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SMALL FARM FAMILY PROGRAM

Growing and Using Grass on Small Farms

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Grass can be a money-making crop on acres where you can't grow row crops. This publication gives some steps to follow to get more income from grass.

Increasing the income from grass usually requires spending some money first on fertilizer and maybe seeding a new stand of grass. More animals must then be handled on a given acreage to justify pasture improvement.

If you are limited on the amount of money for growing more grass, then start your pasture improvement by topdressing the grass you already have. This will give quickest returns for a relatively low cost. You can consider investing profits in new seedings of high yielding varieties later.

Most farms have some land that should be in grass. Examples include land that is steep, rocky, or drouthy.

Improving Old Stands Of Grass Pasture

Many old pastures are not producing the amount of forage they are capable of producing. This can be due to overgrazing, weeds, or low soil fertility.

Restoring the pasture will involve a combination of practices. You need to eliminate over-grazing and control the weeds. Then topdressing with fertilizer, if a soil test shows it's needed, will usually pay off in more pounds of animal per acre.

Consider Adding a Legume

Nitrogen can be supplied by either including it in a topdressing of fertilizer or by seeding a legume in the grass. Bacteria on legume roots take nitrogen out of the air and make it available to the plants. Research indicates that a healthy stand of grass-legume mixture will produce as much forage as grass that is topdressed with 100 pounds of nitrogen. The legumes must make up 35 percent or more of the stand in order to get this much yield increase.

Test Soil and Fertilize

Before seeding the legume, take a soil test to see if lime and the other nutrients are needed. Disk lightly or cultivate the soil sometime during the winter (November through February), and seed the legume.

A starter application of phosphorus should be used with the legume seed but do not use nitrogen. The nitrogen will cause a growth of the established grasses which will compete with the legume seedlings.

As soon as the sod will hold livestock, the grass should be grazed until the animals start biting off the young legumes.

Either with or without the legumes the forage needs to be topdressed with phosphorus and potassium. See UMC Guide 4651, *Renovating Grass Sods With Legumes,* for more details.

Establishing New Pastures

Grasses & Legumes to Choose From

Tall Fescue: Tall fescue will grow in most soils and is particularly well adapted to shallow, drouthy soils. It is most palatable during April and May, and again in September, October, and November. Winter killing sometimes occurs in extreme north Missouri.

Orchardgrass: Orchardgrass will stand less dry weather than tall fescue. It will supply grazing in mid-

summer when tall fescue is not palatable, but requires grazing management to maintain a long lived stand.

Timothy: Timothy is not as long lived as fescue or orchardgrass, but cattle like it and it does not reach its growth as early in the season as most other grasses.

Kentucky Bluegrass: Kentucky bluegrass is adapted to well-drained loams and heavier types of soil in central and northern Missouri. In those areas it equals fescue in hardiness and life of stand, and cattle like it better.

Reed Canarygrass: Reed canarygrass will grow in both drouthy and wet areas. It is one of the earlier grasses to begin spring growth but cattle don't like it in the fall.

Sudangrass, Sorghum-Sudangrass Crosses & Pearl Millet: These are used for extra feed as either pasture or green chop during July, August, and September.

Alfalfa: Alfalfa is not adapted to poorly drained soils. Where it's adapted it gives high yields of very high quality hay. Insects are a problem.

Birdsfoot Trefoil: Birdsfoot trefoil is best adapted to the northern and central part of Missouri and is best used in a mixture with Kentucky bluegrass. However, timothy and orchardgrass may be used.

Ladino Clover: Ladino clover gives high yields of high quality forage but won't stand much dry weather and only short periods of flooding. There is some bloat hazard for cattle.

Lespedeza: Lespedeza will grow on all Missouri soils. This legume can be grown on lower fertility soils than alfalfa, but is also low yielding.

Red Clover: Red Clover, when compared to alfalfa, will grow on less productive soils, soils that are more acid, and soils with restricted drainage. Red Clover is a biannual, but with proper care it will reseed and make an excellent pasture legume.

Selecting a Seeding Mixture

Many different seed mixtures can be used but it is best to keep the mixture simple. A recommended mixture should contain only one grass and one or two legumes. The legumes provide a more nutritious feed and a larger yield. They also supply nitrogen to the grass.

University of Missouri Guide Sheet 4010 lists many mixtures of grasses and legumes that do well together, some of these are:

1. Tall Fescue (15 lbs./A) and Alfalfa (10 lbs./A)
2. Tall Fescue (15 lbs./A)
3. Orchardgrass (6 lbs./A) and medium Red Clover (8 lbs./A)
4. Timotny (2 lbs./A in fall), (4 lbs./A in spring), and medium Red Clover (8 lbs./A)
5. Tall Fescue (15 lbs./A) and Lespedeza (15 lbs./A) and Ladino Clover (½ lb.)

Special Swine Pastures:

1. Ladino Clover (2 lbs./A) and Alfalfa (8 lbs./A) and Orchardgrass 4 lbs., or Timothy 2 lbs., or brome 6 lbs.
2. Rape (8 lbs./A), excellent for a one year pasture.

When to Plant

Grasses and legumes, with the exception of lespedeza, may be seeded in the spring, fall, or winter. Lespedeza should be seeded in winter or early spring.

Spring seedings should be made before April 15 to avoid annual weeds and early summer drouths. Fall seedings (August-September) usually have less weed competition and more favorable moisture conditions than late spring seedings.

Seeding fescue with a hessian fly resistant wheat is often advantageous. Wheat will protect the soil from erosion and furnish additional grazing.

Fall seedings should not be made later than August 31 in extreme north Missouri, September 15 in central Missouri, and September 30 in south Missouri. If the ground is still dry past the seeding deadline, go ahead and sow the wheat in the fall but wait and seed the fescue and legumes in the wheat during January or February. Graze the wheat in the fall and again in the spring. Or, harvest the spring growth as hay.

Fall grazing will not harm new grass and legume seedlings unless they are trampled during wet weather. Begin spring grazing as soon as the soil is firm. For more detailed information on how to make forage seedings, see UMC Guide 4650.

Lime and Fertilizer Needs for New Seedings

Always take a soil sample from a field and have it tested before seeding time. County Extension Centers can get it tested for you.

The amounts of fertilizer recommended in the soil test report will be for the actual amount of nutrients. For example, a recommendation of 60-40-60 means you need 60 pounds of nitrogen, 40 pounds per acre of phosphorus, and 60 pounds per acre of potassium.

Commercial fertilizer mixtures are labeled in the same order. You will need to find some combination of them to give the amounts the test shows are needed. For example, a commercial mix labeled 15-15-15 means 100 pounds contains 15 pounds of nitrogen, 15 of phosphorus, and 15 of potassium. (The rest is inert material.) To fill the 60-60-60 recommendation above, you would need to spread 400 pounds of this 15-15-15 per acre.

Plant Food Symbols Used

N = Nitrogen
P_2O_5 = Phosphorus
K_2O = Potassium
B = Boron

Lime needs to be applied before seeding time if the soil test shows it is needed, because it affects availability of the other nutrients.

Two different plans are suggested on the soil's plant food balance. Plan A recommends larger amounts to plow down. Plan B suggests small amounts at seeding time and larger annual topdressings in later years. Plan B takes less money at any one time, although plan A might give less cost per ton of forage in the long run.

Under either plan, a starter fertilizer is recommended at seeding time to get the young seedlings off to a strong beginning. Use a starter fertilizer containing approximately 30 pounds of nitrogen, 60 pounds of phosphorus, and 20 pounds of potassium

Acres to improve _____

When will it be done _____

CASH COSTS OF PASTURE	*PRESENT*	*AFTER MAKING CHANGE*
1. Land clearing		
2. Fertilizer, topdressing		
3. Lime applied		
4. Seed mixture		
5. Machinery costs for seedbed & seeding		
6. Fence & fence repairs around pasture		
7. Insect & weed control		
8. Mowing pasture (fuel, repairs, etc.)		
9. Taxes on pasture land		
10. Interest paid on borrowed money to establish or improve pasture		
11. TOTAL CASH COSTS (add L1 thru L10)		
12. CASH COSTS/ACRE (divide cash costs L11 by number of acres)		
13. Amount of borrowed money needed		

from fescue. If grass fields have not been topdressed since last year a mixed fertilizer such as 60-20-40 will do a good job of stimulating fall grass growth and reduce winter hay feeding.

To get maximum fall growth from a pasture, remove grazing animals during August and September. Only a few hundred pounds of feed per acre can be grown during August. Grazing it off may reduce the total amount produced during the fall by 40 to 50 percent.

Grazing Tips for New Pastures

Do not graze a new planting too soon. A spring seeded pasture will not produce much hay the first summer. Graze only enough to use the companion crop if one was used, and be careful not to tear up the new seeding during the wet periods.

Fall seeded pastures can be grazed the next spring and summer, but should not be grazed from September 10 until a heavy freeze, if legumes are present, so the roots can build up strength for the winter.

A pasture should be allowed to grow for about three weeks in the spring before it is grazed. The rest of the year, grazing will depend on how you are going to use the pasture. Ideally, the pasture should have a rest period for about 30 days before fall freeze if legumes are present.

A method of supplying hay in winter must be fitted to your program. One method is to buy the hay but this is expensive. A more economical method is to cut hay and store it somewhere.

Another solution is to topdress a pasture in August and graze it in fall and winter. When the grazing runs out or bad weather prevents grazing, you can feed the stored hay.

If a hay crop is taken from a pasture, say in June, the pasture should not be grazed in July or August.

Another method involves the use of the round baler. The bales are left in the field and the pasture is allowed to grow up around them. Less waste will occur if cross fencing is used to force the cattle to clean up one area before going to another.

Tall fescue is one of the better grasses for grazing in fall and winter. If you stockpile a pasture for fall and winter grazing, it is best to rest the pasture in August and September.

Rotation grazing is very helpful in maintaining top production from a pasture. Rotation grazing is a method of grazing one pasture while other pastures are rested. A large pasture can be cross fenced so that cattle are forced to graze one area completely before moving to another area. Portable electric fencing is often used for this.

Guides For Costs

- Mowing pasture, fuel & repairs—$1.75-$2.50/acre
- Moldboard or disc plowing—$4-$6/acre
- Disc and harrow—$2-$3/acre
- Cultipack—$2-$3/acre
- Spread dry fertilizer—$1-$1.50/acre
- Grain drill, fertilizer and seed grass—$2.50-$3.00/acre

References

The following pamphlets contain more information on Grasses. They are available from your local Extension office.

UMC Guide

4010—Seed mixture for Hay, Pasture, & Silage
4546—Chemical Weed Control Recommendations for Legumes & Pastures
4646—Tall Fescue
4650—Establishing Forages
4651—Renovating Grass Sods with Legumes
4660—Sudangrass, Sorghum-Sudangrass Crosses & Pearl Millet
4670—Seed Production of Tall Fescue & Other Cool Season Grasses
4672—Seasonal Use of Pasture Crops in Missouri
4673—Grazing Permanent Pastures
4690—Converting Brushland to Pasture By Aerial Seeding.

Estimating Cash Costs of Pasture

How much money will you have to spend to get more grass? Estimate the amount of money needed for each item. Add up all of your cash costs.

If you borrow the money, when can you pay it back? Discuss this with someone who makes agricultural loans. Have him help you work out a repayment schedule that you can meet.

per acre. The starter fertilizer is more effective when drilled into the soil, rather than broadcast.

Most grasses respond very little to rock phosphate so use the processed kind for them.

Preparing a Seedbed

Lack of moisture and covering the seed too deep are the main reasons for not getting a good stand of grass. Therefore, it is very important to have a firm seedbed. Start your seedbed preparation early. This helps build up a supply of moisture and allows time for settling and firming the seedbed.

Methods of seedbed preparation will depend on the steepness and rockiness of the soil and existing vegetation. Plowing is often the most satisfactory way to begin, especially for late summer seedings. A field cultivator may be used.

If the land is steep or rocky, use a disc plow or field cultivator. Work the ground enough to kill the vegetation, mixing in into the top layer of soil. This will serve as a mulch to preserve moisture and offer some erosion control.

Packing the soil with a roller, both before and after seeding, is helpful. If a seedbed is to be rolled only once, do it before seeding. Rolling a field works very well when the field is dry. When the field is wet, rolling may cause crusting.

Do not cover the grass seeds deeper than ¼ to ½ inch.

Planting Seed Mixtures

Broadcasting

Broadcasting is the most widely used seeding method.

Mix the grass seed mixture with a fertilizer material and broadcast, using a fertilizer spreader such as a truck spreader. After the seed has been spread it should be covered. A harrow, culti-packer or light disk will do this satisfactorily. Dragging cedar trees over the field has also proven satisfactory.

Seeding with a Grain Drill

Using a grain drill with the spouts left in the disks has the advantage of assuring that the grass seed is covered with soil to a desired depth. The operator must be careful that the seed is not planted too deep. The grass seed may not flow evenly out of the drill unless some material such as grain seed or ground feed is mixed with the grass seed. The starter fertilizer can be applied at the same time if the grain drill has a fertilizer attachment.

Specialized Grass Seeders

Several types of grass seeder drills are available. Usually they consist of a front and back roller with the grass seed dropped in between the rollers. The grass seeder will do a good job of seeding.

Control Weeds in Pastures

New Pastures

Weeds reduce the yield of pastures. Most weedy pastures result from either overgrazing or lack of grass competition in a new planting.

Weed problems on a new planting can be reduced by using a companion crop of oats or wheat. Fall seedings have fewer weed problems than spring seedings. Chemicals are available that control weeds on new legume seedings, but they are not satisfactory with grass-legume mixtures. Mowing the weeds may be helpful if no other alternatives are available.

Weeds Due to Overgrazing

Pastures that are weedy due to over-grazing require special attention. First, the over-grazing must be stopped. The pasture should be rested for a long enough period to allow the roots to build up strength. If a chemical is used to control weeds, apply it when the weeds are actively growing. Apply lime and other nutrients if soil tests show they are needed.

Chemical recommendations for pasture weed control are available at the local Extension Center.

Tips on Fertilizing

Topdressing Good Stands of Grass-Legume Mixtures

Applying fertilizer or lime to stands of grass that are already growing is called topdressing.

Fertilizer can be topdressed in late summer, in mid-winter, or early spring. Mid-winter or early spring plant food applications will result in lots of growth in April, May, and June. These treatments should be made before the grass starts to green up.

Most grass-legume mixtures should be topdressed annually with phosphorus and potassium. Although it is possible to topdress less frequently with larger amounts.

A ton of grass-legume hay removes about 12 pounds of phosphate and 40 pounds of potassium from the soil for each ton of hay produced. If 3 tons of hay are harvested per acre, the field should be topdressed with about 0-40-120 per acre to maintain production (no nitrogen, 40 pounds of phosphorus, and 120 pounds of potassium).

It is more difficult to evaluate the amounts removed by pasturing. However, if a grass-legume mixture that would make 2½ to 3 tons of hay per acre is grazed, then an application of 0-20-60 fertilizer per acre each year should maintain production. Test soil in pasture fields every 3 to 4 years and adjust the topdressing program to those results.

Fertilizing Straight Grass Stands for Hay & Grazing

Grass to be used for hay or early grazing should receive 100 to 150 pounds of nitrogen during the winter. Apply 40 to 80 pounds per acre of phosphorus and 40 to 80 pounds per acre of potassium anytime. If much fall pasture is desired, then fertilizer should be applied in July.

Fertilizing Grasses for Fall Production

Usually grass will need additional nitrogen for late summer and fall growth even if it was topdressed the previous winter or spring. This is especially true of fescue that is to be stockpiled for fall and winter pasture. Apply approximately 60 pounds of nitrogen in late July or early August to get the most fall growth

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