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Native Warm-Season Grasses

Calibrating seed drill seeding rates for native warm-season grasses

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Whether you are planting native warm-season grasses (NWSG) for forage, wildlife or bioenergy, calibrating a seed drill prior to planting is beneficial so that the correct amount of seed per acre is applied.

Pure Live Seed (PLS)

To begin, it is important to determine the amount of seed you need to apply per acre to get the correct amount of Pure Live Seed (PLS) planted. As most of these seeds do not have a 100% germination rate and contain some inert material, a calculation must be performed to determine the PLS for your seed. Some seed bag tags already contain this information. If not, simply multiply the %germination by the %purity and divide by 100 to get the PLS percentage. To determine the rate you must apply for a specific PLS rate, you divide the recommended PLS seeding rate by the PLS percentage of your seed and multiply by 100. An example of this calculation is shown below for Indiangrass ‘Cheyenne’:

Indiangrass ‘Cheyenne’	
Germination	91%
Pure Seed	73%
Recommended PLS Seeding Rate	8 lbs/ acre
$\frac{(91 \times 73)}{100} = 66.4\% \text{ PLS}$	
$\frac{8 \text{ lbs. PLS per acre} \times 100}{66.4\% \text{ PLS}} = 12 \text{ lbs seed per acre}$	

Seed Box

In most cases, NWSG like big bluestem, little bluestem and indiangrass need to be planted using the native grass box

on your seed drill or converting a box on your seed drill to handle native seeds.

(For information on planting switchgrass using a seed drill and other seed drill tips, see: <http://forages.tennessee.edu/Page%204-%20Planting/SP701-C.pdf>)

Eastern gamagrass seeds cannot be planted using a no-till, grass based seed drill due to row spacing differences. In this case it is recommended to use a traditional seed box type (i.e. corn planter) instead. The native grass box for other NWSGs should have double agitators (Fig. 1) that will help force the fluffy, light NWSG seed through the openings and into the drop hoses for planting.

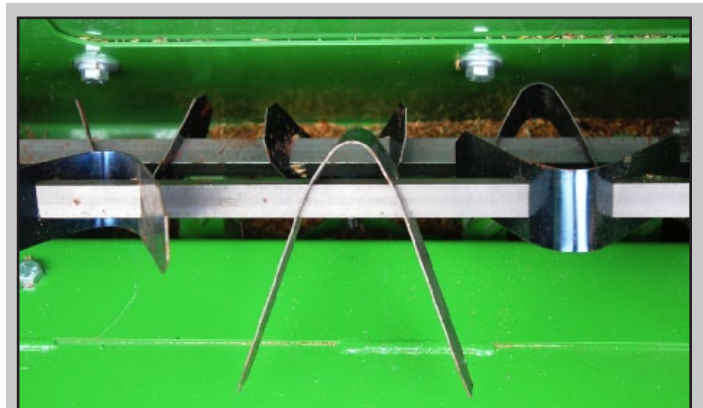


Fig. 1. Double row of agitators inside native seed box.

Using a seed drill without these agitators will result in a shortage of seed dropped for planting. Other alterations to the seed drill include the use of larger seed cups and hoses and a special seed boot. After ensuring that hoses and seed boxes are clear of any debris, calibration of the seeding rates can be performed.

Seeding Rate Calibration

Step 1: Place seed in native grass box and open the sliding gate to a setting that you deem appropriate to start with (Fig. 2). Your seed drill owner’s manual should give you an idea of the setting.



Fig. 2. Pointer and scale to determine relative size of seed opening

Seeding Rate	12 lbs/ acre
Row Spacing	0.6 ft
Number of Rows	12
Length Pulled	100 ft
Area Pulled	$100 \times (0.6 \times 12) = 720 \text{ ft}^2$

$$\frac{12 \text{ lbs/ acre} \times 720 \times 16}{43560} = 3.2 \text{ ounces}^{**}$$

** Total seed weight collected in bags

Step 2: Remove hoses from beneath native grass box and attach pre-weighed bags under seed cups using the hose clamps (Fig. 3).



Fig. 3. Example of bag attachment to seed drill for seeding rate calibration.

- Step 3:** Pull seed drill 100 ft.
- Step 4:** Weigh the seed in the bags and subtract bag weights.
- Step 5:** Calculations

The amount of seed you should have in the bags is determined by multiplying the pounds of seed per acre you want to apply (determined above) by 16 and by the area drilled (in square feet). To determine the area drilled multiply the distance you pulled the seed drill (100) by the planting width of the drill. This value is then divided by 43560 to give you the weight (in ounces) that you should collect in the bags to get the rate you want to apply (see calculation below). Adjust the sliding gate accordingly based on the weights you get. It is important to note that in some cases the scale on the sliding gate is not the most accurate (i.e. doubling the setting will not necessarily double the seeding rate) so it may take a little adjusting before getting the correct output rate.

Seed

Not all seed is the same. Even seed that is of the same species and variety may be different depending on the way they were cleaned. This will differ based on the seed supplier you order seed from. Figure 4 shows two types of seed that are the same species and variety (Little Bluestem 'Aldous') but from different suppliers.



Fig. 4. Little Bluestem 'Aldous' seed from different seed companies. The seed on the left may have greater fluffiness which could make it more difficult to flow through the seed drill at a regular rate.

The seed on the left was not cleaned as much as the seed on the right and may be more difficult to calibrate in the seed drill due to its fluffiness. The fluffiness can cause the seeds to clump and come out of the seed drill this way. This may also lead to a different seeding rate than other cleaned seed.

For information on where to purchase NWSG seed, contact your local soil conservation district.