

Title: **Delayed Harvest and Extended Cold Storage of Evelynn and Redhaven Peaches.**

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Duration of Project: One Year

Justification: ‘Evelynn’ is a new, firm-fleshed, yellow peach variety, developed for the Mid-Atlantic region and has the potential to expand market share by filling a window in the harvest season where improved cultivars are needed. To best manage the harvest, packing, storage, and orderly marketing of this cultivar we need to better understand the behavior of their fruits. The best management practices for how to harvest, how to pack and how much storage these fruits can withstand, need to be informed with field and laboratory data. Optimization of production practices will increase profitability by allowing the fruit to enter the market throughout a longer shipping season, and at maximum quality with minimum loss.

So far, it is thought that compared to traditional cultivars such as ‘Redhaven’, ‘Evelynn’ can hang longer after achieving commercial maturity. However, in the absence of information on hang-time after commercial maturity and cold storage studies, there is a danger of growers hanging fruits for too long as fruit stays firm, which may be affecting other non-visible fruit qualities such as sweetness and acidity of the fruits (Mollendorf et al., 1992). Similarly, following harvest, prolonged storage could result in the loss of firmness and fruit quality, or even internal breakdown (Kao et al., 2012). There is a strong need for estimating, how long it is safe to let ‘Evelynn’ fruit remain on the tree and in cold storage without affecting fruit quality. This requires an experimental study to evaluate delayed harvest and subsequent cold storage effects on the fruit physicochemical properties of ‘Evelynn’ peaches in comparison to ‘Redhaven’, a traditional popular cultivar in the same season. This would help growers in optimizing the fruit quality by determining the appropriate harvest time and subsequent cold storage duration.

Objectives:

- (1) To determine the effects of delayed harvest on fruit quality of ‘Evelynn’ and ‘Redhaven’ peaches after the fruit has achieved commercial maturity.
- (2) To determine the effects of extended cold storage on fruit quality of ‘Evelynn’ and ‘Redhaven’ peaches.
- (3) To determine the interactive effects between ‘delayed harvest’ and ‘extended cold storage’ on the fruit quality of ‘Evelynn’ and ‘Redhaven’.
- (4) To develop practical recommendations for ‘ideal’ hang time and storage to optimize fruit quality for harvest and post-harvest handling of ‘Evelynn’ peaches.

Procedure(s):

In 2019 an experiment will be conducted using fruit from a commercial orchard of mature, bearing ‘Evelynn’ and ‘Redhaven’ trees in southern New Jersey. Commercially mature fruit (N=216 , 24 fruits per sample, total 9 treatment combinations) will be identified and labeled on one day in each variety. Labeled fruits will then be randomly assigned to be harvested at either 0, 7, or 14 days after commercial maturity then placed in cold storage for 0, 15, or 30 days before evaluation. Total yields will be estimated for each tree. Cold storage will be at RAREC in conventional cold storage (33°F, 95% RH).

All fruit will be hydro-cooled before storage. Fruit physical (background color, firmness, weight and diameter) and chemical properties (total soluble solids, titratable acidity and pH) will be measured and analyzed. Statistical analysis of data to estimate mean responses and consistency of response will be performed.

		Days in cold storage		
		1	15	30
Days Harvest Delayed	0	Evelynn	Evelynn	Evelynn
		Redhaven	Redhaven	Redhaven
	7	Evelynn	Evelynn	Evelynn
		Redhaven	Redhaven	Redhaven
	14	Evelynn	Evelynn	Evelynn
		Redhaven	Redhaven	Redhaven

Budget:

Salaries:	\$3,426*
Hourly Wages:	\$2,400
Fringe Benefits:	\$1,915
Supplies:	\$550
Travel:	\$2,790
Miscellaneous:	\$0

Total:	\$11,081
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*For details, please see budget in the templet.

Other Support: None