HORTICULTURE DIGEST

Department of Horticulture
University of Hawaii

Cooperative Extension Service
U.S. Department of Agriculture Cooperating

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No. 36, December 1976

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PREVENTING FLOWERING OF TWO SPECIES OF ORNAMENTAL FIGS

In instances where fruits are a nuisance, it is desirable to remove them or prevent their development.

The experiments reported here were conducted to determine the effectiveness of 2, 3-dihydro-5-6-diphenyl-1, 4-oxathiin (oxathiin) on preventing the development of syconia on 2 species of ornemental *Ficus*, the fruits of which are often undesirable.

The first experiment involved testing oxathiin on preventing flower (syconia) development and resultant fruit set on *Ficus retusa* L., an ornamental fig. Three factors were investigated: chemical concentration, the number of applications, and the presence or absence of pre-mature flowers on the branches.

Five concentrations of oxathiin were utilized, 0. 2000, 4000, 6000, and 8000 ppm. The 3 application frequencies observed were a single application at the beginning of the experiment, 2 applications 1 month apart, and 4 applications 1 every 2 weeks. All combinations of frequency of application, and chemical concentration were studied with both stages of flowering. These stages were a total absence of any visible syconia present on the stem immediately following a flush of vegetative growth preceding flowering, and the presence of immature syconia up to 2 mm in diameter. Data were taken on the number of syconia reaching a diameter of at least 5 mm on each branch over a period of 2 months.

A subsequent experiment involved testing oxathiin on the flowering, and fruit set of *Ficus macrophylla* Desf. Four concentrations were studied, 0, 6000, 8000, and 10,000 ppm. All branches utilized were devoid of syconia at the time of treatment.

The results of the experiment with *Ficus retusa* indicate that oxathiin is effective in preventing fruit set of this species. Differences due to chemical concentration were highly significant, and concentrations ranging between 4000 and 8000 ppm were all comparably effective. The number and frequency of spray applications, and the presence of immature flowers on the branches at the time of the first treatment did not affect the inhibition placed on fruit set by the chemical.

The results of the single factor experiment with *Ficus macrophylla* indicate that a single application of oxathiin to stems free of flowers will significantly prevent fruit set. Both 8000 and 10,000 ppm were significantly different from the control 1 month after treatment. No phytotoxicity was observed with either species.

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GROWTH RETARDANT NOTES

Euphorbia leucocephala

Euphorbia leucocephala offers some promise as pot plant if its tendency to form a tall, columnar plant can be controlled. Cultural practices such as pinching and growth retardants can improve the spread and compactness of this plant. In this trial, retardants were applied to reduce plant height.

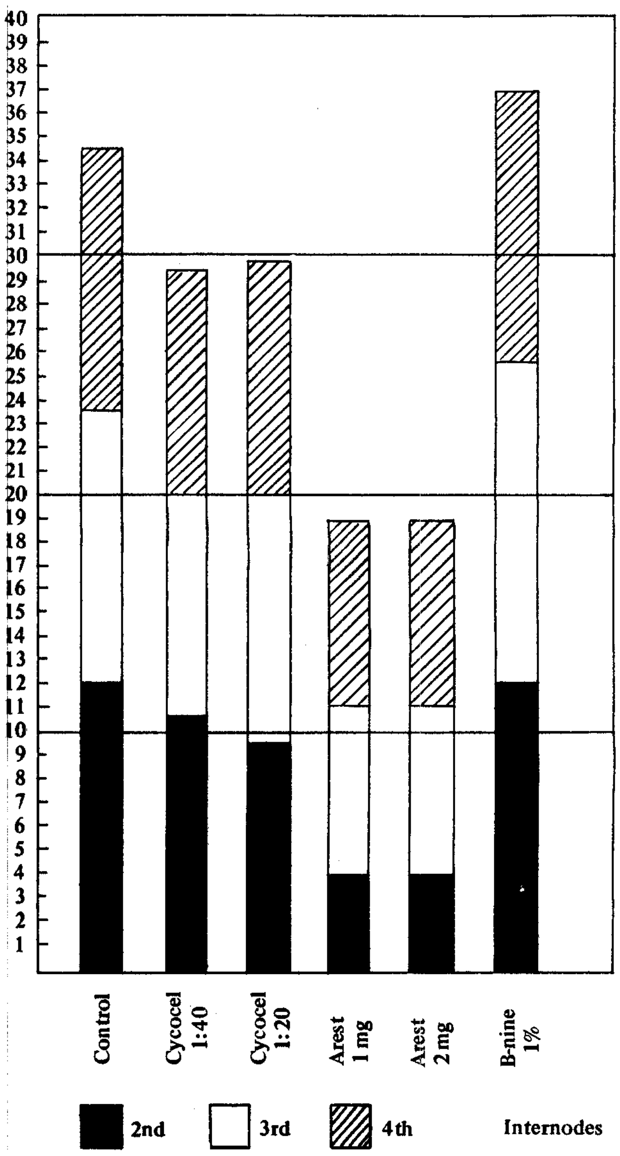
Seed was sown July 8, 1975, and the seedlings transplanted, 3 per 5½" pot (volcanite-woodshavings, 1:1), on September 16. There were 4 pots per treatment. A week after transplanting, the plants were pinched to a height of 4". As the new growth reached an inch in length (October 9), retardants were applied as follows: Cycocel as a 200 ml drench at dilutions of 1:40 and 1:20 of the 11.8% stock, B-nine as a 1% a.i. spray (repeated again 10 days later), and Arest as a drench of 1 or 2 mg a.i. per pot. Data were taken on December 17. Only the 4 longest shoots per pot were measured, and all the other data were from these same shoots. The length was determined as the distance between the origin of the break and the primary cyathium; thus, plant height was actually greater. The results are presented in Table 1.

Table 1. The effect of growth retardants on growth and flowering of *Euphorbia leucocephala*.

Treatment	Avg. Length of break (cm)	As % of control	Avg. No. nodes to flower	Avg. No. of most advanced cyathium+
Control	61.9		6.0	4.0
Cycocel 1:40 drench	49.0	79.2	5.4	4.1
Cycocel 1:20 drench	51.2	82.7	5.4	4.2
B-nine 1% spray (2x)	60.6	97.9	5.5	4.3
Arest 1 mg/pot drench	34.4	55.6	4.8	4.2
Arest 2 mg/pot drench	37.9	61.2	5.0	3.9

+1 = primary cyathium, 2 = secondary cyathium, 3 = tertiary cyathium, etc.

Figure 1. Length of 2, 3, and 4th internodes above break of *E. leucocephala* as affected by growth retardants.



Arest at 1 or 2 mg was most effective in retarding the plants with values about 55–60% of the control. Most of this retardation occurred in the 2nd and 3rd internodes above the break (Figure 1). In all treatments the first internode was already elongating as the retardants were applied. Cycocel produced plants about 80% the size of the controls. B-nine was not effective in reducing plant height in this trial.

The retardants slightly hastened the initiation of the first cyathium. Arest-treated plants initiated the 1st flower 5 nodes above the break while Cycocel and B-nine treatments averaged about 5.5 nodes. There was little difference among the treatments as to the extent of flowering (No. of levels of cyathia produced), but there was a slight tendency towards delay at the higher Arest concentration.

Work still needs to be done to improve *E. leucocephala* for use as a potted plant. While seed is easy to use, the elongation of the seedling, coupled with its small stem diameter (and thus fewer buds at each node), require that several plants be used per pot to create a display. It may be more desirable to use short stem cuttings from which many breaks can be stimulated or to sow the seed much earlier and allow more growth to occur prior to the pinch. The timing of the pinch will need to be determined so that adequate stem length and foliage can develop. It is also possible to delay flowering by means of lighting, but a critical time to give short days and still make a Christmas crop also needs to be determined.

Chenille Plant (*Acalypha hispida*)

Terminal cuttings of *Acalypha hispida* were taken in late August and rooted under intermittent mist. They were potted the last week of September and one-half of the plants were pinched to induce laterals on October 8. One week later, half the single-stem and half of the pinched plants were drenched with Phosfon to retard elongation. Each treated pot received 8 fluid oz. of a Phosfon solution made up by diluting one teaspoon of 10% a.i. stock into one gallon of water. The data in Table 2 were taken on December 17. The plants were actually at their peak in terms of flower display during the third week of November.

Table 2. The effect of Phosfon on growth and flowering of Chenille Plant.

	Pinched			Single Stem	
Treatment	Height (cm)	No. Breaks	Length (cm) of breaks	Height (cm)	No. flwr. spikes
Control	28.6	5.2	26.9	47.5	16.8
Phosfon	14.0	6.2	4.6	19.5	12.2

Phosfon caused a yellowing of the veins of the leaves. This was more of a problem on the single-stem than pinched plants. On Phosfon-treated plants, the close nodes and mass of foliage contributed to a high mealybug population and many leaves and flower spikes abscised. The lengths of the flower spikes on the controls often reached 40–45 cm anc. were not in proportion to the plant, while on treated plants, the spikes were about 20–25 cm.

The concentration of Phosfon was apparently too high. Insufficient elongation of the stem axis occurred for well-proportioned plants. A later application of Phosfon might be better, after the laterals had elongated more. The treated single-stem plants were more attractive than the pinched because of the clubby effect. The controls were satisfactory as single-stem plants, but sprawled too much as pinched plants.

Ethephon on poinsettias

Cycocel™ and Arest™ have been the standard retardants for poinsettias, but a recent review (1) suggested that ethephon (Ethrel™) could be used to retard poinsettias when applied as a drench to the soil.

Pinched plants of two pink cultivars were used, 'Prof. Laurie', and 'Truly Pink'. Both cultivars tend to be too tall when grown either as pinched or as single-stem plants. Approximately 96 mg a.i. of ethephon was applied to each 6" pot on October 8, one day after a hard cut-back. The plants had been under long days which then continued until October 17. This timing of pinch, long days, and ethephon is *not* recommended, but worked in this case. At the time data were taken on December 19, both cultivars were in bloom and even a little past marketable stage. The results appear in Table 3.

Table 3. The effect of Ethephon on growth and flowering of Poinsettia.

Cultivar	Treatment	Height (cm)	Percent of Control	Diam. (cm)	No. Breaks	No. Cyathia w. pollen
Prof. Laurie	control	47.4		29.6	5.4	2.6
	ethephon	32.6	68.7	31.3	5.3	4.4
Truly Pink	control	29.7		26.4	6.7	11.3
	ethephon	25.0	90.9	25.4	6.0	13.3

The proportions of ethephon-treated 'Prof. Laurie' plants were quite pleasing, and the plants were sturdy. 'Truly Pink' was not really satisfactory either as a control or treated plant. Ethephon did not have as great an effect on 'Truly Pink' as on 'Prof. Laurie' as treated plants were 90.9 and 68.7 percent of their respective controls. With respect to inflorescence diameter and number of breaks, ethephon caused little or no adverse effects. The treated plants did mature faster as shown by the count of pollen-bearing cyathia.

(1) Shanks, J: B. 1975. Poinsettias and their greenhouse culture. Maryland Florist. No. 197:1–31.

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NURSERY NOTES

HOW MUCH LIGHT IS 50 FOOT-CANDLES

Are you selling green plants? Low-light tolerances of plants are often given in foot-candles, a unit of measure for light intensity. Use your camera light meter with an ASA setting of 25. Direct the meter straight down to the plant tops about 12 inches above the plants. With lens opening (F-stop) at 2.8 or 5.6, adjust your meter to proper shutter speed. The following table gives approximate conversion from shutter speed to foot-candles:

With lens opening 2.8, Shutter Speed	With lens opening 5.6, Shutter Speed	Corresponding Foot-candles
2	–	5
1	–	20
½	2	45
¼	1	80
1/8	½	110
1/15	¼	150
1/30	1/8	260
1/60	1/15	590
1/125	1/30	1000
1/250	1/60	2000
–	1/125	4000

BP News, June 1975

WOOD PRESERVATIVES FOR PLANT STRUCTURES

Penta (pentachlorophenol) and creosote are excellent wood preservatives. But every year we encounter growers who erect new lath houses, greenhouses, or sheds next to growing structures, and who treat the wood with either Penta or creosote. The result is the loss of plants which are burned by the fumes from these materials.

Neither of these materials have any business in a plant-growing or handling structure.

There is only one wood preservative, *copper naphthenate* (Cuprinol, etc.), that is safe for use around plants.

If you have mistakenly treated wood with Penta or creosote, coating the treated sections with a plant product sold under the trade name of B-I-N will help seal in the fumes. It's worth a try.

Current Topics
March, 1975

WHAT IS A SPREADER-STICKER?

Certain pesticides, because of their oily or powdery nature, do not mix well with water even when an emulsifier is added to the original compound. To reduce the surface tension of water (make water wetter) and encourage a greater dispersion of a pesticide, a spreading agent is sometimes helpful. Instead of spray droplets beading on the plant as rain does on a waxed car, the material is spread evenly over the surface. Spreading agents are often combined with a sticking agent to form a spreader-sticker. The stickers are adhesive materials which mix with the pesticide and stick it to the plant surface. Stickers help sprays remain longer by resisting runoff caused by rainfall.

Garden Guides
June, 1973

GREEN PLANTS

Consumers are buying more green plants than flowers. In fact, 2.5 times more green plants than cut flowers were purchased.

There is no perceptible difference among men and women, or among young and old, in buying habits so far as green plants are concerned.

Many cut flower buyers purchase green plants not only for themselves but for gift giving.

N Y S F I B No. 88
March, 1976

ONE PART PER WHAT?

WHAT DO YOU MEAN? – PART PER MILLION? A part per million is a way of expressing the amount of material in, for example, a soil test, fertilizer solution, or growth regulator.

Here is another way of looking at parts per million.

One part per million is:

- 1 ounce of sand in 31¼ tons of concrete
- 1 inch in 16 miles
- 1 minute in 1.9 years
- 1 ounce of dye in 7530 gallons
- 1 square inch in one-sixth acre
- 1 pound in 500 tons
- 1 penny in $10,000
- 1 ounce in 62,500 pounds of sugar
- 1/16 of an inch in 1 mile

There are several methods for calculating the parts per million of fertilizer. However, there is a simple formula to use if tables are not available. Multiply the per cent of the element in any given fertilizer by 60. This gives the ppm of one ounce of fertilizer in 100 gallons of water.

A fertilizer such as ammonium sulfate (20-0-0) contains 20 per cent nitrogen. If one multiplies 20 per cent by 60 the answer is 12. This is the ppm nitrogen obtained when one ounce of ammonium sulfate is dissolved in 100 gallons of water. To make a 120 ppm solution, simply divide 120 by 12. The answer is 10 ounces. Therefore, dissolve 10 ounces of ammonium sulfate in 100 gallons of water to obtain 120 ppm nitrogen.

Commercial Flower Grower's Notes
Univ. of Georgia, Nov., 1975

PREVENTING DISEASES OF CUTTINGS OF *DRACAENA MARGINATA* LAM.

Two pathogens *Erwinia carotovora* and *Fusarium moniliforme*, are serious incitors of diseases of cuttings of *Dracaena marginata* Lam. The experiments reported herein were conducted to find effective means of controlling these problems thus reducing the loss of cuttings during propagation.

The first experiment involved using 10 cm stem cuttings of *Dracaena marginata*. Cuttings were first treated with fungicide and then both cut ends of one-half of the cuttings were covered with an asphalt based pruning compound. Two methods of fungicide application, dip and dust, were studied. The three fungicides tested were Captan, Terraclor, Difolatan and an untreated control.

With the second experiment, ten 30 cm and ten 10 cm stem cuttings were used for each of 4 treatments. One of these treatments involved treating the stock plant from which cuttings were to be taken with benomyl systemic fungicide. Another treatment involved dipping the cuttings in Captan and Terraclor. A third treatment included both the pre- and post-cutting treatments. The fourth treatment was an untreated control.

A third experiment consisting of 10 treatments was conducted with only 30 cm cuttings. These treatments involved allowing the cuttings to cure and form a layer of periderm over the cut surfaces. In 5 of these treatments, the cuttings were cured in a controlled temperature chamber at 30 °C. Cuttings from another 4 treatments were cured in an open greenhouse with temperatures between 15.5°C and 31°C. Some of these treatments received a post-curing fungicide treatment.

Table 1. The effects of disease preventive treatments on prevention of rotting of stem cuttings of *Dracaena marginata* Lam.

Length of curing period (days)	Captan treatment	Dip	Dust	Pruning compound	Percentage cuttings surviving without infection - month 1	1½	2	3
0	X		X			100		40
0			X	X		100		81
4	X	X			100		100	100
2	X	X			100		90	90
0 Control					80		30	30

With the first experiment, data were taken at 6 weeks and 3 months after treatment, and for the other experiments data were taken monthly over a 3 month period on the percentage of cuttings surviving without infection.

With the first experiment, at 6 weeks after striking the cuttings, Captan and Difolatan treatments showed significant improvement in survival over Terraclor and control treatments. Application of fungicide as a dust was superior to the dip method. At 3 months significance existed only with regards to the fungicides used, and all treatments including the untreated control were superior to Terraclor.

In the second experiment, the post-cutting dip in Captan and Terraclor gave best protection against rotting. The benomyl systemic fungicide applied to the stock plant was the least effective treatment with a lower number of cuttings surviving than for the untreated control.

The most effective treatment in the third experiment appeared to be the combination of allowing the cuttings to cure 4 days in an open greenhouse, with at least 50% shading, and exposed to temperatures between 25.5°C and 31°C, with relative humidity around 70%, followed with a dusting with Captan as a 50% wettable powder.

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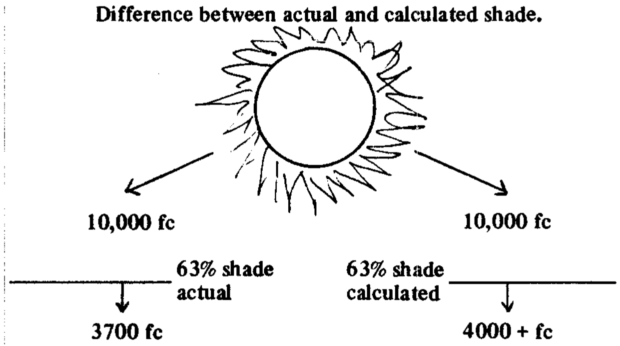
CALCULATIONS ON SHADE AND FERTILIZATION FOR FOLIAGE GROWERS

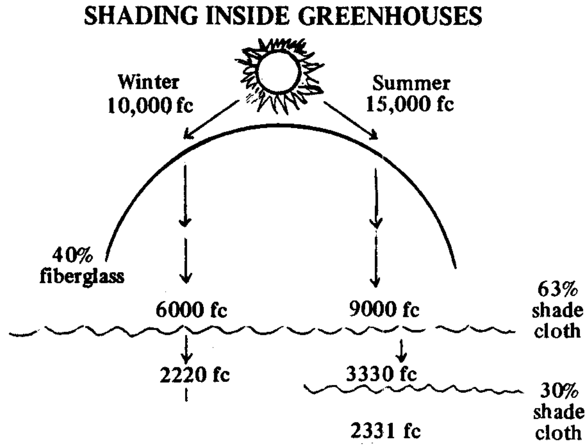
Difference between actual and calculated shade.



Difference between actual and calculated increases as shade level increases. It is only off 2 to 3% at 50%, but may be off 5 to 8% at 73%. NOTE: However, the cost of shade cloth sold as calculated is usually lower.

HOW TO FIGURE SHADE WHEN USING SHADE CLOTH – REMEMBER, NOTHING TAKES THE PLACE OF A METER.

SHADING INSIDE GREENHOUSES



HOW MUCH FERTILIZER TO APPLY TO A CROP

1. Obtain rate from September 1975 Florida Foliage Grower (Vol. 12 No. 9).
2. Rate is in lbs N (Nitrogen) per acre per year.
3. Set up as follows:

$$\frac{\text{x (unknown number you need)}}{\text{sq. ft. of area to be treated}} \text{ as } \frac{\text{recommended rate}}{\text{sq. ft. in an acre}}$$

Solve for 400 sq. ft. of area, a recommended rate of 1200 lb N/A/yr and use of 20-20-20.

$$\frac{\text{x (lb N/A/yr)}}{\text{400 sq. ft.}} \text{ as } \frac{\text{1200 lb N/A/yr}}{\text{43560 sq. ft./A}}$$

Cross multiply: 43560 times X = 43560X
400 times 1200 = 480000
43560X = 480000

Divide each side by 43560:

$$\frac{43560X}{43560} \text{ as } \frac{480000}{43560}$$

X = 11.02 lb N/400 sq. ft./yr

20-20-20 contains 20% N - therefore, divide 100 by 20 = 5.

Then multiply 11.02 x 5 to get amount of 20-20-20 to use.

11.02 x 5 = 55.1 lb 20-20-20/400 sq. ft./yr

55.1 lb/yr divided by 52 applications = 1.05 lb/application/400 sq. ft./wk

55.1 lb/yr divided by 26 applications = 2.1 lb/application/400 sq. ft./2 wks

NOTE: If more than 2.5 pounds 20-20-20 are used per 100 gallons, burn may occur on foliage.

HOW TO DETERMINE HOW MUCH FERTILIZER YOU ARE NOW APPLYING

Need:
1. lb/100 gal (multiply by % to get (N))
2. Area covered
3. Frequency

Example: 3 lb 20-20-20/100 gal applied to a 4' x 100' bench every week

a. 3 lb x 20% = .6 lb N
b. 4' x 100' = 400 sq. ft.
c. .6 lb N x 52 weeks = 31.2 lb N/yr

Therefore, 31.2 lb N are being applied per 400 sq. ft./year

To find per acre rate:

$$\frac{\text{31.2 lb N/A/yr}}{\text{400 sq. ft.}} \text{ as } \frac{X}{\text{43,560 sq. ft./A}}$$

Cross multiply:
400 times X = 400 X
31.2 times 43560 = 1359072
400 X = 1359072

Divide each side by 400:

$$\frac{400X}{400} \text{ as } \frac{1359072}{400} = \text{3397.68 lb N/A/ yr}$$

Reprinted from:
ARC—A Research Report RH-76-1
C. A. Conover and R. T. Poole
Agricultural Research Center—Apopka

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