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## Steps to Establish and Maintain Legume-Grass Pastures

### Lime and Fertilizer

Take soil samples before preparing seedbed, clearing brush, or filling gullies. Lime and fertilize according to needs shown by soil test. Apply lime and fertilizer before plowing or heavy disking. Soil pH and fertility deficiencies may be corrected more rapidly with application of lime and fertilizers with fall tillage, although this may not be desirable on steeply sloping land.

### Seedbed Preparation

A seedbed following a row crop can often be prepared with a disc, harrow, or other secondary tillage. When renovating a pasture, destroy sod using labeled herbicides

or by shallow plowing or disking on the contour with a heavy cut-away or brush disc. Secondary tillage may be needed to finish the seedbed. Apply lime and fertilizer before disking or when drilling if a grain drill is used for planting. The use of a cultipacker or roller may be needed if the seedbed is not firm.

### Species and Variety Selection

Select species that are suitable for desired yield and persistence. Iowa State University Extension publication PM 1792, *Selecting Forage Species*, covers characteristics of many forage legumes and grasses used in Iowa.

The following mixtures are frequently used in Iowa:

## Forage Seed Mixture Recommendations (lbs. per acre)\*

### For Rotation and Permanent Pastures

Species listed in *italics* in the following mixtures indicate forage choices to complete the mixture. For example, for mixture #1, mix alfalfa with either smooth brome grass, orchardgrass, or tall fescue.

#### Moderately to well-drained soils

1. Alfalfa .....6-8  
*Smooth brome grass* .....6-8  
*Orchardgrass* .....4-6  
*Tall fescue*.....6-8

2. Alfalfa .....6-8  
 Timothy .....2-4  
*Smooth brome grass* .....4-6  
*Orchardgrass* .....3-4

3. Smooth brome grass .....15-20

For 1 and 2, you can substitute 4 lb./A red clover for 1/2 the alfalfa seeding rate, or 6-8 lb./A red clover in place of alfalfa.

#### Imperfectly drained soils

4. Red clover .....5-7  
 White or Ladino clover ..... 1/2  
*Orchardgrass* .....4

5. White or Ladino clover ..... 1/2-1  
*Orchardgrass* .....6-8  
*Smooth brome grass* .....8-10

6. Birdsfoot trefoil .....5  
*Smooth brome grass* .....6-8  
*Timothy* .....3-4

7. Birdsfoot trefoil .....6  
 Kentucky bluegrass .....4-6

8. Tall fescue .....10-15

9. Switchgrass .....5-7 PLS

10. Smooth brome grass ..... 10  
 Orchardgrass .....4

11. Switchgrass .....5-7 PLS

12. Big bluestem ..... 10-12 PLS

#### Poorly drained soils

13. Birdsfoot trefoil .....5  
*Smooth brome grass* .....6  
*Timothy* .....3-4

14. Alsike clover .....2-4  
 White or Ladino clover ..... 1/2  
*Reed canarygrass* .....8  
*Timothy* .....3-4  
*Tall fescue* .....6-8

15. Reed canarygrass .....10	22. White or Ladino clover .....1-2	29. Winter rye ..... 1-2 bu.
16. White or Ladino clover .....1-2	Kentucky bluegrass ..... 1/2	30. Foxtail/German Millet.....20-25
Kentucky bluegrass .....6-8	Timothy .....3-5	31. Forage Rape .....4-6
17. Switchgrass .....5-7 PLS	Orchardgrass .....2-4	Oats ..... 1-2 bu.
	Smooth bromegrass .....6	
	23. Birdsfoot trefoil .....5	
	Timothy .....6	
<b>Droughty soils</b>		
18. Alfalfa .....6-8		
Smooth bromegrass.....6-8	<b>Pasture for Hogs</b>	
Orchardgrass .....4-6	24. Alfalfa .....8	
19. Smooth bromegrass .....16-20	White or Ladino clover .....2	
20. Tall fescue .....10-15	25. Forage Rape .....4-6	
	Oats ..... 1-2 bu.	
<b>Pasture for Horses<sup>1</sup></b>	<b>Supplemental Pasture</b>	
21. Alfalfa .....6-8	26. Sudangrass .....25-30	
Kentucky bluegrass .....6-8	27. Oats ..... 2-3 bu.	
Smooth bromegrass .....2	28. Hybrid Pearl Millet .....30-35	
Orchardgrass .....6-8		

<sup>1</sup>Special care is needed when feeding horses. Consider these cautions when selecting forage mixtures for horses. Do not feed sorghum-sudangrass hybrids to horses. Endophyte fungus-infected tall fescue should not be fed to pregnant or lactating mares. Though not as serious, alsike clover has caused photosensitivity and sunburn in horses. And, clovers can cause horses to salivate excessively.

## Seeding

Seed in one of the following ways on a well-prepared seedbed:

- a. Use a grassland drill with press wheels or a cultipack roller type seeder designed for small seeded forage legumes and grasses.
- b. Use a grain drill with a grass seed attachment. Pull tubes of small seed legume box out of downspouts on the grain drill to prevent small forage seed from being planted deeper than 3/4 inch. Cultipack or roll after seeding.
- c. Broad seed. Cultipack or roll before and after seeding. All seeding and seedbed firming operations should be on the counter.

**Caution: Do not disc in seed.** Seeds should be no deeper than 1/4 to 1/2 inch.

Seedings can be made in the spring as soon as a suitable seedbed can be prepared. Spring seedings made after mid-May may not be successful.

One to two bushels of oats per acre may be seeded as a companion crop with spring seedings with the previously listed mixtures not containing oats or rye. The oats may be grazed, taken as silage, cut for hay, or harvested as grain. In a dry spring, it may be desirable to remove the companion crop as early as possible to conserve moisture for the new seeding.

Late summer seedings made between August 15 and September 1 without a companion crop are often

successful. Moisture often is limiting at this time of year but there is less weed competition and erosion risk. Well-established stands can be grazed the following year. Late summer seedings of birdsfoot trefoil may be less successful than spring seedings.

## Weed and Companion Crop Control in the Seeding Year

Graze rotationally after oats are eight inches tall. Alternatively, harvest or clip as often as needed to keep weeds and competing plant competition to a minimum during the seeding year. Do not graze between September 15 and frost to allow recovery and nutrient reserves to accumulate in the plants.

A few herbicides are labeled for use in forage establishment. See your county extension specialist for information on herbicide selection and use. Be sure to read the label on the container. Use preplant herbicides only when seeding pure stands of legumes; these grass control herbicides will not allow forage grasses to establish. The herbicides Butyrac and Butoxone are formulated to control broadleaf weeds in a grass, legume, or mixed grass-legume seeding. The active ingredient 2,4-DB, a form of 2,4-D that has little or no herbicidal effect on legumes. These herbicides are most effective when broadleaf weeds are less than 4 inches tall. The labels note that treated pastures should not be grazed or harvested for forage within 60 days after treatment. These herbicides should not be used on sweet clover seedings.

## Management After Establishment

Weeds and brush can often be controlled with fertilization, grazing, and clipping management. If weeds and brush cannot be managed satisfactorily, consider using herbicides labeled for that purpose.

Top-dress with phosphorus and potassium according to soil test recommendations or refer to extension publication PM 869, *Fertilizing Pasture*, for maintenance fertilizer rates.

Graze rotationally and avoid over-grazing to maintain ground cover and animal grains.

Remove livestock by September 15, rest pastures 30 days, then graze after a killing frost if desired.

Fields may be harvested, but do not cut between September 15 and frost.

## Increase Management Level

The management level of your livestock program can be increased by following these suggestions:

- Plan efficient forage production and use during the entire year to make your pasture improvement program successful.
- Increase livestock numbers as forage production increases.
- Upgrade livestock quality.

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