

Boom Growing at a Dutch-tray Facility®

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I've worked as a grower, head grower, and manager of large greenhouse bedding plant operations for over 20 years. Only in the last 4 years have I dealt with Dutch trays and boom irrigation equipment. At Hines Horticulture Chino Valley, we produce plugs for our own production, bedding plants, perennials, geraniums, vegetative annuals, and poinsettias. Using booms, while maintaining high quality production was a welcome challenge to our team of growers, resulting in many innovations. Many growers fear that machinery in the greenhouse will reduce quality, and take away the human touch. We definitely want to reject that notion. Our facility in Chino Valley has more than 56 booms in operation, each traveling over approximately 2500 flats.

Some of the pros to growing with booms were offered by the salespeople for the company supplying the equipment. Other benefits we discovered along the way. That we would save labor over other methods never made sense to me, because sprinkler watering was really almost no labor. The booms promised more exact, even application, which we found was especially important with plugs, and with plant growth regulator (PGR) applications. That we could make applications of PGRs with booms became a very important technique, which has saved us labor, made our applicators safer, and improved quality. We found that since smaller crop divisions could be treated differently, in irrigating, feeding, and applying PGRs, that we could grow better quality crops.

The cons or difficulties with booms were of great concern, and even made us question our product mix a time or two. The first difficulty we noticed was the fact that we could not spot water, which at first resulted in a lot of overwatering, where growers would see a dry edge and then water the entire table. Another key problem was water-force damage, which was especially bad on young plugs at cotyledon stage, and with sensitive or delicate crops in flower, such as poinsettia, geranium, primula, and cyclamen. We found that growers would get caught with a dry crop, and since the travel of the boom takes time, this could become serious. With sprinklers we could quickly turn a section on, and that option was gone. We found that many growers, at first, didn't trust a machine, period. They are more complicated than a clock, and it does take time to train a new employee on the controls. With all these difficulties we have not yet found a crop we could not eventually master with booms.

Some answers to the cons included special sprinkler nozzles called flood tips which spray the water out horizontally, and allow the water to fall more naturally. In the case of water damage on young plants, we used faster speeds and different tips to try and mitigate the damage. For spot watering we have mostly gone to occasional edge watering, where the turret nozzles are turned off, except for a few on the end, to effectively water the edge. Growers definitely have to plan more carefully to avoid getting caught too dry. With poinsettias we developed the use of a capillary style mat and special tubes to drop the water directly onto the mat. We have also used catch basins that work very well to conserve water and feed on spaced crops, and seem to be less trouble than the capillary mats.

The features of the GTI booms include the ability to choose nozzles on the turrets, three different fertilizer solutions, and several modes of operation. Understanding the boom and how it could be used required that we master at least a few of these modes. First, most people learn to jog, which requires that you be walking alongside, telling the boom what to do. This is the easiest mode, but the most labor-intensive. Next, we train how to program the boom in auto mode, which is like using a sprinkler clock. Third, we use something called a “quick pass”, where the operator triggers a program. This is often called manual mode. The boom will return to home after a job triggered manually. The fourth mode is “remote”, where the boom is triggered by the greenhouse climate control computers. This has been especially good for propagation. We have been able to use inverse humidity as an accumulation trigger. This would be where the computer measures 100 minus whatever the humidity is in the house, essentially measuring dryness. We have also used temperature, light, and vapor pressure deficit (VPD) to make triggering decisions. This method has worked well for propagation from cuttings. It is possible to create many programs, or to ramp the targets up or down to affect weaning.

For PGRs, we’ve created tables where growers are able to use speeds of a boom to change the amount of chemical falling on a table. Our tables are 100 ft² exactly, and so it was easy to do the math. For example, we would want to do several Bonzi applications on successive tables, and the boom would be sped up or slowed down to different speeds to accomplish different effects. This allows the applicator to change the effect of the application without stopping to remix the solution. Of all of our uses, I believe this has been the most extensive area of innovation. Our growing team is now using a more sophisticated approach with PGRs, using climate data averages to decide on ppm rates on different species. Since we grow an older plug under lights in order to induce winter flowering, our plug crops also require PGRs and so this has been a big help in getting accurate results.

To conclude, my experience with booms has been challenging and rewarding, with much of my previous growing techniques having to be changed completely. We continue to try to produce the best quality crops possible, and we definitely do not let machines get in the way.