GrowerFacts

Ipomoea Marguerite

(*Ipomoea batatas*)

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 48-50°F (9-10°C) for 24 hours maximum.

STAGE 2 Callus formation (5-7 days)

- Callus formation occurs in 4 steps:
- Swelling of the tissue without any color change.
- Swollen area begins to turn white
- White areas begin to crack open (epidermis ruptures)
- 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 5.6-5.8 with an EC < 0.5.
- Maintain pH of media leachate at 6.0-6.2.
- 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 5.6-5.8.
- 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 65-68°F (18-20°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 on the crop.
- Maintain soil pH 5.6-5.8 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 - 65-68°F (18-20°C)

Day - 68-75°F (20-24°C)

- Temperatures above 68°F promotes the most rapid growth.
- Avoid temperatures below 50°F as plants may show sign of chilling.

LIGHT

- Keep light intensities above 3000-5000 ftc. while maintaining moderate temperatures.
- Sweet potatoes are grown for their foliage, and the flowers are small and inconspicuous. Therefore photoperiod is irrelevant, but flowering occurs earlier under short day conditions.
- Low light levels promote stem stretch at intensities below 1500 ftc.
- Foliage color is reduced as intensity decreases.

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

- Keep soil moist, but avoid wet foliage to prevent Botrytis problems.
- High relative humidity will promote leaf expansion

FERTILIZATION

- Sweet potato has a moderate fertilizer requirement.
- Apply 15-0-15 alternating with 20-10-20 2X/week.
- As the plants mature the rate can be increased to 200-300 ppm.
- Excessive application of ammonia will promote large leaves.
- 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 (1-2 weeks).
- Pinch plants above the 5th-6th leaves about 1-1.5 “above the soil.
- Under reduced light conditions frequent pinching is required to control plant size.

CONTROLLING HEIGHT

- Height can be controlled by withholding fertilizer, especially phosphorous and ammonium-form nitrogen.
- Sweet potato also responds well to the use of B-Nine (2500 ppm).
- Apply growth regulators once plants reach side of container.

POST PRODUCTION CARE
GENERAL CARE

TEMPERATURE

Night - 65-68°F (18-20°C)

Day - 68-75°F (20-24°C)

Optimum growth 68°F. Chilling occurs in temperatures below 50°F.

LIGHT

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

WATER

Keep soil moist, but water in the morning so foliage is dry by the late afternoon.

COMMON DISEASES AND INSECTS:

Diseases: Botrytis, Rhizoctonia, Pythium

Insects: Aphids, Mealy bugs, Whitefly

COMMON PROBLEMS:

Problem:

Problem: Too little vegetative growth

Cause: High ammonia concentration in the soil, Low fertilization under low light, Low light and over watering, wet media

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Problem: Poor branching

Cause: Low fertilization during early stages, Low light

Problem: Foliage Necrosis

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

Problem: Poor foliage color

Cause: Low light conditions, Over watering, Lack of fertilizer
Plants collapse

Cause: Wet media for an extended period, Botrytis

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