UF UNIVERSITY of FLORIDA
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Planting Date and Nitrogen Fertilization Recommendations for 'Florida Brilliance'

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Summary

Because 'Florida Brilliance' has improved adaptability to the early planting window in Florida, we recommend planting this cultivar as early as September 23. Delaying planting date can significantly affect the yield distribution. In this study, delaying planting date by 7 and 14 days from Sep 27 reduced early-season yield (Nov+Dec) by 49% and 73%, respectively, whereas it increased January yield by 36-37%. 'Florida Brilliance' does not require as much nitrogen (N) as 'Florida Radiance'. The recommended duration of initial high nitrogen (N) fertilization (e.g. 2 lb/acre/d) is at least 3 weeks. Initial N fertilization has a greater impact on early-season yield than on total-season yield. When planting early (e.g. Sep 27), extending the duration of initial high N fertilization to 6 weeks can improve the establishment and maximize early-season yield.

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 Brilliance' during the 2018–2019 season at GCREC. Bare-root transplants were planted on Sep. 27, Oct 4, and Oct 11, 2018. All transplants used in this study were shipped from a Canadian nursery (Lareault Nursery, Quebec, Canada) to Florida on Sep 25, 2018. Transplants were stored at 2 °C until planting in the field. Commercial production and pest management practices were followed. Harvests were performed 26 times between Nov. 15, 2018 and Feb. 28, 2019.

Table 1. Nitrogen (N) fertilization treatments tested during the 2017-2018 season at GCREC.

	Daily N application rate (lb/acre/d)							
Duration of 2 lb N	Week 1-2*[1]	Week 3	Week 4	Week 5	Week 6	Week 7-8	Week 9-22	Total N rate*[2] (lb/acre)
0 wk	0	1	1	1	1	1	1	126-140
1 wk	0	2	1	1	1	1	1	133-147
2 wk	0	2	2	1	1	1	1	140-154
3 wk	0	2	2	2	1	1	1	147-161
4 wk	0	2	2	2	2	1	1	154-168
6 wk	0	2	2	2	2	2	1	168-182

*[1]No fertigation during sprinkler irrigation.

*[2]Total N rate varied depending on the planting date.

Results

Planting date

Delaying planting date affected not only total-season yield but also the yield distribution (Table 2). In this study, delaying planting date by 7 and 14 days from Sep 27 reduced early-season yield (Nov+Dec) by 49% and 73%, respectively, whereas it increased January yield by 36-37%. As a result, total yield was reduced by 13% when planting date was delayed from Sept 27 to Oct 11.

Table 2. Marketable yield of 'Florida Brilliance' strawberry as affected by planting dates.

Planting date	Marketable yield (lb/acre)			
	Nov-Dec	Jan	Feb	Total
Sep 27	4,056 a	3,261 b	11,527	18,962 a
Oct 4	2,047 b	4,440 a	11,285	18,003 ab
Oct 11	1,181 c	4,478 a	10,803	16,461 b

Tukey-Kramer test at $P < 0.05$.

N fertilization

Increasing the N rate during the establishment period from 1 to 2 lb/acre/d increased marketable fruit yield (Table 3). The optimum duration of initial high N fertilization depended on planting dates. Furthermore, initial N fertilization had a greater impact on early-season yield than on total-season yield. When planting early on Sep 27, early-season yield was maximized by extending the duration of initial highN fertilization to 6 weeks (3,839 vs. 4,549 lb/acre). When planting on Oct 4 or Oct 11, early-season yield was maximized by using the initial high N rate for 3 weeks (1,919 vs. 2,171 lb/acre and 1,033 vs. 1,321 lb/acre). Total-season yield was maximized by using the initial high N rate for 3-4 weeks. Marketable and unmarketable yield proportions were minimally affected by planting dates and N treatments (Table 4).

Initial canopy growth improved proportionally to the duration of initial high N fertilization (data not shown). This effect can have different effects on fruit yield. When planting early (Sep 27, high heat stress), improved canopy growth is beneficial to increase early-season yield by reducing heat stress. When planting late (Oct 11, minimal heat stress), by contrast, excessive canopy growth may result in unbalanced vegetative and reproductive growth, which in turn limits fruit yields.

Table 3. Marketable yield of 'Florida Brilliance' strawberry as affected by planting dates and nitrogen (N) fertilization treatments.

Planting date	Duration of 2 lb N/acre/d	Marketable yield (lb/acre)			
		Nov-Dec	Jan	Feb	Total
Sep 27	0 wk	3,839	3,481	10,439	17,759
	1 wk	3,964	3,311	10,757	18,232
	2 wk	3,811	2,865	11,396	18,073
	3 wk	4,064	2,831	11,974	19,121
	4 wk	4,112	3,753	12,991	20,855
	6 wk	4,549	3,326	11,605	19,730
Oct 4	0 wk	1,919	4,400	11,011	17,330
	1 wk	2,167	5,155	10,509	17,831
	2 wk	2,049	4,248	10,717	17,588
	3 wk	2,171	4,281	11,585	18,036
	4 wk	1,832	4,348	12,665	19,113
	6 wk	2,143	4,208	11,223	18,120
Oct 11	0 wk	1,033	4,065	9,756	14,855
	1 wk	1,283	4,553	9,573	15,409
	2 wk	1,284	4,270	10,644	16,198
	3 wk	1,321	4,930	11,266	17,517
	4 wk	1,043	4,227	12,064	17,334
	6 wk	1,121	4,821	11,514	17,456

Table 4. Marketable and unmarketable yield proportions of 'Florida Brilliance' strawberry as affected by planting dates and nitrogen (N) fertilization treatments.

Planting date	Duration of 2 lb N/acre/d	% total yield (#/#)				
		Marketable yield	Unmarketable yield			
			Small	Thrips	Disease	Culls
Sep 27		70.4	6.3	3.8	0.7	9.1
Oct 4		68.5	7.9	3.0	0.6	9.8
Oct 11		73.2	6.0	4.1	0.5	7.6
	0 wk	69.4	6.1	2.9	1.1	9.5
	1 wk	70.7	6.3	3.5	0.6	10.2
	2 wk	70.7	6.2	4.1	0.9	9.2
	3 wk	69.0	6.5	4.6	0.1	9.6
	4 wk	72.6	5.7	2.9	0.8	8.1
	6 wk	70.2	7.3	4.8	0.7	8.4

Data are pooled by each main effect.

Small = small fruit (<10 g/berry)

Thrips = fruit damaged by thrips

Disease = anthracnose, botrytis, or powdery mildew fruit rot

Culls = misshapen, decay, animal damage, etc.

Contact

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