Crop	Begonia
Series	Viking Explorer
Botanical name	*Begonia x hybrida*
Plant type	Annual
Seed type	Pellet
Seed count	2,700 pellets /gr
Germination	20ºC - 10-14 days light favored
Growing	21-22ºC
Optimum pH	5.5-6.0

Plug Culture: 8 weeks (200 cell tray)

Stage 1 (days 1-10) Sow pelleted seed into a plug trays filled with a sterile and well-drained media. Optimum pH is 5.5 to 6.0. Do not cover the seed as begonias require light to germinate. Provide lighting in the germination chamber. Maintain a temperature of 22-25ºC and enough moisture to melt the pellet. The media should be wet to saturated with 100% relative air humidity.

Stage 2 (days 11-21) The cotyledons are now visible, and roots are beginning to form. Supplemental lighting following germination greatly reduces crop time. Strong sunlight will cause high leaf temperature and leaf edge burn. Maintain the media moist but not saturated to promote healthy root development and penetration. For irrigation use water with temperature > 18ºC. Reduce air humidity to 70-80%. Begin feeding at 50-75 ppm nitrogen from a well-balanced calcium nitrate- based formulation. Avoid using ammonium nitrate which may inhibit root growth during germination and seedling development. Highly alkaline water (> 300 HCO3) damages seedlings by causing burn.

Stage 3 (days 22-48) The first true leaves are developed, and roots are beginning to penetrate the media. Reduce air temperature to 18- 20ºC. Begonias are light accumulators and flowering is directly related to the quantity and quality of light received. Allow the media to dry slightly between irrigations as begonia roots require high levels of oxygen. Another important point in growing Begonia is to maintain high air humidity (relative humidity) to minimize leaf burning during stages 2 and 3. Increase the fertilizer rate to 100-150 ppm nitrogen once or twice per week.

Stage 4 (days 49-56) At the end of stage 4 the seedlings should have 2-3 sets of true leaves and the roots should hold the plug media together. Optimum air temperature is 18-20ºC to help tone the seedlings. Avoid temperatures below 16ºC and maintain the EC level at 0.26 - 0.75mS/cm.

Transplanting to finish: 9-10 weeks

In general: Water early in the day if using overhead irrigation to avoid leaf edge burn when leaf temperatures are high.

Media: Select a sterile and well-drained media with a pH between 5.5 - 5.8 and low in salts.

Transplanting: Optimum stage is when the seedling roots reach the edge of the plug cell and have 4-6 true leaves.

Pinching: A terminal pinch promotes more width and a flat top but also delays flowering by 2-3 weeks.

Temperature: Optimum growing temperature is 21-22ºC during the day and 18-20ºC at night for the first 14 days after transplant. Once established the night temperature may be reduced to 17ºC. About 4 weeks after transplant the temperature may be lowered to 14-15ºC to avoid too large leaves and to keep the plants compact.

Fertilizer: Apply 100-150 ppm of nitrogen from a well-

balanced calcium nitrate-based formulation. The use of Cal/Mag formulations like 15-5-15 work well to supply adequate amounts of magnesium. Tall and stretched plants with few flowers indicate too much or too little phosphorous. Stunted, chlorotic plants with marginal leaf burn indicate a lack of calcium and magnesium. To maintain optimum pH, one may alternate with an ammonium-based fertilizer like 20-10-20.

Lighting: Supplemental lighting will hasten development and flowering.

Plant growth regulators: None are required if growth is controlled by temperature and feed, but if needed, particularly in warmer climates, lower rates of plant growth regulators can be utilized.

Pests & Diseases: botrytis

Container	Plant per pot	Total crop time
12.5 cm	1	14-15 weeks
15 cm	1	16-17 weeks
25 cm	1-2	18-19 weeks
30 cm baskets	2-3	20-21 weeks

Series Specifications:

Variety	Garden height	Garden width
Red on Green	50-60 cm	90-100 cm
Rose on Green	50-60 cm	90-100 cm

All information given is intended for general guidance only and may have to be adjusted to meet individual needs. Cultural details are based on Asian conditions such as in Japan and Sakata cannot be held responsible for any crop damage related to the information given herein. Always follow manufacturer's label instructions. Testing a few plants prior to treating the entire crop is best.