

9-1-1898

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Recommended Citation

Lloyd, E. R., "Winter and summer pasture in Mississippi" (1898). *Bulletins*. 889.
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MISSISSIPPI
Agricultural and Mechanical
College
EXPERIMENT STATION.

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Bulletin No. 50.
—❖—

Winter and Summer Pasture in
Mississippi.

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E. R. LLOYD.
—❖—

AGRICULTURAL COLLEGE, MISS.,
SEPTEMBER, 1898.

The bulletins of this Station are sent free to all farmers in Mississippi who apply for them.

Address all communications to **Agricultural Experiment Station**, Agricultural College, Miss.

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Winter and Summer Pastures

IN MISSISSIPPI.

E. R. LLOYD.

Introduction. The keeping of live stock is an important feature in the economics of farming. In this practice, whether the stock consists of dairy animals, young stock, sheep or hogs, the importance of a full supply of food, in order to maintain a continuous growth, is recognized. Stock raising in a farming country is not profitable unless they can be grown on cheap feed and with a minimum amount of labor, and, the only way in which to accomplish this is to supply an abundance of good pasture.

In all prosperous farming countries the rearing and keeping of live stock is considered essential in maintaining the fertility of the soil; and this problem of a permanent pasture must be settled before the farmer can raise stock economically.

Preparation of the Soil. In making a permanent pasture, the first thing to be done is to thoroughly prepare the land by deep plowing and harrowing. No grass will furnish a maximum amount of pasturage on a poor exhausted soil, and fertilizers are as necessary and as profitable for a pasture as elsewhere. Cotton seed, 800 pounds; stable manure, 800 pounds, and kainit, 400

pounds, made into a compost and applied at the rate of one ton per acre broadcast, and plowed under, will give very satisfactory results; or, if more convenient to use commercial fertilizers, cotton-seed meal, 500 pounds, kainit, 300 pounds, and gypsum or slaked lime, 200 pounds, applied at the rate of 1,000 pounds per acre broadcast, after the land has been broken, and then well worked into the soil with a harrow just before the seed are to be sown. It is seldom necessary to use phosphoric acid on soils that contain even a small per cent. of lime, but in the piney woods region or on any sandy loam soil an application of phosphoric acid will be necessary and will give excellent results; so in the sandy soils of the State, I would substitute for the 300 pounds of kainit, in previous formula, 300 pounds of phosphoric acid.

In preparing a permanent pasture, the land should be plowed some time before the seeding is to be done, and since a pasture is expected to last for a number of years with no further cultivation, the soil should be loosened at as great a depth as practicable, to allow a free circulation of air and water and to allow the roots of plants to penetrate deeper into the soil; whereby the dangers of winter killing and being pulled out by stock are greatly lessened. The time and extra expense of thoroughly sub-soiling the land would be well spent. After the land has been deeply and closely broken, go over the field with a disc harrow in two directions, so that no hard, unbroken places will be left. Follow the disc with a light, stright-tooth harrow so there will be left a uniform level surface with a finely pulverized seed bed.

There is a large area in the State where the use of the disc harrow may not be necessary. This is especially true of the sandy soils in the southern part of the State. Wherever the soil is of a loose, open texture and crumbles readily when plowed, it is not necessary to use the disc harrow; a light smoothing harrow is all that is needed on such soils, and as a rule it would not pay to sub-soil this character of land, as the soil is always open enough.

Bermuda Grass. (*Cynodon Dactyl-land.*) This grass is unquestionably the best pasture grass for the South, and is one of the most nutritious pasture grasses grown in the Southern States. While it requires a rich soil for its best development, it will grow well and furnish a large amount of grazing on the thinnest soil.

After a good sod has been formed it is practically impossible for the land to wash; Bermuda has no equal as a soil holder. All kinds of stock are equally fond of it. I have seen both horses and cattle leave a good red clover field and graze Bermuda on ditch banks and along road-rides. Bermuda is adapted to all kinds of soil. You will find it growing well on the sandy soil of the pine woods, and on the red clay hills and on the black lands of the prairie belt.

Since Bermuda grass very rarely, if ever, matures seed in this latitude, the only safe method to propagate it is by transplanting the roots or the underground stems. This should be done in March.

After the land has been prepared as recommended above, then with a bull-tongue or narrow shovel plow open rows two feet apart. With a short spade shave off sod two inches thick; or, a cheaper and quicker method would be take a two-horse turning plow and set it to run shallow, and turn or edge up the sod. The sod can then be hauled in large pieces to the field and there be broken or cut into small pieces and dropped in the drill two feet apart, and covered with a light harrow; or, a better plan would be to go over the field with a heavy roller. This would firm the loose soil around the sod and at the same time level or press down the ridges left by the plow. If the pieces of sod are entirely covered there will be no harm done; as soon as there is moisture enough in the soil the roots will take hold and the grass make rapid growth. In this climate Bermuda will furnish excellent grazing from the middle of May until the middle of November, and often as late as the middle of December. To obtain

the best and largest amount of grazing the Bermuda pasture should be plowed and harrowed in the spring once in from three to five years.

On the sandy soils in the southern part of the State this grass is preferred (*Paspalum platycaule*.) of all grasses for pasture. It makes its best growth in the moist sandy valleys, and shoots up with the first warm days of Spring, and furnishes excellent pasture nearly the entire year and is not injured by frost and will stand more hard trampling and close grazing than any grass we have in the sandy region. It thoroughly covers the ground, forming a thick, tender turf, and is eaten with great relish by all kinds of stock. This grass thrives best where it is trampled. The trampling seems to be essential to its successful growth, and like Bermuda, roots at every joint; but, unlike Bermuda, it is no trouble to get rid of this grass by cultivation, but as soon as the land is turned back to pasture it soon makes its appearance and furnishes good grazing in a short time. Carpet grass can be introduced into new fields as directed for Bermuda or by sowing the seed. This grass also does equally as well on the brown and yellow loam soils in the western part of the State. Lespedeza growing on the same land, which is often the case, adds to the value of the pasture.

This plant, it is claimed, was introduced into this country from Japan, and was first noticed in South Carolina, but **Lespedeza,** is now perfectly at home all over the South, and as far west as Texas and north to the Ohio river. **or** **Japan Clover.** *Lespedeza striata*.) is rather slow to start in spring, making little growth before June, but after that time grows very rapidly, and even on very poor land will furnish excellent

grazing from July 1st until frost. While it is an annual, it will perpetuate itself without care, and like most other members of the clover family, does best on a lime soil, but will do well on the red clay hills and sandy soils of the State.

After Lespedeza has gotten a start on poor land, and if not too closely grazed the first year, will in a short time crowd out the weeds and other worthless plants; and while its growth on poor land will be low and spreading, it will be thick and high enough to furnish good grazing.

In seeding land to Lespedeza, one-half bushel of seed to the acre is ample. The seed can be sown as early in the spring as the danger of frost has passed; or, if preferred, the seed can be sown on oat land in the fall.

After sowing the seed, go over the land with a light smoothing harrow, and it would be much better if the land could be rolled.

This plant closely resembles Alfalfa, but makes a much larger and coarser (*Melilotus alba.*) growth, and is especially adapted to lime soils. It will make a good growth on any lime soil, even on the white barren lime hills, where the land is so poor that no other plant will live. Melilotus is of little or no value on the red clay or sandy soils which contain little lime. In this latitude it is a biennial plant, making only a moderate growth the first year, but an excellent growth the second. This plant comes from seed the first year and from roots the second, and will then continue to re-seed itself for years without interference. The seed may be sown late in August or in February, at the rate of one-half bu. per acre, as directed for Lespedeza.

Melilotus, in either the cured or green state, is not generally liked by animals unaccustomed to it at first, but they soon learn to relish it, and it is very nutritious either in the green or cured state. Melilotus starts into growth early in the spring when other green forage is scarce,

and stock learn to like it very quickly. This plant not only furnishes a large amount of grazing, but has few equals as a soil improver.

This plant is an annual, and is similar **Hairy Vetch.** in growth to a slender peavine, the (*Vicia villosa.*) vines often reaching ten to twelve feet in length and completely covering the ground with a dense mat of forage two or three feet deep. The seed should be sown in August or September, at a rate of one bushel per acre, and with the first rains in autumn the seed will germinate, and in favorable seasons the plants will cover the ground by January and then furnish good grazing until the first of May. If the stock are taken off the field by the first of April the plants will mature seed and re-seed the land perfectly for the next season. We have several fields on the Station farm that were seeded to vetch five years ago, and from these fields we have gathered good crops of seed annually, and while we have sown no seed on the land since the first seeding there has been enough seed wasted or shattered during harvest each year to perfectly seed the land. The stand is now perfect.

Vetch ripens its seed early in June, and each year, as soon as the seed have been gathered, the land is broken with a two-horse plow and sown to cow-peas or German millet to be mowed for hay in the fall. These second crops do not in the least injure the stand of vetch. We have never failed to secure a perfect stand of vetch after the hay crop was removed. This plant is relished by all kinds of stock and will stand a great amount of close grazing.

This oat, sown in August or September, will furnish excellent grazing from **Turf,** November until the middle of May. If **or Winter** a crop of seed is desired, the stock **Oats.** should be taken off the land the first of April. The seed should be sown at the rate of two bush-

els per acre. After the plants have become well rooted they will withstand the hardest freezes we ever have. In 1895, out of several varieties of oats sown the previous fall, all were completely killed by the severe freeze in March, except the Turf oat. On this plant the leaves were killed back about four inches, the plant being otherwise uninjured, and in a few weeks was perfectly green again.

This oat sends up a large number of stems from a single root; often one turf will contain from forty to fifty stems, all of which will have full, heavy heads when ripe.

This grass has done well in permanent pastures on all soils containing a good supply of moisture; in fact, it grows well on land too wet to be cultivated in field crops. It makes its best growth on bottom land, but succeeds well on the seepy hills. The seed should be sown early in the spring at the rate of twenty-five pounds per acre, and covered with a light harrow and rolled. The growth the first year will be weak and disappointing, but the second year the plants will make a strong and vigorous growth and furnish excellent grazing through the winter and the greater part of the summer. After the first season redtop will hold its own with other grasses and weeds. Stock of all kinds eat it greedily.

This plant does best on low, rich land, and will make good growth on land that is too wet and seepy for the successful growth of any of the other clovers. It stands close grazing and will, on suitable land, furnish a large amount of excellent pasturage. This plant has also given good results on seepy hillsides and is not injured by cold. The seed should be sown in

August or February at the rate of twelve pounds per acre. The seed should be covered with a light harrow or simply rolled with a heavy roller. Alsike will furnish good grazing nearly the entire winter and until late in the summer, and will hold the ground for years without re-seeding.

This grass will make a good growth

Orchard on wet, heavy soils during winter and
Grass. furnish good grazing during the fall
 (*Dactylis glom-* and winter. Orchard grass has the ad-
rata.) vantage of making good growth in par-
 tially shaded places. This fact being
 appreciated, makes this grass very popular for sowing in
 groves or woods lots. It grows in turfs, but by close
 grazing and thick seeding the grass will very nearly cover
 the ground. It is liked by stock, and after becoming well
 established in the pasture, will furnish a large amount of
 good grazing. It is a perennial which commences its
 growth with the first warm days in February. It bears
 grazing well and comes again quickly when cropped
 down. The seed should be sown in August, or very early
 in the spring, at rate of forty pounds per acre and either
 rolled or covered with light harrow.

With the proper combination of some

A Combination two or more of the pasture plants just
Desirable. described, it is not only possible, but an
 easy matter, for every farmer in the
 State to have for his stock good green pastures the entire
 year. It matters not in what part of the State his farm
 is located, whether in the sandy region, the brown loam
 region, or the prairie region, some suitable combination
 can be made that will be adapted to his soil conditions.

Pasture Plants for the Pine Woods Soils. Carpet grass and Lespedeza for the sandy valleys and Hungarian brome grass (*Bromus inermis*), Crab grass and Mexican clover for the upland, will furnish grazing through the summer and late fall, and Turf oats and Hairy vetch sown the latter part of August, will furnish excellent grazing through the winter and early spring. On wet or seepy land Redtop and Alsike clover, sown together, will furnish good pasturage the greater part of the year.

Pasture Plants for the Yellow and Brown Loam. For summer and fall pastures, Bermuda grass, Carpet grass, Lespedeza, and Orchard grass. On wet or low land, Alsike clover and Redtop. For winter and early spring grazing, Turf oats and Hairy vetch.

Pasture Plants for the Prairie Soils. For summer and fall grazing, use Melilotus, Lespedeza, Bermuda and Orchard grass. On the wet, low lands, plant Alsike clover and Redtop. For winter and early spring grazing, plant Turf oats and Hairy vetch.

Water Supply. No pasture is complete without a sufficient supply of good, clean water. Impure water supplied to dairy cows will affect the quality of the milk indirectly by injuring the health of the cows. In a large portion of the State the farmers and stockmen are dependent entirely upon ponds for their supply of water for stock. The pond should be so located that it will be impossible for drainage water from stables, barnyards, or any other

contaminated source to empty into it. Stock should not be allowed to wade in the water, where they not only stir up the mud and filth at the bottom, but void both solid and liquid excrement into the water. If this is allowed, the water soon becomes thoroughly contaminated with filth and poisonous germs and is unfit and unhealthy for stock to drink. The pond should have a fence around it that would turn all kinds of stock, and a pipe put through the dam and fitted into a nice trough with an automatic float valve, so arranged that as the stock would lower the water in the trough by drinking more would run in, and by this method the trough would never be dry.