HORTICULTURE DIGEST

Department of Horticulture
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In This Issue: FLOWER AND NURSERY INFORMATION
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ILLEGAL IMPORTATION RESULTS IN LOSS

A San Diego nursery learned an expensive lesson with loss of stock valued at $61,172. Inspection by San Diego County and State personnel resulted in a discovery of imported plant material from Hawaii in cartons marked "draperies." The completed survey by the inspection team found heavy infestation of burrowing nematodes in about 50% of *Scindapsus* plants. With the prospects of a "hold order" on all plants that were found negative but were exposed to the infested plants the nurseryman opted to destroy the entire stock.

None of the types of stock the nursery was bringing illegally from Hawaii is prohibited entry into California. If the nursery had complied with the regulations, the burrowing nematode most likely would have been discovered in quarantine inspection and the nursery would not have had to destroy the host material and the nursery license of the firm would not be in jeopardy.

P.I.N. Points
Vol. 2, No. 1, Jan. 1976

Ed. Note: Those involved in or thinking about exporting plant materials from Hawaii should think twice before taking short cuts. Quarantine regulations are designed for *your* protection and violations can only jeopardize our emerging export industry.

CONTROLLED RELEASE FERTILIZERS ON *PEPEROMIA GRISEO-ARGENTEA*

Three-inch plantlets from leaf cuttings were potted into 4-inch plastic pots in a medium of soil-peat-perlite (1:1:1). Three slow release fertilizers were incorporated to provide, 0.25, 0.50, and 1.00 grams of nitrogen per pot. The materials were normal release Osmocote 14-14-14 [abbr. $(14)_3$], a slower release Osmocote 13.5-13.5-13.5 [abbr. $(13.5)_3$], and Magamp 7-40-6. Five pots comprised an experimental unit with two replications.

Unfortunately, during the first six weeks all treatments, including the control, received liquid feed rather than water. During the second period of four weeks only water was provided.

Data were taken on plant diameter at six and 10 weeks and samples of recently matured leaves were collected after 10 weeks. The summary of the data appears in Table 1.

Osmocote $(13.5)_3$ gave increasing growth responses as the amount of N provided increased, but there was a decline with increased N for Osmocote $(14)_3$ during the period when liquid feed was also provided. This may have been due to salt accumulation as the $(14)_3$ formulation has a faster release than $(13.5)_3$; however during the period when water only was given, the plants with $(14)_3$ yielded a greater growth increment than $(13.5)_3$. Increasing amounts of Magamp decreased the amount of growth over both six and 10 weeks; growth was best with only 0.25 g of N provided.

Growth was best with $(14)_3$ at the two lower N levels in the first six weeks, but there was little difference between the two Osmocote formulations at these levels after 10 weeks. At both the 0.25 and 0.50 rates, the $(13.5)_3$ plants had a higher N content in the leaves than did $(14)_3$, but in both cases N content declined from the 0.25 to the 0.50 rate and increased

Table 1. Growth of *Peperomia griseo-argentea* after 6 and 10 weeks, and leaf concentration of mineral elements after 10 weeks.

Fertilizer Material	Nitrogen grams/pot	Diameter (cm)		Elemental Concn % dry Wt.					ppm	
		6 weeks	10 weeks	N	P	K	Ca	Mg	Mn	Fe
Osmocote 14-14-14	0.25	22.4	24.7	2.15	0.70	0.90	2.63	1.82	147	251
Osmocote 14-14-14	0.50	22.0	24.5	2.01	0.67	1.34	2.33	1.48	199	200
Osmocote 14-14-14	1.00	20.6	26.6	2.97	0.63	1.38	2.22	1.39	377	238
Osmocote 13.5-13.5-13.5	0.25	21.0	24.7	2.65	0.64	0.97	2.55	1.70	140	249
Osmocote 13.5-13.5-13.5	0.50	21.2	24.6	2.45	0.72	1.06	2.43	1.53	184	190
Osmocote 13.5-13.5-13.5	1.00	23.0	28.5	2.85	0.63	1.54	2.63	1.38	384	262
Magamp 7-40-6	0.25	22.0	25.0	2.05	1.01	0.99	2.01	1.74	144	194
Magamp 7-40-6	0.50	21.0	24.3	1.94	1.11	1.54	1.73	1.64	181	197
Magamp 7-40-6	1.00	16.1	19.2	1.75	1.24	2.11	1.77	1.61	185	194
Control		20.5	22.0	1.99	0.68	1.44	2.21	1.51	123	210

again at the 1.00 g rate. At 1.00 g N the $(14)_3$ was slightly higher than $(13.5)_3$. Both Osmocote formulations provided more available N than did Magamp at equivalent N levels. Growth depression with Magamp may well be due to the unbalanced nutrient supply. High phosphorus in all Magamp treatments may have depressed uptake of calcium, magnesium and iron. However, Magamp acidifies also the soil to a greater degree than the Osmocote formulations, and the "pH preference" of the peperomia is known to be somewhat higher than for many other foliage plants.

The plants had all reached a salable size by six weeks, but with the extra fertilizer provided by the liquid feed, the slow release materials may have been superfluous. Superior growth increments of the slow release fertilizer treatments during the last four weeks do suggest that without liquid feed supplement, fertilizers do make a difference.

Conclusion

For short term growth the Osmocote 14-14-14 formulation was best. The most economic N level was 0.25 g N/pot in the short run and 1.0 g over the longer period. Magamp was not satisfactory for this plant. The slower-releasing formulation of Osmocote is probably more satisfactory for longer term crops.

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COMPARATIVE COST OF SEVERAL CHEMICAL PLANT GROWTH REGULATORS

Recently a new plant regulator, Florel, has been considered for use on floral crops. Currently, experiments have shown Florel to retard growth of geraniums and petunias, while also inducing lateral branching. Since Florel has been shown to be effective in limited trials, how does cost compare to other chemicals now in use?

When comparing cost of various growth retardants, it is important to compare actual cost to treat a given area or to treat individual plants. Since a 500 ppm rate of Florel has experimentally been shown to be effective in retarding growth of petunias and geraniums, how does Florel compare to Alar, B-Nine SP, and Cycocel? Table 2 shows that the cost of Florel is less than Alar, B-Nine SP, or Cycocel.

It appears that the cost of Florel would not be a major limiting factor in determining its use. To the contrary, Florel is more economical than the other growth regulators. However, Florel is still in the experimental stages and not as yet labelled for use on petunias and geraniums.

Table 2. Comparison of cost in treating 200 square feet of area with Alar, B-Nine Sp, Cycocel, and Florel.

Spray treatment	Cost
Alar (0.25%)	$0.38
Alar (0.50%)	$0.75
B-Nine SP (0.25%)	$0.57
B-Nine SP (0.50%)	$1.13
Cycocel (1 to 80)	$0.78
Floren (250 ppm)	$0.18
Floren (500 ppm)	$0.36

One gallon of spray material mixed to a final concentration will treat 200 square feet of area.

Cost of One Gallon of Solution
At Common Rates Used

Alar – 0.50% = 0.8 ounce per gallon
5 pound bag = $75.00
therefore, 1 gallon of 0.50% solution costs $0.75

Alar – 0.25%
1 gallon of 0.25% solution costs $0.38

B-Nine SP – 0.50% = 0.8 ounce per gallon
1 pound = $22.50
therefore, 1 gallon of 0.50% solution costs $1.13

B-Nine SP – 0.25%
1 gallon of 0.25% solution costs $0.57

Cycocel – 1 : 80
1 gallon costs $62.25
1 gallon Cycocel will make 80 gallons of solution

therefore: $\frac{\$62.65}{80 \text{ gallons}} = \frac{x}{1 \text{ gallon}}$ $x = \$0.78$

1 gallon of Cycocel at 1 : 80 costs $0.78

Florel – 500 ppm = 1.6 ounces per gallon
1 quart costs $7.25 = 32 ounces

$\frac{\$7.25}{32 \text{ ounces}} = \frac{x}{1.6 \text{ ounces}}$ $x = \$0.36$

1 gallon of 500 ppm solution costs $0.36
Approximately 1 gallon of 250 ppm solution costs $ 0.18.

Ohio Florists' Assn., Bulletin
No. 556, February, 1976

AVAILABLE PUBLICATIONS

Handling Floral Crops

One problem in the floral industry is the loss of fresh flowers, and flowering and foliage potted plants to improper handling procedures —both in production as well as in marketing channels. In order to bring together known information on this subject and present it to selected leaders of those groups involved in production and selling of floral stock, a "National Floricultural Conference on Commodity Handling" was held in Chicago, Illinois, February 27, 1976, sponsored jointly by The Ohio State University and the Ohio Florists' Association.

Results of the conference are available in a 71-page publication containing cultural and economic information on the post-harvest handling of floral crops including fresh (cut) flowers, foliage plants, and flowering plants. The commodity section on foliage plants should be of special interest to Hawaii Nurserymen interested in exporting this commodity.

This 71-page publication is available from the Ohio Florists' Association, 2001 Fyffe Court, Columbus, OH 43210.

Poinsettia Evaluation

A 5-year summary of poinsettia variety testing in Hawaii is included in Departmental Paper 14, Poinsettia Evaluations, 1969–1974, by R. A. Criley, P. E. Parvin, T. Higaki and F. D. Rauch. This report includes evaluations of poinsettia cultivars received from Paul Ecke Poinsettia and Mikkelsen's, Inc. grown at the Manoa Campus, the Maui Research Center at Kula and at the Waiakea Research Station on the Big Island.

Cost of Growing Dendrobiums

A projected return for growing dendrobium orchids is provided in Departmental Paper 37 of the College of Tropical Agriculture by S. G. Camp III and P. F. Philips. This report, "The Economics of Growing Dendrobium on Oahu for Mainland Export," provides information on estimated cost of establishing one acre of orchids under saran and projected returns given several assumptions.

List of Available Publications

A revised listing of all currently available publications from the College of Tropical Agriculture has recently been compiled by Catherine A. Hughes. The list includes both research and extension publications and information on how to order.

Ground Covers

The results of ground cover evaluation at three locations in Hawaii are summarized in Departmental Paper 12 by R. A. Criley, T. S. Kunimitsu, P. E. Parvin and J. L. Degen. This publication, "Ground Cover Survival and Growth," includes information on 75 covers planted in various locations on Oahu and Maui to evaluate their growth and survival under low maintenance after establishment.

The University of Hawaii publications can be obtained from your local County Extension Office or by writing to the College of Tropical Agriculture, Publications and Information Office, Rm. 107, Krauss Hall, University of Hawaii, Honolulu, HI 96822.

Film

A 28½ minute color film is available for use in Hawaii showing efforts of scientists of the Nation's Agricultural Experiment Stations to find ways to increase agricultural productivity and improve stability of our food supply without increasing demand for energy or harming environment.

Scenes from across the nation appear in the film, Unfinished Miracles.

This film may be ordered through:

Cooperative Extension Service Film Library
University of Hawaii
Room 108, Krauss Hall
2500 Dole St.
Honolulu, HI 96822

MAT IRRIGATION

Supplying water to plants has always presented problems. How much water should be applied? How often should water be applied? How can cost of watering be reduced. The first method that was used to irrigate plants was probably a rain dance. Later, jars, buckets, and ditches were utilized. As technology advanced, the hose was created. More recent times have seen spray stakes, pot tubes, and trickle hoses employed. These methods have the advantage of minimizing labor usage, but the answers to the first two questions still remain a matter of judgment. A relatively new method has been devised that will hopefully eliminate, at least partially, the need to decide when and how much. to water. Mat irrigation or capillary irrigation is widely used in Europe and interest is increasing in the United States. Although not 100 percent trouble-free, as occasionally claimed, mat irrigation offers the plant the opportunity of partially regulating the water supply it needs.

One experiment has been conducted on the mat manufactured by U.S. Vattex which involved various soil mixes, fertilization methods and rates. In the same mix and comparable fertilization, *Philodendron oxycardium* and *Dieffenbachia* 'Exotica' usually grew faster with conventional overhead watering with a hose. *Nephrolepis exaltata* 'Florida Ruffle' produced less runners on the mat but increased in size. Better *Aphelandra squarrosa* 'Dania' were produced on the mat than plants grown in hand watered plots.

Mat irrigation can be a helpful tool for use in foliage production. Plants can be grown satisfactorily with a minimum of labor. However, some problems that may arise are: (1) excessive algae growth which blocks the capillary action of the mat, (2) root penetration into the mat resulting in broken roots when the pots are lifted from the mats, (3) durability and cost of mat and (4) salt accumulation on the surface of the medium in the pots.

Future experiments will generate additional information which will answer these questions and reduce or eliminate these problems.

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