

Let's Improve Transplanting Efficiency This Spring

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Before the busy spring season begins, it may be well to spend some time reviewing your transplanting methods to see if they can be improved. This is the largest labor input that goes into bedding plant and potted plant production. Let's review some of the basics and then look at some systems.

One key to efficient transplanting is to have the materials and seedlings handy. Time spent walking, reaching or looking for materials adds to the production cost. Several things can be done. If you don't have a continuous container filling system, try to bring the flats to the transplanters on pallets. This will reduce handling and ensure an adequate supply. Locate the flats as close as possible to the work station.

For small growers with a few hoop houses, frequently, the most efficient system is to set up transplanting stations in the greenhouse. These stations should be portable, preferably on wheels so they can be moved from one end of the greenhouse to the other as the area is filled.

Reduce the amount of walking that the transplanters have to do. To make a 10' round trip to pick up a flat costs at least one cent. Doing this many times a day adds to the cost of the plants as well as tires the worker.

Transplanting is easier if good dibble holes have been formed in the soil surface of the flat. This requires proper moisture content that varies with the type of mix being used. Experimentation will indicate that level.

If you have not already made the change to plugs, consider the advantages. Plugs provide singulation and easy handling of the root ball. This reduces transplanting time by up to half. The use of a plug popper loosens them for easy removal. Research has shown that the slight added cost of plugs is offset by the shorter growing time.

Another key to efficient transplanting is to have an efficient system for removing the flats from the transplant area. This can

be by cart, conveyor or other system. Carts should be designed so that shelves are adjustable for different size plants. If the distance to the growing area is more than 200 feet, an electric cart or other power unit can be used to pull several carts in tandem. Overhead trolley conveyors have worked well for some growers with compact greenhouse facilities.

Now let's look at some transplanting systems. There are many systems and methods used, but here is a comparison of three of them to give you an idea of when it might pay to upgrade.

The lowest tech system is the transplanting by hand on a bench or table. Production varies widely depending on the skill of the transplanter but usually falls between 10 to 20 flats/hour. Assuming an 806 flat, a labor cost of \$6/hour including benefits, and a production of 15 flats/hour, the transplanting cost per flat is \$0.45. At this rate, it would take about 37



hours to cover 1,000 square feet of growing area.

Transplanting conveyors speed production by maintaining an even pace. They require a minimum of five workers to operate. A production rate of 30 to 50 flats/person/hour can be achieved with plugs. Roller conveyors can be used as accumulating sections to supply and remove the flats. A more efficient system is to place the transplanting conveyor in line with the flat filling/dibbling operation.

A typical cost for a four-station conveyor with variable speed belt is \$3,000. Assuming an average of 40 flats/hour, the cost per

flat drops to \$0.15 and the 1,000 square feet of area can be filled in 12 labor hours. The payback for this machine can be as little as 10,000 flats.

Automatic transplanters are becoming more popular with larger growers as technology advances. These require a crew of eight to 10 people to operate the complete system from flat filling to setting the plants in the greenhouse.

Depending on manufacturer, rates of production vary between 50 and 800 flats/hour. Most transplanting machines require two to four people to operate with one person or more checking for skips. The rate per person can be as high as 100 flats/hour. Assuming 65 flats/person/hour and the above-listed parameters, the cost per flat is \$0.09.

With a price tag of \$30,000 to \$60,000, the payback requires a large production volume. In our example, if we assume that we now have a transplanting conveyor system and are considering purchase of a machine that costs \$60,000, the greenhouse operation would have to produce slightly over 300,000 flats/year to have a three-year payback period.

Based on comments by a panel at the recent Professional Plant Growers Association meeting in Buffalo, the greatest advantage to the automatic transplanter is the rapid replanting that can be done to fill growing areas that have been shipped. Keeping the production area full of plants increases the gross dollars from the greenhouse.

The above examples are given to show that there are significant differences in the cost of transplanting. Whether you should consider changing to a new system will depend on a number of factors that should include accurate data on the present output and costs.

