Koethen sweet orange	CRC	x	x
Tosu	CRC	x	x
Volkameriana (6A-36-5,6)	CRC	x	x
Macrophylla	CRC	x	x
Sun Chu Sha Kat mandarin	FLA	x	x
total		14	10-13

Compatibility of some trifoliate hybrids with Eureka is unknown, but obviously questionable.

Performance of rootstocks as seedlings. Seedlings grown by Brokaw Nursery for lemon rootstock trials to be planted with Limoneira Associates (contact Dan Galbraith) in Ventura Co. 100 seeds of each rootstock except 50 of F80-18 citrumelo sent to Nick Sakovich March 17, 1987. When evaluated 4/26/88, most rootstocks looked genetically fairly uniform - Volk was an exception.

Rootstock	Source	No. Seedlings 4/27/87	No. Seedlings 4/26/88	No. Good 4/26/88	Ht (cm) 4/26/88	Notes
Yuma Ponderosa lemon	CRC	60	50	49	120	
Benton citrange	FLA (S. Af)	91	45	38	77	
C-32 citrange	CRC	80	50	45	90	
C-35 citrange	CRC	40	40	37	75	
Rangpur x Troyer	FLA	40	42	38	67	
F80-18 citrumelo	FLA	65	48	10	62	
India lemon (12A-8-3)	CRC	73	48	42	90	
807 rough lemon (Vangasay)	FLA	80	43	40	105	
Koethen sweet orange	CRC	80	50	48	75	
Tosu	CRC	76	48	42	65	
Volkameriana (6A-36-5,6)	CRC	50	33	19	95	size variable
Macrophylla	CRC	80	49	38	80	
Sun Chu Sha Kat	FLA	40	40	33	55	
Schaub rough lemon	22AS861 (Brokaw)	--	42	?	small	
4475 citrumelo	(Brokaw)	not seen				

Schaub rough lemon to be replaced with better seedlings if possible.
Volkameriana to be supplemented with ca 20 additional trees

Brokaw Nursery to rogue seedlings before budding - objective is to obtain 12-15 good trees of each combination.

Buds supplied by Brokaw Nursery:
- Allen Eureka lemon (a seedling source)
- Limoneira 8A Lisbon lemon (old line source)

Each stock to be budded with each scion approximately June 1, 1988. Approx. 20 trees each. 4475 with Lisbon only.

Summary of observations on Lisbon and Eureka lemon rootstock trials at Limoneira Olivelands 1D-T. Trials planted 5/8/86.

Plots were evaluated 26 April 1988 by M. Roose, R. Kupper, and N. Sakovich. Tree height (in cm) is average canopy height. # fruit ¢ 5 cm diameter on each tree was counted. Trees rated for health. Winter chlorosis was ignored unless very excessive. Trees had been pruned in March, so evaluation of freeze damage was difficult. Generally damage was slight.

Code	Stock	No. Trees	Height (cm) Mean	SD	Fruit/ Tree	Tree Health[1]
			Eureka Lemon Trial			
A	Lim. rough lemon	9	171.1	16.2	4.9	1 poor tree
B	Rangpur lime	9	174.9	9.0	4.2	1 Chl.
D	Yuma Ponderosa	9	167.4	14.5	1.3	1 Chl., 1 FD, 1 shaded
E	Macrophylla	9	159.8	13.8	6.3	1 FD
F	India lemon	9	167.8	10.0	0.9	1 Chl., 2 FD
H	Volkameriana	9	157.1	14.4	3.0	2 Chl.
			Lisbon Lemon Trial			
A	Lim. rough lemon	12	164.2	13.7	2.4	2 small
B	Rangpur lime	12	163.8	15.2	5.7	1 FD
C	Swingle citrum.	11	154.6	21.0	9.6	1 poor tree
D	Yuma Ponderosa	12	172.7	23.3	3.3	1 leaning
E	Macrophylla	12	151.6	11.6	2.5	
F	India lemon	12	161.7	13.7	3.0	
G	C-32 citrange	12	169.0	12.6	5.5	1 slight FD
H	Volkameriana	11	156.2	9.0	2.2	1 FD

[1] All trees rated good except as noted. FD = evident freeze damage; Chl. = excessive chlorosis