

Effect of hand thinning stage on fruit size, colour and yield of Flordaprince peaches (*Prunus persica* Batsch)

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Abstract

Studies on the effect of time of hand thinning on fruit size, colour and yield of Flordaprince peaches were carried out during 1998 and 1999 at Ludhiana. Thinning treatments were performed at different stages *i.e.* pink bud stage, full bloom, fruit set and after 7, 14, 21, 35, 42 days of fruit set, along with control. Study revealed that earlier thinning up to fruit set stage produced highly coloured and larger fruits leading to higher marketable yields as compared to control or thinning at later stages.

Key words: Flordaprince, peach, *Prunus persica* Batsch, hand thinning, fruit quality

Introduction

Most of the peach (*Prunus persica* Batsch) cultivars often have a tendency to flower profusely and set more fruits than required leading to deterioration in quality of developing fruits. The acute competition for photosynthates, light and space results in heavy crop of under size, mis-shapen and poorly coloured fruits. To overcome this problem, number of workers have tried different methods of thinning, *viz.*, hand, chemical and mechanical thinning in different cultivars of peach (Chahill *et al.*, 1980; Allan *et al.*, 1992; Chanana *et al.*, 1998). As the response of a particular variety to thinning vary with variation in method and stage of thinning, the present studies were carried out to investigate the effect of stage of hand thinning on fruit size, colour and yield of peach cv. Flordaprince.

Materials and methods

Studies were carried out on eight year old uniform trees of peach cv. Flordaprince during 1998-1999 in experimental orchards of Department of Horticulture, PAU, Ludhiana. The experiment was laid out in randomized block design with ten treatments (Table 1) and each treatment was replicated four times. At the

time of maturity fruit size was determined by measuring length and breadth of 20 randomly selected fruits with Vernier's calipers, whereas, fruit colour was described with the help of Horticultural Colour Chart (HCC) of Wilson (1938).

Results and discussion

The data presented in Table 1 revealed that mean fruit length was maximum (5.08 cm) in the treatment in which thinning was done at pink bud stage followed by thinning at fruit set (5.03 cm) and full bloom (4.95 cm). These treatments were at par with each other. Minimum fruit length was observed in control. Same trend was observed in case of fruit breadth also. The mean yield data revealed that it was significantly higher in control as compared to all other treatments. Keeping aside control, due to its under sized and misshapen fruits, yield was maximum in thinning done at pink bud stage followed by thinning at full bloom and fruit set. It indicated that earlier thinning treatments upto fruit set consistently tended to produce larger fruits and therefore higher yields as compared to later thinning treatments. The reason for increase in fruit size and marketable yield may be due to the reduction in the number of fruits per tree in the early stages

Table 1. Effect of hand thinning stage on fruit size, yield and colour development of peach cv. Flordaprince

Treatment (Stage of thinning)	Fruit size (cm)		Yield* (kg/tree)	1998			1999		
	Length	Breadth		HCC	Visual Colour	Colour(%)	HCC	Visual Colour	Colour(%)
At pink bud stage	5.08	5.03	69.22	Y3B	Deep Yellow	90	Y2B	Medium Yellow	80
At full bloom	4.95	4.97	68.84	Y1B	Yellowish	70	Y3B	Deep Yellow	90
At fruit set	5.03	5.04	65.35	Y1B	Yellowish	70	Y3B	Deep Yellow	90
After 7 days of fruit set	4.76	4.68	55.80	Y1B	Yellowish	70	Y1B	Yellowish	70
After 14 days of fruit set	4.73	4.75	57.94	Y1B	Yellowish	70	Y1B	Yellowish	70
After 21 days of fruit set	4.48	4.45	56.05	Y1B	Yellowish	70	YG154B	Light Yellow	60
After 28 days of fruit set	4.28	4.29	51.88	YG154B	Light Yellow	60	YG154B	Light Yellow	60
After 35 days of fruit set	4.28	4.27	52.95	YG150B	Yellowish Green	50	YG154B	Light Yellow	60
After 42 days of fruit set	4.25	4.15	52.21	YG150B	Yellowish Green	50	YG154B	Light Yellow	60
Control (No thinning)	4.04	4.00	98.99	YG150B	Yellowish Green	50	YG154B	Light Yellow	60
CD ($p = 0.05$)	0.26	0.24	5.58						

* Mean of two years (1998 and 1999)

thereby increasing the leaf:fruit ratio which resulted in increased availability of photosynthates and nutrients to the remaining fruits, thus improving the fruits size and marketable yields. This is in corroboration with the findings of Havis (1962) and Nie and Yu (1993).

The data on effect of time of hand thinning on fruit colour given in Table 1 showed that in 1998 the best coloured fruit (deep yellow) were produced by thinning at pink bud stage. There was no difference in the fruit colour (yellowish) in the next five treatments *i.e.* thinning up to 21 days after fruit set, whereas in control and thinning after 35 and 42 days of fruit set, colour was least developed (yellowish green). During 1999, best coloured fruits were produced by thinning at full bloom and fruit set stages (deep yellow). The fruit colour was improved in all the early thinning treatments *i.e.*, thinning up to 14 days after fruit set. But in later thinning treatments *i.e.* all the treatments performed after 21 days of fruit set and control, fruit colour was the same. This is in agreement with the findings of Turkey and Einset (1939), Havis (1962) and Saini (1998) who observed that hand thinning at full bloom was the most effective in improving the fruit colour. These changes in fruit colour depend upon the degradation of chlorophyll and accumulation of colouring pigments like anthocyanins and carotenoids. Flower / fruit thinning at an early stage reduced the inter fruit competition for minerals and metabolites and hence, allowing faster accumulation of colouring matter resulting in improved colour development.

The present study revealed that earlier thinning treatments *i.e.* up to fruit set produced best coloured and larger fruits leading to higher marketable yields as compared to control or later thinning treatments.

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