Producing Coleus for Profit: A Commercial Growers Guide
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A Commercial Grower's Guide

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I. INTRODUCTION

A. *Coleus* x *hybridus* are members of the mint family, Labiatae.

B. Introduced into cultivation in 1825, they are native to the Eastern hemisphere tropics, particularly Africa and East India.

C. Coleus are favorite garden annuals and house plants primarily due to their ability to grow in sunny or shady locations and perform well in beds, window boxes, tubs and hanging baskets. Valued for their brightly colored foliage rather than for their non-descript flower spikes which are usually pinched off as they form.

D. Coleus retain their brilliant colors throughout the growing season and require very little maintenance.

II. CULTIVARS

A. Generally, coleus are classified by leaf size and shape (see Table 1 for complete descriptions of various cultivars).
1. Small-leaved cultivars, such as Carefree, are usually self-branching and quite dwarf.
2. Medium-size leaves are often "rainbow-type" or heart-shaped, and the plants are generally not self-branching.
3. There are a few large-leaved cultivars, such as Red Monarch.
4. Fringe leaved coleus are also popular; Magic Lace is 90% fringed and Figi is 100% fringed.

B. Many cultivars are self-branching.
1. Self-branching cultivars do not require pinching; they are naturally short and bushy. These include Carefree, Saber, Dragon, Seven Dwarfs and Wizard.
2. Rainbow types, however, are usually not self-branching and need to be pinched and have their flower spikes removed frequently.

III. PROPAGATION

A. Seed
1. Coleus are grown primarily from seed; there are approximately 90,000 to 110,000 seeds per ounce.
2. Only use seed from reliable sources and order new seed each year for best results.
3. Store the seed in a cool, dry place that is safe from rodents and insects.
4. Seeds germinate in approximately 10 days under greenhouse conditions.

B. Media
1. Use a fine, porous medium such as peat-lite mix or fine sphagnum with a pH around 6.5.
2. Media should be treated to be pathogen free.

C. Sowing seeds
1. Moisten the media thoroughly before sowing. Watering immediately after sowing may bury or wash away the seeds.
2. Using methyl bromide treated soil may reduce germination.
3. Sow the seed in rows about 2'' apart and ¼-⅜'' deep.
4. A standard size flat (11½ x 22¼'') will require about 1,000 seeds.
5. Cover the seed with a thin layer of fine vermiculite to help keep moisture around the seed, but still allow light to penetrate. The seed need not be covered if a mist system is used.
6. It is important with coleus to use a fungicide drench treatment when sowing to prevent damping off.

D. Watering
1. Keep the surface of the media uniformly moist; any moisture fluctuation will result in seedling death.
2. Water carefully so that seed is not washed away or buried by splashing soil. Use a fine water fog nozzle, an automatic mist system or sub-irrigation.
3. Use warm water (70°F); cool water (below 60°F) will delay germination.

E. Temperature and humidity
1. The best air temperature for germination is between 70° and 80°F for the first week after sowing, then lower the temperature to 65°F for the next two weeks.
2. Keep the soil temperature above 70°F by applying bottom heat; monitor with a soil thermometer.
3. To keep the humidity high, cover the flats with clear polyethylene or glass.
   a. *The temperature will be higher under the polyethylene or glass than it is in the greenhouse.*
   b. *Remove the covering on very warm or sunny days to prevent excessively high temperatures.*
   c. *Remove the covering after germination when seedlings are first visible.*

F. Fertilization
1. Apply a liquid feed of 100 ppm of 15-16-17, or equivalent, about 1½-2 weeks after sowing.

IV. TRANSPLANTING/GROWING ON

A. Transplanting
1. Seedlings can be transplanted about 3 weeks after sowing when the first true leaves are present, or when the seedlings can be handled easily.
2. Transplant into thoroughly moistened media, water with warm water, and do not allow the soil to dry out completely.
3. Coleus are usually grown in flats of 24-72 or in 3-4'' pots.
4. After transplanting, allow 5-6 weeks until sale.

B. Damping off
1. Coleus are very susceptible to damping off, so do not plant the seedlings any deeper than they were in the seed flat.
2. A post-transplant fungicide drench is recommended. When applying this drench, use a light second watering. However, do not apply when the soil is dry or even moderately dry.

C. Growing Media
1. A typical bedding plant peat-lite mix contains the following ingredients: (Adjust according to your region.)

50% peat/50% perlite or 50% peat/50% vermiculite by volume

- **11 bushels peat, 11 bushels vermiculite or perlite per cubic yard***
- **5 pounds fine dolomitic lime**
- **2 pounds superphosphate 0-20-0**
- **1 pound potassium nitrate**
- **2 pounds slow release fertilizer (14-14-14)**
- **3 ounces wetting agent**
- **4 tablespoons fritted trace elements or equivalent amount of any microelement mix**

*** one cubic yard equals 27 cubic feet or 22 bushels. However, since shrinkage occurs in mixing, add 4 bushels for one full yard of mix. Therefore, 26 bushels before mixing will give one yard or 22 bushels after mixing.**

2. A soil based mix contains the following ingredients:

- **⅓ cubic yard loam soil**
- **⅓ cubic yard sphagnum peat**
- **⅓ cubic yard perlite**
- **2 pounds 0-20-0 superphosphate**

(adjust soil pH to 5.8 to 6.0 by adding dolomitic limestone to increase pH or $FeSO_4$ to lower pH)

3. Whatever type of mix you choose, it must provide good aeration, drainage, and moisture-holding capacity. A peat-lite mix gives the most consistent results.

D. Fertilization
1. Before fertilizing, know the pH and soluble salt content of the soil. Use a pH meter and solubridge to spot check pH and soluble salts weekly.
2. Send a sample of the initial soil mix to a soils testing lab for complete analysis, then make necessary adjustments prior to planting.
3. A general recommendation for a peat-lite mix is to fertilize lightly with 100 ppm of 15-16-17 or equivalent of $N\text{-}P_2O_5\text{-}K_2O$ every second or third watering.

E. Temperature
1. After transplanting, grow at 60-65°F. Coleus grown at 70°F will be ready for sale one week earlier than those grown at 60°F.
2. On cloudy days the temperature should be 5°F higher than night temperature and 10-15°F higher on sunny days.
3. Harden plants for the last 7 days before sale by dropping temperatures to 55-60°F and restricting water.

F. Growth regulators
1. A-Rest is effective in reducing coleus height: 100 ppm is usually used.
2. B-Nine is relatively ineffective in reducing coleus height.

G. Spacing
1. Place flat to flat in greenhouse, leaving a 2' wide center aisle. This will utilize 90% of the greenhouse space.
2. Raise the plants off the ground to prevent rooting into the greenhouse floor and to increase air circulation.

H. Light
1. High light as well as cool temperatures (under 80°F) enhance leaf color.

V. SCHEDULING

A. Total time for coleus crop is 8-9 weeks at 65°F for pack sales and 9-10 weeks for 4'' pots.
1. Total time will be one week earlier in the South or if plants are grown at 70°F.

B. Schedule for pack sales grown at 65°F, ready for May 1 sales follows:

Week 10: Sow seed (70°F)
Week 11: Seed germination (lower night temperature to 65°F)
Week 13: Transplant (65°F)
Week 17: Lower temperature to harden plants (55-60°F)
Week 18: Sales

VI. COMMON PROBLEMS

A. Damping Off
1. Damping off is caused by *Rhizoctonia* and/or *Pythium* fungi and results in death of seedlings.
2. It often spreads in a circular pattern through the seed flat; sowing the seeds in rows may help curtail spreading.
3. Control by using steam or fungicide soil treatment prior to sowing seed and an additional fungicide treatment after transplanting the seedlings.
4. Be careful not to transplant the seedlings too deeply.

B. Cool Temperatures
1. Temperatures below 60°F can slow or stall growth, especially on young transplants.
2. In the seed flats, cool media temperatures (below 70°F) can severely delay germination and growth.

C. Insects

1. Aphids
   a. *Aphids are light-colored, crawling insects that suck plant juices and cause stunted growth or a general decline in plant vigor.*
   b. *They often appear on growing tips or under leaves.*
   c. *They secrete a sticky honeydew which supports a black sooty mold growth.*

2. White fly
   a. *Adults are flying insects with powdery white wings which cluster on the underside of the leaves.*
   b. *They suck plant juices and cause a general decline in vigor.*
   c. *Also, they secrete a sticky honeydew which supports a black sooty mold growth.*

LIST OF CURRENT COLEUS CULTIVARS AND THEIR PHYSICAL CHARACTERISTICS.

Cultivar	Colors	Leaf Shape	Habit	Comments
Brilliant	golden, pink, red, velvet, mix series	heart-shaped, large to medium	18-20" garden height rainbow type	
Carefree	bronze, flame, jade, pastel, pink, velvet, scarlet, golden, red mix series	"oak-leaf", small, deeply lobed	dwarf, self-branching, bushy, uniform	no pinch
Color Magic	young leaves: red edged with green older leaves: cream with red veins, edged green	heart-shaped	rainbow type	
Color Pride	bright rose, edged green	heart-shaped, large	rainbow type	
Dragon	scarlet, pink, series	heart-shaped, large lobed	erect	good in beds
Dwarf Salicifolius	yellow, red	very narrow, deeply serrated	compact, dwarf, 8" garden height	
Emerald Pink	rose, edged green and bronze	heart-shaped	rainbow type 18-20" garden height	good in beds
Festive Dance	orange, edged bronze	serrated	rainbow type dwarf, compact	colorful, separate cultivar
Flamenco	scarlet, edged yellow-green	heart-shaped, fringed	rainbow type 20" garden height	uniform
Fiji	(all colors with green edge) scarlet, pastel, red, blush, lemon lime, rose pink, multicolor, jade, velvet	large, 100% fringed	bushy, erect 12-15" garden height	
Fringed Rainbow	mixed colors	90% fringed, medium size	rainbow type	
Greensleeves	ivory and green	small, tapered, thin leaves	base-branching, similar to Saber	
Highland Fling	amber-red with light green splashes	heart-shaped, large lobed	rainbow type	uniform
Magic Lace	reds and purples splashed with green and yellow	deeply serrated, broad, 90% fringed	rainbow type, compact, dwarf, basal branching	
Magic Lantern	young leaves: rose red older leaves: cream and red with green edge	heart-shaped, lobed	rainbow type, compact, dwarf, basal branching	
Midway	golden, pink, red, velvet mix series	heart-shaped	rainbow type, dwarf similar to Brilliant, 10" garden height	
Othello	black	satiny, crinkled	bushy, mid-dwarf	
Pagoda	red and yellow	heart-shaped, serrated	rainbow type 20" garden height	
Rainbow	bronze, candidum, rose, red, pastel, scarlet, velvet, golden, multi-color, pink, tyrian, char-treuse, emerald, tri-color, buff, calico, mix series	large to medium size, heart-shaped	12-15" medium branching	good for packs, pots, hanging baskets, true to color, pinching helps

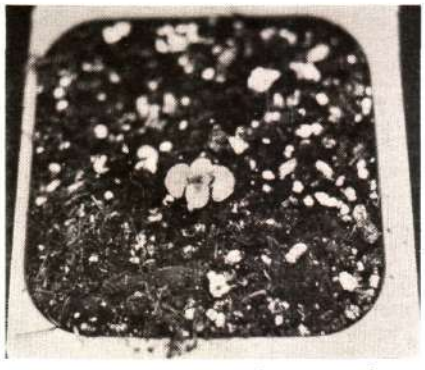
cont'd

LIST OF CURRENT COLEUS CULTIVARS AND THEIR PHYSICAL CHARACTERISTICS.

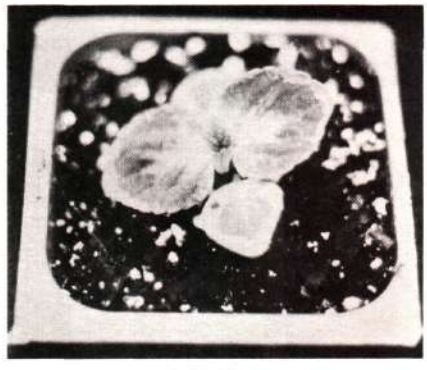
Cultivar	Colors	Leaf Shape	Habit	Comments
Red Monarch	scarlet red	extra large, rippled	fairly dwarf	
Saber	rose, pastel, red, scarlet, jade, clown, velvet	small, tapered, thin	dwarf, basal branching, 8-12'' garden height	slower to flower, hanging baskets, no pinch
Scarlet Poncho	red, edged green	serrated	rainbow type, central stem upright with cascading side branches, 10-12'' garden height	makes excellent hanging baskets, window boxes
Seven Dwarfs	marbled candidum, multi-color, pastel, red, scarlet, sunset, mix series	small, heart-shaped	rainbow type, self-branching	slower to flower than Rainbow, no pinch
Volcano	scarlet-red	lobed	rainbow type	
Wizard	rose, sunset, pastel, velvet, red, golden, jade, pineapple, pink, scarlet, mix series	large, heart-shaped	compact, dwarf basal branching, 10-12'' garden height	no pinch, good in baskets, packs, pots, slower to flower than Rainbow

Production Schedule (by week) for Sale of Coleus May 1.

	Jan				Feb				March				April				May	
WEEK:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
☒ sow									☒									
☒ germination											☒							
☒ transplant													☒					
☒ sell																	☒	



WEEK 13 transplant (seed sown week 10)



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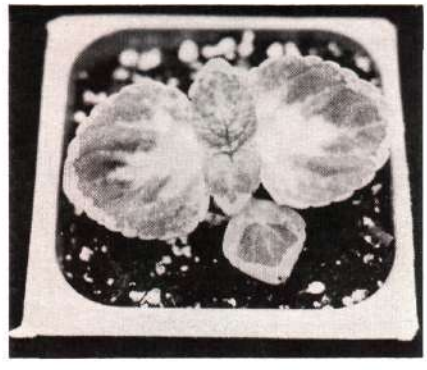

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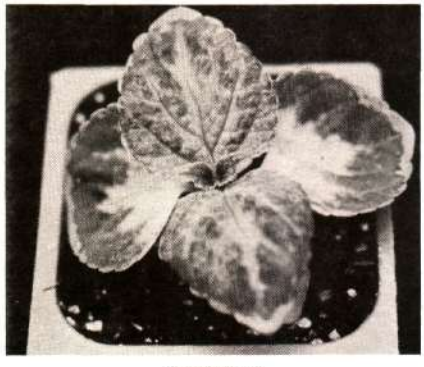

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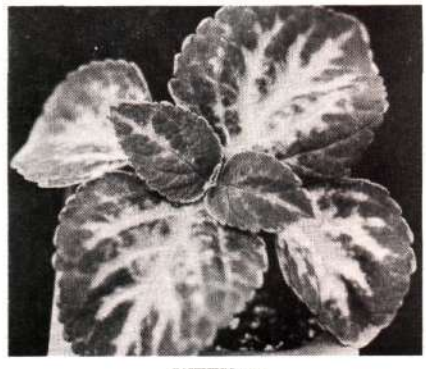

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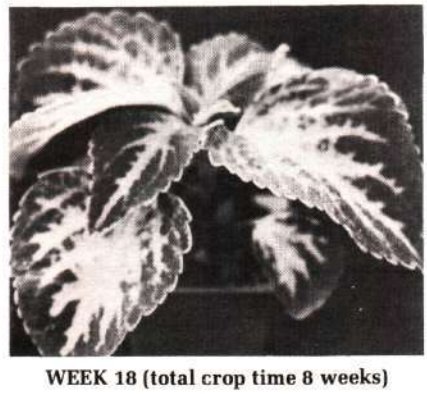

WEEK 18 (total crop time 8 weeks)

Fig. 1 Weekly stages in development of coleus

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