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ALSTROEMERIA CULTIVAR TRIALS — 1984

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***Alstroemeria* cultivar trials show a five- to six-fold yield increase over European observations. Soil temperature control is critical. Highest producing cultivar was 'Orchid', followed by 'Canaria'. 'Campfire' yield was low.**

With *Alstroemeria* an increasingly important cut flower in the United States, it is critical to investigate the yield potentials between various cultivars available in the marketplace. The plant producers' literature on yield, show some major cultivar differences. The yields that are reported are considerably lower than growers have observed under U.S. growing conditions. This study was designed to look at the differences between several Van Staavern and Wulfinghoff cultivars of *Alstroemeria*. An additional aspect of this study was to look at the differences in yield between a gravel medium and a soil medium.

Materials and Methods

Alstroemeria plants were divided into single rhizomes in October and then grown in four inch pots under natural days. The transplanted *Alstroemeria* rhizomes were grown at 61°F night/61°F day. In November, the plants were placed into gravel and soil raised benches. The gravel benches had a ¼ in. crushed limestone layer placed on top of the gravel to supply calcium. The temperature set points were 55°F night, 61°F day, 70°F cool. Both benches were watered with a Chapin twin wall irrigation system. The gravel bench was watered up to five times daily while the soil bench was watered as needed. There was a polystyrene bead mulch placed on top of the soil to maintain uniform temperatures and to prevent solar heating of the soil. The plants were fertilized with every watering using the standard CSU fertilizer program (Bul. 221). Long day treatments were not applied.

The single rhizomes were planted at the density of six plants per seven square foot plot. The plots were replicated within a bench with six plants per plot, two reps per plot and media. When flowering commenced, the flowering shoots were harvested three times weekly when pollen had begun to dehisce. The number of flowering shoots per plant was recorded without consideration for shoot quality (number of cymes per shoot).

Results and Discussion

The soil bench produced consistently more flowers than the gravel bench except for the cultivar 'Marina' (Table 1). This increased yield of the soil bench over the gravel bench could be due to a better soil temperature control which has been shown to be very critical for *Alstroemeria* flowering.

When the yield of the various cultivars was studied, a substantial increase in yield was observed compared to European reports. 'Regina', according to European observations, will normally yield about 8 to 9 flowers per square foot per flowering cycle (2 cycles per year — spring and fall). 'Regina' yielded 39 flowers (gravel) to 42 flowers (soil) after only the spring flowering cycle. This six-fold increase in yield compared to European reports is typical of all the varieties.

Table 1. First season yield response (stems per square foot) from eight *Alstroemeria* cultivars grown in raised gravel or soil benches, February 1 through August 31, 1984. Plants were grown at 55° night/61°F day temperature regime. Means followed by the same vertical line are statistically the same at the 5% level, based on Duncan's multiple range test.

Cultivar	Gravel	Cultivar	Soil
Orchid	58.9	Orchid	63.9
Canaria	49.7	Canaria	55.9
Maxima	46.3	Red Surprise	45.1
Red Surprise	44.3	Regina	42.4
Regina	38.6	Carmen	41.9
Pink Perfection	38.3	Pink Perfection	40.0
Carmen	32.6	Maxima	40.0
Campfire	29.1	Dark Surprise	33.0

[1]*Assistant professor and undergraduate, respectively.*

The highest producing variety was 'Orchid', followed by 'Canaria'. This was to be expected since these are mutated clones of each other. The very low yield observed with 'Campfire' can be explained by 'Campfire' being a late flowering variety with poor spring production. 'Campfire' just began to flower in July. The varieties from Wulfinghoff produced lower overall yields than the Van Staavern varieties.

Additional work that needs to be done includes looking more closely at the changes in medium temperature in soil versus gravel, to determine if this is an important consideration for selection of the growing medium. A flowering shoot quality component should be taken to determine whether there is a significant difference in the overall quality of the different cultivars. General observations have shown that there is a very distinct difference in the quality but this may vary more due to time of the year versus the effect of medium or planting density.