Profitability of Mechanical Fruit Thinning of 'Cape Fear' and 'Sumner' Pecans

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Abstract
A research demonstration on mechanical fruit thinning was conducted on August 1, 2007, in a commercial orchard of 'Cape Fear' and 'Sumner' pecan trees. Treatments were replicated five times in a randomized-complete block design. Five trees of each variety were fruit thinned by mechanically shaking the trees for 8 seconds to remove approximately 30% to 40 % of the fruit on each tree. The initial crop load for all trees was excessive in 2007 with 85% or more of the terminals bearing fruit on each tree at the time of thinning. The effects of mechanical fruit thinning on pecan yield, nut quality, and profitability were assessed in 2007 and 2008. In 2007, there were slight differences in yield, nut quality, and crop value among the thinned versus non-thinned trees in the trial. In 2008, there were significant differences in yield and crop value, and no significant differences in nut quality. The fruit thinning proved to be effective in encouraging a return crop in both varieties compared. A two-year average of the yield and crop value showed a significant increase in the fruit thinned trees as compared to the non-thinned trees.

Materials and Methods
Treatments were replicated five times in a randomized-complete block design. Five trees of each variety were fruit thinned by mechanically shaking the trees for 8 seconds to remove approximately 30% to 40 % of the fruit on each tree.

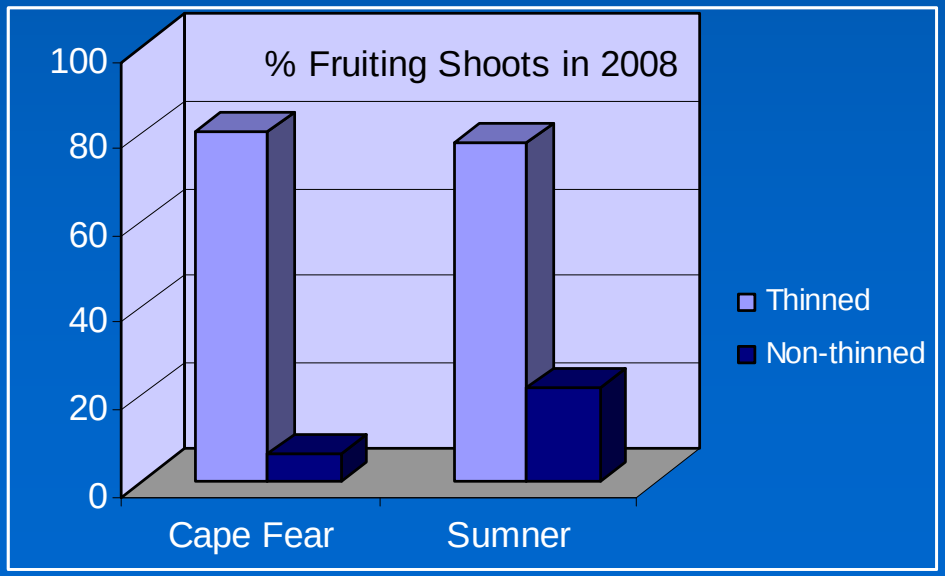

Table 1. Two-year average of in-shell pecan yield, percentage of kernel, and crop value of 'Cape Fear' and 'Sumner' pecan trees mechanically fruit thinned in 2007.

Cultivar	Treatment	In-shell pecan yield (lb./tree)[z]	Kernel (%)	Crop value[y] ($/tree)
		2007		
Cape Fear	Thinned	186.5b[x]	51.2a	199.57a
	Non-thinned	224.9a	47.9b	225.15a
Sumner	Thinned	164.5a	53.8a	186.74a
	Non-thinned	163.3a	52.3a	180.20a
		2008		
Cape Fear	Thinned	195.0a	57.3a	313.98a
	Non-thinned	8.0b	56.9a	12.79b
Sumner	Thinned	183.2a	54.7a	278.58a
	Non-thinned	10.2b	56.1a	15.91b
		Total (2007 + 2008)		
Cape Fear	Thinned	381.5a	---	513.55a
	Non-thinned	232.9b	---	237.94b
Sumner	Thinned	347.7a	---	465.32a
	Non-thinned	173.5b	---	196.1b
		2-Year Average		
Cape Fear	Thinned	190.8a	54.3a	253.83a
	Non-thinned	116.5b	52.4a	149.56b
Sumner	Thinned	173.9a	54.3a	231.35a
	Non-thinned	86.8b	54.2a	115.26b

[z] 1 lb = 0.4536 kg
[y] Crop value = weight per tree X kernel price X percent kernel
[x] Means followed by the same letter within column, year, and cultivar are not significantly different by Fisher's *F*-test ($P<0.05$).

Conclusions
In summary, the OFF year return crop and return crop value of both 'Cape Fear' and 'Sumner' was increased by mechanical thinning in the ON year. This enhanced the total 2-year value and 2-year average value of both cultivars. Increased profitability of these cultivars with mechanical fruit thinning results primarily from higher yields and prices in the OFF year of production, which offset any loss in yield and/or crop value generated by fruit thinning in the ON year.