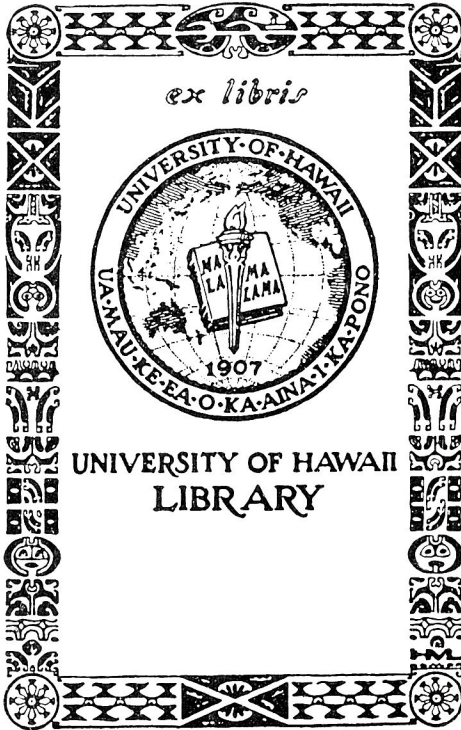




University of Hawaii  
Cooperative Extension Service  
Circular 433

# CROTONS IN HAWAII

JAMES BARROWS  
DONALD P. WATSON





### **Croton Cultivars**

Top row, left, 'Van Buren'; right, 'Harvest Moon'.

Middle row, left, 'B. Comte' (Indian Blanket);  
right, 'Daisy Ortigas'.

Bottom row, left, 'Stoplight'; right, 'Colonel Bob Bullock'.



### **Croton Cultivars**

Top row, left, 'L. M. Rutherford'; right, 'Irene Kingsley'.

Middle row, left, 'McKenzie King'; right, 'Reedii'.

Bottom row, left, 'Baron James De Rothschild' ('Bermuda Red');  
right, 'Madame Fernand Kohl'.

### **ACKNOWLEDGMENTS**

The assistance of Wallace C. Mitchell, A. P. Martinez, and Horace F. Clay is appreciated.

## CONTENTS

	Page
Introduction .....	3
History .....	3
Identification .....	4
Croton Cultivars.....	7
Propagation .....	8
Culture .....	10
Landscape Uses.....	11
Hybridizing .....	11
Pests .....	12
References .....	13

# CROTONS IN HAWAII

by

JAMES BARROWS<sup>1</sup>  
and  
DONALD P. WATSON<sup>2</sup>

## INTRODUCTION

“Croton” is a popular term used for ornamental shrubs and small trees with varying multicolored leaves. Botanically, these plants are called *Codiaeum variegatum*. The leaf colors include shades, blends, combinations, or solid patches of green, red, pink, orange, yellow, lavender, black. The leaf shapes vary from simple ovate to linear, some of which are slightly or deeply cut, others with the blade connected only by the midrib. Many of the most popular are trilobed (oak leaf shaped). Locally, the older, smaller-leaved crotons are referred to as “hedge” types, while the larger-leaved crotons are called “Florida Hybrids.”

## HISTORY

Crotons, native to the Molucca Islands in Indonesia and south to other Pacific Islands, were described by G. E. Rumphius in the 17th century. It is believed that the genus *Codiaeum* came from the Malaysian name “codebo.”

The spectacular croton leaves are used widely in Polynesia as vests and head decoration for native celebrations. Some are used for religious and ceremonial rites. Others are claimed as emblems.

<sup>1</sup>Student, University of Hawaii.

<sup>2</sup>Extension Specialist, Department of Horticulture, University of Hawaii.

The Polynesians also make them into leis. Local Americans of Japanese ancestry often use the leaves of *Croton aureo maculatum* 'Gold Dust' in temples with statues of gods. These leaves are used as a substitute for *Acuba japonica* that is used in Japan. Croton leaves are used widely as designs for Polynesian prints. They are believed to be the source of colors for the flag of Brazil.

Records of the use of crotons indicate that the natives of the Indonesian Islands used their diluted juices as both external and internal medicine.

In 1804, the first crotons were taken to England. The eminent nursery family of James Veitch soon distributed them widely. Later the French and the Belgians hybridized, developed, and distributed a great variety of leaf types.

Henry Dreer brought crotons from Europe to his nursery in Philadelphia in 1871. They soon became popular in the United States as house plants. After 25 or 30 years, probably because of their tendency to drop leaves in homes where there was low humidity and insufficient light, their use was confined to greenhouses or outdoors in tropical or subtropical regions.

Growers in Florida, especially Bradenton and Miami, can be given most of the credit for originating and distributing the hundreds of different named seedlings that are now available.

The croton was brought into Hawaii some time ago, but some of the most popular Island types were developed in France in the 19th century. Local plantsmen today refer to the most colorful crotons as "Florida Hybrids" and these are certainly the result of hybridization by such men as Robert Craig in Pennsylvania; Aubrey Christian, Henry Coppinger, Charles Rutherford, Rudy Bachmann, Connie and Al Cutler and Ralph Davis, all of Miami. Dr. Frank Brown, in his book *Florida's Beautiful Crotons*, describes the world's best collection of crotons on the grounds of the home of Robert Halgrim and on the Thomas Edison estate at Fort Myers, Florida.

## IDENTIFICATION

There is such great variation among seedlings of crotons that each time a new one is produced, it may be named by the originator and propagated vegetatively for distribution even though the differences are slight. Some variation within the same plant occurs because of the influence of such factors as light intensity, temperature, nutrition, and maturity. The developed leaves may be divided into three categories: (1) juvenile, with small, yellowish-green leaves; (2) adolescent, with larger leaves in which the green color may become



red, lavender, or almost black and the yellow areas remain or take on shades of bright red or orange; (3) mature, with a dulling of the color found in the adolescent condition.

“Flushes” of color on new growth are often mistaken for sports, particularly when they are entirely yellow. If the branch is allowed to mature, it will revert to its original color pattern within a few weeks.



*Left to right: Juvenile, adolescent, and mature croton leaf from the same plant of 'Victory.'*



*A simplified classification according to leaf type would be:  
Broad, oak, semi-oak, small, narrow, recurved, spiral, interrupted.*

*Top row, left to right:*

Broad, 'Jungle Queen'; Oak leaf, 'Irene Kingsley'; Semi-oak leaf, 'Victory';  
Small, aureo maculatum 'Gold Dust.'

*Bottom row, left to right:*

Narrow, 'Franklin Roosevelt'; Recurved, 'Volutum' (Ram's Horn); Spiral,  
'Tortilis Major' (Curlicue); Interrupted, 'Interruptum' (Kamehameha).

## CROTON CULTIVARS

While there are well over 150 different crotons, the following 12 have been selected as among the most common and most attractive in the islands:

*Van Buren*—Small leaved semi-oak type; unique color pattern with midrib and veins broadly striped in clear yellow-on-green background; attractive upright habit; sun tolerant.

*Harvest Moon*—Large, broad semi-oak type; pale avocado-green with cream rib and veins; largest of the yellow and green types; sun-tolerant.

*B. Comte* (Indian Blanket)—One of Hawaii's most popular crotons; medium-sized, simple leaf with unique color pattern of a single off-center blotch of bright red-orange on a black background; a French introduction of the 1800's; sun-tolerant.

*Daisy Ortegaz*—Medium-sized, simple leaf with intense shades of scarlet on black; young leaves are sometimes totally scarlet; leaves have a characteristic "cocked" habit or partial spiral which causes each to be slightly turned to one side, giving a "whorl" effect to the branch as a whole; sun-tolerant.

*Stoplight*—Long, narrow leaves with drooping habit; bright, clear shades of red, green, and yellow (hence, the name); sun-tolerant.

*Colonel Bob Bullock*—Large, broad semi-oak type; veins and margin neatly lined in light pink and yellow, medium-green to black background; new growth often

entirely suffused with unique pastel shades of yellow and pink; sun-tolerant.

*L. M. Rutherford*—Very large semi-oak leaf with graceful, arching habit; overall cast of pink and green; new leaves may be shades of orange and gold; not tolerant to full sun.

*Irene Kingsley* (Red Oak)—Medium-sized oak leaf; predominate color, red and black; moderately sun-tolerant.

*McKenzie King*—Medium-sized semi-oak; predominate color is a brilliant transparent orange; this variety has comparatively thin leaves which accounts for its brilliance of color; not tolerant to full sun.

*Reedii*—Large, thick simple leaf with unique crinkled texture; colors are carmine pink and light-green; sun-tolerant.

*Baron James De Rothschild* (Bermuda Red)—Another of Hawaii's most popular crotons; medium-sized simple leaf with clear shades of medium red and green; French introduction of the 1800's; sun-tolerant.

*Madame Fernand Kohl*—Large oak leaf; dense foliage; orange and yellow predominate; sun-tolerant but leaves may be smaller than in partial shade; profuse seed bearer and an ancestor of many of the best hybrids.

## PROPAGATION

### Cuttings

Crotons are most commonly propagated by stem cuttings. The hedge types root so easily that many homeowners select large woody branches up to one inch in diameter, trim off all but the terminal five leaves and root them successfully in their permanent location by pushing the stem four inches into well-prepared soil. The soil should be kept moist for the first few weeks.

Stem cuttings 6 to 12 inches in length selected at any time of the year as long as the wood is firm but still green are ideal for rooting in pure Perlite,\* Vermiculite,\* or sand. Store the cuttings overnight with their stems in water and dip them in a rooting substance before placing them in a rooting medium. As long as the rooting medium is kept damp at all times, the roots will appear within a month.

An automatic intermittent mist system above the rooting area will insure a constant supply of moisture. With this more sophisticated system, whole branches, leaves, and all may be rooted.

\*The use of brand names in publication is for convenience and does not imply endorsement of the products by the College of Tropical Agriculture.



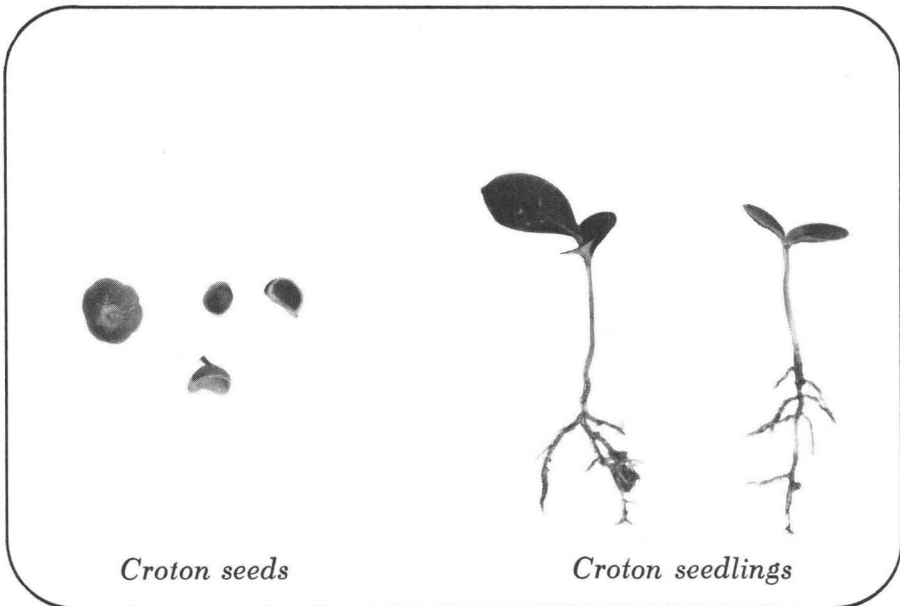
*Large rooted cutting.*

## Air Layering

Stem cuttings that are somewhat woody but still green will root fairly easily but air layering is usually more rapid. Remove about half an inch of the bark around the stem with a sharp knife 12 inches from the tip if you want to start with a plant that is a foot high. Wrap a handful of damp Vermiculite or sphagnum moss around the cut surface with plastic film or aluminum foil and tie the ends firmly with plastic tape. The roots should form in a month and a half. The wrap may be taken off and put back again if the roots have not yet appeared. As soon as the roots are half an inch in length, cut the branch off below the roots and plant it in a pot. Transplant it into its permanent location as soon as the roots fill the soil and start to grow through the holes in the bottom of the pot.

## Seeds

All plants grown from seed may be different from either parent. Pick the seed capsule and place under cover before it is completely dry so that the seeds will not be lost when they are violently ejected from the capsule. When the capsule opens, sow the seed  $\frac{1}{4}$  inch deep in a light soil mix with two or three seeds to a container. While the first immature pair of leaves will appear in about two weeks, the first true leaves will not appear until later, and it will be six months before the quality of the new seedling may be evaluated.



## CULTURE

Most crotons grown in full sunlight produce more brilliantly colored leaves than those grown in full shade, provided adequate moisture is available. In extreme heat some leaves may be burned, especially in areas of low rainfall, slight shade from trees would be ideal.

Light, well-drained, slightly acid soil with a generous supply of organic matter is recommended. The most common limiting factor in many coastal areas of the Islands is an inadequate supply of water.

Two cupfuls of balanced fertilizer (10-6-6, etc.) for each mature plant, well watered into the soil about every four months, will encourage new growth and provide good color. In many island gardens spraying the leaves with liquid fertilizers (making applications according to the manufacturers' directions) will help considerably to rejuvenate neglected crotons. The presence of trace minerals, particularly magnesium, zinc, and copper, is thought to be important for good leaf color.

Pinching out the terminal growth as the plant develops will help to make it more bushy. When fast-growing crotons become four or



*Remove a ring of bark to induce new shoot formation.*

five feet high, they begin to lose their lower leaves, particularly when they receive insufficient water. These plants may be rejuvenated by pruning to within one foot of the ground, then fertilizing and watering thoroughly. This pruning will induce the formation of horizontal drooping branches. Removal by cutting a ring of bark  $\frac{1}{2}$ -inch wide on the main trunk, a foot above the ground, will often initiate new branches on the inside of the shrub. When pruning hedges, it is preferable to cut branches individually some distance below the desired height, rather than use hedge shears to prune the leaves themselves.

### **LANDSCAPE USES**

Not only do crotons grow well where there is plenty of sun but their glorious colors are much more brilliant. Large groupings of plants of the same kind make a much more effective design than collections of different sizes, shapes, and colors. Their foliage blends well with other shrubs. They make good hedges, specimens in the landscape, or foundation plantings. Most crotons are large shrubs and should not be planted too closely; at least 4-foot centers are advisable except for hedges. The yellow and green crotons provide cooler colors for the tropical climate. A bank of crotons under colored lights at night close to the living area can be most attractive. If the foliage is yellow, use a flood light with a yellow filter. If the foliage is mostly red, use a red filter. Night lighting on crotons really makes a splash of color.

The sap from the stems of crotons will permanently stain clothing. Some people have an allergy in the form of a skin irritation by being exposed to juices from the leaves or stems of the plant.

### **HYBRIDIZING**

Indications are that flower production is induced by a decrease in temperature. While they are not conspicuous, separate male and female inflorescences are borne in the axils of the upper leaves of the same plant. The number of male and female flowers on each spike is similar but may vary from one type of croton to another. On a pendulant spike, 10 to 15 inches in length, as many as 70 white male flowers with 15 or more stamens each open a few at a time and bear dust-like pollen. Borne on an upright spike of similar length are female flowers consisting only of an ovary, style, and a three-parted stigma. When the stigma has become receptive, it is shiny and sticky. If at this time pollen from a male flower is dusted on the stigma and the flower stalk covered with a paper bag to

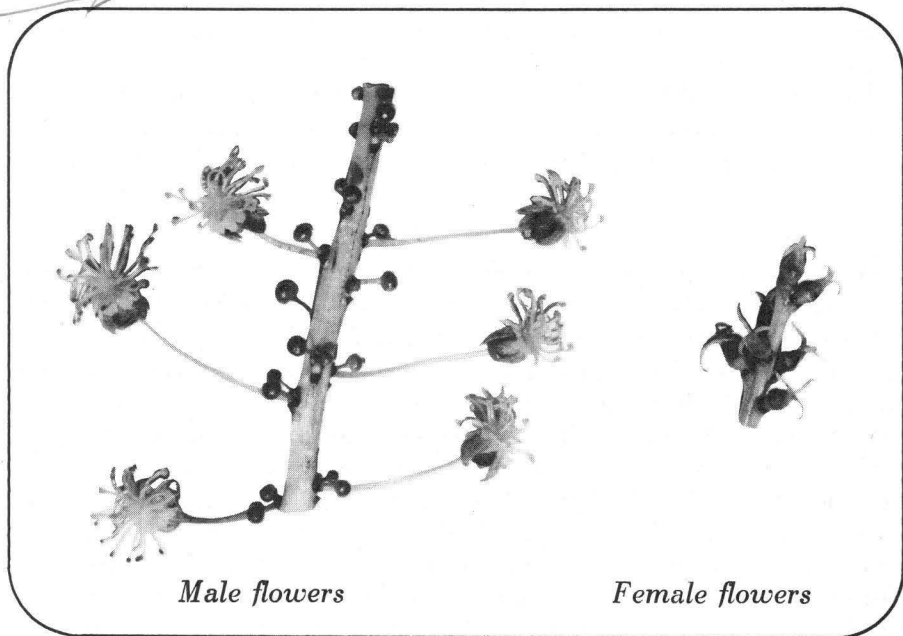
prevent any other pollination, you can control the parents of the cross.

In about six weeks, one to three seeds that resemble small castor beans will be matured in capsules about the size of a large pea.

### PESTS

Crotons grown in Hawaii are relatively free of insects and diseases. Spider mites (*Tetranychus cinnabarinus* and *Eutetranychus banksi*), thrips (*Heliethrips haemorrhoidalis*), mealy bug (*Planococcus citri*, *Pseudococcus adonidum*), scales (eight species), and the green sharp-nosed grasshopper do feed on the leaves of crotons. Croton caterpillar (*Achea junata*) feeds on the foliage and are often a serious pest during the winter. If there is a serious infestation of any of these pests, consult your local County Extension Agent for specific control measures.

Anthraxnose (*Glomerella cingulata*) leaf spot is common on croton. Large, yellowish-gray spots develop into tan-colored areas with salmon-colored fruiting bodies on the leaves. Fungus may be readily controlled with bordeaux mixture or any of the fungicides containing dithiocarbamates. Usually, thorough weekly spraying with an all-purpose insecticide following the directions on the container will suffice.





## REFERENCES

- BAILEY, L. H. 1953. *Standard Cyclopedia of Horticulture*. Macmillan Co., N.Y. Pp. 815-819.
- BROWN, B. FRANK. 1960. *Florida's Beautiful Crotons*. Undersea Press, Eau Gallie, Florida. 143 pp.
- GRAF, ALFRED B. 1963. *Exotica*. Roehrs Co., Rutherford, New Jersey. Pp. 753-763.
- NEAL, MARIE C. 1965. *In Gardens of Hawaii*. Bishop Museum, Honolulu, Hawaii. Pp. 510-511.
- Fascinating Crotons. 1955. *Paradise of the Pacific*. Pp. 54-55, 102.

Cooperative Extension Work in Agriculture and Home Economics  
College of Tropical Agriculture, University of Hawaii,  
Honolulu, Hawaii 96822  
United States Department of Agriculture Cooperating  
C. Peairs Wilson, Director, Hawaii Cooperative Extension Service  
Distributed in Furtherance of the Acts of Congress  
of May 8 and June 30, 1914

**Circular 433—April 1969**

