

## Propagation Efficiencies at Booman Floral®

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The goal of this presentation is to demonstrate how a small company can incorporate easy efficiencies to make propagation work move more smoothly.

By “efficiency” I mean any step that saves us money by lowering labor and production expense. As I see it, it’s not “how fast can we make our fingers stick the cuttings,” but rather how we can protect profit.

### A LITTLE BACKGROUND ABOUT US

We may be best known as breeders and propagators of new *Begonia × rex-cultorum* selections but, that is only the tip of the iceberg. We specialize in the novel and unusual.

For example, our carnivorous plant program may be the world’s largest. We have bred and patented over 20 begonias. We hold the only patent ever granted for a carnivorous plant, ‘Cobra Nest’, patent 12,821, a highly colored *Sarracenia* cultivar which is easy for commercial growers to finish.

In terms of products and capacity, Booman Floral sales are 50/50 starter plants versus finished plants. Of our 300,000 ft<sup>2</sup> of greenhouses, 120,000 ft<sup>2</sup> is dedicated solely to mist propagation with bottom heat. During peak periods, we root over 2,000,000 plugs per week. Staffing varies from 25 to 50, depending on the season.

Some steps we found to be useful are:

- 1) Give employees an incentive to work faster. We issue bonuses which are calculated daily. A computer automatically identifies and counts the trays that each person plants when the trays pass by a hand-held scanner on the planting line. We dismiss employees if they plant fewer than 12 flats per hr after 1 week of working. We rehire workers who worked for us previously to give us higher planting efficiency early in the season.
- 2) Use stickers to identify workers who damage plants. “Speed without quality is more expensive.” In a rush to get a speed bonus, some workers forget quality and damage the plants as they stick them. To identify offenders, we ask that all employees place a unique bar coded sticker on each flat they plant. If more than 2 flats per day do not meet quality specs, they lose their bonus for that day. That gets their attention, believe me.
- 3) Use scanners. These really save time and labor. No more tedious hours spent counting inventories, numbers of flats each worker planted, or numbers of flats by variety we load on customer’s trucks.
- 4) Install computer controls for misting, with manual bench-by-bench overrides. Computerized misting reduces water runoff by automatically changing frequencies through the day and night. The benefits are less management labor expense to adjust misting, less water use, less disease, more stable humidity, and ease to make instant changes in mist possible, via any Internet-connected computer. Quality is improved. Still, manual overrides and bench-

by-bench control are essential. Why? Large losses result if we ignore the plants. For example, when the greenhouses are filled to capacity, benches of plants that need less mist are often placed next to benches that require more. The only solution that works for us during these peak periods is to physically check the plants and manually adjust the mist, hour by hour. Someone has to be in the greenhouse to deal with rapid changes in wind, weather changes, fires, loss of roof plastic, variation in quality of cuttings, fungal diseases in some groups, pipe breaks, solenoids that fail, and electrical connections that short, just to name a few.

- 5) Post-planting and shipping reports daily to the Internet. We used to get hit with credits for problems that were not our fault, for example, when we were provided bad or diseased cuttings to plant. Keeping the customer informed early eliminated this issue. We generate daily report logs with photographs which summarize inventory numbers, varieties planted, disease issues, planting issues, and quantities shipped.
- 6) Build planting stations outside of the mist houses. Workers are more productive when kept warm, dry, and comfortable. Fewer accidents from workers falling on slippery floors translate into insurance premium savings also.
- 7) Buy flat fillers, dibblers, and watering tunnels — labor savers all. We used to fill flats by hand. Now we use a machine for labor savings and uniformity of fill. A dibbling device insures that all cuttings will be placed dead center in each plug. The savings come at the end when empty cells or weak plants are removed and replaced with good ones before shipping. Centered replacement plugs instantly fill voids uniformly, insuring a quality presentation to the customer. Watering tunnels gently settle cuttings in place, without knocking them over.
- 8) Install conveyors for obvious labor savings. Eliminate employees walking, and productivity goes up. Use belts, not people, to move plants to the planting line, to carts, and into trucks.
- 9) Move multiple trays at once. Our metal tables hold 14 propagation flats. We never move just one flat at a time. We also built simple wood frames on carts to move multiple tables at a time.
- 10) Grow clean stock and plant uniform quality cuttings. To save labor and avoid “touching a flat twice” requires absolute uniformity of response of the cuttings we plant. Our expectation is 100% take for all taxa. The goal is to plant a flat, and sell it “as is” without a second human touch to remove dead or small plants later. Accordingly we:
  - (a) “Keep clean stock” so that the cuttings have the same nutrition, vigor, and freedom from diseases.
  - (b) We renew our rex begonia elite stock annually from tissue culture and rebuild our mother blocks.
  - (c) We plant cuttings prepared to a standard size.

- 11) Employ every sanitation step you can think of. This is key to preventing plant loss.
  - (a) We grow most of our stock in greenhouses where workers must wash hands, dip shoes in disinfectant, wear lab coats, etc.
  - (b) A prophylactic fungicide program is maintained in the stock houses.
  - (c) Power washers are labor savers when we need to clean all surfaces before the propagation season.
  - (d) We use copper naphthenate on wood surfaces.
  - (e) We use hand gels, gloves, and finger cots to prevent disease spread.
- 12) Install computer-controlled bottom heat and double-poly walls. Bottom heat saves us 20% on fuel and speeds rooting in the dark months. Computers isolate heat needs, zone by zone, hour by hour, sending the minimum amount of heat only to areas that require it. Computer heating controls are remote accessible via phone and Internet which reduces supervision expense.
- 13) Reduce the space that stock plants require. Space costs us money. Stock plants are not “income producing,” per se, so we try to minimize greenhouse space in southern California that we dedicate to stock plants.
  - (a) We modify the growth habit of our stock plants so that high leaf densities are available for harvesting on 2-week-return cycles.
  - (b) Some stock plants we leave in 50-cell trays, and achieve very high densities.
  - (c) We set up a stock plant facility in Guatemala to deliver prepared leaves to us.
- 14) Use cookie cutters. We save time by using them, and get uniform high-quality plants. As a result, our rex begonia flats root uniformly with plugs with multiple shoots. Our customers’ reward is a branched plant at finish, by planting just one of our liners.
- 15) Use a cell size that eliminates losses or claims. We used to grow rex begonias in 84 cells, then 72 cells, and now finally in 50s. The smaller sizes did not always grow for customers if their growing environments were not perfect. Translation: we lost money on claims. Once we shifted all production to 50 cells, claims stopped and customer satisfaction soared.
- 16) Use trays pre-filled with gel stabilized Preforma<sup>®</sup> substrate. While we have not realized cash savings by using these trays, as the higher price offsets our labor savings to fill flats, we have managed to eliminate all shipping claims for damaged product. The gel in these soil plugs prevents the soil from falling away from the cuttings during shipment. This is especially important with fine-rooted plants that don’t have extensive root systems, such as rex begonias. Even if the plug comes out of the tray during shipping, it arrives with roots attached and the plant usually grows.

- 17) Use cardboard for winter pack boxes. Instead of using bulky Styrofoam, we save money and help the environment by using a recyclable double cardboard box system for our winter pack boxes.
- 18) Control waste and recycle. Waste control is an obvious money saver.
  - a) We minimize water waste by use of computerized mist controllers which apply only the amount of water needed throughout the day.
  - b) Stock plants have drip tapes or low-volume emitters.
  - c) All waste water is recycled to garden areas.
  - d) Recycling cardboard boxes cost us less than sending them out as landfill garbage.