

Lantana Denholm

(*Lantana camara*)

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.
- 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 45-50°F (8-10°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 5.5-6.2 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 (9-11 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 5.5-6.2.
- 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 .5-1.0.

STAGE 4 - Plants ready for transplanting or shipping (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.
- A zero DIF is desired.
- Use growth regulators if DIF is positive.
- Increase the light intensity to 2000-4000 ftc.
- Provide shade during the mid point of the day to reduce temperature stress.
- Maintain soil pH 5.5-6.2 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: 75-80°F (24-26°C)

65°F promotes the most rapid growth. Above 95°F will promote flower abortion.

LIGHT

- Keep light intensities at 4000-7000 while maintaining moderate temperatures.
- Lantana is day neutral and will flower profusely as light conditions improve. During the winter when sunlight is reduced, crops take longer to finish.
- Low light levels promote stem stretch.
- During the summer reduce light levels to prevent leaf burn.

MEDIA

Use a well-drained, disease-free soil-less medium with a high initial nutrient charge and a pH 5.6-6.2. Combinations of peat, bark, or perlite are best.

WATER

Lantanas can be allowed to dry down between waterings, as plants are susceptible to Botrytis and Powdery mildew if humidity is too high, temperatures are low, and light is low- avoid wet foliage.

FERTILIZATION

- Lantana requires regular feeding 2X/week.
- Constant 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

- Once liners are established, pinch plants back to improve basal branching.
- Pinch plants above the 5th-6th leaves about 1-1.5 "above the soil.
- Severe pruning improves final plant form but delays flowering 3-5 weeks.
- Possible to train into a tree when using upright types.

CONTROLLING HEIGHT

- Height can be controlled by withholding fertilizer, especially phosphorous and ammonium-form nitrogen.
- Use a 3000 ppm spray of Cycocel or Florel 5-6 days after pinching; reapply every 2 weeks as needed. As Florel will cause bud abortion, do not use after buds set.
- As the light intensity increases, reduce the rate to 1500 ppm

POST PRODUCTION CARE

TEMPERATURE

Night: 62-65°F (16-18°C)

Day: 75-80°F (24-26°C)

Can survive temperatures up to 95°F

LIGHT

- Lantana does best in full sun.
- Optimum light levels are 3000+ ftc.

MOISTURE

Lantanas are susceptible to Botrytis and Powdery Mildew; allow soil to dry down between waterings.

COMMON PROBLEMS:

INSECTS: Aphids, Thrips, Whitefly, Spider mites, Fungus gnats

DISEASES: Botrytis, Rhizoctonia, Pythium, Fusarium, Alternaria

Problem: Plants collapse



Cause: Wet media for an extended period; Botrytis

Problem: Excessive vegetative growth

Cause: High ammonia concentration in the soil; Over fertilization under low light; Low light and over watering, wet media; Excess or late Florel application

Problem: Poor branching

Cause: Low fertilization, lack of ammonia; Low light; Excessive flowering

Problem: Foliage Necrosis

Cause: Drying out the plant between irrigations; High soluble salts in the soil

