

Successful Forage Seeding Methods

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Successful establishment of new pastures or hayfields begins with thoughtful selection of the forage species to be planted. Select sites that are likely to be productive, have access to livestock water, and can be fenced adequately. Sow crops the year prior to forage seeding that will permit control of problem weeds, but avoid use of herbicides that could result in carryover damage to new forage seedlings. Complete any major soil modifications well in advance of seeding.

Use research and experience-tested procedures to reduce seeding failures. Seeding failures are costly in terms of seed and labor, as well as lost forage the following year.

Seed Selection

Select improved varieties that are adapted to the soils and climate of your area whenever available. Local extension personnel and seedsmen can help identify those varieties best suited for various situations.

Use clean seed that has high germination. Poor quality seed often lead to seeding failures. Use certified seed whenever possible to assure varietal purity, vigorous seedlings, and to eliminate the possibility of introducing weed seeds. Certified seed initially may cost more, but it is usually well worth it — poor seed is never a bargain.

Seedbed Preparation

Good seed-to-soil contact is essential to maintain adequate moisture near the seeds. This moisture is necessary for germination and for the small root systems of young seedlings. Good seed-to-soil contact is obtained by preparing a seedbed that is firm, well-packed, and free of large clods with just enough loose surface soil for proper seed coverage. Such a seedbed enhances proper seed placement, infiltration of rainfall and storage of moisture to help prevent the drying out of the upper layer of soil. Any preparation method that accomplishes this seedbed is satisfactory.

Untilled, weed-free soybean stubble is one of the best seedbeds. The seedbed remains firm, the stubble and mulch provide some protection, moisture is conserved, and weed seeds are less likely to germinate.

Small grain stubble provides an excellent mulch for late summer seeding of cool-season forages. Excessive straw sometimes must be removed before seeding. Seeding into small grain stubble is not effective, however, if weedy annual grasses or volunteer grain plants are abundant. Small grain stubble, especially rye, sometimes suppresses growth of new grass seedlings. Remove

excess straw and delay planting until at least 30 days have past following small grain harvest to reduce this problem.

Corn, sorghum, sudangrass or millet stubble or residue makes good cover for winter dormant and spring seedings. If more than 18 inches of stubble remain, harvest and remove the extra growth by clipping or grazing. Tillage to smooth the field and/or reduce some of the residue also may be useful. Use properly equipped drills to seed through the mulch.

Before seeding, firm the seedbed by rolling or cultipacking if the soil is loose. When rolling or cultipacking are not possible, wait for rainfall to settle the loose seedbed before seeding. On a properly prepared seedbed you should sink no more than the thickness of the soles of your footwear when walking across the field. You should be able to bounce a basketball on a properly firmed seedbed. This helps prevent seeding too deeply, and allows good seed-to-soil contact. Do not over-prepare a seedbed on fine textured soils as crusting of the soil surface may occur.

Fertilization

Successful establishment is associated with soils having favorable pH and fertility. Always take soil tests well in advance of seeding to allow time to correct any deficiencies before or at seeding.

Acidic soils should be limed at least six months before seeding. Lime corrects soil acidity, supplies calcium and magnesium, and makes other minerals more available to the plant.

Phosphorus is particularly important for establishment to encourage rapid root development. Incorporate phosphorus prior to seeding or place with the seed at seeding time when needed. Nitrogen should not be applied at seeding except in soils that are very deficient in nitrogen. Even small amounts of nitrogen will stimulate weed growth, which will slow establishment of the forage. An exception may be where a labeled herbicide has been used and excellent weed control is expected; small amounts of nitrogen may encourage seedling growth in such a situation.

Methods of Seeding

Small forage seeds should be covered 1/8 to 1/2 inch deep in fine textured soils and from 1/2 to 1 inch deep in sandy soil. Many stands fail or have excessive skips because seed was planted too deeply.

Use the proper equipment. On smooth, residue-free fields where moisture is expected to be plentiful, specialized cultipacker seeders that seed and pack in one operation work well with seed that is not fluffy. This type of equipment is not suited to sandy soils.

It is best to use a grassland drill specifically designed to seed grasses. The drill should have effective agitators and a positive feed mechanism to meter seed out uniformly to produce even

stands. Seeds should pass freely through the seedtubes into furrows opened by double disk openers with effective depth control such as depth bands. Packer wheels should firm soil around the seed or a roller may be towed immediately behind the drill if it doesn't cover seeds too deeply.

To obtain uniform stands on rough surfaces and reduce the chance of skips it sometimes is helpful to drill half of the seed in one direction and the remainder at right angles to it. This also allows faster seedling growth and quicker, dense stand development.

Broadcast seeding generally is not recommended. However, when seed is broadcast rather than drilled, rolling after seeding provides some good contact between seed and soil. This helps to partially overcome some of the disadvantages of broadcast seedings. Higher seeding rates also can help, but increased seeding rates cannot replace proper establishment practices.

Date and Rate of Seeding

Seed perennial warm-season grasses between April 1 and May 15. Early seeding provides for faster establishment. If a severe weed problem is expected, use light tillage or herbicides to kill successive weed crops, followed by seeding around May 15.

In some areas, winter or dormant seedings of warm-season grasses also can be successful if soils are dry and soil temperatures are too cool for germination (about 45°F). Dormant seedings usually are made between Nov. 15 and April 1.

Perennial cool-season grasses are seeded most successfully between Aug. 1 and Sept. 15, but depend on late summer and fall rains for establishment. Do not seed into dry soil. Spring seedings often are successful when done between March 1 and April 30, but are more likely to have problems with summer annual weeds. Dormant seedings of cool-season grasses are less successful because soil temperatures often exceed the germination temperature (about 35°F) for several days during the "dormant" period.

The date to seed annual forages varies greatly among species and objectives of the planting. However, it usually takes 4 to 6 weeks before usable forage is available.

Use recommended seeding rates for your area. Excessive seeding rates are costly and rarely overcome other poor establishment practices. Likewise, use of low seeding rates to reduce cost often results in stands that develop more slowly and permit rapid weed invasion, which often is more costly than the savings obtained from using less seed.

Companion Crops

Companion crops can be used for seedling protection and to reduce soil erosion. Sandy soils or hilly sites are most likely to benefit from companion crops. Do not fertilize or manage companion crops for grain or high forage yields because this creates extreme competition for new seedlings. Graze or cut hay from companion crops early to reduce competition.

The most desirable companion crop for fall- or spring-seeded cool-season grasses is oats. When seeded in the spring at 20 pounds per acre and cut for hay before heading, adequate protection is provided without the oats becoming too competitive with grass seedlings. Fall-seeded oats will winter-kill, eliminating its competition to grass seedlings. Wheat, rye and barley usually are too competitive to seedlings to be used as companion crops.

Companion crops are not recommended for establishing warm-season grasses. Where soil or seedling protection is needed, stubble seeding and mulches are more effective.

Weed Control

Most forage seedlings grow slowly and compete poorly with weeds. The most frequent cause of seeding failure and slow establishment of most forages is poor weed control.

Late summer seeding of cool-season grasses will avoid many summer annual weed problems, although winter annual grasses still can be a problem. Otherwise, seeding in spring before weeds germinate offers the best opportunity to establish warm- and cool-season grasses before weed competition becomes severe.

Competition for light by taller weeds is the most common risk to new seedlings. Mowing can be used to reduce competition from grassy weeds. Mow early and frequently enough as well as at a safe stubble height to permit light to reach young seedlings without smothering these seedlings with clippings. If weed density is low, mowing may not be needed at all. But when weed density is high, it may be necessary to mow whenever weed height is about twice the height of the new seedlings using a stubble height that removes just a small amount of the tops of new seedlings. If possible, use mowing equipment that chops clippings into small pieces that will slide to the soil past young seedlings as the clippings dry. Avoid clipping warm-season grass seedlings after Aug. 1 and cool-season grass seedlings after Aug. 30.

Herbicides are available to control some weeds for most forages as seedlings. As always, follow label directions.

Managing New Seedlings

New seedlings, especially warm-season grass seedlings, lack sufficient vigor to recover rapidly from grazing or clipping. Do not graze or clip warm-season grasses during the seeding year except for emergency weed control. If weeds have been controlled well and a vigorous stand develops with many plants developing seedheads, some light grazing may be possible in October or November, preferably after frost.

Where stands of warm-season grasses are slow to establish or weeds are not controlled well the first season, two or three years may be necessary to establish a vigorous stand. Dormant seeds that did not germinate the first year may germinate during year two to help thicken stands.

Controlled burning of warm-season grass plantings during the years following seeding often hastens development of thick stands. Conduct these burns when established warm-season grasses break dormancy (about late April or early May) on sites that contain sufficient fuel to carry a fire and where proper safety measures can be followed.

Graze spring sown cool-season grasses during the first season just often enough to reduce competition from companion crops and weeds. Avoid grazing during wet weather. Do not graze beyond Sept. 1 during the first full grazing season to allow plants a chance to store energy and harden for winter. Use light, rotational grazing that leaves a 4 to 6 inch leafy stubble the season following seeding.

Following the first winter, more herbicide options are available for use on established perennial forages, especially for broadleaf weeds. Effective weed control during the second season will help develop thicker, more vigorous grass stands.

Additional Information

Establishing forages, especially perennials, can be complex and confusing. Government and other organizational programs frequently will help with the cost of seeding grasses for range, wildlife and conservation purposes. To remain eligible for payments, however, certain cultural practices may need to be followed that differ from those recommended here. Contact your local Extension office, the Natural Resource Conservation Service, or an FSA office for more information before seeding, especially if you are considering cost-sharing or you need assistance to plan, develop seed mixtures, or fine-tune cultural practices.