Part of almond Culture and Orchard Management 2004-2005

Almond Tree Training for Catch Frame Harvester

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Background:
Air quality, due to dust and PM 10 generated by almond harvest has become an issue in the San Joaquin Valley. Of all agricultural activities, almond harvest produces the most dust. All harvest operations produce dust but sweeping and pick-up produce 80 to 90% of the dust. One of the ways to eliminate these operations is by using a catch frame harvester. However, almond orchards are not only trained with a low head but also the tree canopies are too close to the ground. This makes the operation of a catch frame harvester difficult to operate.

Objectives:
To train almond trees with different height heads. Also to develop and maintain strong trunk and limb structure capable of supporting maximum crops.

Plans and Procedures:
A test plot was established in February 2003 in a Nonpareil-Sonora-Carmel orchard. The experiment was established in the Nonpareil variety with four treatments which are replicated four times. Each replication consists of eight-tree plots. The head height was established by a heading cut at the time of planting. The following treatments were established: 1) trees headed at 42 inches, 2) trees headed at 52 inches, 3) trees headed at 18 inches and then at 62 inches and 4) trees headed at 18 inches and then at 62 inches. Treatment 3 was pruned short while treatment 4 was pruned long in the following season.

Tree height, trunk circumference and pruning weights are found in the following table:

Treatments	Tree Height (ft)		Trunk Circumference (mm)		Pruning Weights (lb)	
	2003	2004	2003	2004	2003	2004
42" Head	10.4 ab	12.4	176 c	346 b	5.6 c	15.0
52" Head	10.7 b	12.7	166 b	336 b	3.5 b	9.4
62" Head-Short Pruned	10.0 a	12.4	121 a	278 a	3.3 b	11.9
62" Head-Long Pruned	9.9 a	12.2	126 a	287 a	1.8 a	10.9

Discussion:
There was a dwarfing effect at the end of the first growing season on 62 inch head treatments. These trees were headed at 18 inches and then one shoot was selected which was headed at 62 inches. The dwarfing effect is express in trunk circumference in both 2003 and 2004 seasons. The dwarfing effect based on tree height is only evident in the 2003 season. The amount of prunings removed from the four treatments was significantly higher in the 42 inch head. The reason being that there was great need to remove lower limbs in this treatment.