Upping Our Labor Game©

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For the past 5 years, Spring Meadow Nursery has been actively seeking and implementing more efficient ways to work. We have made changes throughout our production departments, but most of what I am going to talk about today focuses on the propagation department which includes making and sticking cuttings and transplanting.

Figure 1 shows one person sticking cuttings in their own flat, a method that we used for 20 years (pre-lean flow). Following training in lean flow methods in 2009, we found that by changing to progressive or an assembly-line sticking method, we were able to increase productivity by 15% (Fig. 2). This method uses three people sticking flats. The first person removes the medium-filled flat from the upper conveyor and sticks approximately one-third of the cuttings. The second person sticks approximately one-third of the cuttings. The third person will finish sticking what is needed and place a plant label on the flat and move the finished flat to the lower conveyor. This method works very well when training new workers or trying to bring slower workers up to speed by placing the slower person in the middle so that they are pushed by the worker on their right and left sides.

Fig. 1. Each person sticking cuttings in their own flats.

Fig. 2. Progressive sticking group of three people.

After 3 years of progressively sticking cuttings, we topped out any further labor savings. To continue the labor savings process, we purchased an AgriNomix indexed flat conveyor this season which automatically advances a medium-filled flat when one is removed from the conveyor (Fig. 3). So far, the indexing conveyor has boosted our productivity 18%.

Fig. 3. AgriNomix indexed flat conveyor system.

Table 1 illustrates one example, sticking 32 cell trays, of a 63% efficiency gain that we have achieved over the past 5 years. This is a group rate and includes the person running the flat filler, off-loading the flats from the conveyor to the carts and hauling carts to the greenhouse.

Table 1. Illustrates the gain achieved over the past 5 years.

	2008	2009 Introduced Lean-Flow Techniques	2010	2011	2012	2013 Introduced indexed tray feeding	Total Productivity Gain So Far (5 years)
Flats per man hour (32-cell tray)	24	27	30	34	33	39	63%

A lean flow technique that we use to keep workers informed of their output is shown in Figure 4. A white board with hourly production updates is maintained by the crew leaders. On this day, as of 12:30 PM, the transplanting and sticking crews were well above their expected rates, 130 and 159% respectively. Crews that produce above the expected rates are paid a performance based incentive every 2 weeks.

A TTA USA mechanical transplanter (Fig. 5) was installed in June 2013, to increase the efficiency of transplanting a 72 plug into a quart pot. So far, we have been able to triple the manual transplant rate, and expect further productivity increases in 2014, as our workers become fully trained.

Fig. 4. Hourly production output.

Fig. 5. TTA USA mechanical transplant line.

The AgriNomix tray destacker and pot loader (Fig. 6) which is on the transplant line was also added this season. This machine has eliminated one worker; however, it has been far from trouble-free. The main problem has been static of the pots which occasionally require a worker to manually place the pot in the tray. We are working with the plastic manufacturer and AgriNomix to correct the problem.

We have 20 acres of greenhouses containing rapidly growing young plant material which require regular pruning to encourage branching and to keep plants within their size specification. Figure 7 shows the hedge pruner method which was used for many years, requiring a worker to bend over holding a 40-inch hedge trimmer all day. The clippings are swept up by another worker. The rate for manual trimming and clean-up is 600 flats/man hour.

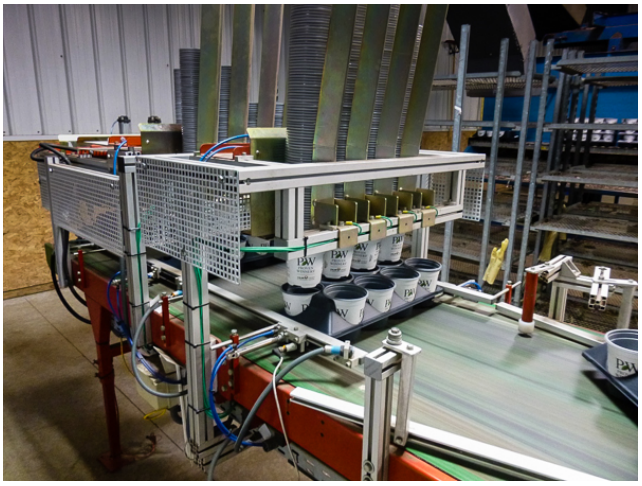

Fig. 6. AgriNomix tray destacker and pot loader.

Fig. 7. Trimming liners with a hedge pruner.

Fig. 8. Mechanical trimmer.

Two years ago we contracted for the construction of the mechanical bed-width trimmer (Fig. 8) that runs on rails on both sides of the bay. It has the ability to be raised and move over plants that do not need trimming. The clippings are swept to a conveyor at the back of the trimmer and deposited to the sidewalk for easy clean-up. The rate using the trimmer is more than 10 times that of the worker with the hedge pruner: 6000-8000 flats/man hour.

By making our facility more efficient, it has been a win-win for both management and staff.