Mechanical Topping of Nonbearing Almond Trees

Roger Duncan, UCCE Stanislaus County

University of California
Agriculture and Natural Resources

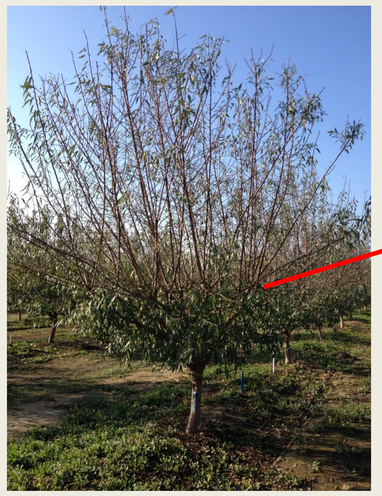
Problem:
Some growers of nonbearing almond trees contemplate mechanical topping during the initial training years to quickly reduce tree height in the fall to reduce the risk of winter / spring leaning or blow over. Some also feel that mechanical topping will create a permanently shorter, bushier tree that may have higher early yields.

Purpose:
- To document the effect of first leaf mechanical topping on tree height, trunk girth, anchorage and early yield of Nonpareil & Monterey .
- To compare costs and returns of mechanical topping vs. various tree training strategies by hand.

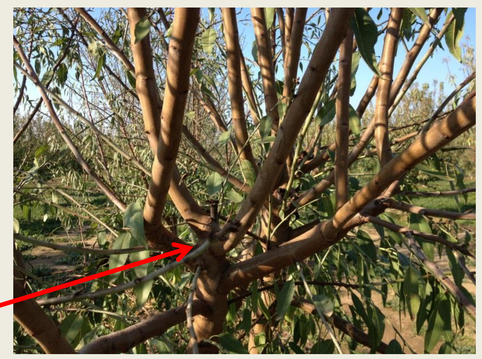
Training Strategies Tested:
- Mechanically topped 1rst dormant + scaffold selection (by hand)
- Mechanically topped 1rst dormant with no scaffold selection
- Standard "Long pruned" training by hand
- "Short pruned" by hand
- No scaffold selection / pruning

Untrained trees on the left vs. mechanically topped trees on the right. Topping initially reduced tree height by two – three feet.

Untrained tree at the end of 2nd leaf. Trees are on Titan peach x almond hybrid and very vigorous.



Mechanically topped trees were just as tall as untrained trees by the end of the growing season



Multiple heading cuts all at the same height on mechanically topped scaffolds has the potential to increase shade out of lower wood

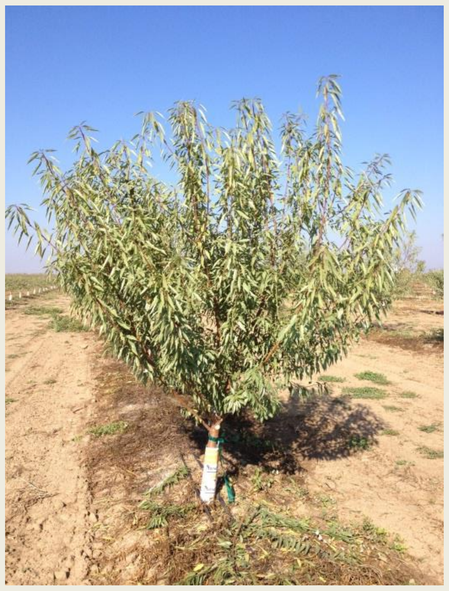
The Effect of Tree Training Method on 3rd Leaf Yield

	Pounds per acre	
	Nonpareil	Monterey
Topped with No Scaffold Selection	561 AB	608 AB
Topped + Scaffold Selection by Hand	608 AB	642 AB
Long Pruned by Hand	538 ABC	651 AB
Short Pruned by Hand	402 C	506 B
Untrained	649 A	785 A

Effect Tree Training Method on Tree Size and Anchorage

	Tree Height (feet)				Trunk Circumference (cm)				Tree Angle (degrees)	
	After Training (End of 1rst Leaf)		End of 2nd Leaf		End of 2nd Leaf		End of 3rd Leaf		3rd Leaf	
	Nonpareil	Monterey	Nonpareil	Monterey	Nonpareil	Monterey	Nonpareil	Monterey	Nonpareil	Monterey
Topped with no scaffold selection	5.5	5.5	12.7 A	13.5 AB	34.6 B	31.3 BC	46.6 B	43.6 AB	74.8 A	75.1 A
Topped + scaffold selection by hand	5.5	5.5	12.5 A	13.6 AB	35.2 AB	31.5 B	46.5 B	42.7 BC	75.5 A	75.9 A
Long pruned by hand	7.5	7.5	12.5 A	13.5 AB	35.6 AB	30.3 CD	47.3 AB	42.4 CD	76.2 A	76.2 A
Short pruned by hand	5.5	5.5	11.9 B	13.1 B	33.2 C	30.1 D	44.6 C	41.8 D	76.2 A	76.2 A
Untrained	9.0 – 9.5	8.0 - 8.5	12.9 A	13.9 A	36.5 A	32.8 A	48.2 A	44.3 A	76.7 A	76.7 A

Results and Conclusions:
- Mechanical topping plus follow up scaffold selection by hand was the most expensive training method, but only about $12 per acre more than conventional, long pruned trees.
- Although mechanically topped trees started the second leaf about three feet shorter, they were just as tall as untopped trees by the end of the season.
- Trunk caliper of topped trees is similar in size to long pruned trees. Untrained trees tend to have the largest trunk caliper while short pruned trees have the skinniest trunks.
- Unpruned trees had the highest 3rd-leaf yields while short pruned trees had the lowest.
- There was no difference in trunk angle (tree leaning) among the treatments.
- Mechanical topping created numerous shoots emerging at the same location in the canopy. It is unknown if this will expedite shade out of lower limbs more quickly.



No scaffold selection or shoot tipping. Low branches removed for shaker access only.

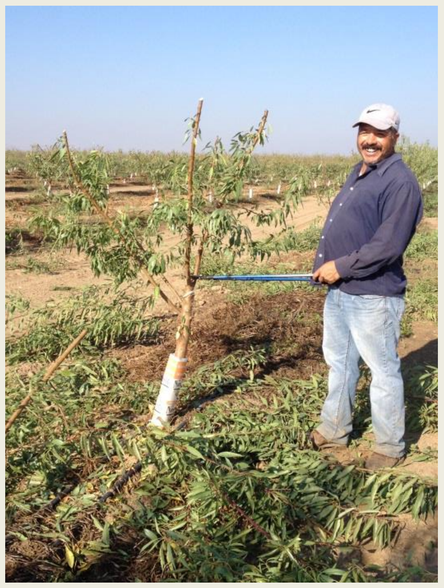
Final tree height 8' – 9'

Cost: $18 / acre

"Long" training by hand to four or five scaffolds, open centers

Final tree height ~ 7.5'

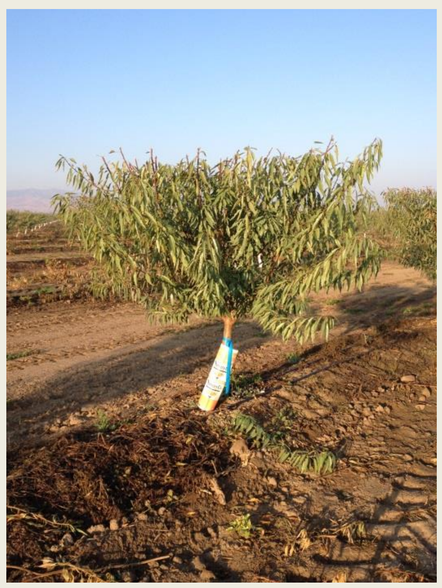
Cost: $71 / acre



"Short" training by hand to three - four scaffolds.

Final tree height ~ 5.5'

Cost: $66 / acre



Mechanically topped. No scaffold selection. Low branches removed for shaker access only.

Final tree height ~ 5.5' from top of berm.

Cost: $30 / acre for topping + $18 for low branch removal = $48 total

Mechanically topped plus scaffold selection to 4 – 6 scaffolds.

Final tree height ~ 5.5' from top of berm

Cost: $30 / acre for topping + $53 for hand pruning = $83 total

*Labor valued at $12 / hour. Does not include cost of stacking and shredding brush