GrowerFacts

Coleus Pistachio Nightmare

(*Solenostemon x hybridus*)

Propagation

STAGE 1 - Harvesting of cuttings to sticking

- Harvest uniform diameter cuttings to ensure uniform rooting.
- Make multiple passes over the stock to collect uniform diameter cuttings 2-3 node tips.
- Harvest cuttings at the correct stage of maturity- be certain stem cuttings are not woody.
- Harvest cuttings in the early morning or late afternoon when ambient temperatures are below 90°F (32°C).
- Place cuttings in carriers either base up or base down.
- Avoid crushing the cuttings when harvesting to decrease botrytis problems.
- Cover the carrier with a damp towel to prevent desiccation of the cuttings.
- Store the cuttings for at least 2 hours at 48°F (9°C) to reduce cutting temperature.
- Maintain 75-90% RH in the cooler to prevent desiccation of the cuttings.
- If planting is going to be delayed, store the cuttings at 50-60°F (10-16°C) for 24 hours maximum.

STAGE 2 - Callus formation (5-7 days)

- Callus formation occurs in 4 steps:
  1. Swelling of the tissue without any color change.
  2. Swollen area begins to turn white
  3. White areas begin to crack open (epidermis ruptures)
  4. Rough callus areas begin differentiating root initials.
- Soil temperature 68-72°F (20-22°C)
- Air temperature 68-70°F (20-21°C) nights, 75-80°F (24-26°C) days.
- To guarantee uniform rooting, the media should be sufficiently moist so that water is easily squeezed out of rooting media.
- Keep RH 75-90% at the base of the cutting.
- Use tempered water, 70°F (21°C), in the mist lines since cold water will lower the soil temperature during the day.
- Maintain high relative humidity in the air surrounding the cutting, 75-90%, to minimize evapotranspiration.
- Prevent leaf wilting by applying overhead mist or fog.
- The mist frequency should increase and decrease as the light and ambient temperatures change during the course of the day.
- During the first 3-5 days frequent night misting may be required.
- Each wilting episode during stage 2 adds at least one day to the rooting program.
- Light intensity should be 500-1000 foot-candles.
- Light intensity above 1000 will increase plant stress due to plant warming.
- Use retractable shade so that the light intensity can be increased as the cuttings mature.
- Begin foliar feeding with 50-75 ppm of 20-10-20 as soon as there is any loss in foliage color.
- Soil pH should be 5.5-6.0 with an EC < 0.5.
- Maintain pH of media leachate at 6.0-6.2.
- If growth regulators were used during stock plant growth, no growth regulators are used during stage 2.
- If growth regulators were not used during stock plant growth then start applying appropriate growth regulators as soon as cuttings are turgid.
- Once 50% of the cuttings begin differentiating root initials, the cuttings are ready to transfer to stage 3.

STAGE 3 - Root development (7-14 days)

- Soil temperature 68-72°F (20-22°C).
- Air temperature 68-70°F (20-21°C) nights, 75-80°F (24-26°C) days.
- Once the cuttings begin to form root initials, it is critical to begin drying out the soil.
- Avoid drying out the air since this will increase evapotranspiration which will reduce root zone temperature.
- To reduce soil moisture:
- Reduce the mist application during the dark period.
- Reduce the duration and frequency of the mist.
- Reduce the amount of water applied per day by delaying the start of the mist period until 9:30 to 11:00 AM and end the mist period earlier than 4:00-5:00 PM.
- Begin increasing light intensity to 1000-2000 ftc as the cuttings begin to root out.
- Apply growth regulators as needed.
- Foliar feed at 100 ppm nitrogen from 15-0-15 alternating with 20-10-20 then increase rapidly to 200 ppm. Increase the frequency and rate at each application to prevent salt problems.
- The majority of fertilizer should be in the nitrate form (15-0-15).
- The soil pH should be 5.8-6.0.
- Soil EC should be below 0.5.
- Monitor the pH and EC of the leachate on a daily basis. The pH should be 6.0 and the EC should stay between 0.5-1.0.

STAGE 4 - Plants ready for transplanting or shipping (5-7 days)

- Air temperatures 62-68°F (16-20°C) nights, 75-80° F (24-26°C) days.
- Move the liners from the mist area into an area of lower RH, lower temperatures, and higher light intensity.
- Increase the light intensity to 2000-3000 ftc.
- Provide shade during the mid point of the day to reduce temperature stress on the crop.
- Maintain soil pH 5.8-6.0 and EC less than 1.0 mmhos/cm.
- Fertilize at 150-200 ppm nitrogen from 15-0-15 alternating with 20-10-20 once per week.

Growing On to Finish

TEMPERATURE

Night: 62-65°F (16-18°C)

Day: 70-80°F (21-26°C)

LIGHT

- Keep light intensities at 2000-4000 while maintaining moderate temperatures.
- Coleus are day neutral, but are grown for the foliage, not the small flower, so photoperiod is unimportant.
- Low light levels promote stem stretch. Higher intensities improve color and compactness.

MEDIA

- Use a well-drained, disease-free soil-less medium with a high initial nutrient charge and a pH 5.6-6.0.
- Combinations of peat, bark, or perlite are best.

WATER

Keep soil moist-dry. Soil can be allowed to dry down slightly between waterings.

FERTILIZATION

- Coleus has a moderate fertilizer requirement.
- Biweekly fertilization 15-0-15 alternating with 20-10-20 is best.
- As the plants mature the rate can be increased to 200-300 ppm.
- Water with clear water every third watering if high soluble salts problems occur.
- Maintain medium electrical conductivity around 1.0 mmhos/cm (using 1:2 extraction).

PINCHING

- The plants have vegetative buds in the axial of each leaf. The first pinch should leave 2-4 leaf pairs with 4 leaves left after each of the next two pinches.
- Remove flower buds as they appear because reproductive stages halt vegetative growth.

CONTROLLING HEIGHT

Coleus are compact by habit so PGR's are not generally necessary. If needed B-Nine can be applied at 2500-5000 ppm.

POST PRODUCTION CARE

TEMPERATURE

Night: 62-65? F (16-18? C)

Day: 70-80? F (21-26? C)

LIGHT

- Coleus does best in full sun to partial shade.
- Optimum light levels are 2000-4000+ ftc.

WATER

Soil can be allowed to dry down slightly between waterings, but don't let coleus wilt.

COMMON PROBLEMS

Insects: Aphids, Thrips, Whiteflies, Mealy Bugs

Diseases: Botrytis, Rhizoctonia, Pythium, Verticillium, Alternaria

Problem: Excessive internode elongation

Causes: Low light

Problem: Poor branching

Causes: Low fertilization, lack of ammonia; Low light; Cold temperatures; Retention of the flowers

Problem: Foliage Necrosis

Causes: Drying out the plant to wilt between irrigations; High soluble salts in the soil

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