We set up a small experiment with ‘Eckes-point C-1 Red’ poinsettias in a soilless medium of 1 volcanicite:2 peat:1 perlite which had been amended with Osmocote 14-14-14 at 4 oz/ft³, triple superphosphate at 2 oz/ft³, dolomite at 6 oz/ft³, and MgSO₄ at 2 oz/ft³, with one plant per pot. The plants were pinched 10 days after potting and long days (10 ftc. night interruption, 10 pm to 2 am) were continued for one more week. An application of cycoceal (1:20) was made 3 weeks after the start of natural short days. Plants were irrigated twice daily with a liquid feed which supplied 180 ppm each of N & K from calcium and potassium nitrate.

Molybdenum was supplied as a 5 ppm solution (1 gram ammonium molybdate in 100 ml and diluted 20 ml of this stock to 1 liter of water). The treatments employed were:

1. Soak the foam block in which the cutting was rooted in Mo solution before planting.
2. Drench the pot with 6 fl oz of Mo solution 3 days before pinching.
3. Drench the pot with 6 fl oz of Mo solution at the time of pinch.
4. Spray the foliage with Mo 3 days after pinch.

Ten pots were used for each treatment and these were randomly arranged on one bench. Analysis of data, except tissue analysis, was a completely randomized design.

Data were taken on the height, number of breaks, final bract diameter, and number of deformed leaves per plant. Leaves from the first to third position on the shoots which developed after the pinch were collected from treated and control plants for tissue analysis. Where they occurred, deformed leaves were also sampled for this analysis. N was analyzed by the Kjehl Dahl method, and all others except Mo by x-ray spec-

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**ERRATUM**

The following are corrections and additions for the article The Pruning of Anthurium Leaf Blades which appeared in the last Horticulture Digest No. 71.

Table 4 should read: Prune All Leaves 42.0a instead of 4.20a².

Literature cited:


Authors are: Joanne Imamura
Research Associate
Tadashi Higaki
Horticulturist
Table 1. Growth and deformed leaf count on 'Eckespoint C-1 Red' poinsettias with or without additional Molybdenum. Mo was supplied as a 5 ppm solution.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Height</th>
<th>No. breaks</th>
<th>Bract Diam.</th>
<th>No. deformed leaves/plant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cm</td>
<td>cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Soak foam block before planting</td>
<td>56.4</td>
<td>6.6a</td>
<td>24.3ab</td>
<td>0.9</td>
</tr>
<tr>
<td>2. 6 fl oz drench 3 days before pinch</td>
<td>52.2</td>
<td>5.3b</td>
<td>22.4b</td>
<td>0.9</td>
</tr>
<tr>
<td>3. 6 fl oz drench at time of pinch</td>
<td>56.1</td>
<td>5.5b</td>
<td>25.0ab</td>
<td>0.9</td>
</tr>
<tr>
<td>4. Foliar spray 3 days after pinch</td>
<td>55.7</td>
<td>5.4b</td>
<td>28.2a</td>
<td>1.9</td>
</tr>
<tr>
<td>5. Control</td>
<td>55.3</td>
<td>5.3b</td>
<td>25.2ab</td>
<td>2.2</td>
</tr>
</tbody>
</table>

ANOVA² NS 1% 5% y

² Treatments differ from one another in the Duncan’s Multiple Range Test at the level of significance shown for the analysis of variance only if the letters following the mean value are different.

² Not analyzed by ANOVA.

Table 2. Tissue analyses of 'Eckespoint C-1 Red' foliage from normal and deformed leaves on plants with or without added molybdenum. Values from single sample of 20 leaves from each treatment.

<table>
<thead>
<tr>
<th>Treatment²</th>
<th>Percent</th>
<th>ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>N</td>
<td>P</td>
</tr>
<tr>
<td>1</td>
<td>4.02</td>
<td>0.35</td>
</tr>
<tr>
<td>2</td>
<td>4.08</td>
<td>0.35</td>
</tr>
<tr>
<td>3</td>
<td>3.92</td>
<td>0.30</td>
</tr>
<tr>
<td>4</td>
<td>4.02</td>
<td>0.37</td>
</tr>
<tr>
<td>5</td>
<td>4.04</td>
<td>0.39</td>
</tr>
</tbody>
</table>

² Treatments are same as in Table 1.

Molybdenum solutions were applied approximately 5 weeks before leaf samples were taken. Since the number of treated plants was small, one composite sample was collected and analyzed per treatment.

Final plant size and bract diameters were satisfactory and the number of breaks averaged from 5.3 to 6.6 (Table 1). In this respect, growth was normal. Deformed leaves (Figure 1), however, developed as the first to third leaves when new breaks began to elongate, averaging about 2 per plant on the control plants and delayed Mo application plants. Less than 1 deformed leaf per plant was found in the other treatments which had received the earlier Mo applications.

There was a trend of low Mo in deformed leaves while the Mo levels were almost 10 times higher in normal leaves (Table 2). The only abnormality was in the first treatment (the foam blocks soaked in Mo) wherein foliar Mo was as low as in deformed leaves but there were fewer
deformed leaves. Perhaps there was insufficient penetration of the solution into the block to provide a reservoir for long term uptake.

The content of other elements in the tissue did not show as great a variation as did Mo and all seemed to be above critical levels (2), except calcium in the control was below the "normal range".

References


Richard A. Criley
Horticulturist

NURSERY NOTES

FLORICULTURE MARKETING

Don Bonebrake, director of floral buying and merchandising for Ralphs Grocery of California (an early, enthusiastic, and successful flower-selling supermarket chain whose 137 stores all sell floral products) has this to say at last month's Produce Marketing Association's conference: "The industry is growing 12 to 18 percent per year and product quality and size are improving. Blooming plant sales are at an all-time high, but foliage plant sales are leveling off. Sales are growing for poinsettias, silk flowers, plant hangers, and fruit baskets." Bonebrake called cut flower sales the industry's biggest weakness, even though sales are up. "Cut flower selection, supply, and quality are inconsistent and at an all-time low". Bonebrake, who was honored as Floral Marketer of the Year, announced that the PMA will sponsor a demographic study of supermarket sales of floral products.

Flower Marketing Information
The Pennsylvania State University
November, 1983

NEW LEAFMINER CONTROL METHOD

Commercial florists have discovered a key to controlling leafminers in greenhouse-grown chrysanthemums. Apparently adult leafminers need a source of nectar for maximum egg laying. Since they can't obtain enough nectar from chrysanthemums, they fly to alternate hosts such as gerbera gypsophila, marigolds, zinnias, asters, tomatoes, onions, squash, broccoli and cucumbers. One grower had difficulty controlling leafminers in chrysanthemums when he grew them next to snapdragons. For effective control, the alternate hosts and adjacent plants must be treated.

Since leafminers are not strong fliers, physically separating those plants being propagated from those in the finishing stages can help prevent the insects from reinfesting later crops. A light bulb mounted in a yellow cylinder covered with light machine oil is effective in trapping adults. Adult pupae, which drop to the ground under greenhouse benches, can be controlled by sprinkling hydrated lime.

Florascpe, August 1983

ANTHURIUM GROWERS ORGANIZE COMMITTEE

Growers and shippers hoping to step up the marketing exposure of locally grown anthuriums have formed the Hawaii Anthurium Product Promotion Committee. The committee recently registered as a non-profit organization with the state Department of Regulatory Agencies and elected a slate of officers.

Officers are Chairman Vernon Inouye, Floral Resources of Hawaii; Vice Chairman Daniel Hata, Hata Farms; Secretary Tracey Lauder, Keum Soon's Anthurium Gardens; and Treasurer Terri Toki, Orchids of Hawaii.

Inouye said the purpose of the committee is to work cooperatively with state and county officials in developing and implementing promotional programs for the increased sale of anthuriums to mainland, foreign and local markets.
The committee appointed Ogilvy & Mather Hawaii and Susan Sunderland Public Relations to handle advertising and publicity. The Honolulu-based firms will begin a trade advertising campaign, develop product information kits for distribution to local and national media, and place publicity about the use and care of anthuriums in national trade and consumer publications.

Projects of the committee are to be funded by allocations from the state Department of Agriculture, the County of Hawaii Department of Research & Development, and membership fees. Hawaii's anthurium industry is one of the major floricultural businesses in the islands. Total export sales for January through October 1983 were 1.4 million dozen, with mainland U.S. sales ahead of last year by 11 percent. During 1982, Hawaiian growers shipped more than 1.7 million dozen anthuriums around the world, with nearly 650,000 dozen sold in the United States.

Florists' Review
Feb. 2, 1984

LEAF SPOT LESION OF Dracaena deremensis cv. Janet Craig

Leaf spot lesion of Dracaena deremensis cv. Janet Craig continues to be a problem plaguing interior plantscapers and growers.

Research at Cornell has demonstrated two interactive nutrient imbalances are contributing to the problem. An imbalance of K:Ca, with potassium supplied in a 4:1 milliequivalent ratio resulted in an average of 262 lesions per plant. With a 1:4 milliequivalent ratio of potassium to calcium, the average number of lesions per plant was only 4.

In a parallel study with ammonium vs. nitrate nitrogen fertilizers, when 100% ammonium N was used there were 232 lesions per plant. Using 100% nitrate nitrogen fertilizer, the average number of lesions per plant was 3. Fresh weight and dry weight were significantly increased as less ammonium nitrogen was used. Plants were heaviest in the zero percent ammonium nitrogen treatments.

To minimize the amount of leaf spot lesion injury, growers and interior plantscapers using Dracaena deremensis cv. Janet Craig should maintain high calcium and low potassium fertilizer programs using nitrate nitrogen fertilizers. Even with this fertilizer program, leaf spot lesions may still be a problem, but the number of cases should be minimal.

Two independent evaluations of the leaf spot lesions by Cornell plant pathologists showed the problem was not caused by disease organisms.

J. W. Boodley
Long Island Horticulture News
March 1983

CAn YOU AFFORD TO GUESS

Allen C. Botacchi, Connecticut Extension Agent, states that "over half of the greenhouse problems and $$ losses that are brought to my attention are related to the growing media. Low aeration, high salts, incorrect pH and low fertility are more common than diseases and insects".

"In most cases these $$ losses could be reduced or eliminated prior to planting the crop. Dolomitic limestone and superphosphate are inexpensive yet contain essential plant nutrients. The correct rate or amount of these or other fertilizers incorporated for background nutrition should be based on a soil test."

"These materials should be incorporated into the growing media prior to planting. Recommendations will be sent with the results of your soil test."

SAVE $$$
DON'T GUESS—SOIL TEST!!


CALIBRATING HAND-HELD SPRAYERS

The 1983 Extension Agents Handbook of Insect, Plant Disease and Weed Control from Oklahoma State University lists a handy procedure for calibrating a hand-held sprayer.

The accompanying nomograph shows whether the proper amount of chemical is being applied over a given area. It may seem easy enough to apply the proper amount of chemical when following "spray to run-off" directions. However, exactly what does "spray to run-off" mean?

Label recommendations often give dosages in rates per area. For instance, most of the turfgrass pesticides give an amount to apply per thousand square feet. The nomograph enables you to determine whether you are within reasonable range with your technique of spraying. (Remember, for conversion to square feet, one acre consists of approximately 43,000 square feet). Although more data is needed, greenhouse
growers should use from 150 to 300 gallons of spray per acre of greenhouse crops. This may vary depending on the size, spacing and foliage density of the crop being sprayed.

To use the nomograph:
1. Mark off a given area such as 100 square feet.
2. Fill the sprayer tank half-full with water and adjuvant and operate at the proper pressure until you get the desired spray pattern.
3. Determine sprayer delivery rate in ounces per minute by spraying into a container and measuring the spray volume delivered.
4. On the nomograph, draw a straight line from the desired application rate per acre to the nozzle capacity in ounces per minute.
5. Draw a second straight line from the size of the practice area on the left-hand scale through the point of intersection of the first line and the turning line until the second straight line intersects the right-hand scale. This will indicate the time it should take to spray the practice area.
6. Spray the practice area in the correct amount of time and get a feeling for how fast you should be progressing with the sprayer.

You can also use the nomograph in a reverse manner to calibrate a dosage per acre. Determine how long it took to spray a measured area. Then determine the nozzle capacity in ounces per minute and figure how many gallons per acre your dosage rate was. By knowing the values for any three sides of the nomograph, you solve for the fourth by drawing two straight lines. You would thus use the nomograph to check from one application to the next to make sure there is a reasonable degree of consistency. Such a check could be handy when a new employee is undertaking a spray job for the first time.

Editor’s Note: C. C. Powell is an extension plant pathologist at Ohio State University. This article originally appeared in Plant Pathology Notes.

C. C. Powell
Florists’ Review
June 23, 1983

AVAILABLE PUBLICATIONS

PALM BIBLIOGRAPHY
An exhaustive literature search has been completed on palms as part of the current research project partially funded by the Governor’s Agricultural Coordinating Committee (GACC). This compilation has been published as, an Annotated Palm Bibliography, Research Extension Series 040, by Paul Murakami and Fred D. Rauch. Each citation includes a brief notation of the contents of the article and are grouped into the
following broad categories to make it more convenient to locate the desired information:

1. Botany and Classification
2. Propagation
3. Culture
4. Pests and Their Control
5. Use
6. Miscellaneous
7. Books

Single copies are available from your County Extension Office or by contacting the Agricultural Publications and Information Office, College of Tropical Agriculture and Human Resources, University of Hawaii, 2500 Dole Street, Krauss Hall Room 6, Honolulu, Hawaii 96822.

THE LANGUAGE OF FLOWERS

A dictionary of flower meanings arranged alphabetically for easy reference.

Acacia .................................. Friendship
Amaryllis .................................. Hesitant beauty
Anemone .................................. Anticipation
Arborvitaes .................................. Live for me
Aster .................................. Virtue
Azaleas .................................. Temperature
Bachelor-button .................................. Hope of love
Basil, sweet .................................. Success in love
Bittersweet .................................. Truth
Blossoms
   Almond .................................. Hope
   Apple .................................. Admiration
   Cherry .................................. Spiritual beauty
   Orange .................................. Purity
   Bluebell .................................. Sad regret
   Buttercup .................................. Money
   Cactus .................................. Grandeur
   Calla Lily .................................. Beauty
   Camellia, Red .................................. Personal worth
   Camellia, White .................................. Loveliness
   Candytuft .................................. Indifference
   Carnation, White .................................. Constancy
   Cedar .................................. Remember me
   Chrysanthemum, Red .................................. I love you
   Chrysanthemum, White .................................. Fidelity
   Chrysanthemum, Yellow .................................. I am sad
   Cineraria .................................. Always a delight
   Clover, 4-leaf .................................. Good luck
   Columbine .................................. Inconsistency
   Crocus .................................. Joy
   Cyclamen .................................. Bashfulness
   Daffodil .................................. Unreturned love
   Dahlia .................................. Elegance
   Daisy .................................. Innocence
   Dandelion .................................. Coquetry
   Dock .................................. Patience
   Dogwood .................................. Love in spite of adversity
   Edeleiss .................................. Noble memories
   Everlasting .................................. Always remembered
   Fern .................................. Fascination
   Fir .................................. Time
   Fleur-de-lis .................................. I burn
   Forget-me-not .................................. True love
   Four-o’clock .................................. Timidity
   Foxglove .................................. Youth
   Fuchsia .................................. Confiding love
   Gardenia .................................. Refinement
   Gentian .................................. I love you best when you are sad
   Geranium .................................. Gentility
   Gladiolus .................................. Friendship
   Goldenrod .................................. Encouragement
   Heliotrope .................................. Devotion
   Hibiscus .................................. Delicate beauty
   Holly .................................. Domestic Happiness
   Hollyhock .................................. Ambition
   Honeysuckle .................................. Faithfulness
   Hyacinth, Blue .................................. Constancy
   Hyacinth, Purple .................................. Jealousy
   Hyacinth, White .................................. Loveliness
   Hydrangea .................................. Heartlessness
   Iris .................................. A compliment
   Ivy .................................. Fidelity
   Jonquil .................................. Wisdom
   Larkspur, Pink .................................. Freedom
   Larkspur, Purple .................................. Haughtiness
   Lavender .................................. Loveliness in age
   Lilac, Purple .................................. First love
   Lilac, White .................................. Innocence
   Lily of the Valley .................................. Purity
   Lotus .................................. Forgetfulness
   Magnolia .................................. Soulful
   Marigold .................................. Unequited love
   Mimosa .................................. Daintiness
   Mint .................................. Virtue
   Moss Rose .................................. Great merit
   Myrtle .................................. Wedded happiness
   Narcissus .................................. Vanity
   Nasturtium .................................. Patriotism
   Night-blooming cereus .................................. Transient beauty
   Oleander .................................. Beware
   Orchid .................................. You are beautiful
   Palm Leaf .................................. Victory
   Pansy .................................. Thoughtfulness
   Passion flower .................................. Holy love
   Peony .................................. Shame
   Periwinkle, White .................................. Pleasant memories
   Petunia .................................. You soothe me
   Phlox .................................. Agreement
   Poinsettia .................................. Success
FOOD FOR THOUGHT

*How a greenhouse operator* in Grants Pass, Oregon cut his monthly heating bill by two-thirds by turning off his conventional heating system—and installing 450 New Zealand rabbits, each with a body temperature of 101.5°F.

Fifty-three acres of forest is being chopped, mostly to cook with, every minute of the day. About 6 acres per minute are being reforested. What about future generations?

NOTE: The use of trade names is for the convenience of readers only and does not constitute an endorsement of these products by the University of Hawaii, the College of Tropical Agriculture and Human Resources, the Hawaii Cooperative Extension Service, and their employees.

Fred D. Rauch
Extension Specialist in Horticulture