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DEVELOPMENTS IN DRACAENA PRODUCTION

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Tropical Ornamentals

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Dracaena fragrans and *Dracena fragrans* 'Massangeana' are two of the most important plants used in interiorscaping. These plants are native to tropical Africa but are known to have been under cultivation in Europe since at least the mid-1700's. Currently, these plants are available in bush, cane, tree, and stump forms. They are used extensively in interiorscapes because of their aesthetic impact and because they perform well under low light conditions with very few insect and disease problems.

This paper will focus mainly on the production of this plant in the cane form and will introduce some new techniques which could have a significant effect on how cane is produced and grown.

Until the 1960's most cane was collected in Central and South America and shipped to the United States for growing. During the past 25 years extensive acreage of cultivated cane has greatly increased both the total volume and diversity of

sizes, and made cane available 12 months of the year. Cane is normally harvested and processed in a 10-day period and shipped to final producers. This process usually includes cutting the cane into 1-, 2-, 3-, 4-, 5- or 6-ft. pieces, waxing the top end, treating with indolebutyric acid (IBA) and eventually shipping in climate-controlled containers.

In south Florida the most commonly-grown configurations are canes of staggered heights as follows: 8 or 10-in. pots having a 3-ft., 2-ft., and 1-ft. cane; 10 or 12-in. pots having a 4-ft., 3-ft. and 2-ft. cane; and 12 or 14-in. pots having a 5-ft., 4-ft., 3-ft. and 2-ft. cane. Normally from one to three lateral buds develop at the top of each cane, thus producing the tufted look that we expect in normal cane production.

The development of the lateral buds at the top (apical) end of the cane are of both horticultural and botanical interest. Dracaenas are botanically monocotyledenous plants. This group includes other major plants such as grasses and palms. Most of the herbaceous (leafy type) members of the monocot group are quite different from the dracaenas in that they do not exhibit secondary cambial growth. In this regard, the dracaena group is more like the dicotyledenous plants, such as *Ficus*, *Quercus* (oaks), and many other common plant species. Dracaenas have a secondary cambium, which allows for lateral growth or thickening of stems, as well as vascular bundles within the stems. A cross examination of a dracaena stem will show that there are a series of leaf scars around the stem, each containing a lateral or axillary bud. The fact that only the top buds develop on cut cane is due to what is referred to as apical dominance.

The concept of apical dominance is well known in horticulture. Many plants exhibit this phenomenon, which is the inhibition of the development of buds located below the apex or tip of the plant. When certain plants are pinched or pruned, non-apical buds often develop and, thus, the plants branch or become bushier.

Nowhere is apical dominance more evident than in the growing of *Dracaena fragrans* 'Massangeana' in the cane form. In almost all cases 1 to 3 buds develop at the apical end of a 'Massangeana' cane, while buds below this point are inhibited and remain dormant.

The possibility of artificially inducing additional buds to develop in this plant without sacrificing the apical heads has been the goal of many people in our industry. This response would allow a myriad of new possibilities, including:

1. Promoting more apical heads. Often only 1 or 2 develop while 3 or more is most desirable.

2. Promoting a bushier look at the base of the pot. Often 1- or 2-ft canes will develop only one head.

3. Promoting head development along the length of taller canes to give a fuller look or to develop heads in selected areas to give a more decorative look, such as the poodle cut.

4. Promoting branching during field propagation to produce plants that have more character.

It is generally accepted that non-apical buds do not develop because of growth hormones produced at the apex (top) of the plant that move downward and inhibit non-apical (lower) bud development.

It has been observed many times that when cane is injured, buds below the injury will sometimes develop. Additionally, in a branched cane, each branch develops independently. An apex on one branch, even if it is shorter than another, will develop apical buds. This indicates that the inhibiting hormone travels mostly downward.

After considerable research⁷ it seemed that the answer to the problem of inducing lateral buds to develop without affecting the top buds was to isolate a bud or buds from the influence of more apical buds. After applying this reasoning, it remained to develop a technique to accomplish this goal. We have found that cutting deeply into the cane results in the development of lateral buds below the cut area. This is not a new idea. Reed and Holme did this in 1919 with lemon trees. A bud or buds will develop anywhere from directly below the cut to a distance of 5 or 6 in. below it. This distance is related to the location of buds on the side of the cane that is cut. *Dracaena fragrans* 'Massangeana' buds form in the leaf axils of the developing plants. Since the leaves are formed in whorls, it follows that the buds are present in a whorled pattern around the cane. We have observed that 3 leaves complete approximately a 360° circle, with the center of each leaf being 120° apart, each bud being progressively further up or down the cane. The vertical distance between buds is related to growth factors that affect the rate of growth and vigor of the plant.

We have also found that by cutting in selected areas of the cane, it is possible to promote a specific bud or buds to develop (Figure 1). The location of a cut on old or new wood on the cane seems to make no difference in terms of success rate, and the development of these lateral buds has no detrimental effect on the growth of apical heads or on root growth. Five-foot canes have developed up to 4 lateral buds when properly cut. Several of these have been grown to salable size and sold to the trade.

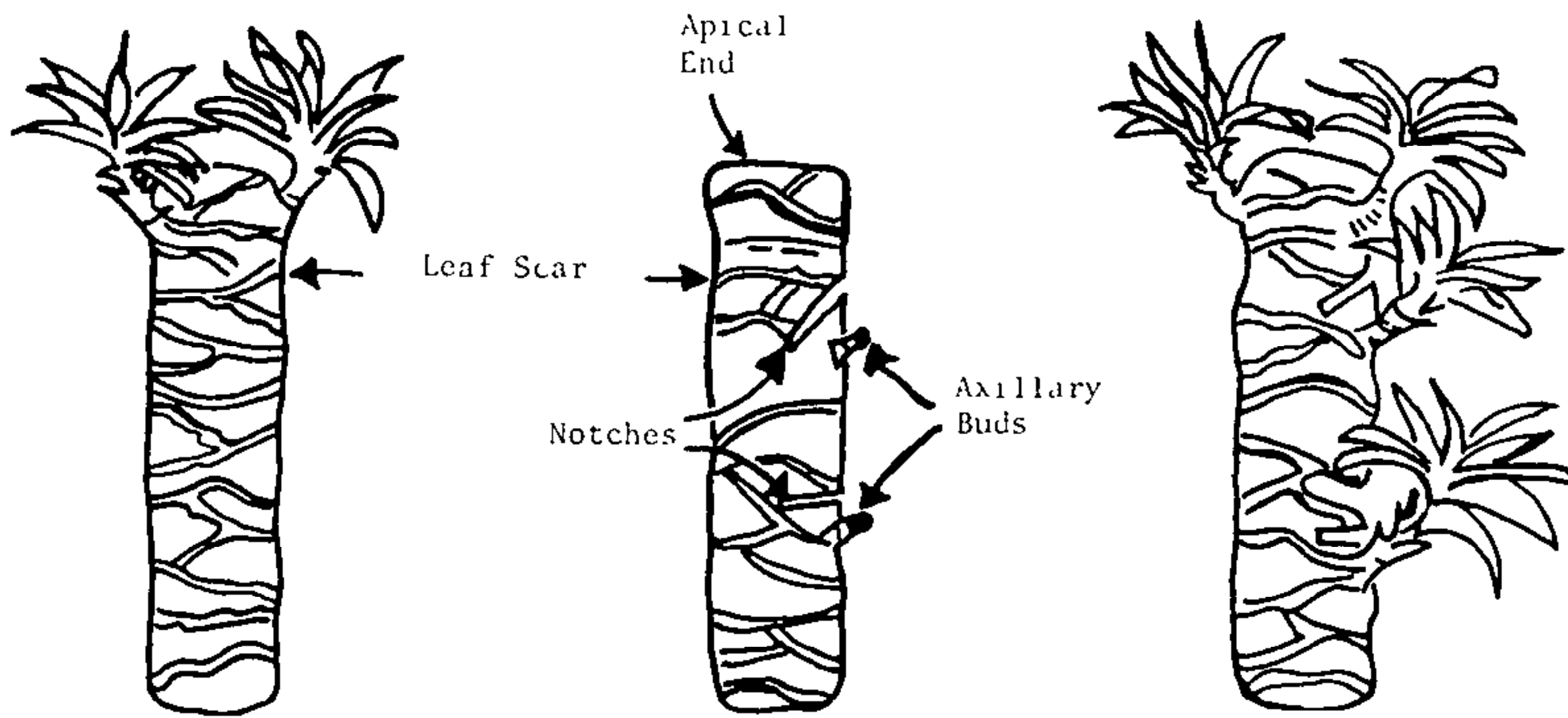


Figure 1. Technique for promoting lateral bud development in dracaena canes Left Typical unnotched cane Center: Cane following notching Right Notched cane producing lateral buds.

It is sometimes observed that a bud will begin to develop near the apex and then stop developing and end up as a stub. This is probably due to hormone production in buds that are more advanced, or more apical (further up on the cane). We have found that a deep cut above such a bud will result in full development. Currently, our work has been done with cuts $\frac{1}{3}$ to $\frac{1}{2}$ of the way through the cane. We are experimenting with the minimum depth of cut to assure bud development.

These research efforts are only in their beginning stages. We are very excited about the possibility of making a very good plant even better. We are currently working with *Dracaena marginata* and *Dracaena deremensis* 'Warneckii', and results to date are very promising.

JAPANESE STYLE WORK GROUPS AT CYPRESS CREEK NURSERY, INC.

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After a study of Japanese style management groups by Leiser Colburn, it was decided by the management team¹ at Cypress Creek Nursery to set up a trial program in one department of the nursery to see if such methods would prove beneficial in the company. The propagation department was selected for two reasons:

¹ Management team: Bill Colburn, Bill Mincey, Doug Ryan, June Sunday