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# Effect of Removal of Runners and Flowers from Day-neutral Strawberries on Time of Harvest and Total Yields

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## **Abstract**

Day-neutral strawberries can produce fruit during the summer and fall when regular strawberry production has ceased, thereby diversifying fruit production. In Iowa and the Midwest, cultural practices suggest the removal of flowers and runners until early July, but little information is known about cultural practices to shift production to cooler times of the summer and fall. Removing flowers and runners requires additional labor throughout the season. This study compares the production practices of removing flowers and runners and how those practices affect total fruit production, average berry size, and plant biomass.

## **Keywords**

RFR A9042, Horticulture

## **Disciplines**

Agricultural Science | Agriculture | Horticulture

# Effect of Removal of Runners and Flowers from Day-neutral Strawberries on Time of Harvest and Total Yields

## RFR-A9042

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### Introduction

Day-neutral strawberries can produce fruit during the summer and fall when regular strawberry production has ceased, thereby diversifying fruit production. In Iowa and the Midwest, cultural practices suggest the removal of flowers and runners until early July, but little information is known about cultural practices to shift production to cooler times of the summer and fall. Removing flowers and runners requires additional labor throughout the season. This study compares the production practices of removing flowers and runners and how those practices affect total fruit production, average berry size, and plant biomass.

### Materials and Methods

Bare-root day-neutral strawberry cultivars Albion, Seascape, and Tribute were planted May 7, 2009 at the Horticulture Research Station, Ames, IA. Fourteen plants were placed on white-on-black plastic in a double row spaced 12 in. apart in each plot. Cultivars were randomly blocked in four replications. Rows were spaced 6-in. on center. The production techniques of runner and flower removal included 1) runner removal until July 31 and flower removal until May 31, 2) runner removal until July 31 and flower removal until June 30, 3) runner and flower removal until July 31, 4) no runner removal and flower removal until May 31, 5) no runner

removal and flower removal until June 30, and 6) no runner removal and flower removal until July 31. Yield data were collected when fruit ripened in July until frost in October. Plant biomass was collected from three plants by harvesting runners, removing the roots of the runners and mother plants, and drying at room temperature (70°F).

### Results and Discussion

Strawberry fruit began to ripen July 8 for treatments with flower removal until May 31, July 29 for treatments with flower removal until June 30, and August 14 for treatments with flower removal until July 31 (data not shown). The 2009 growing season was fairly cool, especially in the month of July, and assisted strawberry growth in general. In warm-to-hot years, strawberry fruit in the month of July could result with less berries formed and fruit with sunscald. Overall, fruit quality was very good and disease was not prevalent in 2009.

The treatment of no runner removal and flowers removed until July 31 showed the highest total berry weight and total berry count for Tribute, and there were no differences in average berry size compared with other treatments (Table 1). There were no differences among treatments for berry weight, berry count, or average berry weight of Seascape (Table 1). The treatment of runner and flower removal until July 31 showed the highest total berry weight for Albion. Total berry counts were higher among all treatments for Tribute compared with Seascape or Albion, but the average berry weight for Tribute was half the average berry weight for Albion. Higher average berry weights make

day-neutral strawberries more competitive in the market place. In general among all cultivars, average berry size and total berry yield were higher when runners and flowers were removed until the end of July.

Runner number and dry weight were generally highest in treatments that did not receive runner removal. There also were higher runner numbers and dry weights from plants that had runners and flowers removed until May 31

and June 30 (Table 1). Mother plant weights were generally highest for Tribute. Due to smaller plants with Seascape and Albion, producers may want to plant the strawberry plants closer together, such as 6 in. to 9 in. instead of 12 in. to increase overall production within an area.

### Acknowledgements

We thank the Horticulture Research Station for their assistance with the project.

**Table 1. Total berry yield, average berry weight, and runner and mother plant biomass from six cultural techniques of runner and flower removal from July to October 2009.<sup>x</sup>**

Cultivar	Treatments <sup>z</sup>	Total berry weight per plot <sup>y</sup> (g)	Total berry count per plot	Average berry weight (g)	Runner number per plant	Total runner weight per plant (g)	Average mother plant weight (g)
Tribute	RR / FR May 31	1802.0 <sup>x</sup> bcde	338.75 b	5.32 d	9 bcd	20.07 def	65.79 abc
	NRR / FR May 31	2250.2 ab	408.50 ab	5.51 d	10 bcd	27.41 cdef	96.12 a
	RR / FR June 30	1863.2 abcd	350.50 ab	5.23 d	13 bc	25.54 cdef	85.54 abc
	NRR / FR June 30	2203.6 ab	401.50 ab	5.45 d	10 bcd	38.73 bcd	94.76 ab
	RR / FR July 31	2183.0 ab	363.00 ab	6.07 d	1 d	1.10 f	64.24 abc
	NRR / FR July 31	2449.3 a	418.00 a	5.85 d	13 bc	33.36 bcde	76.11 abc
Seascape	RR / FR May 31	1178.8 f	139.50 c	8.38 c	14 ab	47.50 abcd	52.10 c
	NRR / FR May 31	1293.1 edf	144.50 c	8.97 c	17 ab	41.63 bcd	68.66 abc
	RR / FR June 30	1310.8 cdef	141.25 c	8.91 c	25 a	75.81 a	79.37 abc
	NRR / FR June 30	1249.0 ef	135.75 c	9.24 c	9 bcd	25.89 cdef	74.59 abc
	RR / FR July 31	1314.2 cdef	148.00 c	8.73 c	3 cd	6.19 ef	53.21 c
	NRR / FR July 31	1342.3 cdef	149.00 c	8.96 c	17 ab	34.08 bcde	69.05 abc
Albion	RR / FR May 31	1258.3 ef	116.00 c	10.76 ab	13 bc	49.04 abcd	51.87 c
	NRR / FR May 31	1181.6 f	110.75 c	10.63 b	13 bc	41.81 bcd	50.11 c
	RR / FR June 30	1343.1 cdef	120.25 c	11.11 ab	16 ab	46.77 abcd	58.36 abc
	NRR / FR June 30	1302.7 cdef	114.50 c	11.36 ab	15 ab	56.26 abc	60.35 abc
	RR / FR July 31	1899.0 abc	158.25 c	12.03 a	1 d	1.34 f	80.86 abc
	NRR / FR July 31	1290.4 edf	115.00 c	11.06 ab	18 ab	61.50 ab	56.22 c
	LSD P ≤ 0.05 <sup>w</sup>	602.45	77.08	1.29	11	32.01	39.79

<sup>z</sup>RR = runner removal; NRR = no runner removal; FR = flower removal.

<sup>y</sup>Total plot size was 14 total plants or 14 sq ft.

<sup>x</sup>Means are average four treatment replications.

<sup>w</sup>Least significant difference at P ≤ 0.05; NS = no statistical difference; values sharing the same letter are not statistically different from each other.