

FOLIAR FERTILIZATION OF FLOWER BULB CROPS –A TRIAL AND SOME THOUGHTS^{1,2}

There is interest among Northwest flower bulb growers in the use of foliar fertilizer sprays. Some growers are already using such sprays with claims of improved quality and yield. Little published information is available regarding the use of foliar nutrient sprays in flower bulb crops; although, in England, nutrient sprays containing fungicides have been tested on *Narcissus* and tulip with some success (Rees, 1972, p. 89).

Those selling foliar nutrient sprays caution that they should not be used as a substitute for a regular fertilizer program. The amount of mineral nutrients available in the sprays is very small when viewed against the normal nutrient requirements of plants. Most of those who promote the use of sprays emphasize the importance of the timing of the spray application, suggesting that foliar nutrients can be helpful if applied at a critical point in the life cycle of the plant.

We decided to run a simple trial to test the ability of foliar nutrient sprays to influence the bulb yield of bulbous *Iris*, *narcissus* and tulip. Some details of this trial are shown in Table 1.

TABLE 1.

<u>Variety</u>	<u>Tulips</u>	<u>Iris</u>	<u>Narcissus</u>
Size (diameter in cm)	8 - 9	6 - 7	slabs
Planting date	Sept. 20, 1977	Aug. 10, 1977	July 18, 1977
Date of fall fertilization	Sept. 20, 1977	Aug. 10, 1977	July 18, 1977
Type of fertilizer used	16-16-16	10-20-20	10-20-20
Rate (lbs/acre)	200	200	200
Date of spring fertilization	After blooming	April 10-25, 1978	April 5-20, 1978
Type of fertilizer used	10-20-20	10-20-20	10-20-20
Rate (lbs/acre)	300	300	300
Digging date	6/22/78	7/18/78	6/27/78

¹Foliar sprays were donated by Leffingwell Chemical Company.

²Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the U. S. Department of Agriculture and does not imply its approval to the exclusion of other products or other products that may be suitable.

Commercial plantings were used. Bulbs were harvested at the usual time. Spring fertilizer application, a normal procedure on the fields used for this experiment, was made at the times indicated on half of the plots treated with foliar sprays. This fertilizer was applied as a top dressing at the rates indicated.

Foliar nutrient sprays were applied at the times shown in Table 2. Application dates were chosen to coincide with the period of most rapid bulb growth. A mixture of Nutra-Phos N^(R) (at 5 lbs per acre) and Sorba-Spray^(R) ZKP^(R) (at 1 quart per acre) was applied in water (30 gallons per acre).

Table 2

Crop	Spray Dates	Yield (g)
Tulip	3/15	5945
LSD 0.05 = 1231	4/14 & 5/18	6490
	5/18	5737
	3/15, 4/14 & 5/18	5882
	no spray	6345
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Narcissus	4/14	12286
LSD 0.05 = 1621	5/18	13270
	6/15	12741
	4/14, 5/18 and 6/15	12920
	no spray	12929
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Iris	4/14	7331
LSD 0.05 = 1040	5/18	7043
	6/15	6942
	4/14, 5/18 & 6/15	7385
	no spray	7480

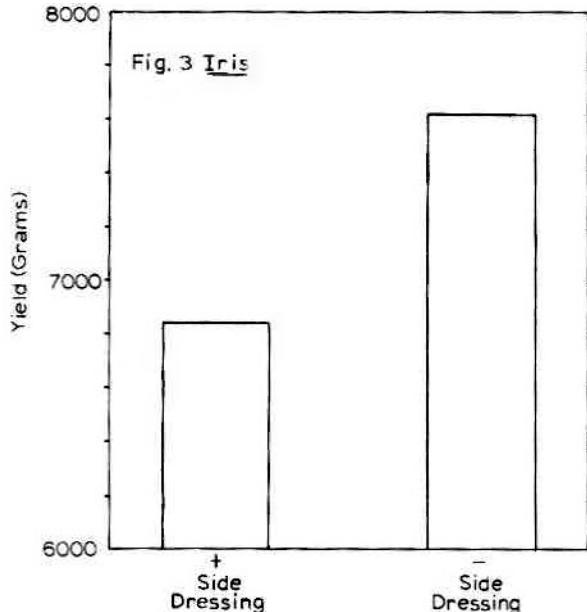
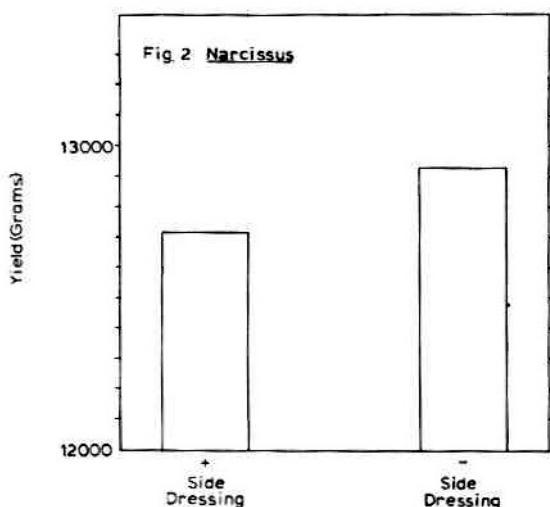
Treatments were arranged in split plots with six replicates of each spray treatment receiving a spring side dressing and six left without side dressing. Data were analyzed for fresh weight yield. The values shown in Table 2 and on the bar graphs are the average yields for 17 foot subplots.

Results with foliar nutrient sprays were disappointing. In no case did spray application significantly influence bulb yield (Table 2). This was true with or without side dressing. (Means are for pooled data)

Side dressing increased tulip yields by a significant amount (Figure 1), although it had no significant effect on narcissus yields (Figure 2) and caused a significant decrease in Iris yield had not previously been used for flower bulb crops and the yield increase with side dressing may have occurred because of low field fertility. The decreased yield in *Iris* with side dressing is difficult to explain although iris roots are exceptionally sensitive to mechanical damage and it is possible that side dressing caused enough root disturbance to retard growth.

In general, a single trial cannot indicate the value or the lack of value of any cultural practice. This is particularly true with flower bulb crops where the bulbs contain sufficient nutrient reserves to partially hide the effects of fertilization in a one-season experiment (Rees, 1972, p. 205). However,

the lack of any consistent yield increase with foliar applied nutrients in our trial suggests that flower bulb growers should make careful benefit/cost analysis before beginning a large scale foliar spray program.



Reference

Rees, A. R. 1972. The Growth of Bulbs. Academic Press, London.

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