

Plant Spacing and Nitrogen Fertilization Recommendations for ‘Florida Beauty’

Shinsuke Agehara

Summary

‘Florida Beauty’ is characterized by its compact canopy size, day-neutral flowering habit, and improved adaptability to the early planting window in Florida. Because of these traits, we recommend to plant this cultivar between September 23 and October 5 using narrow plant spacing (e.g. 12”). We also recommend to use a high N rate (e.g. 2 lb/acre/d) during establishment for slightly longer than for other cultivars, as the negative impact of excessive N fertilization appears to be minimal for this cultivar. Delayed establishment of an ideal canopy size can result in yield reductions and increased insect damage.

Plant Spacing

The standard strawberry in-row plant spacing is 14 to 16 inches, depending on cultivars. Closer plant spacing reduces fruit yields per plant and makes harvesting and spraying more difficult. On the other hand, wider spacing makes inefficient use of land and reduces yields per acre.

Nitrogen Fertilization

Strawberry growers typically apply N at high doses of 2-3 lbs/acre/d during establishment and gradually lower the rate to 0.75-1 lb/acre/d. The initial high-dose fertilization can be beneficial for improving the establishment of strawberry transplants, but this practice must be tailored for each cultivar based on its growth characteristics and nutrient requirements.

Methods

Fertilization treatments described in Table 1 were tested for ‘Florida Beauty’ during the 2017–2018

season at GCREC. In addition, two levels of in-row spacing (15” and 12”) were tested. Bare-root transplants were transplanted on Sep. 28, 2017. Commercial production and pest management practices were followed. Harvested were performed 30 times between Nov. 2, 2017 and Feb. 26, 2018.

Table 1. Nitrogen fertilization programs tested during the 2017-2018 season at GCREC.

Duration of 2 lb/acre/d	Daily N application rate (lb/acre/d)					Total N rate (lb/acre)
	Week 1–2	Week 3–5	Week 6–8	Week 9–11	Week 12–22	
0 wk	0	1	1	1	1	140
3 wk	0	2	1	1	1	161
6 wk	0	2	2	1	1	182
9 wk	0	2	2	2	1	203

Results

‘Florida Beauty’ vs. ‘Florida Radiance’

When planted earlier (Sep. 28), ‘Florida Beauty’ produced a 57% higher Nov-Dec yield and a slightly lower total season yield than ‘Florida Radiance’ (Table 2). This improved fruit earliness of ‘Florida Beauty’ was not observed when planted late (Oct. 12). The average fruit size of ‘Florida Beauty’ was 13% to 15% smaller compared to ‘Florida Radiance’, lowering the percentage of marketable yield especially during early harvests.

Plant spacing

Reducing plant spacing from 15” to 12” increased November and December yields by 28% to 33%, January and February yields by 6%, and the total season yield by 10% (Table 3). It did not affect the

percentage of marketable or unmarketable fruit yields (Tables 4-5).

N fertilization

Increasing the initial N rate from 1 to 2 lb/acre/d for 3 to 9 weeks increased November yield by 2% to 17%, December yield by 7% to 37%, January yield by 20% to 37%, February yield by 18% to 25%, and the total season yield by 20% to 28% (Table 3). Extending the duration of the initial high N rate had no significant effect on the percentage of small fruit yields (Table 4), but it reduced the percentage of unmarketable yields by thrips damage from 18% to 6% in December (Table 5). 'Florida Beauty' had higher thrips damage fruit yields than other cultivars (data not shown). It is possible that insect damage can have a greater impact on 'Florida Beauty' than on other cultivars, because of its relatively compact canopy structure. Increasing the canopy size by high N fertilization may be one of effective management options to control insect damage for this cultivar.

Plant spacing x N fertilization interaction

Although the plant spacing x N fertilization interaction was not statistically significant, reducing plant spacing can result in increased plant competition for soil nutrients and water. When planting closer, it is recommended to use the initial high N rate slightly longer to minimize the risk of plant competition.

Table 2. Yield performance of 'Florida Radiance' and 'Florida Beauty' in the 2017-2018 trial at GCREC.

	Florida Radiance	Florida Beauty
Early planting (Sep. 28)		
Nov-Dec yield (# of 8-lb flats/acre)	354	555
Total yield (# of 8-lb flats/acre)	3101	3015
Fruit set (no./plant)	26.2	23.4
Average fruit size (g/fruit)	24.7	21.4
% of marketable yield in total yield	89.3	74.4
Late planting (Oct. 12)		
Nov-Dec yield (# of 8-lb flats/acre)	401	359
Total yield (# of 8-lb flats/acre)	2646	2437
Fruit set (no./plant)	23.0	19.8
Average fruit size (g/fruit)	23.9	20.4
% of marketable yield in total yield	90.1	76.0

In-row spacing was 15" for 'Florida Radiance' and 12" for 'Florida Beauty'.

Table 3. Marketable yield of 'Florida Beauty' strawberry as affected by plant spacing and duration of initial high N fertilization.

In-row spacing	Duration of 2 lb N	Marketable yield (# of 8-lb flat/acre)				
		Nov	Dec	Jan	Feb	Total
15"		129 b	293 b	895	1426	2742 b
12"		165 a	390 a	947	1513	3015 a
	0 wk	137	287	768 b	1265	2456 b
	3 wk	140	306	919 ab	1578	2943 ab
	6 wk	150	380	948 ab	1497	2975 a
	9 wk	161	392	1050 a	1537	3140 a

Table 4. Small fruit yield of 'Florida Beauty' strawberry as affected by plant spacing and duration of initial high N fertilization.

In-row spacing	Duration of 2 lb N	Small fruit yield (% total yield, no./no.)				
		Nov	Dec	Jan	Feb	Total
15"		36.5	18.3	8.5	3.0	11.4
12"		35.2	17.5	7.6	3.3	11.5
	0 wk	39.6	22.0	9.6	3.9	13.8
	3 wk	33.8	16.5	6.5	2.4	9.8
	6 wk	36.5	16.9	9.5	3.5	12.2
	9 wk	33.4	16.1	6.7	2.7	9.8

Small fruit yield = <10 g/fruit (unmarketable)

Table 5. Thrips damage of 'Florida Beauty' strawberry as affected by plant spacing and duration of initial high N fertilization.

In-row spacing	Duration of 2 lb N	Thrips damage (% total yield, no./no.)				
		Nov	Dec	Jan	Feb	Total
15"		10.8	13.0	7.3	5.1	7.5
12"		10.2	9.7	7.9	6.0	7.7
	0 wk	12.0	18.1 a	8.9	5.6	9.3
	3 wk	12.9	11.0 ab	7.2	5.4	7.8
	6 wk	9.8	10.4 ab	7.1	5.0	6.8
	9 wk	7.2	6.0 b	7.2	6.3	6.5

Contact

Dr. Shinsuke Agehara

UF/IFAS Gulf Coast Research and Education Center

P: 813-419-6583

E: sagehara@ufl.edu

<http://gcrec.ifas.ufl.edu/faculty/dr-shinsuke-agehara/>