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Pastures for Alabama

A GOOD pasture furnishes cheaper feed than any other crop on the farm. Good pastures can be established only on suitable land properly prepared and seeded to desirable grazing plants. Where suitable land is available it is good farm practice to have enough good pasture for all the farm animals. Some suggestions for the production of pastures based on preliminary results of pasture experiments in Alabama are given in this leaflet.

Permanent Pastures

Selecting Pasture Land.—Fertility and moisture are the two chief requirements of a pasture soil. The best pasture soils are moist, fertile bottom lands. There are many areas in Alabama that are covered with bushes and briars which, if cleared, prepared, and seeded in the proper plants, would make good pastures. Where bottom land is not available, a fertile clay soil which holds moisture may be used. Dry sandy upland soils or soils that are too poor to grow other crops profitably are not suitable for pasture.

Preparing Land and Seeding.—All trees, except those needed for shade, should be removed and all brush should be burned. The land should be plowed and if phosphate and lime are to be used they should be thoroughly disked into the soil. If the number of stumps on the land makes plowing impractical the surface should be loosened with a spring-tooth harrow or a "gee-whiz".

The seed should be sown and covered lightly. The seed may be sown thick enough to give a stand the first year or they may be sown thin and the scattered plants which come up the first year allowed to reseed and cover the ground within a few years. The first method costs more than the second but gives a thick sod by the end of the first season, whereas, the other method requires several years for a thick sod to be formed. In addition to the extra grazing which results from thick seeding, weed control is much simpler where there is a thick stand of pasture plants than where the stand is thin.

Fertilizers.—The question of whether fertilizer will be profitable on a pasture depends largely upon conditions on the

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individual farm. Where the amount of land is limited and it is desirable to keep as many animals as possible in order to meet the market demands for livestock products, fertilizer should be profitable if soil conditions are such that it will materially increase the amount of grazing. On the other hand, if land is plentiful and no livestock products are to be sold for market, the use of fertilizer on pastures would probably not be profitable. It may be profitable to fertilize a pasture in order to grow some valuable grazing plant that would not otherwise grow; for example, Kentucky bluegrass must be fertilized in the Tennessee Valley.

Fertilization should be based on the kind of crops grown and on the type of soil used. Lime and phosphate stimulate the growth of legumes such as lespedeza, black medic, and the various clovers. These materials also stimulate some of the grasses and are usually the most profitable fertilizer materials for pastures. Nitrogen stimulates the growth of grasses but due to its high cost it is not usually very profitable. Except on the lime soils of the Black Belt, basic slag is one of the best pasture fertilizers. This material contains both phosphate and lime and some very profitable returns have been obtained from its use on pastures. Wherever basic slag is used in starting a pasture, it should be applied at the rate of about 1 ton per acre. On the lime soils of the Black Belt, superphosphate has given larger returns than any other fertilizer used. On these soils superphosphate should be applied at the rate of 600 to 800 pounds per acre when the pasture is first started. After that an annual application of 200 to 400 pounds is sufficient.

Plants.—*Bermuda grass* has been used rather extensively in permanent pastures in Alabama. It will grow on practically all the soils of the State except on very wet and on poor sandy soils. On good land, this plant furnishes a fair amount of grazing during the summer and early fall. Bermuda grass begins to grow later in the spring and is killed back by frost earlier in the fall than other pasture grasses; it also forms a very dense sod and is difficult to eradicate. Because of its short season of growth as compared to other grasses and because of its tendency to spread into cultivated fields where it becomes a serious pest and since there is always a possibility that it might be desirable to plant the area that is in pasture to a cultivated crop, the general use of Bermuda grass for pasture is not advisable.

Carpet grass grows best on the low moist sandy soils of the southern half of the State. It does not grow well on the uplands. This grass spreads rapidly and is present on most of the lowland pastures of South Alabama. On most of these pastures carpet grass was not planted, but was spread by natural agencies. Carpet grass is a creeping type of plant which forms a

thick sod. This plant is easily killed by plowing and therefore is not a pest in cultivated fields.

Dallis grass grows on practically all soils of the State. It grows best on the heavier types of moist soils. This grass is more drouth resistant than either Bermuda or carpet and has a longer growing season than Bermuda grass. It grows on drier uplands than does carpet grass. Dallis is a broad-leaved bunch grass which grows more erect than carpet grass. This grass is easily killed by plowing and does not become a pest in cultivated fields. It is generally accepted that imported Dallis grass seed is preferable to American-grown seed. American-grown seed usually has a much lower germination percentage than has imported seed.

Kentucky bluegrass is a fine-leaved creeping grass which is unexcelled for pasture wherever it will grow. With proper management it can be grown successfully on the limestone valley soils of North Alabama where it grows all the year except during extreme drouths in summer and very cold weather in winter. It is possible that bluegrass will, with proper treatment, grow successfully on the better grades of clay soils as far south as Central Alabama. Bluegrass in preliminary plantings on the lime soils of the Black Belt has grown well when fertilized with superphosphate. It furnishes grazing for a greater portion of the year than any other grass known. Bluegrass requires more favorable conditions for growth than do most of the other grasses. It requires a fertile soil which is well supplied with lime and phosphate. This grass should be fertilized with about 2,000 pounds of basic slag per acre before planting on non-lime land. The slag should be scattered and the land plowed and harrowed in August or early September to form a good seed bed. On the lime lands of the Black Belt, superphosphate should be used at the rate of 600 to 800 pounds per acre before planting.

Redtop is adapted to heavy bottom land and also grows on the better types of upland in Central and North Alabama. This grass remains green during the entire year, but makes its best growth early in the spring. It will furnish grazing sooner after sowing than most other grasses, but a stand of it does not last many years. It is, therefore, best adapted for use in new pastures to supply grazing while other pasture plants become established. Redtop is a fine-leaved bunchy grass and is easily eradicated by plowing.

Orchard grass grows under conditions similar to those for redtop except that it does not grow as well on wet land and grows better in shade than redtop. This is a bunch grass which has medium-coarse leaves and is adapted to approximately the same uses as redtop.

Lespedeza is a summer legume and is one of the best pasture plants in Alabama. It will grow on all of the soils of the State, except the lime soils of the Black Belt. Lespedeza grows best on moist, fertile bottom land and makes its poorest growth on dry, sandy hills. This plant furnishes little grazing before June, after which it may be grazed until frost. Lespedeza does not require inoculation on Alabama soils. Common lespedeza is probably the best variety for pastures. It is a low-growing annual which always produces enough seed to reseed the land. Korean lespedeza is not recommended for use in pasture mixtures as it does not reseed itself and must be sown each year. Kobe lespedeza may be used under favorable conditions, but under most conditions Common is preferred.

White clover is a creeping annual legume which makes the greater portion of its growth during the spring and early summer. It is adapted only to the fertile bottom lands. This plant is not inoculated naturally on Alabama soils and requires artificial inoculation. It produces enough seed to reseed the land.

Black medic is an excellent plant for early spring grazing. It is adapted chiefly to the lime soils of the Black Belt. This plant is a legume which requires inoculation on Alabama soils. It produces enough seed to reseed the land.

Hop clover (Trifolium procumbens) is a low-growing creeping annual legume which makes its greatest growth in the spring, usually dying about May 1. It furnishes grazing for a period of three or four weeks in the early spring before grass is ready to graze. This plant will grow on practically every soil type in Alabama. It is a heavy seeder and reseeds the land. It requires inoculation on Alabama soils.

Pasture Mixtures.—Under most conditions a mixture of pasture plants affords more grazing than a planting of one crop. A mixture should contain both grasses and legumes; if possible, each plant of the mixture should make most of its growth at the time that other plants in the mixture are not growing. The mixtures given below have proved to be adapted to the conditions in pastures in Alabama. The rates of seeding given are sufficient to give a good pasture in a few years after sowing. If it is desirable to get the maximum grazing the first year after sowing, the seed should be sown at a rate at least three times as heavy as the one given.

The following mixtures are recommended for use under the conditions specified:

For general use in all parts of the State:

Imported Dallis grass—10 lbs.
Common lespedeza—10 lbs.
Hop clover—1 lb.

On the lime soils of the Black Belt:

Imported Dallis grass—10 lbs.
Black medic—10 lbs.
White clover—3 lbs. (on bottom land)

If phosphate is applied to the soil the Dallis grass should be well established before black medic is planted because the black medic plants will grow very vigorously and shade the young Dallis grass plants and prevent them from getting started. On many areas it is not necessary to plant black medic as it is already present and when phosphate is applied it furnishes abundant grazing in the spring. The white clover should be planted on the bottom land as it does not grow well on the hills.

On the red fertile soils of the Tennessee and Coosa Valleys of North Alabama where sufficient phosphate and lime are applied:

Kentucky bluegrass—15 lbs.
Orchard grass—10 lbs.
White clover—3 lbs.
Common lespedeza—10 lbs.

On moist sandy bottom land in the Sand Mountain area:

Imported Dallis grass—10 lbs.
Redtop—5 lbs.
Common lespedeza—10 lbs.
Hop clover—1 lb.

On bottom lands of South Alabama:

Imported Dallis grass—10 lbs.
Carpet grass—5 lbs.
Common lespedeza—10 lbs.
Hop clover—1 lb.

In South Alabama, on most of the sandy bottom land, carpet grass grows naturally, but Dallis grass is more drouth resistant, grows more erectly, and is probably preferable to carpet grass as a grazing plant. Carpet grass produces an abundance of seed and scatters readily and therefore is very valuable in starting a pasture by furnishing grazing until Dallis grass gets established.

Redtop, orchard grass, Kentucky bluegrass, white clover, black medic, and hop clover should be planted in the last of September or early in October. Dallis grass, carpet grass, and lespedeza should be planted in February or early March. White clover, black medic, and hop clover should be inoculated.

Pasture Management

Grazing.—New pastures should not be grazed until the plants have become fairly well established. The pasture should not be grazed too closely the first season. After the first season,

close grazing may be practiced. When the plants grow tall and become tough, after a period of wet weather, the pasture should be mowed.

Weed Control.—A pasture which has been properly prepared, fertilized, and seeded at a rate sufficient to give a thick stand of desirable plants, usually has fewer weeds than has a poor pasture with a thin stand of desirable plants. Wherever the land is smooth enough, weeds may be controlled by mowing two or three times a year. On rough land where mowing is not feasible, weeds may be cut with hand blades or with hoes. Where only a few scattered weeds appear, hand pulling is probably the simplest method of control.

Bitterweed is one of the most objectionable pasture weeds in this state. Where there is a thick stand of bitterweed and very little growth of pasture plants it may be advisable to plow the pasture and seed it to desirable plants. Scattered patches of bitterweed in a pasture may be controlled by mowing or by other methods described in the preceding paragraph.

Wild onion is extremely difficult to control. There is no known practical method of eradicating this plant in a pasture, once it becomes established. Thus land which is to be used for pasture should be as free as possible from wild onion.

Burning.—The practice of burning pastures destroys the seeds and young seedlings of desirable pasture plants. It is impossible to maintain a stand of such plants as carpet grass, Dallis grass, lespedeza, and hop clover where pastures are burned in the spring. Burning allows undesirable plants such as broom sedge and weeds to predominate. Another serious result of burning is the destruction of organic matter and the loss of nitrogen. These materials are essential in the production of a pasture.

Temporary Pastures

During the winter months or during extreme summer drouths temporary grazing crops may be of considerable value.

Winter Pastures.—For winter grazing, rye and oats are probably the best plants to use in Alabama. Oats may be sown at the rate of 2 bushels and rye at the rate of 1 bushel per acre. They may be planted by drilling in corn or cotton middles or sown broadcast and covered by plowing or disking. If planted early in the fall, oats or rye will usually be ready to graze by the latter part of December. If the winter is not very severe these crops will furnish considerable grazing during January, February, March, and April. The cost of growing these crops is very low, if the seed are produced on the farm; if the seed are

purchased the cost is not excessive. They should be top dressed with a nitrogenous fertilizer in the fall if the maximum grazing is desired. If these crops are to be used for hay or grain production they should not be grazed after the last of February.

Italian rye grass if sown on the sod of permanent pasture will usually furnish considerable grazing during the winter. It is very palatable and is liked by all kinds of livestock and poultry. Preliminary results of experiments being conducted indicate that this crop may be very valuable in middle and South Alabama. In the northern part of the State on very heavy clay soils, when sown on a sod, it has not produced a good stand. In the Sand Mountain area a good stand is obtained but the soil is so deficient in nitrogen that it must be fertilized in order to produce sufficient growth to be of value. Since it is planted on the sod no preparation is necessary and the cost is very low. It can probably be planted cheaper and easier than any other temporary winter grazing crop. This grass should be planted at the rate of about 25 pounds of seed per acre late in September and fertilized with nitrogen soon after it comes up. Rye grass usually retards the growth of summer grasses in the spring and should, therefore, be sown on only a portion of the permanent pasture.

Summer Pastures.—For summer grazing Sudan grass, cowpeas, soybeans, and kudzu may be used. None of these will stand close grazing, but may be used for short periods when permanent pastures fail because of drouth. Kudzu is probably the most promising plant for temporary grazing in summer. It is a perennial and if once established comes from crowns each spring, whereas, the other crops named above are annuals and must be planted each spring. Sudan grass makes an excellent temporary grazing crop if it is planted on rich land or if it is top dressed with a nitrogenous fertilizer soon after it comes up.

OTHER PUBLICATIONS

The following publications on crops useful for pasture may be obtained by writing the sources suggested.

Publications by the United States Department of Agriculture which may be obtained from your Senator or Congressman at Washington, D. C.:

Bermuda Grass, Farmers' Bulletin No. 814
Sudan Grass, Farmers' Bulletin No. 1126
Carpet Grass, Farmers' Bulletin No. 1130
Important Cultivated Grasses, Farmers' Bulletin No. 1254
Lespedeza, U. S. D. A. Leaflet No. 100
Kudzu, U. S. D. A. Leaflet No. 91

Publications by the Alabama Agricultural Experiment Station which may be obtained by writing the Alabama Agricultural Experiment Station, Auburn, Ala.:

Kudzu in Alabama, Circular No. 57
Soybeans, Leaflet No. 2
Lespedeza, Leaflet No. 6.

DEPARTMENT OF AGRONOMY AND SOILS