Hybrid Onion Seed Trial, 1987

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ABSTRACT

Successful seed production of open pollinated onion (Allium cepa L.) is difficult in Arizona. Providing adequate pollen transfer by honey bees (Apis mellifera) to ensure adequate seed set is a problem often encountered. Honey bees discriminate between onion cultivars. Onion flowers appear to be less attractive to honey bees than flowers of most competing plants. Bees may neglect the crop, particularly if another highly attractive plant species is in bloom. This honey bee discrimination has led to poor onion seed yields. This report compares seed production among five onion cultivars in Tucson, Arizona.

METHODS

This study was conducted at the University of Arizona's Campbell Avenue Research Farm, Tucson, Arizona. Onion cultivars examined included 'Texas Early Grano 1015Y', 'Grano', 'Creole', 'Bermuda', and 'Texas Early Grano 502 prr'. The experiment was arranged in a completely randomized block design. Each of the 5 onion cultivars were replicated once in each of 4 blocks. A replication consisted of 30 onions planted along a 7.6-m-long row. Once onion bloom commenced, 12 honey bee colonies were placed adjacent to the 0.33 ha. experimental plot.

Twenty umbels from each cultivar were randomly harvested for seed analysis. Total weight of seed per umbel was recorded. Estimated counts were made on the total number of seeds produced per umbel. Thirty individual florets were randomly selected from each of the 20 umbels and the number of seeds per floret was recorded.

RESULTS AND DISCUSSION

There were significant differences in the mean yield per umbel (grams) and the estimated number of seeds produced per umbel in the onion cultivars examined (Table 1). 'Grano', 'Bermuda', and 'Creole' produced the highest yields.

The number of seeds produced per floret are given in figure 1. Complete seed abortion ranged from 45 percent in 'Grano' to 80 percent in 'Texas Early Grano 502 prr'. Generally, the cultivars only yielded one to three seeds per floret.

Results of this test clearly show that onion cultivars demonstrate differential yield potentials. Growers should be careful when choosing an onion cultivar for seed production.

Table 1. Comparison of seed yields of several onion cultivars using the Duncan-Waller k-ratio multiple comparison test.

Cultivar	Seeds/umbel(g) X	SD	[1,2]	Total no. seeds/umbel X	SD	[1,2]
'Grano'	1.5	(1.2)	a	423	(329)	a
'Bermuda'	1.4	(1.0)	ab	308	(207)	ab
'Creole'	1.2	(0.9)	a	334	(285)	a
'TEG 1015Y'	0.7	(0.4)	bc	187	(116)	bc
'TEG 502 prr'	0.6	(0.6)	c	140	(137)	c

[1]n=20
[2]Means within columns followed by the same letter are not significantly different (Duncan-Waller k-ratio t test, $P < 0.05$).

Figure 1. Number of onion seeds per floret (n=600)