

Sattin Hill Farm Course

Module 13: Direct Seeding

Introduction

This module is all about direct seeding– why you should do it, how to use a precision seeder, the impact of temperature and moisture on direct seeding, and more!

As mentioned in the previous module, there are many advantages of transplanting over direct seeding; however, in Josh's experience at Sattin Hill Farm, certain crops do better when directly seeded: carrots, baby kale, arugula, spinach, radish, and turnips.

Benefits of Direct Seeding

Flexibility: There's a lot of flexibility when it comes to direct seeding. If you've planted all of your transplants and still have a few open beds, you can direct seed them to ensure a continual flow of products. For example, Josh always has carrot seed on hand in the event that he has an open bed. He'll direct-seed carrots; everybody loves carrots, and they are easy to sell.

Interplanting: Another great option for direct seeding is interplanting. As mentioned previously, while growing tall, slow-growing crops like peppers, tomatoes, and cucumbers, you can direct-seed other quick-growing crops alongside them like arugula or radish.

Time Input: When thinking of time input as a farmer, direct seeding can be a swift process. With a quality precision seeder, the actual process of direct-seeding is much faster than transplanting.

Temperature: Temperature can play a significant role in success with direct seeding. Closely monitoring the weather is key. Many people try to direct seed in early spring, but this can lead to spotty germination because the soil temperature is still too cool. There are strategies to avoid this. For example, if you plan on planting out in the spring, monitor upcoming weather. If there are a few cold days, but there will be a streak of warmer weather in three or four days, postpone direct seeding until then. The key is making sure the weather will be warm enough for the entire period of germination.

Direct Seeding in Different Seasons

Direct seeding in caterpillar tunnels helps to provide more consistent temperatures during the cooler months of the year. The tunnels can be closed up in the afternoon and

trap as much heat as possible to warm the soil. Even if the ambient air temperature is cooler, warmer soil is the key to germinating seeds and plant growth.

Similarly, trying to direct seed in the summertime can be challenging as some crops won't germinate when it's too warm. It's crucial to plan ahead and understand the limitations and needs of the seeds you'll sow.

Moisture Levels for Direct Seeding

Soil moisture content is also a huge factor for good germination of direct-seeded crops. Monitor the moisture level of your soil at all times. Sticking your hands in the soil is a much better gauge than a visual appraisal. For example, the very top layer of the soil can appear dry when wind has swept across it, but upon further investigation, you may find it's still quite wet below the surface.

Learning ideal moisture levels come with time and experience. Soil should not be soggy, as that will cause the seeds to rot. With trial and error comes proficiency in gauging optimal moisture levels for your soil and farm.

Irrigation for Direct Seeding

Drip irrigation cannot be solely relied upon for germination of directly sown seed; it does not always provide full, even coverage for the soil. Alternatively, overhead irrigation is ideal for directly sown crops. It provides even moisture coverage to the ground for optimal germination.

On Josh's farm, his beds are planted with a variety of crops with different irrigation needs. This doesn't allow him to irrigate overhead for a large block at one time. Consequently, Josh hand waters individual beds for the ideal germination of his directly sown beds. He checks the moisture level and then hand waters as needed during the first few days after direct seeding.

Even when overhead irrigation systems are in place, Josh recommends installing an accessible hand watering setup. This provides the flexibility needed to really care for the beds during the first few crucial days of germination, hand watering sections as necessary.

Precision Seeders

A high-quality precision seeder is elemental for a successful farm operation. Compared to seeding by hand, a precision seeder is infinitely faster and allows precise in-row spacing and depth of planting for the seeds.

Avoid Overseeding

When direct sowing seeds, avoid overseeding. Overseeding necessitates thinning out crops for proper spacing. When sowing by hand, thinning becomes necessary since you cannot truly control the rate at which you drop seeds, especially with very small seeds. Precision seeders allow you to singulate seeds with high accuracy, so overseeding is no longer problematic.

Options for Seeders

The two most commonly used direct seeders by small-scale farmers are the Earthway Seeder and the Jang Seeder.

The Earthway Seeder: The Earthway is a less expensive option, and typically most new farmers start with it due to its lower cost. Josh no longer uses it on his farm due to the Earthway's limitations. It is most capable of sowing larger seeds like corn, peas, or beans.

This seeder can also be used for side dressing crops with soil amendments. For example, you can load up a seed hopper with pelleted chicken manure (about the size of spinach seeds) and run it alongside rows of tomatoes.

The main drawback of the Earthway is its lack of accuracy when it comes to small seeds.

The Jang Seeder: Josh recommends a Jang Seeder as the optimal seeder for anyone serious about market gardening. The Jang is a little more expensive, but its high-quality construction and its accurate, precision seeding make it well worth the cost. This seeder comes in different models that allow for seeding multiple rows at a time. The most commonly used models by market gardeners are the JP-1 (which seeds a single row at a time) and the JP-5 (which seeds five rows at a time). The JP-5 will seed ten perfectly spaced rows on a 30" bed in two passes.

Josh prefers the JP-1. For his small-scale farm, it provides the most flexibility. He also recommends starting with a JP-1 because it can be used for so many things and then upgrading to the JP-5 if you expand and find a need for it.

The Anatomy of the Jang Seeder

The front wheel drives the system on the Jang seeder. As the front wheel moves over the ground, it powers the seeder by way of internal gears. There are two gears and a chain inside a covered gear-box; this system spins a seed roller measuring out seeds from a covered hopper.

Underneath the seeder, just behind the front wheel, is a furrower (or mini “plow”) that opens up the soil. Seeds will drop into the furrow, and behind that is a “shoe” to cover the seeds with soil. The rear wheel then slightly compresses the soil to create an ideal seed germination scenario.

The Jang’s internal gears can be swapped out for a variety of sizes to accomplish different spacings. There is a reference chart on the gearbox to guide your choice. Spacing for crops will ultimately be based on both the gear ratio and the type of seed roller used. The seed rollers come with holes of varying sizes to accommodate the sizes of seeds. These rollers also have different numbers of holes to regulate density. More holes mean more seeds being dropped. For example, seed roller XY24 (which Josh uses for direct-seeding carrots) will have 24 holes. For further instruction on using a Jang Seeder, visit <https://paperpot.co/jang-seeder-roller-chart/>

Setting Up the Jang Seeder

Remove the Hopper: Josh recommends taking out the hopper when setting up your Jang seeder. There is a button just behind it to release the hopper. When the hopper is removed, it is much easier to line up the gears.

Install the Gears: Loosen the thumbscrews to remove the cover from the gearbox. For seeding radish, Josh uses gear number 14 on the front and number 10 on the back. When the gears are installed, feed the chain around the gears, and reinstall the cover.

Install the Seed Roller: Next, install an F24 seed roller into the hopper. Loosen the thumbscrew from the roller compartment on the front of the hopper, open the cover, remove the pin from the shaft, pull out the shaft, remove the seed roller currently inside, and install the F24 seed roller.

Adjust the Brush: You’ll notice an adjustable brush just over the seed roller. In the fully down position, only seed that is flush in the holes will go through. When you want slightly more seed to be dropped than fits into one hole, or if you have larger seed needing more clearance, raise the level of the brush.

Josh keeps his brush in the fully down position for planting most of his crops, except for spinach, for which he adjusts the brush to the up position.

Reassemble: Once the seeder roller is installed and the brush is set to the desired position, reverse the steps to put the hopper mechanism back together, then reinstall the hopper into the body of the Jang. First, ensure that the gears are correctly engaged, rotate the hopper back while pulling the release lever, and then snap it back into place.

Another nice feature of the Jang seeder is that it has a lid on the hopper to prevent seed from falling out and debris or water from getting in.

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Seeding with the Jang Seeder

Filling the Hopper: When pouring seed into the hopper, add at least enough for the current planting, and preferably a little more to ensure you don't run out midway through the task.

Adjusting the Handle: There is a convenient loosening nut in the middle of the seeder's handle that allows you to position it to the left, the right, or the middle. Josh favors the middle position for the majority of the seeder's use.

Starting Your First Row: Before starting your first row, lift the seeder, hold it up with one hand, and use the other hand to rotate the front wheel until you can truly see a few seeds dropping. If the hopper wasn't installed quite right, this step would reveal the problem before you attempt seeding.

Once you've verified that seed is dropping, begin rolling out the first row. While the Jang allows you to move very quickly and even run if you prefer, Josh recommends taking your time to ensure your rows are as straight as possible. When you reach the end of the row, remember that the seeds are dropping from the middle of the seeder, so roll the front wheel just beyond the end of the bed to where the seed hopper itself has reached the end of the bed.

How to Evenly Space Rows: To ensure straight rows, Josh uses a string line on each side of the bed. For five rows on a 30" bed, he first seeds the outer two rows of the bed following the string lines. Then he seeds a row directly down the middle. After that, he makes two more rows in the spaces between the middle and outer rows. This gives him a finished bed of five evenly spaced rows.

The same approach can be applied to planting three rows, four rows, or even seven rows. With time and experience, you will create very evenly spaced rows by visually taking your cue from the outer rows along the string lines.

Finishing Seeding: Once all rows are planted, remove the hopper and pour the remaining seeds back into the bag. Keeping seed stored in a refrigerator will extend the lifespan keeping them viable for the next planting.

Place any drip lines back onto the freshly seeded bed (if using drip), and water in the seeds immediately after planting.

Jang Seeder - Josh Sattin Kit

Paperpot Co. has put together a Jang Seeder Josh Sattin Kit, which includes the JP-1, along with the rollers Josh most uses on his farm: XY24, F24, and X24. To learn more about the kit, visit: <https://paperpot.co/product/jp1-jang-seeder-josh-sattin-kit/>

Jang Seed Rollers

Josh doesn't grow a wide variety of crops on his small farm, so he has narrowed down his seed rollers to three. He recommends buying the specific rollers you need for the crops you grow.

Below is a Jang settings chart for some of the crops grown at Sattin Hill Farm:

Crop	Rows per bed	Seed Roller	Gears
Carrots	5	XY24	13 front, 11 rear
Radish	5	F24	14 front, 10 rear
Arugula	7	X24	11 front, 13 rear
Baby Greens	7	F24	14 front, 9 rear

Josh also grows baby greens including kale, tatsoi, and mustard. While these are the configurations Josh uses, he encourages experimentation to discover what works best for you. His kit is a good starting point, but always pursue ways to simplify your own system and figure out ideal seed densities for your specific needs. Take notes as you seed and make adjustments to maximize your yield.

Summer Germination Tip

If you want to get crops to germinate in the summertime and the soil is too warm and dries out quickly, here is a tip— After direct seeding and watering the bed, cut a 4' wide strip of silage tarp and place it on the bed with the white side facing up. This locks in the moisture and reduces the heat. It's imperative to regularly check for germination while using this tip. The moment you observe successful germination, immediately remove the tarp. The plants will become "leggy" or even die if you don't. However, it is a very effective method if the timing is right.

Direct Seeding in a No-Till System

If you run a no-till system and leave the roots of your previous crops in the ground, it can be a struggle to run a seeder through beds without getting snagged on those roots.

You can get around it by planting a different number of rows than the crops that previously occupied the bed.

For example, if the previous crop was lettuce planted out at four rows and the roots were left in the ground, you can follow with a direct-seeded crop of three rows or five rows. This puts your new crops growing between the old rows.

Conclusion

Direct seeding and a precision seeder are essential elements of a successful farm. Whether you fit in another planting of carrots to fill an empty bed, interplant some quick growing crops alongside your peppers, or drill in pelleted chicken manure as a side dressing of fertilizer, the JP-1 Jang Seeder is high quality and versatile tool for your direct seeding. It improves any market gardener's toolkit. Try out the Josh Sattin Kit to get started with direct seeding on your farm!