



HORTICULTURE DIGEST

Department of Horticulture
University of Hawaii

Cooperative Extension Service
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In this Issue: FLOWER AND NURSERY INFORMATION

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THE TEN COMMANDMENTS FOR BUSINESS

1. Handle the hardest job first each day; easy ones are pleasures.
2. Do not be afraid of criticism; criticize yourself often.
3. Be glad and rejoice in the other fellow's success; study his methods.
4. Do not be misled by dislikes; acid ruins the finest fabrics; however, both may be used to advantage.
5. Be enthusiastic; enthusiasm is contagious.
6. Do not have the notion that success means simply money-making.
7. Be fair, and do at least one good act every day.
8. Honor the chief; there must be a head to everything.
9. Have confidence in yourself; believe you can do it.
10. Harmonize your work; let sunshine radiate and penetrate your relationships.

Pennsylvania Retail Florists, May 1971

GROWTH REGULATOR NOTES

White Christmas Bush

In a trial with seedling *Euphorbia leucocephala*, the white Christmas bush, a soil drench of Cycocel at 1/2 gram per plant was effective in retarding growth to approximately half that of the control 5 weeks later. A spray of Cycocel at 3/10 percent (3000 ppm) was not effective; neither were sprays of 100 and 200 ppm of EL531, although the latter did cause slight retardation of internode elongation. A soil drench of EL531 at 50 mg of the chemical per plant caused the death of all the plants.

Hibiscus

A spray of 3/10 percent (3000 ppm) Cycocel to pink hedge hibiscus was the most effective growth retardant of vegetative growth. The spray was applied March 24 when new growth after shearing was 4 to 6 inches long. Two months later, control plants averaged almost 34 inches of new growth; those treated with Cycocel averaged

16 inches. At the end of 4 months, the Cycocel-treated plants were still producing very short internodes and would still be considered within bounds; the control plants had vegetative shoots more than 48 inches long. Other compounds (B-nine, EL-531, and Niagara 10637) tried on hibiscus were only slightly effective or not at all. An experimental retardant, TD-1123, was effective at 1/4 percent (2500 ppm) for about 3 weeks, but the plants resumed normal growth. Maleic hydrazide at 1/2 percent (5000 ppm) prevented any growth beyond that present when the plants were sprayed, but there was some phytotoxicity at this concentration. Eventually, new laterals developed from deeper within the hedge and grew out irregularly through the top.

Wedelia

A remark from a local weed control specialist set us off on a quest for a retardant for the ground cover, *Wedelia trilobata*, which grows so abundantly in Hawaii. There seem to be several effective materials, but this preliminary report describes only the effect of Maintain CF-125, a morphactin. At 600 ppm in a spray application, Maintain caused the plants to develop shorter internodes, more lateral branches, and a dark-green color. A certain amount of leaf rolling on older foliage was associated with its use, but this would not be noticeable in mass plantings. Be very careful in spraying Maintain, as other plant materials downwind may be more drastically affected. Some of the adverse effects of Maintain are: leaf drop, leaf roll, distorted new growth, and proliferation of lateral branches.

Richard A. Criley
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NURSERY NOTES

Botrytis Control

Benlate, a new systemic fungicide, has recently given excellent control of Botrytis or "fire" of Easter lily foliage in northwest California. Reports by researchers at the University of California show that Benlate 50W, applied to lilies at the rate of 2 pounds of the formulation per acre,

produced control equal to or better than the standard bordeaux mixture. It was also apparent that Benlate is a material comparable with the standard PCNB-Ferbam dip for lily bulb root-disease control.

California Agriculture, March 1971

Orchid Virus

Plant pathologists report that an insidious virus disease of orchids, which quickly renders orchid blossoms useless, has been found in a number of locations in California. The disease, not known to occur in California until 1970, endangers the State's \$4 million industry in cut orchids, along with the valuable orchid collections of many private growers.

Symptoms of the disease appear as elongated brown spots along the midrib and longer veins of the petals and sepals, with a few spots on the lip of the blossom. Orchid leaves do not show distinct symptoms of the disease. Since symptoms may not appear until after the orchid blossoms are cut, customer dissatisfaction may create a marketing problem. Customers may switch to other types of cut flowers, as has been reported in Illinois, Maryland and Florida, where the disease has caused marketing problems.

Pacific Nurseryman and Garden
Supply Dealer, April 1971

1972 All-American Rose Selections Announced

Two outstanding All-American Rose Selections award winners for 1972 have been announced by the Selection Committee. Apollo, produced by Dr. David Armstrong, is a sunrise-yellow hybrid tea. Portrait, several-toned pink hybrid tea, was developed by Carl Meyer, an amateur hybridizer from Cincinnati, Ohio. This is the first time in the 32-year history of All-American Rose Selections awards that an amateur has competed successfully against the professional hybridizers to win an award.

These new selections are on display at the All-American Rose test garden at the Kula Branch Experiment Station on Maui.

New Anthurium Released

A new anthurium, 'Manoa Mist,' is being released to the anthurium industry by the Hawaii Agricultural Experiment Station. The white-flowered seedling was selected by Kamemoto et al from offsprings of a 'Uniwai' X 'Marian Seefurth' cross. 'Manoa Mist' has outstanding flower quality and a high degree of anthracnose resistance. The yield is about 7.3 flowers per plant per year compared to an average of 6 for most commercial cultivars.

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Better Anthurium Rooting with Mist

Intermittent mist was found beneficial in rooting anthurium cuttings in studies conducted by Kunisaki and Sagawa of the Hawaii Agricultural Experiment Station. When intermittent mist was compared with daily watering with an overhead sprinkler system, misting more than doubled the number of cuttings that rooted and also increased average length of the root produced. In another experiment to determine the number of fully expanded leaves which are needed on cuttings to obtain good rooting, it was noted that two or three leaves per cutting resulted in more roots and longer roots per cutting than on cuttings with one leaf.

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AIR POLLUTION

We are becoming more concerned and aware of pollution of our environment. Pollution can take many and diverse forms. Air and water pollution have received wide publicity in recent years. Other forms, not as widely recognized, include visual pollution from litter, power lines, billboards and slum areas.

Residents of Hawaii are fortunate because we are not yet faced with the serious air pollution problems encountered by many mainland communities. Air becomes contaminated when anything is added to it. The atmosphere can contain certain contaminants and remain unobjectionable. It becomes objectionable only when the amount of impurities added affect people, plants or animals. Air pollution covers the entire scale of contaminants—smoke, dust, fumes, mist, radioactive wastes, odors, gases and combinations of these items.

Many of these pollutants have an adverse effect on plants. Certain of the more sensitive plants may serve as "biological indicators" or monitors of air pollution. The general categories of pollutants of most concern to nurserymen and plantmen are ozone, peroxyacetyl-nitrate, sulfur dioxide and fluorides.

Ozone

Symptoms of ozone injury may include reddish-brown stipple or bleached flecking on the upper surface of the leaf; small areas merge to form irregular blotches and marginal rolling and scorch when severe. Sensitive plants include lilac, white and scotch pine, black locust, sycamore, green and white ash, tulip poplar, European larch, aster, salvia and dahlia.

Peroxyacetyl-nitrate

Symptoms of peroxyacetyl-nitrate injury may be collapse of tissues on lower leaf surfaces,

which appears silver or bronze in bands or blotches. Chlorosis or bleaching is noted in conifers. Typical sensitive plants are petunia, salvia, chrysanthemum, snapdragon, aster and primrose.

Sulfur dioxide

Typical symptoms of sulfur dioxide injury include light blotches between veins and on the leaf margin; adjacent tissues appear chlorotic. Conifers show brown necrotic tips on the needles. Sensitive plants may be larch, white pine, Douglas fir, spruce, white fir, scarlet hawthorn, verbenas, and certain tulip varieties.

Fluoride

The symptoms of injury from fluoride gases would be tips and margins of leaves becoming necrotic with scorched appearance; distinct separation accented by a narrow dark reddish-brown or slightly chlorotic band. Conifers show brown to reddish-brown necrotic needle tips. Sensitive indicator plants might be pine, gladiolus and iris.

Scientists at ARS, Beltsville, Maryland, have found that the Bel-W3 tobacco plant is especially useful in monitoring photochemical oxidant pollutants. This plant shows characteristic, easily identified and highly specific symptoms over a wide range of conditions.

AVAILABLE PUBLICATIONS

Gardening under Artificial Light

From the 18 articles in the new 64-page Brooklyn Botanic Garden Handbook, "Gardening under Artificial Light," plant lovers can learn how to grow plants in a basement greenhouse, start seedlings under lights, root cuttings, and even ripen green tomatoes brought in from the garden. Forcing data for 38 kinds of flowers, from begonias to sweet peas, will prove helpful to those wanting out-of-season bloom. Experts in the field explain the reasons plants respond to lights as they do and the practical use of lights in plant culture.

There's extensive information in the book on selection and use of different kinds of lights, reflectors, fixtures and timers. The 48 illustrations include inspiring ideas for arranging plants in an attractive way in the home. Reference tables supply lists of plants with their light requirements, and sources of materials, plants and books.

"Gardening under Artificial Light," guest-edited by R. Milton Carleton, is the sixty-second in a series of popular garden reference books, published by the Garden as a public service. Copies are available by mail for a small fee from the Brooklyn Botanic Garden, 1000 Washington Ave., Brooklyn, N. Y. 11225.

How To Service a Tree

Gardeners interested in care of their trees will find helpful information in a new circular, "How

To Service a Tree," prepared by Dr. Donald P. Watson, Extension Specialist in Horticulture. This publication, Cooperative Extension Circular 450, provides useful information on pruning and training, fertilizing, watering, repairing valuable shade and landscape trees.

To receive a free copy of this publication, contact your local extension office or write to the College of Tropical Agriculture Publications and Information Office, Krauss Hall, University of Hawaii 96822.

Hawaii Flowers and Nursery Products 1970

A source of valuable information on Hawaii's ornamental industry is a recent report, "Hawaii Flowers and Nursery Products 1970," published by the Hawaii Crop and Livestock Reporting Service of the State Department of Agriculture. Information is presented on the number of farms, total value of sales, number sold, and wholesale value of sales for cut and lei flowers, cut cultivated greens, potted plants and nursery products. Also included is information on land area utilization, out-of-State shipments and labor employed on farms to produce flowers and nursery products.

The Nursery Business

For those seeking information on starting into the nursery business or improving their nursery operation, a bibliography listing books and other publications is available. This publication, prepared by John J. Pinney, author of several books on the nursery business, explains various types of nursery operations, and lists publications available and where they can be obtained.

To get your free copy of this publication, "The Nursery Business," Small Business Bibliography No. 14, contact your Small Business Administration Field Office, Suite 286, 1015 Bishop St., Honolulu, Hawaii 96813. Also available is "Retail Florist," Small Business Bibliography No. 74.

Growing Ornamentals in Urban Gardens

"Growing Ornamentals in Urban Gardens," Home and Garden Bulletin No. 188, U.S. Department of Agriculture, provides basic information on how to grow and care for plants in the urban environment. Included is information on preparing growing media, planting, watering, fertilizing and mulching. You can obtain single free copies from your county agricultural agent or you can write the Office of Information, U.S. Department of Agriculture, Washington, D. C. 20250.

ARTIFICIAL TURF

One of the big controversies of our time is over artificial turf. Like any issue that might be debated, there are two sides. Margaret Herbst, in her

article "Advantages and Disadvantages of Artificial Grass, Trees and Shrubs," presents the pros and cons of artificial turf very well. We will attempt to summarize some of her findings for you.

One of the arguments in favor of artificial turf on athletic fields is that there are fewer injuries to the players. While this is true of certain types of injuries, evidence now shows that there is an increase in the incidence of other forms of injury and in some cases the severity of the injuries. Players report they tire more readily, pitchers particularly complained of sore and aching legs.

According to findings by Michigan State researchers, artificial turf is "hot stuff" in the sun. Surface temperature on the artificial turf was 136 F, compared to 86 F for natural grass less than 10 yards away. Temperatures measured at Busch Stadium in St. Louis were even hotter—152 F measured at ground level during the day. Artificial turf can be cooled by an application of 1/5 inch of water.

Artificial turf also presents some new maintenance problems. One of the more unusual culprits is bubblegum that is chewed by the players. Then there are players who chew tobacco and smoke cigarettes . . . it's well-known what happens to plastic that gets too hot.

But like it or not, artificial turf is here to stay, even though many people are having second thoughts about this miracle product that would cure all our problems. Artificial turf does have its place and in many instances may be the best choice. However, with our accent on environment these days, the advantages and disadvantages should be carefully considered.

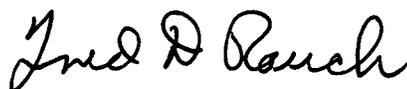
CONTRIBUTIONS TO ORNAMENTAL HORTICULTURE

The members of the Horticulture Department, College of Tropical Agriculture of the University of Hawaii, would like to express their appreciation for the support of the ornamental program provided by so many firms and individuals. It is through these demonstrations of support for the work of the College that programs in research and extension in ornamental horticulture can be more effective.

The following list includes contributions to the Department for the first 6 months of 1971:

- Ultramar Chemical Co., Honolulu
(Soil amendments, pesticides and fertilizers)
- Gaspro, Inc., Honolulu
(Soil amendments, herbicides, fertilizers, plastic pipe, growth regulators)
- Arthurs Hawaii, Ltd., Honolulu
(Sprinkler heads and fittings for irrigation system)
- Chevron Chemical Co., Honolulu
(Insecticides, herbicides)
- Velsicol Chemical Co., Chicago, Illinois
(Insecticides, herbicides)

- Northrup King Seed Co., Minneapolis, Minnesota
(Grass seed)
- Amchem Chemical Co., Ambler, Pennsylvania
(Sprayer)
- O. M. Scotts & Son, Marysville, Ohio
(Fertilizers, grass seed)
- Jacklin Seed Co., Inc., Deshman, Washington
(Grass seed)
- Giegy Chemical Co., Honolulu
(Insecticides, herbicides)
- Cal-Turf Hawaii Inc., Honolulu
(Soil amendments)
- Garden City, Honolulu
(Dichondra seed)
- ABG Instrument & Engineering Co., Santa Barbara, California
(Proportioner)
- Divaco Cooperative, Hilo
(Fertilizer)
- B. Kumabe, Kaneohe
(Plant material)
- Yoder Bros. of California, Salinas, California
(Chrysanthemum and carnation cuttings)
- Shell Development Co., Modesto, California
(Growth regulators)
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(Easter lily bulbs)
- Paul Ecker Poinsettias, Encinitas, California
(Poinsettia cuttings)
- Eli Lilly & Co., Indianapolis, Indiana
(Growth retardant)
- Uniroyal Chemical, Naugatuck, Connecticut
(Growth regulator)
- All America Rose Selections, Inc., Shenandoah, Iowa
(Rose bushes)
- Jackson & Perkins, Medford, Oregon
(Rose bushes)
- Donald Angus, Honolulu and Tangier
(Geranium cultivars)
- Hawaii Association of Nurserymen (Orchid Commodity Section), Honolulu
(\$1,784.65)
- Mrs. J. H. Beaumont, Honolulu
(Framing of three Reichenbachia prints for the Beaumont Orchid Research Library)
- American Can Co., Neenah, Wisconsin
(BR8 blocks)
- Floralife, Inc., Chicago, Illinois
(Quickie sure-start)
- Hawaii Association of Nurserymen, Honolulu
(Bird-of-paradise plants)



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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, the Hawaii Cooperative Extension Service, and their employees.