

TECHNICAL NOTES

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TN – PLANT MATERIALS -CA -88

Planting Seed Using A No-Till Drill

Matthew Bronson, Lockeford Plant Materials Center, CA

Introduction

Planting with a No-Till Planter/Drill gives you a wide variety of planting options to maximize plant establishment and yields. As with any piece of equipment, it is important to understand the seed or seed mix you are planting. The seed drill manufacturers owner's manual is a great place to start during set up, as it will provide guides on to how to adjust the seeder for your seed mix. If the manual cannot be located, usually the manufacturers website will have a PDF version you can download.



Fig. 1. Custom cover crop seed drill designed and built by Leslie Miller, cover crop and orchard cover crop farmer. 2020.

Margaret Smither-Kopperl, Manager; Matthew Bronson, Farm Manager, Lockeford Plant Materials Center, 21001 N. Elliott Rd., Lockeford, CA 95237.

Required Supplies

In addition to the owner's manual, or online information about the planter, the following supplies are recommended.

Table 1. Recommended supplies for seed drill calibration.

<u>Safety Supplies</u>	<u>Consumables</u>	<u>Tools</u>
Hearing Protection	Silicon Spray	Compressed Air Wand
Safety Goggles	Grease Gun	Extension Cord
Gloves	Clean rags	Seed Scoop
N95 Masks	Pen and Tape	Shop Vacuum

Preparation of Equipment

Before you adjust the seed drill, familiarize yourself with its operation and safety recommendations set out by the manufacturer. Always have the drill hooked up to the tractor (all hydraulics in the down position) before any adjustments are made, this will allow for a sturdy platform to adjust the drill. Use a compressed air gun to clean the machine and all seed distribution tubes before planting. The planter will have grease fittings. Use the owners-manual to locate and grease all fittings. If your planter has chains to drive the gears, spraying them with silicon spray will help with smooth operation (Miller, 2020).

Seed Selection

The seed or seed mix you select will affect your seed drill calibration and seeding depth (Cal-Flora, 2018). Setting seed depth on the planter, before you go out to the field is important. Once in the field, run the planter for about ten feet to decide if you are getting the proper seed to soil contact. Often the seed drill will have multiple boxes for different sizes and types of seed; agronomic or cover crop seed (Figures 2 and 3), native seed, and fluffy seed. Native and pollinator seed mixes have very small seeds (Figure 4) and it is highly recommended that you add rice hulls or polenta as a filler to allow for smooth flow of seed through the flutes. The largest seed in your selected mix will determine the planter opening settings (St. John et. al., 2005). The manufacturers manual will have tables that correspond to general seed sizes, select the table that most closely matches your largest seed size.

Commonly Planted Seed Mixes



Fig. 2- High Biomass Cover Crop Mix

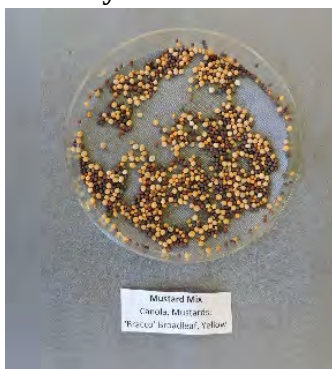


Fig. 3- Brassica clover mix



Fig. 4- Pollinator seed mix

Preparing to Plant

The seed drill typically has 3 settings that are important to adjust before seeding. The flutes in the hopper which rotate and agitate the seeds are adjusted during calibration of the planter (Figures 5 and 6). The coulters which open the soil for seed placement are also adjustable (Figure 7). Finally, the packing wheels which put downward pressure to assure good seed to soil contact can be adjusted (Figures 8,9,10) (Great Plains, 2020)

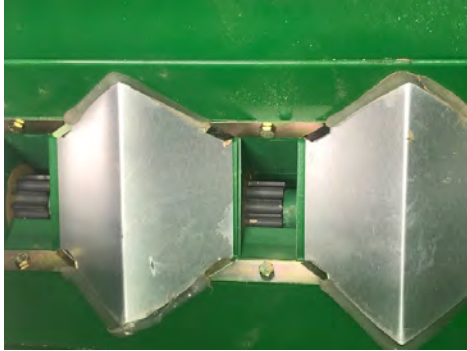


Fig. 5- Hopper flutes can be adjusted for desired seeding rates.



Fig. 6 - Flute adjustment knob

Calibration/Seed Distribution

It is highly recommended that you calibrate the planter and test the seeding rate before you begin a complete field planting. Refer to the owner's manual for your drill or to the references list for detailed instructions on calibration. Depending on the planter there are three common ways to test seed distribution (Hoag et al., 2002).

- 1) Using a hand crank on the seed drill to measure seed distribution. This is recommended as the first step when getting ready to plant. This step allows you to conserve seed and make sure the planter is working properly.
- 2) Driving over a tarp marked with a square foot grid to count average seeds per square foot (Figures 11 and 12) and test seed dispersion. Read the seed planter manual to choose proper tractor speed while calibrating and planting.
- 3) Running the seed drill in the field for approx. 10 feet, then getting out of the tractor to measure seed distribution and check for good soil to seed contact. This is challenging if the seed is small or hard to see.



Fig. 7 - Setting correct seed depth on coulters Before operation of planter with tape.



Fig. 8 – Closing or packing wheels can be adjusted for good seed to soil contact.



Fig. 9- Pull type adjustment handle.



Fig. 10 – Level planter on the ground



Fig. 11-Seed distribution before planting



Fig. 12-Counting seed distribution

Planting

With your calibration test complete, it is now time to plant. Make sure that the seed is evenly distributed along all hopper openings. If your drill has an acre counter attached, zero out the meter. Read the seed planter manual to choose proper tractor speed while calibrating and planting. Once you have completed your planting, the acre counter data will allow you to compare with your original seed distribution calculations (St. John, Loren et al., 2008). After any planting make sure to vacuum out any leftover seed and clean the drill.



Fig. 13-Distribution of seed



Fig.14 – Even seed distribution

Post Planting Cleaning

It is recommended that the planter be cleaned right after planting (Kincaid, 2020). You will need a shop vacuum, compressed air hose, air wand, gloves, marking pen, goggles, hearing protection and a cloth bag. The cloth bag will be used to store seed removed from the planter. It is important to mark the bag with the date, type and weight of the seed collected from the planter. Typically, seeds are left over in the hopper and in the distribution tubes. While the planter is still attached to the tractor and securely placed on a hard, even surface, i.e. concrete, a shop vacuum can be used to remove the extra seed. Note that the vacuum chamber should be clean of debris and the filter cleaned before seed is vacuumed up. Once the seed is removed, the tractor should be taken out to the field to allow any additional seed to pass through the planter. Often seed is left in the distribution tubes and running the planter over a small area of the field will allow this seed to pass through the machine. Note: some planters have hand cranks that the operator can use to move final seed through the system. Finally, use a compressed air hose with a wand to blow all dust off of the machine before storage.



Fig. 15 - Clean Dist. Hoses



Fig. 16 - Clean Coulters

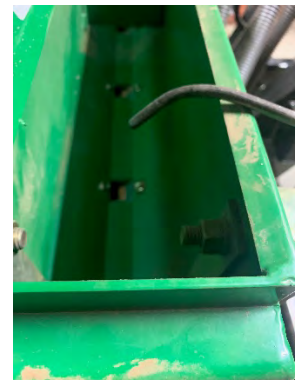


Fig. 17 - Clean box / flutes



Fig. 18 - Cover Crops planted in rows with grass alleyways.

The USDA NRCS Plant Materials Program develops technical notes and videos to aid landowners and conservations in developing successful plantings.

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