



# Geranium/Begonia

ISP technologies

environmentally clean crop production for healthier food

(Rates Based on ppm of N in water)

Successful greenhouse production of begonias and geraniums for bedding, color bowl and/or hanging baskets is dependent upon balancing the need to push plant growth under often challenging growing conditions as light levels fluctuate wildly due to weather. The ideal media pH is 6.0 – 6.6. This sets them apart from most other annual flowers as they prefer a slightly higher pH. (Another ISP crop sheet focused on petunias and most other annual flowers.)

It should be noted that this program is presented as a guideline only based upon research and the experiences with a number of growers. With the wide variances possible from both media types, water quality and environmental conditions present during any particular season, your actual recommendation can vary from what is presented. It is always advisable to discuss actual management practices with your local ISP specialist.

Begonias and Geraniums are heavy feeders requiring a constant feed of 250 - 300 ppm nitrogen. Possible concerns are iron (Fe) or manganese (Mn) toxicity, which can occur as media pH drops to a pH of 5.5 or below. These conditions will cause the foliage on geraniums looking flat and gray.

If media pH is managed at 6.0 - 6.6 and chelated iron is provided in a ratio of 2/1 with manganese, as needed, producing a great crop of begonias and geraniums is significantly easier.

If irrigation water alkalinity levels are below 120 ppm CaCO<sub>3</sub> (bicarbonate), then flowable lime or potassium bicarbonate may be necessary. Very high pH water (above 7.0) with high alkalinity levels (above 200 ppm CaCO<sub>3</sub>) may require acid injection. Work with your ISP crop consultant using the acid recommendations from the AlkCalc online calculator to correctly reduce water pH or to dose flowable lime or potassium bicarbonate.

There is role for biostimulants such as Metabolik SB and HV-1 in flower production. Using Metabolik SB at 1.6 oz per 10 gallons of solution at transplanting will speed establishment and enhance rooting. Including one of the bioinoculants such as RootShield Plus, Actinovate, Terra Grow, Cease or Companion will enhance the effect of the Metabolik as well as provide a good measure of soil-borne disease protection. Research began in 2016 at the Penn State Southeast Agricultural Research and Extension Center on using Metabolik HV-1 to promote flower production in finishing annuals.



The primary plant food used by most flower growers is 17-4-17 Flower Special as this low phosphate (P) formula aids in managing plant stretch while providing sufficient nitrogen and potassium for plant and flower growth. Switch to add, or add in, 10-20-20, or 20-20-20 if P levels start to drop below desired levels.

When finishing 4" or larger pots, hanging baskets or color bowls, be sure to apply a timed-release pelleted fertilizer before shipping. This application of plant nutrients will greatly help in keeping your plants in better condition as they are handled by often inexperienced resellers and gardeners.

ISP Soluble Plant Food	200 ppm	300 ppm	Actual Usage
17-4-17	.98 pounds	1.50 pounds	
20-20-20	.83 pounds	1.25 pounds	
10-20-20	1.70 pounds	2.55 pounds	

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