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THE SEEDING OF MEADOWS AND PASTURES

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There is probably no agricultural practice regarding which there is greater difference of opinion among farmers than that of the methods of seeding meadows and pastures. This is largely due to the fact that a stand of either clover or grass is dependent upon many factors, such as weather conditions, soil, and quality of seed.

THE SEEDING OF MEADOWS

The most common meadow mixture in Missouri is that of red clover and timothy. Where these are sown together it is customary to sow the timothy in the fall and the clover the following spring, although frequently they are both sown together in the spring and occasionally, in the southern part of the State, in the fall.

Nurse Crop.—The term “nurse crop” is applied to the small grain crop with which clovers and grasses are frequently sown. In Missouri rye, wheat and oats are commonly used for this purpose and are usually ranked for their efficiency in the order given. The function of the nurse crop is not to directly aid the clovers and grasses as may be supposed but rather to keep down the growth of wild grasses and weeds which may crowd out and destroy the young plants. Where weeds do not bother, the clover and grass will always make a better growth alone than where they must compete with the grain crop. Under favorable conditions, however, one can usually get a good

stand with the nurse crop and some returns may be had from the land while the meadow is getting started.

Where a nurse crop is used, the most common method of seeding timothy is to use the grass seeder on a grain drill, seeding it with wheat or rye in the fall. Eight to ten pounds of timothy seed are sown to an acre, drilling it in with the grain or allowing it to fall broadcast ahead of the disks or hoes. Where clover is added to the meadow, it is usually sown broadcast the following February or early March on a frosty morning when the ground is "honey-combed" with frost. The clover seeds lodge in the small cracks or crevices and are covered when the ground thaws. Six to eight pounds of clover is the usual rate of seeding. The clover may also be drilled in with a disk drill, crossing the rows of wheat or rye at right angles. The seed should be run into the main hoes of the drill so it may be covered. If the disks are run shallow, the wheat or timothy plants will not be disturbed to any great extent. Where clover is sown alone on wheat or rye, this is an especially good method of seeding. Still another method is to sow the clover and timothy on the wheat after the ground is dry enough to work and cover by a light harrowing.

Where oats or barley are used, the clover and timothy may be mixed together in the grass seeder of the drill and sown at the same time as the grain. They may also be sown broadcast after the nurse crop is sown and covered with a light harrowing. Where oats are broadcasted the best plan is to harrow in the oats, then broadcast the clover and timothy and harrow again lightly, covering the seed from a quarter to a half-inch deep. This practice is not so satisfactory, however, either for the oats or clover and timothy as is drilling.

Under less favorable conditions, especially in dry seasons and on thin lands, better stands of grass may be obtained by seeding alone. Timothy may be sown alone in the fall on land prepared as for wheat and the clover sown broadcast on frozen ground the following spring. Timothy is often sown on corn land in the fall and where this is done the corn should be cut for silage or fodder and a good seed bed prepared. For best results, the seeding should be done as early in September as possible.

Timothy and clover may also be sown alone in spring. On foul land a light seeding of three or four pecks of oats or two or three pecks of barley to the acre to be cut for hay when the grain is in the milk or soft dough stage will help by keeping the weeds under control.

Where timothy and clover are sown with a nurse crop of small grain the first crop of hay is usually obtained the year following the

harvesting of the nurse crop, although on the best lands a fair crop of clover may sometimes be cut the same year they are seeded. The first crop is usually almost pure clover, the second about an equal mixture of clover and timothy and, if left a third year, the crop will be almost pure timothy. Where sown alone, either in fall or spring, a fair crop of hay, although frequently more or less weedy, may be obtained the first year.

A stand of timothy may be maintained for several years but red clover is a biennial and most plants die at the end of the second year, especially if allowed to seed. Some will often live over, however, and if the second crop of clover is pastured, a fairly good meadow of mixed clover and timothy may be maintained for four or five years and sometimes even longer, especially where it is occasionally manured.

Other Clovers and Grasses for Meadows

Alsike Clover.—On wet or sour lands where red clover is uncertain, the use of alsike clover is to be recommended. The seed of alsike is only about half as large as that of red clover and hence the rate of seeding is about half that of the red. Alsike is a short perennial which will last three to five years. It is only about half as large as the red and hence should not be sown where red clover grows well. It makes a fine quality of hay but not a very heavy yield. It is especially adapted for the level prairie soils of Southwest and Northeast Missouri and for seeding wet bottom lands. It should be mixed with timothy where it is to be used for hay. On the very wettest lands and those which are very sour, alsike and red top will make a good mixture for hay. Three or four pounds of alsike clover and ten or twelve pounds of red top seeded in the same manner as red clover and timothy will give good results.

Orchard Grass.—In the southern part of Missouri, especially in the Ozark region and the Southwestern part of the State, orchard grass is made use of extensively both for meadows and pastures. On the dry soils of the Ozarks and in regions subject to droughts, it yields better and lasts longer than timothy. This grass grows in bunches instead of spreading and making a sod like timothy and red top and hence other grasses or clovers should be sown with it to fill in between the bunches and occupy all of the land. For hay, it should be cut when in bloom as it loses its palatability and becomes rather coarse and woody if allowed to mature. Two crops of hay or a hay and a seed crop are usually cut each season.

THE SEEDING OF PASTURES

The seeding and care of pastures is receiving more attention in Missouri as land values increase. Bluegrass and white clover are chiefly used for pastures in this State and in the majority of cases have been allowed to come in of their own accord. The most common method of starting pastures has been to turn stock on to an old meadow which has begun to deteriorate and in which bluegrass and white clover have come in and crowded out some of the timothy. Where they are to be started directly from the first seeding, a mixture of timothy, red clover, alsike clover, white clover and bluegrass may be used. On lands well adapted to bluegrass and white clover, it is a more common practice to omit these and let them gradually come in as the land is pastured. It is somewhat better practice, however, to add both of these. Bluegrass and white clover are rather slow in starting, hence the red clover, alsike clover and timothy are added to furnish most of the pasture for the first few years, after which they gradually disappear and the bluegrass and white clover predominate. The usual rate of seeding is about six pounds of timothy, three pounds of red clover, two pounds of alsike clover, two pounds of white clover and eight to ten pounds of good bluegrass seed to the acre. The grasses are best sown in the fall with wheat or rye or alone and the clovers added the following spring, or all may be sown in the spring with a light seeding of oats or barley.

Good Seed.—The importance of using good seeds of all kinds cannot be too strongly emphasized. Every farmer realizes what a great temptation there is to use seeds which are not of the best quality because of the lower market price per bushel. As a matter of fact, the cheapest seeds one can buy are those of highest grade, although these are quoted at the highest prices. Cheap seeds are either low in vitality and will thus fail to give a proper stand, or they contain certain weeds which will greatly reduce the value of the meadow or pasture, sometimes ruining them entirely. Many low grade seed samples are faulty in both purity and vitality. It is highly important, therefore, that both grass and clover seeds be pure and of strong germinating quality.

In buying bluegrass seed special attention should be given to obtaining seed that is as free of chaff as possible and that germinates well. Bluegrass seed varies in weight from about twelve to thirty pounds to the measured bushel, depending upon the amount of chaff and other inert matter contained. Good seed should weigh at least twenty pounds to the bushel and it should germinate at least fifty per cent. Much of the difficulty that has been encountered in seeding bluegrass has been due to the fact that the greater part of the

seed on the market is of low vitality. This is due to the methods of harvesting and curing the seed commonly practiced by seed growers. Bluegrass seed cannot be threshed with an ordinary thresher but is gathered by stripping by hand or with machines especially constructed for the purpose. The seed is gathered before fully matured and cured in thin piles in the sun. Unless the seed is scattered out thinly and frequently stirred, it is apt to heat in the pile, thus lowering its vitality. After curing, it is sacked and left in this condition until it can be cleaned to remove more or less of the chaff. It may frequently heat in the sacks unless thoroughly dried and cured before sacking. In certain sections in North Missouri, the production of bluegrass seed is an important industry.

Improving Old Pastures.—A pasture which has begun to fail, can be made much more productive by drilling in a mixture of two pounds of red or mammoth clover, three pounds of timothy and one pound of alsike, in early spring, running the seed into the gashes made by the disks. If a disk drill is not available, the land may be disked, the seed broadcasted and then harrowed. This seeding of clovers increases the pasturage for two or three years following and stimulates the bluegrass through the nitrogen added to the soil by the clovers. Likewise, by feeding hay over the pasture land in the winter, much seed will be shattered which will help in reseeding.

FERTILIZING MEADOWS AND PASTURES

The use of phosphates, such as finely ground beefbone meal, applied with the nurse crop on all lands that are rather low in fertility and especially where clover has begun to fail will help materially in securing a stand of both clover and grass. Where wheat is the nurse crop used, the increase on the wheat crop frequently will be great enough to cover the cost of the fertilizer and leave a profit besides. The increase on the grass crop will then be clear gain. Oats and rye do not respond to fertilizers as readily as does wheat but it may often pay to fertilize them for the effect upon the grass crop following.

The use of manure on meadows and pastures has also been found advisable. Experiments at the Missouri,¹ New York (Cornell)² and Pennsylvania³ Experiment Stations have shown manure to give good returns on meadow lands of these states. In fact, at Cornell the

1. Results unpublished.

2. Lyon, T. L. and Morgan, James O. The Effect of Fertilizers Applied to Timothy on the Corn Crop Following It. Cornell Agr. Exp. Sta. Bul. 273:55-76, 1910.

3. Hunt, T. F. Meadows and Pastures, Penn. Agr. Exp. Sta. Bul. 101: 1-16, 1910.

residual effect upon the corn crop following the meadow has been so great that it has been found more profitable to apply manure to the hay crop in the rotation than to the grain crop.

It is seldom profitable, however, to use manure on a poor stand of grass but on thin lands, where the stand is good, manure will materially increase the yield of hay.

MISSOURI SEED TESTING LABORATORY

The Missouri Agricultural Experiment Station in cooperation with the United States Department of Agriculture maintains, at Columbia, a seed testing laboratory in which seeds are tested for purity and germination free of charge for all Missouri farmers and seedsmen. Farmers may thus have tests made of seed before buying. This should always be done or the seeds bought subject to a test by the Laboratory and with permission to return them if not found satisfactory by test. If this precaution were taken, much of the difficulty experienced in obtaining good stands would be avoided.

PASTURE MANAGEMENT IN THE OZARK REGION

For several years the Experiment Station has been conducting a series of grass experiments in the Ozark region for the purpose of determining the adaptations of various grasses and clovers for pasture on the dry upland soils of this section. These investigations have also considered the best mixtures for pasture as well as the best methods of obtaining a stand.¹ According to the results obtained, recommendations regarding pasture management must be made under two distinct heads: first, methods for the better upland and valley soils of the region which are fairly well supplied with organic matter and hold moisture well; and, second, methods for the more gravelly or rocky upland soils which are less well supplied with organic matter and tend to be dry and infertile. The first class of soils are much better adapted to the common grasses and clovers than are the latter, so that it is the latter class to which the greatest attention must be given in establishing a profitable pasture.

Considering first the better soils of this region which are likely to be used for pasture purposes, mixtures such as the following are recommended, the amounts being given in pounds per acre:

(1) Kentucky bluegrass, 8 pounds; orchard grass or timothy, 6 pounds; red clover, 2 pounds; white clover, 2 pounds.

(2) Kentucky bluegrass, 8 pounds; timothy, 5 pounds; red top, 4 pounds; alsike clover, 2 pounds.

1. Miller, M. F. and Hutchison, C. B. Grass Investigations in the Ozark Upland, Mo. Agr. Expt. Sta. Bul. 108:93-138, 1913.

(3) Kentucky bluegrass, 8 pounds; orchard grass, 5 pounds; timothy, 5 pounds; red top, 3 pounds; red clover, 2 pounds; alsike and white clover, 1 pound each.

(4) Kentucky bluegrass, 8 pounds; timothy, 8 pounds; red clover, 5 pounds.

Orchard grass is not usually recommended to be used alone where bluegrass will do well, but it is a very satisfactory pasture grass, even on such lands, and the use of 8 pounds of orchard grass seed with 3 pounds of red clover and 2 pounds of alsike clover is good.

For the drier, more gravelly lands, mixtures such as the following are recommended in pounds per acre:

(1) Orchard grass, 8 pounds; Kentucky bluegrass, 5 pounds; red clover, 3 pounds.

(2) Orchard grass, 8 pounds; Kentucky bluegrass, 5 pounds; red top, 4 pounds; red clover, 2 pounds; white clover, 1 pound.

(3) Orchard grass, 8 pounds; Kentucky bluegrass, 5 pounds; timothy, 5 pounds; red top, 4 pounds; red, alsike and white clover, 1 pound each.

For the very driest lands at all suitable for pasture, a mixture of 10 pounds of orchard grass, 5 pounds of red top, and 4 pounds of red or mammoth clover is to be recommended; or a mixture of 10 pounds orchard grass and 5 pounds of red or mammoth clover for a cheaper application.

Farmers desiring a full report of the grass investigations conducted by the Missouri Agricultural Experiment Station in the Ozarks, should obtain Bulletin 108, which will be sent free to all inquirers.