

SEEDING CROPS IN THE MARKET GARDEN

By Daniel Brisebois and Reid Allaway

Of the six acres of vegetables we grow each year, roughly an acre and a half is direct seeded with push seeders. When you count that out—40 beds x 3 rows/bed x 90 m/row, you get almost 11 km (7 miles). That’s one long row to seed! And nobody wants to get on hands and knees to thin eleven kilometres of vegetables.

Choosing a seeder that works for you and your farm is an important decision. It needs to be precise for each crop it seeds, easy to adjust for different crop specifications, light enough so it is pleasant to work with, and heavy enough to firm soil adequately while resisting years of wear and tear.

Over the last six years, three push seeders have met our needs at Tourne-Sol cooperative farm (see pg. 62 for a description of the farm). In our first year after having tried many different seeders on the farms where we had apprenticed and worked, we purchased an Earthway seeder and a Glaser precision seeder. In 2008, we added the Jang Clean Seeder to our tool shed. Let’s compare these three seeders.

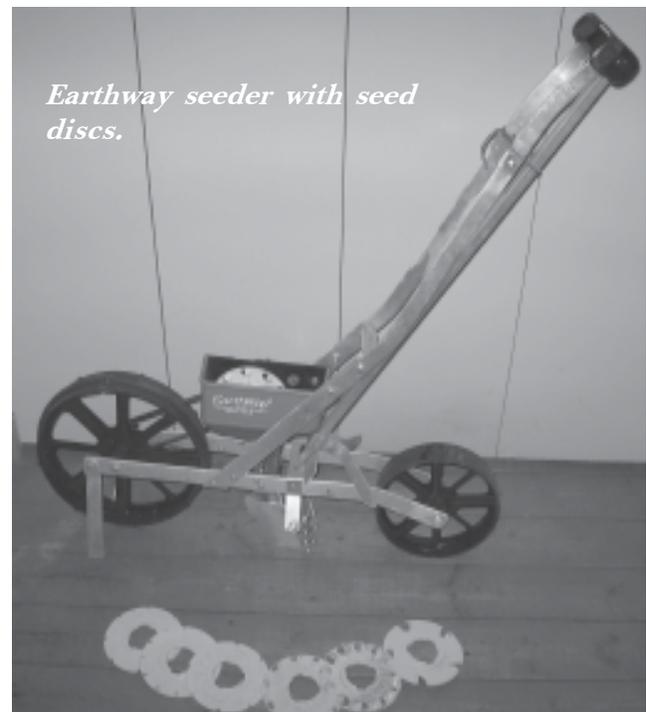
Earthway vegetable seeder¹

1. Seeding mechanism

- The front wheel uses a rubber belt to drive an interchangeable seed plate in the hopper. The plate picks up seed, then drops it down a chute into an opened furrow. A drag chain fills the furrow and the rear wheel tamps the seeded row.
- It is easy to see whether the plates pick up seed as you push the seeder.
- When there is very little seed in the hopper, you can keep planting if you tilt the seeder to the right.

2. Precision

- Six plates come with the seeder; five others can be purchased separately.
- There are two plate options for most crops. Choosing the right plate means you can sometimes avoid thinning.
- When various plastic parts wear out, seed can be



Earthway seeder with seed discs.

caught behind the plate, either jamming the seeder (e.g. with peas) or reducing the seeding rate (e.g. with carrots and brassicas).

3. Seed depth

- The depth of the furrow opener shoe can be adjusted quickly and easily.
- Seed depth is quite consistent.
- The seeder is somewhat resistant to clogging.

4. Changing seed

- The plates are quick and easy to change between varieties or crops.
- The hopper is easy to empty.

5. Overview

The Earthway is a great multi-purpose, first seeder with amazing value for cost—you can easily grow over \$100,000 of vegetables with this \$150 seeder! That said, you may want something more durable and precise after a few years.

Glaser pinpoint seeder

1. Seeding mechanism

- The wheel axle of the Glaser runs through the base of the hopper. Depressions in the axle collect seeds and drop them into the small furrow being opened by the opener shoe at the front of the seeder. A trailing wheel closes and tamps the furrow.
- If you can see the wheels turn, you know that the axle is delivering seed.
- The seed chute can be clogged easily with dirt or debris.

2. Precision and adjustment

- The Glaser is designed for small seeds.
- The axle has three settings for seed size. An extra axle is available with three more hole sizes for larger seed.
- A brush can be adjusted to leave either more or less seed in each axle depression.

3. Seed depth

- The depth is determined by the angle of attack of the seeder and the condition of your seedbed. The Glaser requires some practice before you can achieve consistent results.

4. Changing seed

- It is very quick and easy to change the hole size.
- The lightweight hopper is very easy to empty without spilling.



Emptying the Glaser.

Guidelines for seed depth

1. Plant seeds a depth equal to three times their width in the ground.
 - Plant small seeds, such as lettuce, carrots and brassicas, 0.25 inch (0.5 cm) deep.
 - Plant medium-sized seeds, such as coriander/cilantro, chard and beets, 0.5–0.75 inch (1–1.5 cm) deep.
 - Plant big seeds, such as peas and beans, 1 inch (2.5 cm) deep.
2. Planting depth depends on the moisture content of the soil.
 - If the soil is very wet, don't plant too deeply as the seeds can rot before they emerge.
 - In very dry conditions, plant more deeply to place seeds into more humid soil.
3. If you see seed lying on the ground, plant more deeply.

5. Overview

A precise and affordable seeder for small seeds, costing \$160(USD). The Glaser complements the Earthway as it can handle small round seeds that might be caught behind Earthway plates. However, to work well, the Glaser requires a relatively fine seedbed and minimal amounts of mulch or crop residue on the soil surface.

Jang Clean Seeder (models AP and JP)

1. Seeding mechanism

- The front wheel turns a chain that drives a roller at the bottom of the seed hopper. Depressions in the rotating roller collect seed and drop it into the furrow.

2. Precision and adjustment

- There is a different roller for each seed size. Each roller costs about \$25.
- A brush at the hopper exit (throat) can be adjusted to change the amount of seed that collects in the depressions on the roller.
- The front wheel's interchangeable drive gears can adjust the speed of the seed roller.
- The seeder consistently produces solid stands at the desired density but only when adjusted appropriately.

3. Seed depth

- The standard opener shoe handles crop residue and stones better than the Earthway or Glaser. There is an optional disc opener for high residue situations.



The front wheel of the Jang Clean Seeder turns a chain that drives a roller at the bottom of the seed hopper. Depressions in the rotating roller collect seed and drop it into the furrow.

Making the most of your seeder

1. Prepare your seedbed a week or more ahead of planting to help break down residue, loosen soil and force a flush of weeds.
2. Just before seeding, cultivate the bed with a rake, rototiller or other tool to eliminate weeds and break any crusting that may have developed since you formed the beds.
3. Seed straight parallel rows to make weeding easier.
 - The Earthway has a built-in row marker. With a hacksaw, we notched a corner of the bar to mark our standard row spacings of 15-inches (38 cm) and 24-inches (60 cm).
 - We use the Earthway to mark the rows for the Glaser.
 - Other systems for marking rows include various kinds of scratch, drag or rolling tracers mounted on bed preparation tools or used as independent tools.

- Provides very uniform depth and placement of seed because of the heavy construction, large wheels, long wheelbase and spring-loaded wings trailing the opener.

4. Changing seed

- To empty the seed and change the rollers, the hopper needs to be removed from the seeder. This takes more time than with the Earthway or Glaser (but much less time than other fancier seeders, such as the Stanhay or Nibex).

5. Overview

- The Jang Clean is a professional quality seeder for the diversified vegetable farmer who has outgrown the Earthway.
- It is well-built for long life with replaceable parts and durable design
- The single-row push model AP-1 or JP-1 costs \$400–600. Jang also offers other models for multiple rows or tractor mount.

How we use different seeders

These days, we use the Jang Clean Seeder to seed long rows that have only a couple varieties. The seeder is great for beans, carrots, beets, parsnips, radishes and turnips. On our farm, the Jang Clean Seeder has proven to be worth the purchase price

Calibrate your seeders

Calibrate each of your seeders using this formula:

$$\text{Number of seeds} \div \text{Distance seeder travelled} = \text{Seeding rate}$$

Repeat this calculation for each setting on your seeder.

To calculate the **number of seeds**:

- Fill the hopper on the seeder.
- Raise the seeder over a container.
- Turn the drive wheel a fixed number of turns.
- Count the seeds that dropped into the container.

To calculate the **distance travelled**:

- Measure the circumference of the seeder's drive wheel.
- Multiply the circumference by the number of turns you rotated the wheel.

Calibrating Glaser pinpoint seeder to seed arugula.

Hole size	Number of seeds	Distance travelled	Seeding rate
Small	21	1.44ft (0.44m)	15 seeds/ft (48 sds/m)
Medium	42	1.44ft (0.44m)	29 seeds/ft (95 sds/m)
Large	136	1.44ft (0.44m)	94 seeds/ft (309 sds/m)

Adapted from COG's *Crop Planning for Organic Vegetable Growers* by Daniel Brisebois and Frédéric Thériault.

given the improved uniformity it provides.

For salad greens and herbs, we seed dozens of short rows (25–50 ft./8–15 m) of different varieties. We use the Glaser and Earthway for these rows since it is easy to change the types of seed and settings in these seeders. We plant arugula, brassica greens, chicory and summer savory with the Glaser. With the Earthway, we seed lettuce, beet and chard greens, cilantro and dill.

The Earthway is a great first seeder and handles a wide diversity of crops. Coupling the Earthway with the Glaser gives a full range of options and better precision. The Jang Clean Seeder is a heavier, more complex and more precise tool that can help achieve more consistent results in direct seeding.

Footnote:

1. The Earthway seeder was described in the Spring 2010 and Spring 2009 issues of *TCOG*.

Daniel Brisebois and Reid Allaway are two of the five members of Tourne-Sol cooperative farm. Dan is co-author of COG's Crop Planning for Organic Vegetable Growers and Vice-president of COG. He also writes a blog (goingtoseed.wordpress.com) on growing seed.

Reid is responsible for machinery, infrastructure and maintenance at Tourne-Sol farm and does a lot of direct seeding. Reid loves tinkering with machinery and adapting tools to fit the needs of a small diversified vegetable farm.

Photo credits: Robin Tunnicliffe (Earthway), Tourne-Sol cooperative farm (Glaser and Jang)

