



FAIRSHARE

CSA COALITION

Grower Information Sheet

Water Wheel Transplanter

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Farm Name: Crossroads Community Farm

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Farm Website: <http://www.crossroadscommunityfarm.com/>

About Your Farm

Acres: 17 acres

Shares/Members: 360

Other relevant farm details: Between 2 farms we manage 28 acres of tillable fields, after hoop houses, roadways and some hedgerows that narrows down to roughly 21 acres of available bed feet.

For us **once we were growing more than 4 acres of vegetable crops we needed to buy a transplanter.** Up until this time we had been transplanting entirely by hand into freshly tilled soil to make the job go quicker. We drove our tractor mounted with a 3 point toolbar and 3 seeders set at 15" down the bed to mark the 3 rows. After the rows were marked we came and placed plants by hand. If it was hot and windy the biggest problem with this method was the lack of water for the newly placed plants. We spent so much time dragging hoses around and watering in the stressed plants. We could have placed drip tape on the beds and planted next to it, but we came through and cultivated mechanically with an Allis Chalmers g. The drip tape would have to be moved for this.

SOURCE

Purchased in 2008 from market farm implement, can be purchased directly from Rain-Flo

Rain-Flo's website is www.rainfloirrigation.com and phone number is (717) 445-3000

Tip: Ordering in December or January you usually get a discount compared to ordering later in the year, this will also insure that your machine is delivered before the coming season.

Rain-Flo model 1600 \$3500 after all of the additions.

Options that we have: top tray for carrying more flats into the field, 3rd and 4th seats, side ladder to fill tank, 3 super wheels to fit 6", 12", 17", 31", 45" or 86" spacing, spikes and

rubber spacers for the superwheel. Plumbing to allow for 3 wheels to be used at once. Trailer mounted with hydraulic lift. (the planter is also available in 3 point model) We really like the trailer mounted model as it takes 1 person literally 2-3 minutes to hook up, but we don't have any experience with the 3 point model to speak on that.

OVERVIEW

This is the most versatile piece of equipment that we own and the best investment we have made to date. We plant every crop that we grow with it, outside of anything that is direct seeded, and recently we bought a potato planter and no longer use the waterwheel to plant potatoes. The efficiencies that a waterwheel gives allow for profitable crop production on a scale from 4 to 20 acres of vegetables. I don't have exact numbers on times to hand transplant a bed before we got the transplanter, but one of the biggest things is how many plants you can plant in a day. If you are constantly bent over on your knees and crawling along the bed planting by hand, that has a huge toll on your body and you can't continue to do it all day without bodily harm.

With this transplanter you are still physically putting the plant in ground and covering up the root ball, but you are riding on a seat while doing the job. There are very few parts that can wear out. This is a very simple machine. What the waterwheel allows you to do is plant in a somewhat more comfortable position, but also to ride along and not have to move with every plant because you are moving on the tractor. There are some instances that we use the waterwheel to mark wet spots on the bed and come back and plant by hand. Even in these times, having the water in the field at the correct spacing for future cultivation is so critical. We are now able to put in 1000 plants in an hours worth of labor on 3 rows at 12 inch spacing. The plants are watered and set firm in the ground at equidistant spacing for both ease in mechanical cultivation and hand cultivation. This number may be able to be replicated when planting by hand, but the watering in part will be very time consuming when necessary. Also that hour of labor really only took 15 minutes worth of the day, (3 people riding on the transplanter, 1 person driving the tractor, 15 minutes to plant the bed x 4 people – 60 minutes). That means during the planting season we can get a lot done in a short window of time. This is so important when the weather is unpredictable and you only have a dry spell for 1 day before the next rain.

VERSATILITY

Having the superwheel (this would be in contrast to buying wheels with welded spikes at set spacing) allows us to change the in-row spacing without having to take the wheels off the machine. We use a rubber mallet and knock off the metal spikes and put in a black rubber spacer wherever we don't want a spike. We can then plant at anywhere from a 6", 12", 17", 31", 45" or 86" spacing. We use it for planting on bare ground as well as on plastic. The transplanter is designed for planting into plastic mulch. When it is used on bare ground it does get clogged with mud often. We carry a couple of paint scrapers to get the mud off of each spike. We found the less water we put down the better in terms of mud buildup. We also found that setting the wheels so they are just barely touch the ground instead of all the way down allows for them to go longer without clogging with mud. If conditions are just so that they clog with mud right away it is frustrating and

time consuming to clean it off. We find this happens most on 6" spacing and least on 17" or more spacing. When we plant onions we drive the beds with no one on the transplanter, and find that we often have to clean the mud off at the end of every 400 foot bed. This probably takes about 5 minutes to do a really good job at cleaning it. We usually have to refill the tank every 1-2 beds when we are planting on 3 rows 6" spacing. If we are planting on 2 row 17" spacing we can usually get more like 5- 400' beds before having to refill the tank. Refilling the tank can take some time and is something to consider if you have low water output. It takes 160 gallons to fill the tanks. At 10 gal/min that is 16 minutes. If you have the water volume and a way to setup a larger hose with more volume then a garden hose it is worth the effort. I think we can fill the tank in about 3 or 4 minutes through 1 1/2" layflat.

CROPS

We have used the planter for the following crops

Brassicas

Chard

Sweet Corn

Cucumbers

Zucchini,

Winter Squash

Eggplant

Fennel

Garlic

Herbs

Hd Lettuce

Leeks

Melons

Onion

Peppers

Potatoes (much slower then a potato planter though)

Rutabaga

Strawberries

Sweet Potato

Tomato

TRACTOR

To run a waterwheel transplanter you have to have a tractor that goes slower then a turtle. Very few tractors do this so you need to find one that does. From my limited knowledge I believe that **either a creeper gear or hydrostatic transmission is necessary.** It is possible to make use of a waterwheel transplanter even if your tractor doesn't go slow. You can simply drive down the bed at whatever speed your tractor does go, put down water to mark your spots, and come back and plant by hand. This is a large labor savings by marking your bed and putting water down for you, but you have to be bent over and move down the bed every time you put in a plant, this is a lot of wear and tear on your body. The speed is very dependent on what spacing you are using as well. For 17" spacing on brassicas, we have two people ride (one for each row) and we can drive quite

fast. For 6" spacing we have to drive extremely slowly. We have found on our farm that **anything that we are planting on 6" spacing (garlic and onions), we just mark the beds with the waterwheel and plant by hand.** We try to get a big crew of people on this task so that it goes quickly.

PROBLEMS

Some problems we have had are the wheels not staying consistently spaced apart. (we need them to be on 15" spacing 3 rows/ bed for our cultivating tractors). We thought the set screws were maybe wore down or lost their sharpness so we ordered new ones. But eventually we realized that the threads just had rust built up in them so even when you cranked down on the set screw and thought it was tight it was really not bottoming out on the axle. We had to take the wheels off and lube them up and get the screws to turn all the way through.

The waterwheel is by no means fast, it is still a relatively primitive method of transplanting and large growers may be annoyed by how slow it is.

The accuracy of your rows and plant spacing is still dependent on a human putting it in the ground in the right spot. If your workers aren't able to visualize that the plant needs to go into the center of the wet spot, then your between-row spacing can get off. Education amongst your workers about the need for cultivating equipment to come through consistently spaced rows is necessary.

OTHER TRANSPLANTERS

We don't have a ton of experience with other transplanters. Many larger operations than us are using mechanical transplanter 5000 units, the advantage of these would be the carousel design allowing for the tractor to drive much faster and set more plants per labor hour. For us we are not quite at the volume of production that we feel we need to be for this investment. The waterwheel is slower then the 5000 I'm sure, but it works well enough for us that we aren't yet looking to improve on it.

The following photos were found on the internet to help illustrate how a waterwheel is used.



