

Runner Management to Boost Efficiency

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Prohexadione-calcium (Apogee®) was evaluated for inhibition of runner formation and plant performance in a modified plasticulture system used for growing strawberries in the Northeast. Application rates between 0.8 oz to 2.5 oz per 100 gallons (62.5 to 189 mgL⁻¹) in multiple applications were evaluated. Rates between 1.6 and 2.5 oz/100 gallons were most effective. Apogee® reduced runner formation but initiation of treatments within 3 weeks of planting and 3 sprays applied at 3-week intervals appeared to be necessary for complete runner suppression. The inhibitory effects from an application of Apogee® lasted for about 28 days. Apogee® decreased petiole growth, runner weight and runner number, but increased root to shoot ratio, the number of branch crowns, the number of flower trusses, and total marketable yield without affecting mean fruit size. The number of fruit harvested early was reduced, peak fruit production was delayed and harvest extended later into the season. The performance of plants treated with Apogee® was equal or superior to plants where runners were removed manually during the course of plant growth and development.

Table 1. Effect of Prohexadione-calcium (ProCa) application on growth characteristics of Darselect strawberries in 2006.

Treatment ^z	Runners per plant (no)	Crowns per plant ^{x, w} (no)	Root length (cm)	Leaves per plant (no)	Runner length (cm)	Petiole length (cm)
Control	9.8 b	2.3 b	23.0 a	20.2 b	44.9 a	17.7 a
ProCa 62.5 mgL ⁻¹	7.1 c	2.6 b	24.7 a	21.7 ab	11.0 c	11.7 c
ProCa 125 mgL ⁻¹	5.8 c	4.0 a	22.9 a	25.3 a	7.4 d	8.9 d
Runner removal ^y	14.5 a	2.6 b	23.3 a	23.4 ab	34.8 b	16.2 b
Significance						
Treatment	***	***	NS	*	***	***
ProCa	***	***	NS	**	***	***
Linear	***	***	NS	***	***	***
Quadratic	NS	**	NS	NS	***	**

^z Treatments applied 30 July, 18 August, and 6 September. Strawberries planted 25 June, 2006.

^y Runners were removed 18 August, 13 September, and 28 October.

^x Mean separation within columns by Duncan's multiple range test, P = 0.05.

^w NS, *, **, *** Nonsignificant or significant at P = 0.05, 0.01, or 0.001, respectively.

Table 2. Effect of Prohexadione-calcium (ProCa) application in 2006 on yield and fruit size of Darselect strawberries in 2007.

Treatment ^z	Flower trusses ^{x,w} (no/plant)	Total yield marketable fruit (no/plant)	Mean fruit weight marketable fruit (g/fruit)	Total yield marketable & unmarketable fruit (no/plant)	Total yield marketable fruit (g/plant)
Control	4.3 b	25.8 c	18.5 a	28.4 c	476 c
ProCa 62.5 mg L ⁻¹	5.1 b	33.6 b	17.8 ab	36.2 b	592 b
ProCa 125 mg L ⁻¹	7.4 a	40.9 a	16.8 b	44.4 a	683 a
Runner removal ^y	6.7 a	35.2 b	17.5 b	40.0 ab	615 ab
Significance	***	***	**	***	***
ProCa	***	***	*	***	***
Linear	***	***	**	***	***
Quadratic	NS	NS	NS	NS	NS

^z ProCa treatments applied 30 July, 18 August and 6 September, 2006.

^y Runners were removed 18 August, 13 September, and 27 October 2006.

^x Mean separation within columns by Duncan's multiple range test, P = 0.05.

^w NS, *, **, *** Nonsignificant or significant at P = 0.05, 0.01, or 0.001, respectively.

Table 3. Effect of Prohexadione-calcium (ProCa) application in 2007 on yield and fruit size of 'Jewel' strawberries in 2008.

Treatment ^z (mg L ⁻¹)	(oz/100 gal)	Flower trusses ^{x,w} (no/plant)	Total yield marketable fruit (no/plant)	Mean fruit weight marketable fruit (g/fruit)	Total yield marketable & unmarketable fruit (no/plant)	Total yield marketable fruit (g/plant)
Control 0	0	7.3 c	54.4 c	11.3 c	61.6 c	663.0 b
ProCa 125	6	24.4 a	84.6 a	13.3 a	116.4 a	919.4 a
ProCa 189	9	22.1 a	84.2 a	13.1 ab	111.6 a	917.6 a
Runner removal (3x) ^y		14.6 b	67.9 b	12.1 b	93.6 b	750.3 b
Significance		***	***	***	***	***
ProCa		***	***		***	***
Linear		***	***		***	***
Quadratic		***	**		***	**

^z Apogee treatments applied as a dilute spray on 1 August, 22 August and 16 September, 2007.

^y Runners removed 22 August, 19 September and 27 October, 2007.

^x Mean separation within columns by Duncan's multiple range test, P = 0.05.

^w NS, *, **, *** Nonsignificant or significant at P = 0.05, 0.01, or 0.001, respectively.