United States Department of Agriculture
Natural Resources Conservation Service
Technical Note No: TX-PM-10-7
August 2010

Seedbed Preparation

Plant Materials Technical Note

Photo by Shelly Maher, E. "Kika" de la Garza PMC

Successful establishment of grasses, forbs and legumes requires quality seedbed preparation and seeding. Seeding failures can be attributed to many factors including:

- Poor or inadequate seedbed preparation - including looseness, dryness near the surface, and excessive weed competition.
- Seeding too deep - usually because of a poorly prepared seedbed or no depth control.
- Time of seeding - seedbed preparation began too late, moisture was not kept near the surface, and the expected rains either did not occur or were of insufficient duration.
- Poor luck – weed competition, drought, poor seed, and grasshoppers. If seedings are left to chance, "poor luck" happens often.

"Good seed to soil contact required"

Seeds require water and favorable temperatures for germination. Maintaining seed moisture is critical for optimal germination.

I. Reasons for preparing a seedbed:

a. To save moisture by eliminating competing vegetation.
b. To firm the ground so small seeds can come in contact with moisture
c. To help ensure a shallow depth of seed placement.
d. To eliminate competition by killing undesirable plants before desirable plants are planted.

II. How to prepare a spring seedbed (conventional). Mechanical site preparation should be considered when your plans involve using a conventional grassland drill (i.e. without no-till capacity), or using a broadcast seeder. It should not be considered if any potential erosion problems exist. Mechanical site preparation should be considered if the producer needs to prepare a site heavily infested with undesirable vegetation. Mechanically prepared sites should be a clean, weed free, firm, moist, and smooth prior to planting.

a. Deep-cultivate in the fall for spring seedings. (following range or pasture, consider allowing one or two intervening crops before seeding)
b. Leave the field rough over the winter.
c. Harrow or shallow-cultivate early in the spring to break down large clods.
d. Herbicide with an application of glyphosate a few days prior to planting to kill weeds.
e. Cultipack the field just before seeding if the soil is loose. If the soil is dry, do not attempt to pack.

III. How to prepare a spring seedbed (no till). Chemical site preparation should be considered when your plans involve using a no-till grassland drill to install your seeds or when it's important to maintain some type of cover on the field for erosion control. This type of site preparation should not be used if you are planning on broadcasting your seeds. Chemically prepared seedbed should also be considered if the producer has no or inadequate tillage equipment available.

a. Control weeds in the fall by mowing followed with an application of glyphosate.
b. Control weeds in the spring with repeated applications of glyphosate. Do not disturb the residue. Warning- mowing, light tillage or a light harrowing will dislodge residue that will rake-up in the drill. Loose plant material will get caught in the drill unit scraping the ground and preventing good seed to soil planting.

IV. How to prepare a fall seedbed (conventional):

a. Deep-cultivate the preceding fall if weeds or residues are extremely high and dense.
b. Delay deep-cultivation until spring if residues are light and weed densities are low.
c. Fallow the soil for one growing season. Expect loose dry soil the following fall.
d. If early fall rains occur, harrow the soil to firm it and control emerging weeds. If rains do not occur, let the field set.
e. Herbicide with an application of glyphosate a few days prior to planting to kill weeds.
f. Delay seeding until after the soil temperatures cool and adequate soil moisture has been attained.
g. Cultipack the field just before seeding if the soil is loose. If the soil is dry, do not attempt to pack.

V. How to prepare a fall seedbed (no till):

a. Control weeds the preceding fall by mowing followed with an application of glyphosate or short-lived soil active herbicide.
b. Control weeds in the spring and summer with repeated applications of glyphosate. Do not disturb the residue. Warning- mowing, light tillage or a light harrowing will dislodge residue that will rake-up in the drill.
c. Delay seeding until after the soil temperatures cool and adequate soil moisture has been attained.

VI. A good seedbed is:

a. Uniformly firm, well packed underneath with small clods and/or light mulch on the surface to prevent erosion.
b. Has moisture near the surface so that shallow planted seeds can begin and continue to take up soil moisture.
c. Is free from weeds and competing vegetation.

VII. Summary:

a. Dry seedbeds do not pack.
b. Beware of drilling on hard surfaced ground. Good soil coverage over the seed can be difficult to obtain. Monitor how the drill is performing throughout the planting and make adjustments as needed.
c. Correct firmness is when an adult footprint is only slightly visible on the prepared bed prior to the seeding operation.
d. At seeding time, there should be no actively growing weeds.
e. Increasing pounds of seed/acre does not compensate for poor seedbed preparation.
f. Small seeds that germinate will not have enough nutrient reserve to reach the surface if planted too deep.
g. Most native species should be planted at a shallow depth of ¼ inch. (seedlings are too deep if you cannot see a few seeds on the soil surface)

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