

Paper-Pot System for Transplanting Efficiency

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The paper pot transplanting system is an innovative, labor-saving technology developed in Japan. It relies on using paper pots that are connected in a chain so that they feed themselves through the transplanter. The transplanter itself is hand-pulled. With it, I can put 264 plants in the ground (one flat) in less than a minute...all while walking upright (no kneeling, crawling, or stooping).

The transplanter opens a narrow furrow, the paper chain goes down into the furrow, and then the plants are covered by a set of metal flanges. At the start of a row, the lead cell of a flat of paper chain pots is pulled down into the furrow, staked to hold it in place, and then you pull the transplanter forward. The transplants all follow each other into the ground. Packing wheels firm the soil around the transplants as you go.



The paper-pot flats come compressed in cases of 75 to 150. In the greenhouse at seeding time, the paper flats are opened (not unlike an accordion or perhaps unfurling a Japanese-style paper fan) using a pair of metal rods and held open on a frame while being filled with potting soil. The paper pots resemble a honeycomb of cells. Once filled, the metal frame can be removed. Seeding is accomplished by hand or with a seeding device that seeds an entire flat at once.

Because the pots are in a chain, the in-row spacing is pre-determined. Generally, the system is best suited for closely spaced crops. It is absolutely perfect for allium family crops. It can also be used for things like spinach, chard, various salad greens, many cut flowers, beets, and some herbs. The in-row spacings that are available are 2", 4" and 6". Longer in-row spacings are possible if you skip cells when seeding.

The cell size for the paper pots are small, with the standard size being 1.25 inches in diameter and 1.25 inches deep. Slightly larger (1.33 inch diameter) and deeper (1.5 to 2 inches) cell sizes are also available.

The transplanter is like nothing else available in the U.S. and is somewhat difficult to describe in words. For this reason, I recommend the following YouTube video:

<http://www.youtube.com/watch?v=EWd8gBJgEMY>

Traditional transplanters require a tractor, tractor-driver, 1 to 3 people riding on the back, and often an additional person to shuttle flats to the crew. With the paper pot transplanter, one person can do the whole operation without using a tractor. The transplanter has many attractive attributes: no moving parts to wear out or break, no fuel use, no noise, and no stoop labor.

The primary drawback is the short in-row spacings available and small cell size which disallows transplanting larger seedlings or crops that need a longer in-row spacing. On my farm, I use the transplanter primarily for allium crops and spinach. It has been a very good investment. I grow quite a lot of alliums (leeks, bunching leeks, onions, shallots, and scallions) and do a good amount of spinach. Our spinach production has increased and improved significantly. I can now seed and germinate spinach consistently in the paper pot flats somewhere cool for my fall crop and therefore get a consistent and solid stand after they are transplanted. In the past, with direct seeding, I always had gaps in my rows due to imperfect germination in hot and dry field conditions in July and August.

The transplanter works best in lighter, well-tilled soils. It does not do well in clay. I use a rotovator to prepare beds for transplanting. Excessively clumpy soil or lots of residue affects the performance in terms of how well the paper chain pots are buried. I sometimes need to go back down my rows and cover up sections that did not get buried adequately. I consider this a very insignificant price to pay for the speed and ease of planting using the system.

The cellulose paper is not bleached but does contain resins (the same as used to strengthen paper grocery bags) to keep them from disintegrating when wetted. The paper decomposes in the soil after a season. My Wisconsin-based certification agency (Midwest Organic Services Association) approved them for use on my certified organic farm starting in 2006.

There are several models of transplanters. The standard, and best-performing, unit weighs 29 lbs and is about 80 inches long. The cost in 2009 (not including shipping) is around \$1100. The paper chain pots range from \$1.75 to \$2.75 per flat (depending on cell size). The other required components of the system include rigid plastic trays to hold the paper pot flats and a metal frame to hold the paper pots open before filling with potting mix.

I learned about the paper pot transplanter while living in Japan. I am now importing and selling the transplanters and related components. So far, there are people using the transplanter in Wisconsin, Iowa, New York, and Washington.

For more information, please contact me using the information above, (email preferred).