



Pinacolada™

PENSTEMON BARBATUS

Minimum Germination Rate: 75%

Seed Product Form: Raw

FLOWERING

Specific Flowering Mechanism: Daylength and irradiance have no effect. Maturity of plants and cool night temperatures will promote more flowers per plant. No vernalization is required. However, long days or vernalization will improve flowering uniformity.

Flowering Type: Day-neutral plant.

PLUG CULTURE

The timing approximations are based on optimal culture recommendations below:

Germination 1 (approximately day 1 – 21): From the time a seed is sown until radicle emergence takes place; usually with the root penetrating the media and some cotyledon development. Expect radicle emergence in 14 – 21 days. Recommend 2 – 3 seeds per cell.

Cover: A very thin layer of medium sized vermiculite may be applied to maintain moisture levels if desired, but light is required for germination.

Media: pH: 5.5 – 6. EC: <.75 High EC discourages rooting into the media and could decrease final count of useable seedlings.

Light: Light is necessary for germination. Provide a light source of 10 – 100 foot candles if utilizing a chamber.

Moisture: Saturated (5) for day 1 – 14 or when radicles have emerged and penetrated the soil. Then reduce moisture level to wet (4).

Humidity: 100% until radicle emergence then reduce to 40%.

Dehumidify: Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

Temperature: 64° – 68°F (18° – 20°C).

Germination 2 (approximately day 15 – 24): From the time cotyledon is observed until it is fully expanded. The roots have expanded throughout the media. Dehumidify from 100% to 40% in the air.

Media: pH: 5.5 – 6. EC: 1 – 1.5

Light: Supplemental lighting at 350 – 450 foot candles (3,500 – 4,500 lux) during a 10 – 12-hour day will enhance plant growth.

Temperature: 60° – 64°F (16° – 18°C).

Moisture: Alternate between moisture levels wet (4) and moist (3). Allow media to approach level (3) before re-saturating to level (4). Do not allow seedlings to dry down.

Humidity: 40 – 50%

Dehumidify: Lower relative humidity to 40% (approximately day 15). Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

Fertilizers: Alternate between calcium-based fertilizers (13-2-13 or 14-4-14) and potassium nitrate (15-5-15) at 50 – 75 ppm nitrogen. Phosphorus should not exceed 10 ppm.

Growth Regulators: Penstemon Pinacolada has a compact growth habit and should not require PGR applications. If needed in the plug stages, a 1,500 – 2,500 B-Nine application may be supplied as a spray.

Fungicides: Preventative fungicide may be applied for Pythium, Rhizoctonia and Thielaviopsis, Botrytis and/or Powdery Mildew.

Plug Bulking/Flower Initiation (approximately day 24 – 32): The time it takes for the shoots to proportionately fill the plug cell and for roots to develop throughout the media.

Media: pH: 5.5 – 6. EC: 1 – 1.5

Light: Supplemental lighting under low light conditions at 350 – 450 foot candles (35,000 – 45,000 lux) will enhance shoot and root growth.

Temperature: 60° – 64°F (16° – 18°C).

Moisture: Alternate between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4). Do not allow plants to wilt.

Humidity: 40 – 70%

Fertilizers: Alternate between calcium-based fertilizers (13-2-13 or 14-4-14) and potassium nitrate (15-5-15) at 75 – 100 ppm nitrogen.

Growth Regulators: If needed, spray B-Nine at 1,500 – 2,500 ppm. B-Nine can be used to tone the plants.

Fungicides: Preventative fungicide may be applied for Pythium, Rhizoctonia and Thielaviopsis, Botrytis and/or Powdery Mildew.

Note: These suggestions are only guidelines and may have to be altered to meet individual grower's needs. Check all chemical labels to verify registration for use in your region.

Initiated Bulking (approximately day 32 – 49): Seedlings develop from juvenile to mature, usually determined by the number of leaves present. Seedlings are receptive to initiation and flower bud development.

Light: Provide 3,500 – 4,500 foot candles (35,000 - 45,000 lux) or 12 – 16 mols of light.

Temperature: 60° – 64°F (16° - 18°C)

Fertilizer: Alternate between calcium-based fertilizers (13-2-13 or 14-4-14) and potassium nitrate (15-5-15) at 100 – 150 ppm nitrogen. Under high light conditions a 17-5-17 fertilizer can be used; leach with fresh water every third watering.

Fungicides: Preventative fungicide may be applied for Pythium, Rhizoctonia and Thielaviopsis, Botrytis and/or Powdery Mildew.

GROWING ON

The timing approximations are based on optimal culture recommendations below:

Transplant to Finish (approximately day 49 – 98): Optimize plant shoot and root growth; which is usually a 1:1 ratio. Flower buds are usually present and developing.

Media: pH: 5.5 – 6. EC: 1.2 – 1.5 High salts may result in root loss.

Light: Provide 3,500 – 4,500 foot candles (15 – 20 total mols or 35,000 – 45,000 lux) to enhance shoot and root growth.

Temperature: 65° – 70°F (18° – 21°C) days; 55° – 60°F (13° – 15°C) nights.

Moisture: Alternate between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4). Excessive drying of the media moisture level will concentrate salts around the root system and may burn the root hairs.

Dehumidify: Provide horizontal airflow to aid in drying down the media through evapotranspiration under cool, low light conditions.

Humidity: 40%

Fertilizers: Constant liquid feed at 150 – 200 ppm nitrogen with a calcium-based fertilizer (13-2-13 or 14-4-14). Under high light conditions a 17-5-17 fertilizer can be used. Leach with fresh water every third watering.

Growth Regulators: If needed, spray B-Nine at 1,500 – 3,500 ppm, or drench Bonzi at 1 – 2 ppm.

Fungicides: Preventative fungicide may be applied for Pythium, Rhizoctonia and Thielaviopsis, Botrytis and/or Powdery Mildew.

TECHNIQUES TO ENHANCE POST HARVEST QUALITY

When to Treat: 1 – 2 weeks prior to finish or shipping.

Fertilizer: Potassium nitrate drench at 150 ppm nitrogen.

Common Diseases: Pythium, Rhizoctonia, Thielaviopsis, Botrytis, Powdery Mildew. Monitor moisture and humidity levels and use preventative fungicide drenches.

Common Pests: Fungus Gnats, Shore Flies, Aphids and Thrips. Use pesticides according to label directions.

PRODUCT USE	GARDEN SPECIFICATIONS
Pots, containers, mass plantings	Light: Part to full sun USDA Hardiness Zone: 3 AHS Heat Zone: 8

	Garden Height	Garden Width
Pinacolada	8 – 10" (20 – 30 cm)	8 – 10" (20 – 30 cm)

PENSTEMON SCHEDULING IN WEEKS

	Pinacolada
Total crop time	14 – 18
'128' plug crop time	7 – 8
'200' plug crop time	6 – 7
'288' plug crop time	6 – 7
Transplant to finish crop time	
4" crop	7 – 8
6" crop	8 – 9, 3 plugs per pot
8" crop	Not recommended