

## Verbena Quartz XP

(*Verbena x hybrida*)

### Germination

#### Plug Tray Size

392-cell or similar size.

- Top-dress the plug trays with a medium covering of coarse-grade vermiculite at sowing.
- Moisture management is the key to successful verbena germination.
- Verbena germinates best under medium-dry (level 2) to medium (level 3) plug media moisture levels; medium-wet (level 4), and wet (level 5) conditions will tend to decrease germination performance.
- Light is not required for germination.

#### Stage 1 (Sow to radicle emergence; 4 to 6 days)

- Germination temperature: 72 to 75°F (22 to 24°C)
- Light: Not required for germination.
- Relative humidity: 95 to 97%.

### Plug Production

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

- Temperature: The day air temperatures can be set at 70 to 72°F (21 to 22°C) and the night temperature at approximately 60°F (15°C)
- Light: Up to 2,500 f.c. (26,900 Lux) during Stages 2 and 3
- Moisture: Once the plug trays come out of the germination chamber, grow them under medium-wet (level 4) moisture conditions. Avoid wet (level 5) moisture conditions until the seedlings establish.
- Fertilizer: Apply fertilizer at rate 1 (less than 100 ppm N/less than 0.7 mS/cm EC) with a nitrate-form fertilizer with low phosphorous. Maintain a media pH of 5.8 to 6.2 and EC at 0.5 to 0.7 mS/cm (1:2 extraction).

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

- Temperature: The day air temperatures can be set at 68 to 70°F (20 to 21°C) and the night temperature at approximately 60°F (15°C).
- Fertilizer: Increase the fertilizer rate to 2 (100 to 175 ppm N/ 0.7 to 1.2 mS/cm EC). Maintain a media pH of 5.8 to 6.2 and EC at 0.7 to 1.0 mS/cm (1:2 extraction).

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

Maintain the recommended growing temperatures and fertilizer regime as in Stage 3. Light levels can be up to 5,000 f.c. (53,800 Lux) if temperatures can be maintained. Check for powdery mildew from this stage onwards.

#### Growth Regulators

**In North American conditions:** If plant growth regulator treatments are necessary for holding/toning the plugs, apply A-Rest (ancymidol) at 10 ppm (37.6ml/l, 0.0264% formulation) as a foliar spray.

**In northern European conditions:** If needed, 1 to 3 applications of B-Nine/Alar (daminozide) at 1,250 ppm (1.5 g/l 85% formulation or 2 g/l 64% formulation) spray has been tested and shown to be effective.

### Growing On to Finish

#### Container Size

606-cell packs.

#### Media

Use a well-drained, disease-free soilless medium with a pH of 5.5 to 6.2 and a medium initial nutrient charge.

#### Temperature

Maintain day temperatures at 65 to 70°F (18 to 21°C) and night temperatures at about 60°F (15°C) until finish. Verbena can be grown as low as 55°F (13°C), but the crop time will be longer.

**In northern European conditions:** For the first 2 weeks following transplant, maintain night temperatures at 61 to 66°F (16 to 19°C). After this, night temperatures may be dropped to 57 to 63°F (14 to 17°C).

#### Light

Keep light levels as high as possible while maintaining appropriate temperatures.

#### Humidity

Avoid high humidity in the growing environment as this can induce powdery mildew.

## Fertilizer

Starting 1 week after transplant, apply fertilizer at rate 3 (175 to 225 ppm N/1.2 to 1.5 mS/cm) using predominantly nitrate-form fertilizer with low phosphorus. If needed, a balanced ammonium and nitrate-form fertilizer may be used as needed to encourage growth and balance the media pH.

## Growth Regulators

**In north American conditions:** Use 2 applications of A-Rest (ancymidol) at 20 ppm (75ml/l, 0.0264% formulation) as a foliar spray. One application can be done 1 week after transplant, and the second application can be done 10 to 14 days later. B-Nine/Alar (daminozide) at 3,500 ppm (4.1 g/l 85% formulation or 5.4 g/l 64% formulation) applied as a foliar spray also works well. Use the same spray schedule as recommended for A-Rest.

**In northern European conditions:** 2 to 3 applications of B-Nine/Alar (daminozide) at 3,200 ppm (3.8 g/l 85% formulation or 5 g/l 64% formulation) plus Cycocel (chlormequat) at 375 ppm (3.18 ml/l 11.8% formulation or 0.5 ml/l 75% formulation) has been tested and shown to be effective.

## Common Problems

**Insects:** Mites, thrips

**Diseases:** Powdery mildew

**Note:** Growers should use the information presented here as a starting point. Crop times will vary depending on the climate, location, time of year, and greenhouse environmental conditions. Chemical and PGR recommendations are only guidelines. It is the responsibility of the applicator to read and follow all the current label directions for the specific chemical being used in accordance with all regulations.

