Quartz Series Verbena

The Highest Germination and Greatest Young Plant Vigor of any Verbena Series

■ The **Quartz** series presents strong garden performance with proven mildew tolerance.
■ Heat and drought-tolerant **Quartz** plants have a spreading, mounded habit that will reach a garden height of 10 to 12 in. (25 to 30 cm).
■ Huge umbels of large florets top the darkest green foliage on the market.
■ Great for beds, baskets and mixed containers.
■ Uniform in habit and flowering times, **Quartz** verbena has a 85%+ Yield Potential.

Verbena x hybrida
Approximate seed count: 11,900 S./oz. (420 S./g)

Plug Production

Sowing

■ Moisture management is key to successful verbena germination.
■ Verbena germinates best under a medium to dry plug media moisture levels; wet, saturated conditions will tend to decrease germination performance.
■ Moisture levels (dry to medium) can be controlled by adjusting the water pressure, number of misting nozzles and the speed of the misting tunnel in the sowing line.

Grower standards for determining plug media moisture levels:
Saturated/wet: When the media is wet, water will ooze out from the bottom and the top of the plug cell when the substrate is lightly touched with your finger.
Medium wet: The media is still glistening, but water will not ooze from the bottom, and will penetrate only slightly from the top around the fingertip.
Dry: The media has changed color to a light brown and virtually no water will ooze out of the substrate when touched.

Stage 1 (Sow to radicle emergence)

Germination temperature: 72 to 75°F (22 to 24°C)
Relative humidity: 95 to 97%
Days to germinate: 4 to 6 days
Plug tray size: 392-cell
Top-dress the plug trays with a medium covering of coarse grade vermiculite. Verbena germinates best under dark conditions.

Stage 2 (Radicle emergence to cotyledon expansion; 10 to 14 days)

EC: 0.5 to 0.75 mmhos/cm
pH: 5.8 to 6.2
Once the plug trays come out of the germination chamber, grow them under normal (medium) moisture conditions. Avoid excess moisture until the seedlings establish. Beginning from stage 2 until finishing the plugs, maintain a constant soil temperature of 70 to 72°F (21 to 22°C). The day/night air temperatures can be set at 70 to 72°F (21 to 22°C) and 60°F (15°C), respectively.

Stage 3 (Cotyledon expansion to growth of all set of true leaves; 10 to 14 days)

EC: 0.75 to 1.0 mmhos/cm
pH: 5.8 to 6.2
Start fertilizing the seedlings two times a week with 50 ppm N from 14-0-14, alternating with 20-10-20 type fertilizer. Increase the nitrogen concentration to 100 ppm after a week, and continue this program until finishing the plugs. The day/night air temperatures can be set at 68 to 70°F (20 to 21°C) and 60°F (15°C), respectively.

Stage 4 (Development of all true leaves to shipping/transplant; 7 days)

EC: 0.75 to 1.0 mmhos/cm
pH: 5.8 to 6.2
Maintain the recommended growing temperatures and fertilizer regime as in Stage 3. Check for powdery mildew from this stage onwards. If plant growth regulator treatments are necessary for holding/toning the plugs, apply 10 ppm A-Rest as a foliar spray.

Total Plug production time: Approximately 5 to 6 weeks for a 392-cell plug tray.

Growing On to Finish

Media

Use a well-drained, disease-free soilless medium.

Temperature

Maintain day temperatures at 65 to 70°F (18 to 21°C) and night temperatures at 60°F (15°C) until finish.

Light
No supplemental light is required.

Humidity
Avoid high humidity in the growing environment; it can induce powdery mildew.

Water
Keep the growing media moist.

Fertilizer
Starting a week after transplant, fertilize with 150 ppm N from 15-5-15 Cal-Mag once a week; alternate with 20-10-20 type fertilizer. In addition, fertilize the crop with Epsom salts (magnesium sulfate) at a rate of 1 to 2 lbs. per 100 gallons of water a couple of times during the crop period to prevent potential magnesium deficiencies.

Growth Regulators
If plant growth regulators are necessary to control plant height, apply A-Rest at 20 ppm as a foliar spray a week after transplant, and a second application can be done 10 to 14 days later. If necessary, a third application can also be made at the same interval. B-Nine at 3,500 ppm applied as a foliar spray also works well. Use the same spray schedule as recommended for A-Rest.

Crop Scheduling
Weeks to flower from sow in 606-cell packs: 11 to 13 weeks (average) in Spring; 10 to 12 weeks in the Summer.

Common Problems
Insects: Mites, thrips.

Diseases: Powdery mildew
Avoid moist/damp and humid conditions in the greenhouse.

Note: Chemical recommendations are only guidelines. Follow national and state regulations.

PanAmerican Seed

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