

## NEW HYBRID CROTONS

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The common croton has been growing in Florida for many years, but only within comparatively recent years has the interest in this beautiful tropical shrub become so intense that the demand for it exceeds the supply. The present size and phenomenal growth of this phase of the State's nursery industry makes it worthy of serious attention.

Although it is thought to be native of Malaya and adjacent Pacific Islands, the croton is grown in all tropical and subtropical lands. Botanically known as *Codiaeum variegatum* var *pictum*, the genus name is derived from an old Greek word meaning "head." Persons to be honored were crowned in Malaya with wreaths of croton leaves, as the Greeks used laurel foliage. Although horticultural varieties of Crotons number well into the hundreds, they are thought to be from one botanical species greatly modified by selection and crossing. The wild form with green leaves is variety *Molluccanum*.

Very few historical data regarding this plant are on record; however, it is known that sixty-nine varieties were introduced into England between 1863 and 1880. These varieties were brought from India, the South Sea Islands, the New Hebrides, and New Guinea. The original introduction of the plant to these lands is thought to have been the work of early missionaries in an effort at beautifying native villages and the surrounding landscape. It was also used for fencing the enclosures around their dwellings, and the branches were often employed for decoration on festive occasions.

Among the very early croton introductions are some that have withstood the tests of time and still remain extremely popular, competing with many beautiful hybrids of recent introduction. Some of these are Dayspring, Queen Victoria, Andreamum, Amabile, Aucubaefolium, Disraeli, Maculatum Kotoni, Mortii, Picturatum, and Tortillis.

From these outstanding varieties and numerous others of better qualities have arisen the many superior hybrids exhibited throughout the world at this time.

As far as can be determined, the first Crotons were brought to America during the second half of the 19th century by Henry A. Dreer of Philadelphia, and from there several were introduced to Florida. Dr. H. Harold Hume states that crotons were abundant in Florida upon his arrival in the state in the late 1890's. Since that time, innumerable beautiful plants have resulted from the labors of plant breeders in Florida. More croton hybrids have originated in southern Florida, particularly in the Miami area than in any other section of the United States and probably of the world.

Due to the extreme variation in croton foliage, even among leaves on individual plants, it has been fairly difficult to ascertain a method of description that may be used to scientifically identify individual varieties. The following plan is presented as the most feasible.

### METHOD OF DESCRIBING FOLIAGE

Special attention was paid to the leaves. Well matured, typical leaves of each croton were used in writing the technical descriptions. All leaves were described under light of as nearly the same intensity as possible. The color chart of the Royal Horticultural Society was used throughout the descriptions because this chart is thought to be the most complete and best adapted to the description of flower colors. Published in two volumes, this English chart is accurate and authoritative because the colors and their names are in accordance with the standards accepted by makers and users of color in many countries. The colors chosen and the names used for them have been selected primarily for the purposes of horticulture.

The following observations were made in describing each leaf:

#### I—Physical characteristics of Foliage.

##### A. Size.

1. Large, medium, small, etc.
2. Average length in inches.
3. Average width at widest point in inches.

##### B. Shape.

1. Refer to Chart.

##### C. Petiole.

1. Length.

- 2. Width.
- 3. Predominant color.
- D. Texture.
  - 1. Leathery, medium, papery, etc.
- E. Surfaces.
  - 1. Upper.
    - a. Bullate, ridged, undulate, revolute, etc.
  - 2. Lower.
    - a. Bullate, ridged, undulate, revolute, etc.
- F. Markings and Coloration.
  - 1. Ground color.
  - 2. Spotting and blotching.
  - 3. Margin.
  - 4. Costa.
  - 5. Veins.
  - 6. Base.
  - 7. Tip.

METHOD OF DESCRIBING LANDSCAPE VALUE

An effort was made to obtain information which would be indicative of the landscape value of each variety.

The following characteristics were observed in this respect:

I—Habit of Growth.

A. Compact, loose, or leggy.

II—Rate of Growth.

A. Fast, medium or slow.

III—Exposure to Sun for best coloration.

A. 25 percent, 50 percent, 75 percent, etc.

ORIGIN

I—Who originated plant.

Following is a key plate that shows the various shapes of croton leaves and each variety has been referred to one of the types by a key number. While some varieties have several types of leaves on the same plant and all of these leaves may not match exactly, the key plate will be a useful accessory in the identification of croton varieties.

I. ANN RUTHERFORD (Ann)

Leaf very large, 1" X 4 1/2"; No. 3, petiole 2 3/4" X 3/16", Cardinal Red<sub>s</sub>22/3; leathery, waxy, upper surface bullate, undulate; lower surface ridged; ground color approaches Ivy Green<sub>oo</sub>60; spotting and blotching Indian Yellow 6/1 suffused with Cardinal Red<sub>s</sub>22/3; margin none; costa Chrysanthemum Crimson<sub>s</sub>24/3; veins Chrysanthemum Crimson<sub>s</sub>24/3;

base ground color, Indian Yellow 6/1 suffused with Cardinal Red<sub>s</sub>22/3; tip ground color Indian Yellow 6/1 suffused with Cardinal Red<sub>s</sub>22/3.

Fairly compact, medium grower, 50 percent sun; introduced by Charles Rutherford, Miami.

2. BROOKS

Leaf very large, 12 1/2" X 7 1/2"; No. 1, slightly recurved; petiole 1 3/4" X 3/16", Parsley Green<sub>oo</sub>62/1; leathery; upper surface bullate, edges irregular and slightly undulate; lower surface heavily ridged; ground color approaches Black; spotting and blotching Rose Opal<sub>s</sub>22; margin Cardinal Red<sub>s</sub>22/2; costa Cardinal Red<sub>s</sub>22/2; veins to shoulders Cardinal Red<sub>s</sub>22/2; base ground color, Rose Opal<sub>s</sub>22; tip Rose Opal<sub>s</sub>22.

Fairly compact, medium grower, 50 percent sun; introduced by Charles Rutherford, Miami. Said to be the most outstanding of all crotons.

3. CAROL ANN CONRAD (Carol)

Leaf very large, 11 1/2" X 4 1/2"; No. 2, petiole 2 3/8" X 3/16", Oxblood Red<sub>oo</sub>23/1; leathery; upper surface slightly ridged, slightly undulate; lower surface heavily ridged; ground color approaches Black; spotting and blotching approaches Signal Red<sub>s</sub>19; margin approaches Signal Red<sub>s</sub>19; costa approaches Signal Red<sub>s</sub>19; veins approach Signal Red<sub>s</sub>19 fading to Sulphur Yellow 1/1; base approaches Spinach Green<sub>oo</sub>60; tip Signal Red<sub>s</sub>19 fading to Sulphur Yellow 1/1.

Compact, fast grower, 50 percent sun; introduced by Archie Ortugas, Miami.

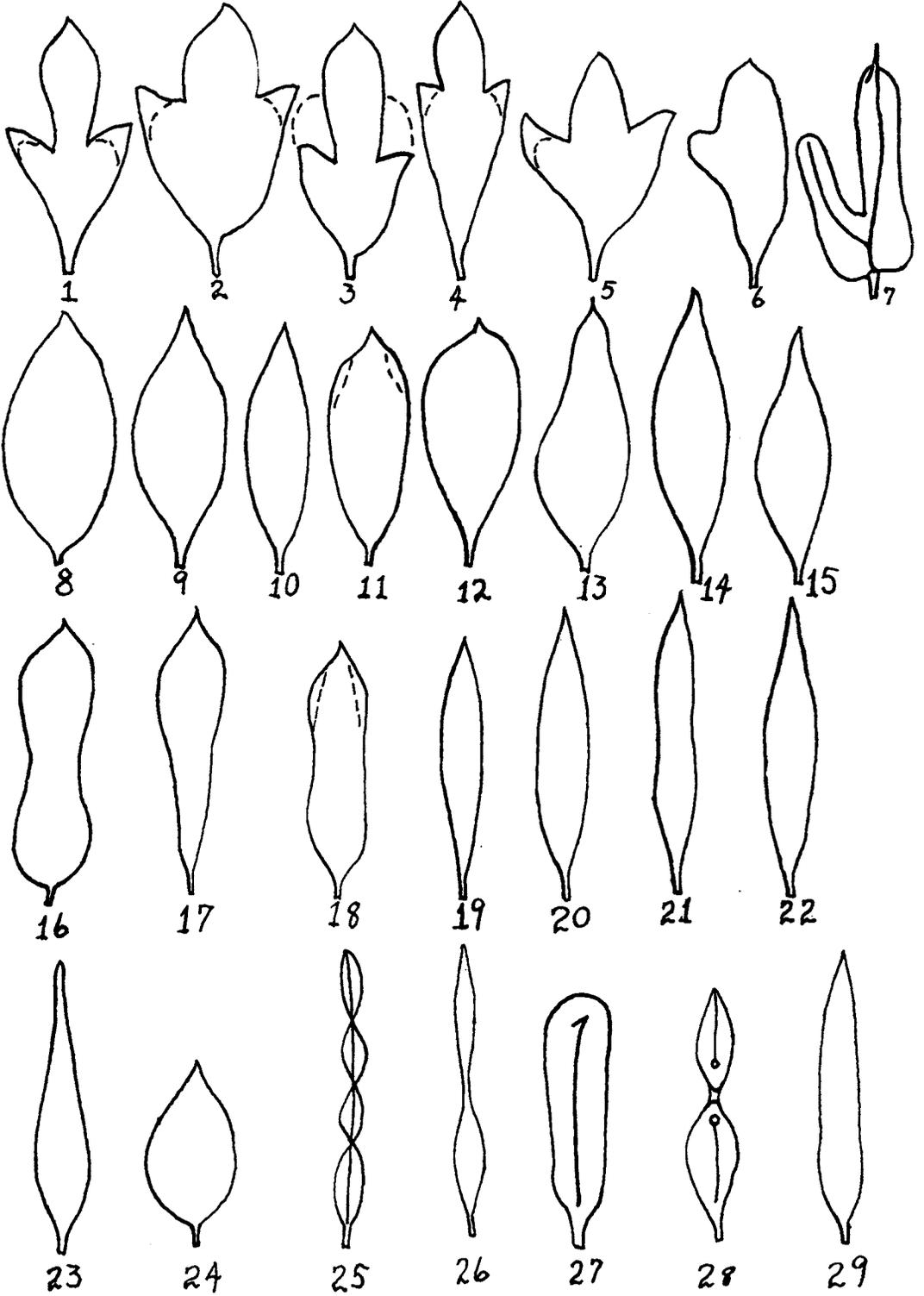
4. DAVIS (No. 1)

Leaf large, 9 1/2" X 4"; No. 9, slightly recurved, troughed; petiole 2 1/4" X 5/32", Empire Yellow<sub>oo</sub>3/2; medium waxy; upper surface bullate, undulate; lower surface ridged; ground color Spinach Green<sub>oo</sub>60/1; spotting and blotching Empire Yellow<sub>oo</sub>3 fading to Empire Yellow<sub>oo</sub>3/2; margin none; costa Empire Yellow<sub>oo</sub>3/2; veins not outstanding; base ground color; Empire Yellow<sub>oo</sub>3; tip ground color, Empire Yellow<sub>oo</sub>3.

Loose, very fast grower, 75 percent sun; introduced by Ralph Davis, Miami.

5. DOCTOR FAIRCHILD (Fairchild)

Leaf large, 8 3/4" X 3 1/2"; No. 11, slightly troughed, slightly twisted; petiole 1 7/8" X 5/32", Chrysanthemum Crimson<sub>s</sub>24/3; leathery;



upper surface slightly bullate, undulate; lower surface ridged, bright; ground color Spinach Green<sub>60</sub>, blotches of Maroon<sub>10</sub><sub>30</sub>; spotting and blotching Magenta Rose<sub>27</sub> fading to Magenta Rose<sub>27/3</sub>, fading to Lemon Yellow 4<sub>2</sub>; margin Magenta Rose<sub>27</sub>; costa Magenta Rose<sub>27</sub>; veins not outstanding; base ground color, Magenta Rose<sub>27</sub> fading to Magenta Rose<sub>27/3</sub>, fading to Lemon Yellow 4<sub>2</sub>; tip ground color, Magenta Rose<sub>27</sub> fading to Magenta Rose<sub>27/3</sub> fading to Lemon Yellow 4<sub>2</sub>.

Compact, medium grower, 50 percent sun; introduced by Alvin Cutler, Miami.

#### 6. DOCTOR STANNUS (Stannus)

Leaf large, 10" X 3 1/4"; No. 4; slightly troughed; petiole 3" X 3/16", Maroon<sub>10</sub><sub>30</sub>; medium; upper surface edges undulate; lower surface ridged, bright; ground color Ivy Green<sub>60</sub><sub>60</sub>; spotting and blotching Mimosa Yellow<sub>60</sub><sub>2</sub> suffused with Claret Rose<sub>21/1</sub>; margin not outstanding; costa Claret Rose<sub>21</sub>; veins not outstanding; base ground color, Mimosa Yellow<sub>60</sub><sub>2</sub> suffused with Claret Rose<sub>21/1</sub>; tip ground color, Mimosa Yellow<sub>60</sub><sub>2</sub> suffused with Claret Rose<sub>21/1</sub>.

Fairly compact, fast grower, 50 percent sun; introduced by Alvin Cutler, Miami.

#### 7. DORIS KISKI

Leaf very large, 11" X 3 3/4"; No. 10, slightly recurved, slightly twisted; petiole 2 1/8" X 3/16", Indian Lake 826<sub>1</sub>; leathery, waxy; upper surface slightly bullate, undulate; lower surface ridged, bright; ground color Ivy Green<sub>60</sub><sub>60</sub>; spotting and blotching Chinese Yellow<sub>60</sub><sub>6/1</sub> suffused with Cardinal Red<sub>22/3</sub>; margin Cardinal Red<sub>22/3</sub>; costa Cardinal Red<sub>22/3</sub>; veins not outstanding; base ground color, Chinese Yellow<sub>60</sub><sub>6/1</sub> suffused with Cardinal Red<sub>22/3</sub>; tip ground color, Chinese Yellow<sub>60</sub><sub>6/1</sub> suffused with Cardinal Red<sub>22/3</sub>.

Compact, fast grower, 75 percent sun; introduced by Archie Ortagus, Miami.

#### 8. GLORIOSA

Leaf large, 8 3/4" X 4 1/2"; No. 8; petiole 1 3/4" X 5/32", Maroon<sub>10</sub><sub>30</sub>; leathery, waxy; upper surface slightly bullate, undulate; lower surface ridged; ground color Ivy Green<sub>60</sub><sub>60</sub> fading to Spinach Green<sub>60</sub><sub>60</sub>; spotting and blotching Rose Red<sub>24</sub>; margin Rose Red<sub>24</sub>; costa Chrysanthemum Crimson<sub>24/2</sub>; veins Chrysanthemum Crimson<sub>24/2</sub>; base ground color, Rose Red<sub>24</sub>; tip ground color, Rose Red<sub>24</sub>.

Compact, fast grower, 50 percent sun; introduced by Henry Coppinger, Miami.

#### 9. LUTHER BURBANK

Leaf large, 9" X 7/8"; No. 8; petiole 1 3/4" X 5/32"; Maroon<sub>10</sub><sub>30</sub>; leathery; upper surface slightly bullate, slightly undulate; lower surface ridged, veins Lettuce Green<sub>61</sub>, ground color Maroon<sub>10</sub><sub>30</sub>; ground color approaches Ivy Green<sub>60</sub><sub>60</sub><sub>60</sub>; spotting and blotching Cardinal Red<sub>22</sub>; margin Cardinal Red<sub>22</sub>; costa Cardinal Red<sub>22</sub>; veins not outstanding; base ground color, Cardinal Red<sub>22</sub>; tip ground color Cardinal Red<sub>22</sub>.

Compact, fairly fast grower, 50 percent sun; introduced by Alvin Cutler, Miami.

#### 10. MONARCH

Leaf very large, 19" X 6"; No. 8; petiole 4 1/4" X 3/16", Maroon<sub>10</sub><sub>30</sub>; leathery; upper surface fairly smooth, edges slightly undulate; lower surface ridged; ground color approaches Ivy Green<sub>60</sub><sub>60</sub><sub>60</sub>; spotting and blotching Chrysanthemum Crimson<sub>24/2</sub>; margin Chrysanthemum Crimson<sub>24/2</sub>; costa Chrysanthemum Crimson<sub>24/2</sub>; base Scheeles Green<sub>60</sub>, Rose Bengal 25<sub>2</sub> suffused with Straw Yellow<sub>60</sub><sub>1/2</sub>; tip ground color, Rose Bengal 25<sub>2</sub> suffused with Straw Yellow<sub>60</sub><sub>1/2</sub>.

Compact, medium to fast grower, 75 percent sun; introduced by Henry Coppinger, Miami.

#### 11. NORMAN ROCKWELL

Leaf large, 9" X 4 1/8"; No. 11; petiole 2 3/8" X 3/16", Maroon<sub>10</sub><sub>30</sub>; leathery; upper surface bullate, undulate; lower surface bullate; ground color approaches Black; spotting and blotching Rose Red<sub>24/1</sub> fading to Vermilion 18<sub>2</sub>; margin none; costa Rose Red<sub>24/1</sub>; veins not outstanding; base ground color, Rose Red<sub>24/1</sub> fading to Vermilion 18<sub>2</sub>; tip ground color, Rose Red<sub>24/1</sub> fading to Vermilion 18<sub>2</sub>.

Compact, fast grower, 75 percent sun; introduced by A. R. Christian, Miami.

#### 12. POLYCHROME

Leaf very large, 12 1/2" X 5 3/4"; No. 12; petiole 3 5/8" X 3/16" Delft Rose<sub>20/1</sub>; leathery; upper surface moderately bullate, edges slightly undulate; lower surface ridged; ground color Spinach Green<sub>60</sub><sub>60</sub>; spotting and blotching China Rose<sub>24/1</sub> outlined with Mimosa Yellow<sub>60</sub><sub>2/2</sub>; margin China Rose<sub>24/1</sub> outlined with Mimosa Yellow<sub>60</sub><sub>2/2</sub>; costa Mimosa Yellow<sub>60</sub><sub>2/2</sub> suffused with China Rose<sub>24/1</sub>;

veins Mimosa Yellow<sub>002/2</sub> suffused with China Rose<sub>24/1</sub>; base ground color, Mimosa Yellow<sub>002/2</sub> suffused with China Rose<sub>24/1</sub>; tip ground color. Mimosa Yellow<sub>002/2</sub> suffused with China Rose<sub>24/1</sub>.

Compact, fast grower, 25 percent sun; introduced by A. R. Christian, Miami.

#### 13. RUBYII (Pink Marble)

Leaf very large, 10 3/8" X 4 7/8"; No. 8; petiole 2 1/2" X 1/4", Chrysanthemum Crimson<sub>24/1</sub>; leathery; upper surface bullate, very undulate; lower surface heavily ridged; ground color approaches Ivy Green<sub>0001060</sub> fading to Spinach Green<sub>0060</sub>; spotting and blotching Rose Opal<sub>22/1</sub>, Mimosa Yellow<sub>002/2</sub>; margin Rose Opal<sub>22</sub>; costa Indian Lake 826<sub>3</sub>; veins Indian Lake 826<sub>3</sub>; base ground color, Rose Opal<sub>22</sub>

fading to Rose Opal<sub>22/2</sub>, Mimosa Yellow<sub>002/2</sub>; tip ground color, Rose Opal<sub>22</sub>.

Compact, medium grower, 50 percent sun; introduced by Ralph Davis, Miami.

#### 14. SIBYL GRIFFIN

Leaf large, 10 1/2" X 5"; No. 3; petiole 1 5/8" X 3/16", Maroon<sub>30</sub>; leathery, waxy; upper surface undulate; lower surface slightly bullate, ground color approaches Oxblood Red<sub>00623</sub>, veins Lettuce Green<sub>061</sub>; ground color Ivy Green<sub>0001060</sub>; spotting and blotching Indian Orange<sub>7/3</sub>, Indian Orange<sub>13/3</sub>; margin Cardinal Red<sub>22/3</sub> fading to Indian Orange<sub>13</sub>; costa Cardinal Red<sub>22/3</sub>; veins Cardinal Red<sub>22/3</sub>; base ground color, Cardinal Red<sub>22/3</sub> fading to Indian Orange<sub>7/3</sub>; tip ground color, Cardinal Red<sub>22/3</sub> fading to Indian Orange<sub>13</sub>.

Compact, fast grower, 75 percent sun; introduced by Alvin Cutler, Miami.

## GLADIOLUS CORM TREATMENTS IN THE CONTROL OF FUSARIUM ROT

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Each year about 50 million gladiolus corms or "bulbs" on Florida farms are rotted by *Fusarium oxysporum f. gladioli* Snyder and Hanson. This fungus attacks gladiolus and certain members of the iris family. It lives in the soil for many years after diseased corms are planted. It also lives from year to year in corms and cormlets by which varieties are propagated. Infected corms often do not show any rot through one or more seasons; and it is these latent or dormant infections that make the disease so difficult to control (3).

Fusarium wilt diseases of other crop plants, with few exceptions, are controlled by planting disease-free seed in soil that is free of the fungus, or by planting resistant varieties. In gladiolus, satisfactory disease control often is not possible by the first method because disease-free planting stock is not commercially available. Therefore, moving to new land is only partly effective. Satisfactory control with resistant varieties is not entirely practical either, because the shipping quality of such

varieties is inferior to that of the standard commercial varieties. Furthermore, even the most resistant varieties available eventually become diseased when grown for several years on soil containing the fungus (4).

The fungus that causes fusarium rot enters corms through roots and wounds. Infection may spread from the mother corm to the new corm and cormlets. Corms may rot at any stage of growth, but most rotting generally occurs during the curing and cool storage periods. Blowing warm air over corms during the first week or ten days after digging has helped in some cases to reduce losses from rotting in storage.

The most general method of controlling fusarium corm rot is chemical treatment of the corms before planting. Mercuric chloride solution was commonly used until 1944 when Creager (1) recommended a 15-minute dip in a solution of 1 pound New Improved Ceresan in 50 gallons of water, immediately before planting. That proved to be fairly safe and effective on all varieties and is still used by many growers. During the past five years, however, N. I. Ceresan has proven unsatisfactory in several cases and growers began to use other fungicides, to treat after harvest instead of before planting, and to put more emphasis on obtaining healthier corm stocks.