INCREASING PASTURE CARRYING CAPACITY

Profitable pastures are within the reach of every farmer by care and management. It has been demonstrated that the productivity and value of pastures can be restored and maintained if suitable management practices are followed. This can be achieved in a manner that usually will bring returns far in excess of the costs involved. Yet, surveys have shown that pastures in many areas are deteriorating through loss of the stand of native grasses.

Pasture improvement can be brought about through the control of grazing, control of weed pests, and by reseeding and fertilization. For control of grazing, it is essential that proper management practices be followed. If livestock are permitted to overgraze a pasture, they will graze the leaves in which water, air, and minerals are converted into living plant food so closely that only a small amount of plant food can be converted into plant cells. Weakening of the grass roots follows and the plant dies. But even if the plants are not grazed closely enough to be killed, there is the danger that seeding, which is necessary to the maintenance of grass stands, may be prevented. To avoid destruction of pasture plants or prevention of seeding, farmers should increase the growth of grass or reduce the number of livestock per unit of land. The former may be achieved by improved pasture management practices, as discussed herein. The latter can be accomplished by increasing the land in pasture, reducing livestock numbers, or both.

As livestock are prone to graze most heavily near the water supply, farmers are advised to distribute the water supply over the grazed area, if practicable, so that the grass will receive more uniform grazing. Also, the placing of salt in less used parts of the pasture will encourage more grazing of those areas.

A detrimental practice which may kill grass or contribute to the weakening of plants is the burning of pastures, which is sometimes done to destroy certain weeds or brush. Grasses that are desirable for grazing may be killed, and seeds still on plants or on top of the ground may be destroyed. Even if the grasses are not killed, their grazing yield will be reduced.

Weeds which are not desirable as plant food and which shade the grasses and deny them sunlight, water, and plant food are among the biggest pests in a pasture. Weeds outgrow the grasses because livestock select the grasses, giving the weeds an advantage. To correct this condition, the weeds should be eliminated by mowing or grazing by sheep so as to give the grass enough protection from overgrazing and stunting to allow a healthy, normal leaf surface to grow. R. R. Lancaster, in a Texas Agricultural Experiment Station Bulletin entitled "Mowing Pastures", states that Texas animal production could be doubled by clearing and mowing several million acres of low land along streams, on overflow croplands, and in low swales of deep, moist, fertile soil now overgrown with brush, bloodweeds, careless weeds, sunflowers, briars, and worthless shrubs. In the open pastures, production of pasture grasses generally can be increased 50 to 60 percent by mowing weeds where there is fertility and moisture. Mr. Lancaster advises that mowing to control weeds should start soon enough to mow all before seed can form.
Shading by trees and shrubs or brush is also a serious detriment to growth of grass. Some trees may have more value than the increase in grasses which would result from their removal, but those of low value should be removed and their sprouts kept out until they are eliminated. Such trees and shrubs can be removed either by power-driven saws, hand work, or by spraying. Grasses will usually come in naturally after the trees are taken out, but if not, it will be necessary to reseed.

Fertilization of pastures can be accomplished by overseeding with bur clover, yellow hop clover, white Dutch clover, or Korean lespedeza. Addition of these plants to the pasture will give one to two months longer grazing and will increase both the quantity and quality of the forage.

In pastures on hillsides it may be desirable to employ some mechanical aid, such as gully control and contour ridges to prevent erosion, especially if the land is grazed closely. Gullies may be controlled by planting Bermuda grass or some similar grass in the bottoms and on the sides. A small gully can be plowed up and seeded or put in sod if the water can be directed out of the gullies temporarily. The contour ridges or contour furrows are helpful both in causing greater absorption of water necessary for grass growth and in avoiding the washing away of topsoil and grass seeds. The clovers grown in pastures reproduce by seed, and if these seeds are washed away the seed crop is lost and reseeding is required. Furrows may be of the single furrow type or may be of the ridge type, constructed by several furrows.

A good pasture is possible only if an adequate amount of plant food is available. Where pastures are grazed continuously, the available plant food is reduced, and it becomes necessary to replenish the supply. Writing in the Texas Agricultural Extension Service Bulletin B-147, entitled "Fertilizing Texas Pastures," M. K. Thornton and R. R. Lancaster point out that 95 percent of the substance in grass comes from sunlight, air, and water, which are usually abundant. The remaining 5 percent of grass substance is from nutrients in the soil. The condition and fertility of the soil, they say, mainly determines whether there may be a pasture or merely idle land. A fertile soil will contain adequate humus, and it must supply nitrogen, phosphorus, potash, calcium, and an abundance of many other elements. Humus is necessary to prevent the soil from becoming compacted, which limits circulation of moisture and air and results in less available plant food elements and a restricted root development. The organic matter in the soil can be maintained if perennial grasses, such as clovers, are used. These also contribute to the supply of nitrogen, which is necessary for the development of other plants. The application of superphosphate, potash, and lime is recommended for pastures in Texas, although the rates at which these should be applied vary from region to region. Superphosphate has proved effective for pastures on most soils in Texas where average annual rainfall is above 25 inches and on many sandy soils in areas with between 20 and 25 inches. Rates of application for pastures are not so important as for annual crops, but an application of 100 pounds of 20 percent superphosphate per acre is commonly considered as a base requirement for pastures for one year. Amounts sufficient for several years, however, may be applied at one time. The fall of the year is the best time for applying superphosphate.

Loss of potash results principally from leaching, but loss is relatively low in pasture as compared with cropland and is slight in a dense sod or a vigorous cover crop. However, where needed, the use of potash will increase the stand of legumes and will cause the stand to persist longer.

Nitrogen fertilizer may be applied just before spring growth starts or in the early fall. In either case, it stimulates plant growth and furnishes earlier spring pasturage. Fall fertilization causes greater winter storage of plant food, assuring not only earlier spring grazing but also more vigorous competition with weeds and clover. The rate of nitrogen for permanent pastures is generally considered to be 30 pounds of elemental nitrogen (100
pounds of ammonium nitrate, 200 pounds of sodium nitrate, or 150 pounds sulphate ammonia) per acre.

In the application of fertilizers to pastures, it is well to consider that usually the full effects of one fertilizer are not realized unless other plant food elements are available in the soil in sufficient quantities. Therefore, it is often desirable to apply several of the more important fertilizers simultaneously. On badly exhausted pasture land, it may be well to apply 5-10-5 fertilizer at the rate of 300 to 500 pounds per acre in order to obtain more complete fertilization.

It is recommended that fertilizers applied to pastures be put in the soil, if possible. Potash and phosphate left on top of the ground, for example, are subject to fixation in forms that cannot be absorbed by plants and are, therefore, of no value. However, these fertilizers can be worked into the soil by a spring tooth harrow or disk. It is preferable that such soil treatment should precede the fertilizer.

By using fertilizers and other recommended practices, the growth and density of forage in pastures can be increased, and, at the same time, the forage becomes more tender, more nutritious, and more digestible, making possible the production of more and better livestock and an increase in the net returns from the land.

**FARM MANAGEMENT**

**Recommendations for Grasshopper Control**

Grasshoppers often cause extensive damage to crops at this season of the year, but they can be controlled, according to Paul Gregg, assistant extension entomologist of Texas Agricultural and Mechanical College. The time to kill them, he says, is when they are young, for it is easier to kill the young ones than those that are large and full grown. Gregg suggests that each farmer examine the areas where the grasshoppers hatch out on his farm and apply control measures while the hoppers are small and before they have a chance to damage the crops. He lists the following new insecticides for grasshopper control: benzene hexachloride (BHC), 12 pounds of 3 percent gamma per acre; toxaphene, 12 pounds of 20 percent dust per acre, and chlordane, 15 pounds of 10 percent chlordane per acre.

**Cotton Classification Program Announced**

The procedure to be followed by organized cotton improvement groups in obtaining free cotton classification and cotton market news services in 1948 under the Smith-Doxey Act was announced recently by the United States Department of Agriculture. Cotton farmers must organize into associations, adopt a variety of cotton, file application, arrange for sampling, and meet certain other requirements for their members to be eligible for the services. Group applications should be filed with the Cotton Branch, Production and Marketing Administration, United States Department of Agriculture, as soon as possible after all members have planted their cotton but not later than July 1 in Louisiana and in Texas counties lying east of the 100th meridian and not later than July 15 in Arizona, New Mexico, Oklahoma, and the remaining counties of Texas.

**COMMODITY NOTES**

**Stocks of Grain on Farms in Texas, April 1**

Stocks of wheat on farms have remained relatively high, as marketings from farms slowed down with price declines. Estimated stocks of 12,427,000 bushels of wheat on Texas farms on April 1 were at a record level for that date as compared with 1,573,000 bushels last year and a 10-year (1937-45) average of about 3,000,000 bushels. On the other hand, stocks of feed grains were relatively small because of heavy feeding during the winter. Stocks of corn at 9,494,000 bushels were low, compared with 12,348,000 bushels last year and an average of 18,536,000 bushels. Stocks of 3,750,000 bushels of oats were also low, compared with 5,819,000 bushels last year and an average of 7,371,000 bushels. The 479,000 bushels of barley on hand were 140,000 bushels higher than on
the same date last year, while stocks of rye were estimated at 46,000 bushels, compared with 6,000 bushels last year.

TECHNOLOGICAL DEVELOPMENTS

Improvements in Cotton Ginning

The cotton ginning industry has been making immense technological strides within the last 15 years, according to Charles A. Bennett, United States Department of Agriculture. Among the improvements that have been made in cotton ginning equipment and methods are all-metal buildings and machinery, standardized and interchangeable parts, and machine production on dimensioned jigs under closer tolerances of finish and fit. These have replaced wooden construction and rough castings. Cotton driers, gin stands of greater capacity, better pneumatic apparatus, and greater accessibility are pronounced improvements. Cotton drying processes have been adopted by more than a third of the active cotton gins, which handle 65 percent of all the cotton. Unit exhausting and feeding processes over each cotton gin stand have replaced the bulk extraction of heavier foreign materials from the harvested cotton. Improved cleaning and extracting machines have angular bar grids, revolving knuckle-tooth disk grids, reciprocating cleaner cylinders in staggered vertical descension, and other devices for removing foreign matter gathered by machine harvesting.

The adoption of single variety cotton planting in many communities has made possible a further advance in ginning processes for protecting purity of ginned cottonseed as demanded by farmers. The trend toward single-variety cotton communities has been sound and healthy, says Mr. Bennett, and should lead to visual bale identification in coverings and tags to assure consumers that they are receiving a specialized variety of cotton fiber from dependable producers.

The standard density presses now in use are of both down and up packing type, and new designs utilize either two or three rams. These presses do not kill the natural resilience of the cotton fibers, and the bales consequently open quickly at the spinning mills during the first blending processes, thereby avoiding the delay encountered as a result of the extreme crushing when low-density bales undergo commercial compression between the gins and mills. A standard density gin bale is also suitable for high-density recompression, because it fits between the side doors of the high-density presses.

Research is under way to improve further the drying and cleaning of cotton, to restore necessary moisture to very dry fiber during the ginning, to clean even better the ginned fiber as it passes from the gin stands to the bale press, to prevent gin fires, and, by whatever method possible, to lower the costs of ginning. The results of this research are expected to benefit growers by lowering costs of ginning and marketing their crop and by raising the value of the ginned fiber through improved ginning processes.

ANNOUNCEMENTS

Meetings

The Texas Cottonseed Crushers Association will meet at the Baker Hotel in Dallas, Texas, on May 31 and June 1.

The Annual Cotton Research Congress will convene in Dallas, Texas, on July 22, 23, and 24. This year the Congress will enlarge its exhibits, which have been a feature of the meetings during the last nine years.

Recent Publications

Texas Agricultural Experiment Station, Agricultural and Mechanical College of Texas, College Station:


Experiments with 2,4-D for Controlling Weeds in Rice Fields in Southeastern Texas in 1947, Progress Report 1115, by Edgar C. Tullis.

Copies of these publications may be secured by request to their respective publishers.