SEED FILLERS AND CARRIERS FOR PLANTING NATIVE WARM-SEASON GRASSES AND FORBS

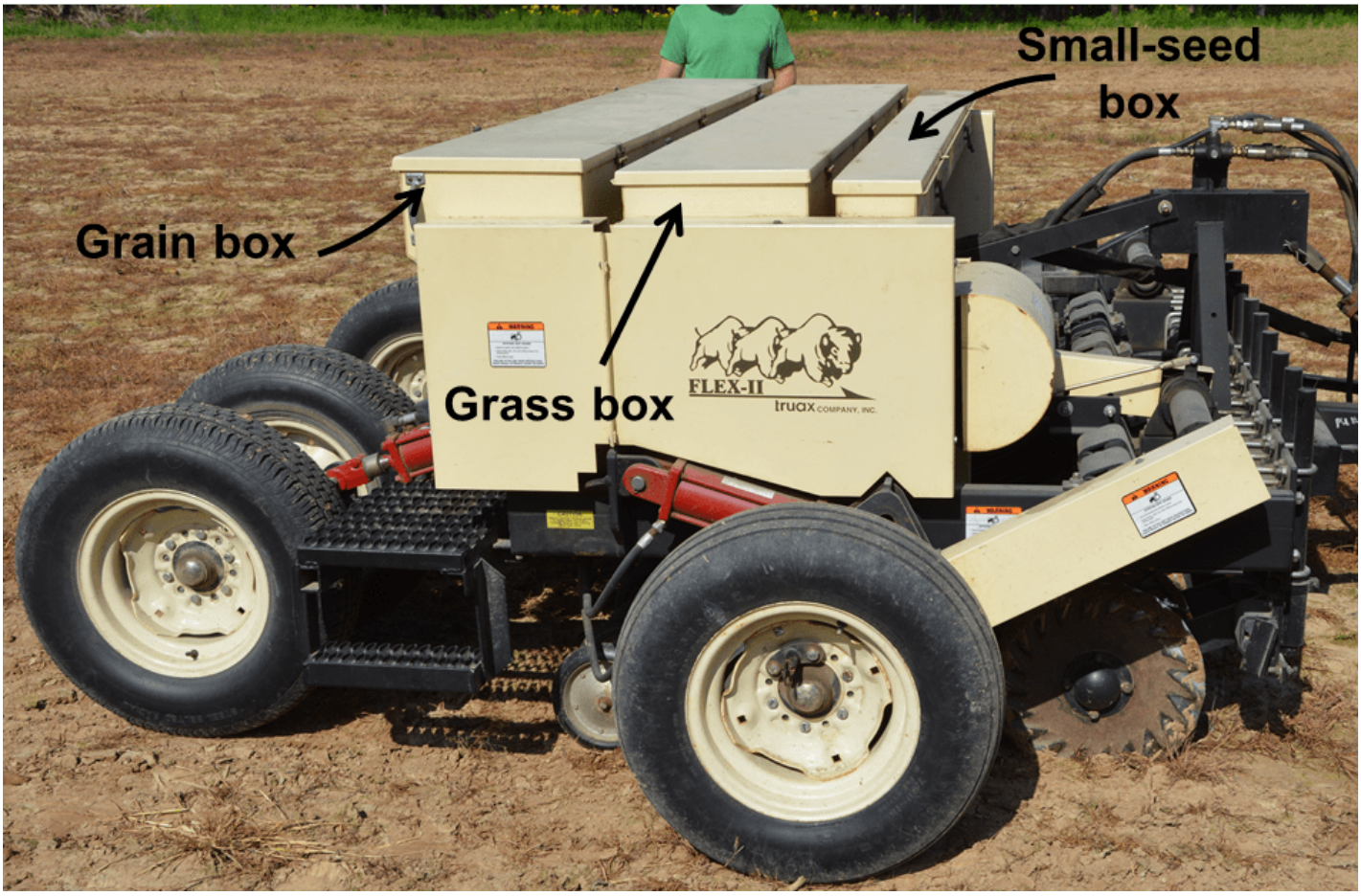
Seeding rates for native warm-season grass and forb mixtures (NWSG) have changed drastically over time. In the past, native grasses were planted without forbs at rates exceeding 10 lbs/ac. This may be ideal from a forage production standpoint, but this created dense stands of native grass with little to no forb component and lacked benefits to most wildlife.

Mixtures have shifted from heavy planting rates of tallgrass species with few forbs to reduced rates of mid-stature grasses with an abundance of forbs. Recommended seeding rates of some current mixtures may be lower than what no-till drills are capable of planting. In this case, **fillers** may be needed to increase the bulk weight of the seed to allow the equipment to plant at the correct rate.

Seed mixtures are also more commonly being established by broadcasting seed during late winter (frost seeding) using cyclone fertilizer spreaders. Broadcasting native warm-season grass and forb seed usually requires the use of a **carrier** to ensure the mixture flows correctly through the spreader and the seed is distributed evenly across the field.

Using fillers when no-till drilling native warm-season grass and forb mixtures

Planting native grass and forb mixtures with a no-till drill is the most common establishment method for NWSG plantings. It may be difficult to achieve the correct seeding rate with a no-till drill because of the combination of reduced bulk weight of dechaffed seed and reduced seeding rates of common mixtures. Fillers can be used to increase the bulk weight of native grass and forb seed if a drill cannot achieve the recommended seeding rate. Traditionally, native grass and forbs have been planted separately using the grass or fluffy-seed box for the native grass seed and the small-seed box for the forbs. However, if the seed has been cleaned and dechaffed it is common for seed companies to mix the seed and recommend it be planted together using the fluffy or grain box on a no-till drill. Fillers can be used when planting native grasses and forbs separately or when planting native grass and forb mixtures. Refer to the chart below for recommended fillers for the different seed boxes of a no-till drill.



No-till drill planting box	Recommended fillers
Small-seed box, when planting switchgrass, clovers, or small-seeded native forbs.	Cat litter, clay absorbent
Grass or fluffy-seed box: when planting big bluestem, little bluestem, indiangrass, or native grass/forb mixtures.	Vermiculite
Grain or large-seed box: when planting native warm-season grass/forb mixtures	Cracked corn

Example:

We are planting a 10-acre field to a native warm-season grass and forb mixture using a no-till drill. The recommended seeding rate is 6 lbs/acre. The seed will be planted with the grain box of the drill, but the drill will only plant a minimum of 10 lbs/acre of our seed mixture.

10 acre field * 6 lbs/acre bulk seeding rate = 60 lbs of the seed mixture
Minimum seeding rate for the no-till drill is 10 lbs/acre = 10 lbs/acre * 10 acres = 100 lbs

We need to add a filler to increase the bulk weight of the seed mixture to be able to plant at the correct seeding rate. We added a 1:1 ratio (by weight) of cracked corn to our seed mixture:

60 lbs of seed + 60 lbs of cracked corn = 120 lbs of bulk weight for 10 acres

We now need to adjust our bulk seeding rate to account for the added crack corn.

120 lbs of bulk weight for 10 acres = 12 lbs/acre

We need to calibrate our drill to plant 12 lbs/acre in order to plant 6 lbs/ac of our initial seed mixture.

Generally, you should use a 1:1 ratio (by weight) of filler-to-seed, but in some cases you may need to use a higher ratio (e.g., 2:1, 3:1, or 4:1 filler-to-ratio) to achieve the correct seeding rate.

Using carriers when broadcasting native warm-season grass and forb mixtures

Broadcasting native warm-season grass and forbs mixtures is most commonly accomplished with a cyclone fertilizer spreader. These spreaders may have issues broadcasting the native grass and forb seed. The 2 main issues are: (1) the seed is not heavy enough to flow through the spreader and (2) the seeds of various size will settle and will not be spread evenly across the field. Carriers will add more bulk weight to the native grass seed and will help ensure the seed stays mixed across the field. Common carriers that are used with native grasses are cracked corn, pelletized lime, wheat, or oats. The recommended rates of common carriers are in the table below:

Carrier	Recommended rate
Pelletized lime	200 lbs/acre
Wheat	40 lbs/acre
Oats	32 lbs/acre
Cracked corn	1:1 ratio of seed-to-cracked corn by weight

Table adapted from the publication *Warm season grass establishment,*
Indiana Department of Natural Resources, 2006.

Pelletized lime mixed with native grass and forb seed prior to broadcasting.

Example:

We plan to broadcast a native grass and forb mixture on a 10-acre field. The recommended bulk seeding rate is 6 lbs/acre.

10 acre field * 6 lbs/acre bulk seeding rate = 60 lbs of the seed mixture

We need to add a carrier to the mixture to increase the bulk weight of the seed mixture. We plan to add 200 lbs of pelletized lime per acre:

200 lbs/ac of lime * 10 acres = 2000 lbs of lime
60 lbs of seed + 2000 lbs of pelletized lime = 2060 lbs of bulk weight for 10 acres

We now need to adjust our bulk seeding rate to account for the added pelletized lime.

2060 lbs of bulk weight for 10 acres = 206 lbs/acre

We need to calibrate the spreader to broadcast 206 lbs/acre in order to plant 6 lbs/acre of our seed mixture.

Conclusions
Planting native warm-season grass and forb mixtures at the correct rate is a critical step in ensuring a successful planting. Using fillers and carriers when establishing native warm-season grasses and forbs can help ensure the mixtures are planted at the proper rates, flow correctly through the seeding equipment, and ensure the seed is spread evenly across the field.

Other Resources:
Pure Live Seed: Calculations and Considerations for Wildlife Food Plots, Detailed Resource, Purdue Extension-FNR
Calibrating a No-Till Drill for Conservation Plantings and Wildlife Food Plots-video, The Education Store, Purdue Extension
Renovating Native Warm-Season Grass Stands for Wildlife: A Land Manager's Guide, The Education Store

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