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EFFECT OF FOLIAR APPLICATION OF PROMALIN ON SHOOT GROWTH OF CITRUS SEEDLINGS

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Abstract. **Foliar application of Promalin (GA_{4+7} and 6-benzylamino purino) in 1981 to 1½-year-old trifoliate (*Poncirus trifoliata,* Raf.) seedlings increased the total length of new shoot growth but not shoot number. Both the fresh and dry weights of new shoots of the sprayed plants were significantly greater than that of the control. However, the same experimental plants failed to have the new shoot growth increased to the succeeding application of Promalin in the following year of 1982.**

Since Promalin contains GA_{4+7} plus 6-benzylamino purine, it is expected that foliar application of this material to citrus seedlings would also increase the new shoot growth just as GAs do on that of other fruit trees. This study tested this hypothesis.

Experiments and Results

1981 Experiment. In Aug. 1981, 40 trifoliate seedlings about 1½ years old were potted in 2-gal pots in the field. Each plant was trimmed to a single stem about 1½ feet high. Twenty of these plants received foliar weekly applications of Promalin from Sept. to Nov. 1981 at a concentration of 25 ppm using a volume of 20 ml per plant. All newly growing shoots of the treated and control plants were cut off from the initial single stems on Jan. 1982 and total length, total number, and fresh and dry weights were obtained.

Fig. 1. Growth pattern of shoots of trifoliate seedlings sprayed with Promalin and the control.

Comparison of new shoot growth between the treated and control plants indicated that the treated plants had the total length of shoots significantly increased over the control, but the total number of new shoots were not increased. Also, the treated plants had increased fresh and dry weights (Table 1).

The growth pattern of shoots between the treated and the control plants were quite different. The control plants produced erect and sturdy shoots but the treated plants produced elongated shoots that were slender and soft in the early stage of growth (Fig. 1).

1982 Experiment. In 1982, ten pots of the same experimental plants, which had been sprayed with Promalin in the previous year were sprayed again at 10-day intervals from March to May. Ten pots of plants which had also

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Table 1. Comparison of new shoots on trifoliate seedlings sprayed with Promalin and control plants in 1981.

	Length (cm)	No. of Shoots	Fresh wt (g)	Dry wt (g)
Treated	74.55 ± 3.72	4.30 ± 0.21	5.31 ± 0.26	2.27 ± 0.11
Control	44.10 ± 2.20	4.00 ± 0.19	2.80 ± 0.13	1.22 ± 0.06
t value	7.04**[z]	1.07^{NS}	9.65**	8.75**

[z]** = significant at the 1% level.
NS = non significant.

Table 2. Fresh weight of new shoots on trifoliate seedlings treated with Promalin for 2 years and control plants in 1982.

	Fresh weight (g)
Treated	53.00 ± 5.30
Control	61.00 ± 6.10
t value	1.00[NSz]

[z]NS = non significant.

been sprayed with Promalin in the previous year were left unsprayed as 1982-untreated controls. Ten pots of the previous year's control plants were used again as 1981 and 1982-untreated controls. The total fresh weight of the new shoots of these different treatments were measured in Jan. 1983.

Comparison of new shoot growth between the treated and the 1981 and 1982-untreated control plants indicated that new shoot fresh weight was less (not statistically different) for treated both years than for nontreated plants (Table 2). This data indicates that previous application of Promalin might slightly inhibit new shoot growth of seedlings in the following year.