Iochroma Fuchsioides: The Newest Addition to Your Pollinator Garden

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EXECUTIVE SUMMARY

Iochroma fuchsioides, the Red Iochroma plant, offers a new and exciting option for consumers to decorate their pollinator gardens with a rare and exotic upcoming crop. This Solanaceae relative of Brugmansia from the foggy Andean cloud forests of South America is a blooming powerhouse, continuously producing hummingbird-attracting bright red flowers from May into early October. Compatible as a landscape shrub in USDA zones 9B-11, *Iochroma fuchsioides* grows 1-5 meters tall with large, dense leaves and clusters of long tubular flowers with high nectar production. An important medicinal plant to the Kamsá and Iganos people of the Sibundoy Valley, the Red Iochroma will delight consumers with a fascinating cultural history to complement its attractive morphology. No cultivars are currently available for this species, opening up possibilities for private sector breeding programs to develop varieties to compete against other species within the *Iochroma* genus.

I. INTRODUCTION

A. Study Species.

The new crop for horticultural consideration is *Iochroma fuchsioides*. Common names include Red Iochroma, Cloudforest Burning Bush, and Red Angel's Trumpet in English. Within its native South American Range, it is also known as Arbol de Campanilla (little bell tree), Flor de Quinde (hummingbird flower), and Borrachera (when taken as an intoxicant).

B. Taxonomic Classification and Geographic Distribution in the Wild.

Iochroma fuchsioides (Bonpl.) Miers, previously known as *Lycium fuchsioides* Bonpl., is a member of the Solanaceae family ("Tropicos | Name - Iochroma fuchsioides (Bonpl.) Miers" 2022). This species, along with the other members of its genus, are native to the Andean cloud forests of Colombia, Ecuador (Raffauf *et al.* 1991) with drift into Peru (Smith *et al.* 2008) between 1800 and 2800 meters above sea level.

FIGURE 1. Geographical distribution of *Iochroma fuchsioides* in its native range.

The climate of cloud forests frequent overcast skies with low evaporation rates due to closed canopies (Parra Sánchez *et al.* 2016). However, *I. fuchsioides* is found most commonly in either cultivated or disturbed areas within the region, like forest gaps, pastures, and edges of roads which have adapted them to more exposed conditions (Smith & González 2011). To the best of my knowledge, there have been no recorded instances of this species spreading outside of its native South American range and becoming invasive.

I. fuchsioides can grow as a perennial shrub or tree, averaging 1-5 meters in height. The plant has dense, reddish-brown branches with oblong, 10-15 cm long and 5-6 cm wide leaves. Blooming in May and continuously producing until early fall, the flowers are bright red trumpet-shaped tubes that flare at the opening and grow in clusters emerging from a single point on the branches (Schultes 1977). The plants produce the best floral clusters when in soils that contain clay and lime (Quintana *et al.* 2016). When matured, the flowers produce elongated berries typical of those in the Iochrominae (Cueva Manchego *et al.* 2015).

FIGURE 2. The tubular flowers produced by *Iochroma fuchsioides*.

FIGURE 3. Leaves and young floral buds of *Iochroma fuchsioides*.

While all the parts of the plant contain some amount of toxicity and are not considered edible, the Kamsá and Iganos people of the Sibundoy Valley have used *I. fuchsioides* as a magico-religious hallucinogen and narcotic known as “Borrachera” or “Borrachera Andake” (Raffauf *et al.* 1991). One of the largest distributions of *I. fuchsioides* resides between the Sibundoy Valley and the city of Pasto, likely due to its importance to the indigenous peoples as a medicinal plant (Schultes 1977). Typically, when used as an intoxicant, the medicine men crush the leaves and brew a tea or ingest the raw stems and flowers for psychoactive effects. As a medicinal tool, the roots are sometimes used in childbirth to stimulate labor (Schultes 1977). Although chemical screenings have found several types of naturally occurring steroids (withanolides), there is currently very little chemical or botanical understanding in relation to these practices (Raffauf *et al.* 1991).

II. CROP SPECIES

A. History and Potential Uses.

The close relative to *I. fuchsioides*, *Iochroma cyaneum* (Lindl.) has been propagated to produce several cultivars of several colors. The *I. cyaneum* cultivars ‘Indigo’, ‘Royal Blue’, ‘Sky King’, and ‘Wine Red’ were obtained as rooted cuttings by Kartuz Greenhouses in 1999 and evaluated for three years. The cultivars were easily propagated by wood cuttings with an 83-94% success rate of establishing roots 4-6 weeks after undergoing an indolebutyric acid treatment and being intermittently misted. Despite being native to highland elevations and cooler temperatures, the plants were fast-growing, displayed heat tolerance for the southern Florida climate, and continuously produced blooms (Meerow *et al.* 2004). Although there are both published and commercially available cultivars for seeds of other *Iochroma* species, *I. fuchsioides* does not appear to have any established cultivars on the market. Possible future explorations of this genus may offer crosses with *I. fuchsioides* to develop cultivars within the species to compete with current genera varieties.

Given the morphology and extended blooming period of the flowers, *Iochroma fuchsioides* has established itself as a hummingbird attractant. With the elongated, fused petals to fit the shapes of their beaks, attractive red hue, and high nectar volume and sugar concentration compared to display size, the plant’s most common pollinators are hummingbird species (Smith *et al.* 2008). These results show a potential for the crop to be grown and marketed as a hummingbird-attracting landscape shrub within USDA Zones 9B-11 (Meerow et al. 2004).

III. PRODUCT INFORMATION

A. Anticipated Cultural Requirements.

This woody perennial crop is best grown in rich, well-draining soil mixes. Options for optimal growth include one-part perlite (small to medium-sized particles) and two-parts potting mix, avoiding NPK contents above 15-15-15; or an equal-parts mix of coco fiber and perlite. The following option will require a granular fertilizer application in absence of a typical potting mix

("Iochroma fuchsioides - Red Iochroma - Growing tips", 2022). Any soil or soilless media should maintain a pH between 6.1 and 6.5. Under greenhouse conditions, a 20-40% shade cloth is required while the plant establishes, but partial sun is sufficient when fully grown. Mature plants can be potted in patio containers if they are equipped with proper drainage holes. On average, a 14-24" diameter pot with a depth of 14" is sufficient for healthy root growth ("Burning Trumpet Bush [*Iochroma fuchsioides*] – Urban Perennials").

I. fuchsioides prefers daily temperatures between 13 and 30°C and a cool overnight temperature below 18°C. On days exceeding 30 degrees, a potted plant may need to be moved into a shaded or dappled area. Plants used in landscaping are more heat tolerant, but they should still be positioned where a couple hours of partial shade are allowed ("Iochroma fuchsioides - Red Iochroma - Growing tips", 2022).

B. Market Niche.

The *I. fuchsioides* plants begin their blooms in May, making them the perfect spring crop for customers to plan their summer pollinator gardens with. Market competitors may be common pollinator attractants like *Lobelia sp*., *Monarda sp*., or *Agastache sp*. However, the advantage of *I. fuchsioides* is its exciting, tropical origins and unique floral morphology.

A potential hurdle for production is its climatic conditions. While it can be planted as far as Zone 7, well established plants can still be damaged by harsh frosts. Although most damage comes in the form of lost leaves, shrubs with well-established and healthy root systems can survive freezes up to -4°C if properly mulched ("Burning Trumpet Bush [*Iochroma fuchsioides*] – Urban Perennials").

A potential marketing story to captivate customers may include the following:

"From out of a dream, a hummingbird weaves through the misty Andean cloud forest to find a cluster of striking scarlet tubes. The promise of nectar brings the visitor back time

and time again, lighting up the forest with brilliant hums and flickers of bright feathers. Bring this scene home to your own backyard with the Red Iochroma, the new and upcoming perennial sure to dazzle your garden's visitors. Year after year these plants will delight you with unique, hummingbird-attracting blooms that will breathe life back into your pollinator garden. Plans to hit the market lie within the next four to five years, so get ready to be on the cutting edge of pollinator planting."

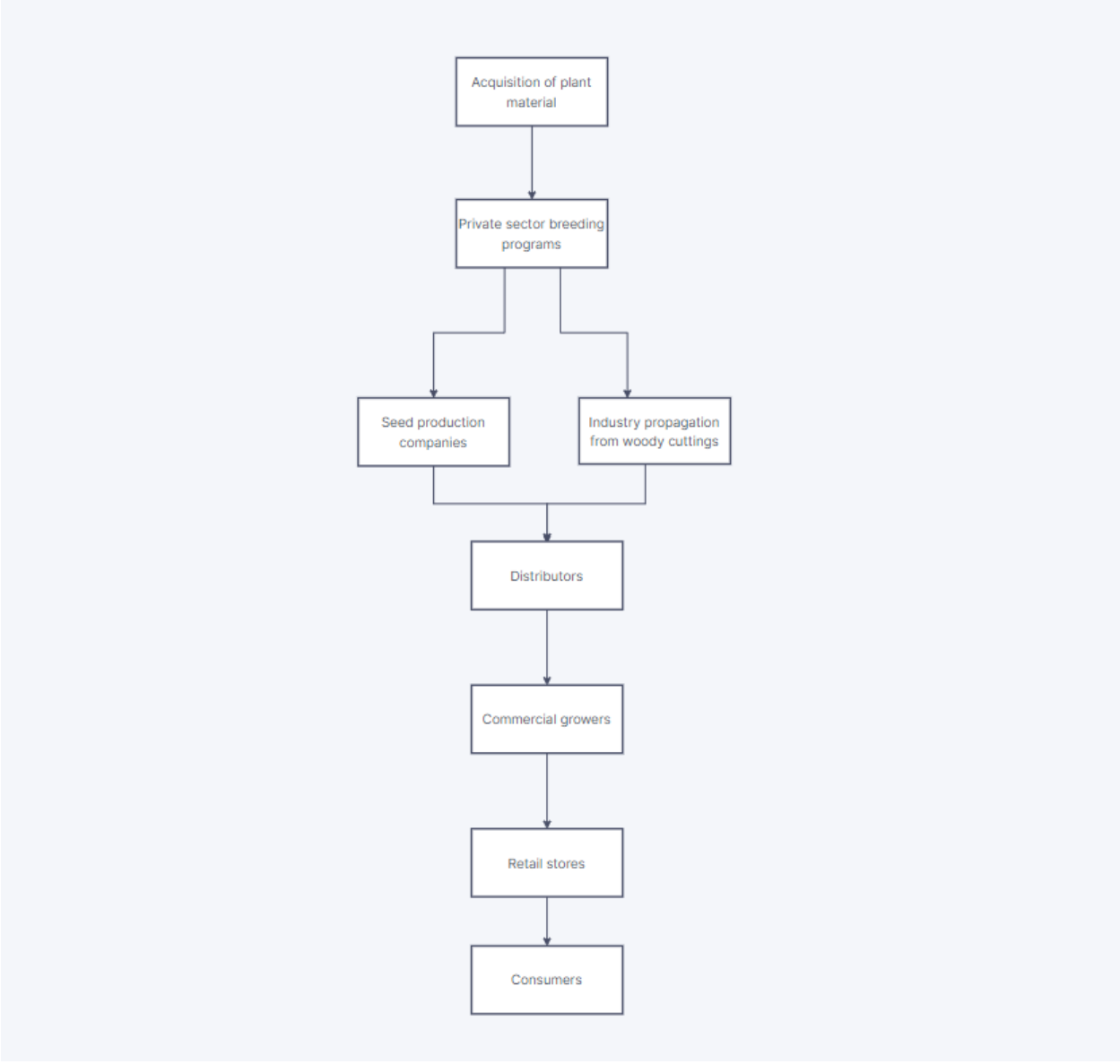

FIGURE 4. Anticipated horticultural distribution chain, starting with the collection of *Iochroma fuchsioides* seed and/or cuttings and ending with the consumer public.

IV. PRODUCT INFORMATION GUIDE (PIG) & CROP SCHEDULE

When grown from seed in controlled greenhouse environments, germination times can range from 20 days to two months based on adequate moisture exposure after planting. Seeds should be sown in 288 plug trays in a well-draining media of two parts germination mix and one part perlite. Sow 1 seed per plug, with seeds spread directly on top of soil media and lightly pressed into each plug. Sprinkle additional media over the cells to cover each seed. Soil pH should be maintained between 6.1 and 6.5 to properly stimulate germination. Plug trays must be kept in mist chambers with average humidity between 95-100% and maintained at above 35 degrees Celsius until germination has been achieved. Moisture and humidity can be controlled by utilizing plastic bags or domes over trays. Partial daily sun exposure is necessary for germination; keep plug trays under 20-40% shade cloth. Transplanted seedlings should be moved into 4 inch pots with excellent drainage holes and may be fertilized with an evenly distributed NPK mix of 15-15-15 once a month while plants establish until late fall and into winter when fertilizers should be discontinued. Pruning should be done during the winter to avoid interrupting the continuous blooms. Following a year of growth, slow-release fertilizers like Miracle-Gro and Osmocote may be sparingly applied 8 inches away from the base of the plant three times per year to ensure quick growth and establishment of a healthy root system capable of withstanding potential frosts. Additional plant growth regulators are not required for the production of *Iochroma fuchsioides.*

To reach target sell dates of late spring when plants are just beginning their blooms, seed production should begin in February or early March. The crop may be harvested for individual sale 14 weeks after germination as young plants, or, after a year of growth as a fully developed perennial shrub. Plants should be on the cusp of flowering or already show clusters of flowers when retailers receive them, so shipments from producers to retailers should occur two weeks before target sell date.

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