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Fertilizer for Small Grains

Yields of wheat and oats in central and northern Texas have been increased as much as 10 bushels and 26 bushels, respectively, by the proper use of fertilizer, according to tests of the Texas Agricultural Experiment Station.

Proper use of fertilizer on small grains increases not only grain yields but also the amount of forage available and the winter hardiness of the plants. In the 1952-53 season, the use of 30 pounds of nitrogen and 60 pounds of phosphorus per acre resulted in an average gain of 25.1 bushels per acre for oats and 9.1 bushels for wheat on seven farms in northcentral Texas. Phosphorus tripled the yield of winter forage from oats.

In the north Texas tests, applications of 30, 60, and 90 pounds of nitrogen per acre were made on different test plots and, also, an application of 60 pounds of phosphorus per acre. Neither the nitrogen nor the phosphorus alone was as effective in increasing grain yields as when they were used together. The treatment of 30 pounds of nitrogen and 60 pounds of phosphorus per acre gave the most profitable grain yields, increasing yields 25.1 bushels above the check plot which received no fertilizer. Thirty pounds of nitrogen alone resulted in an increase of 11 bushels, and the use of phosphorus alone gave an increase of only 2 bushels per acre.

A higher rate of application of nitrogen in combination with the 60 pounds of phosphorus increased yields further, but the gain was not sufficient to compensate for the higher cost of fertilizer.

Nitrogen and phosphorus together were also the most effective combination in increasing yields of wheat. Thirty pounds of nitrogen and 60 pounds of phosphorus per acre resulted in an increase of 9 bushels per acre of wheat. The application of nitrogen alone at the rate of 30 pounds per acre gave an average increase of 4 bushels per acre, while 60 pounds of phosphorus alone gave an increase of 6 bushels per acre. Higher rates of application of nitrogen in combination with phosphorus also increased wheat yields but not sufficiently to pay the cost of additional fertilizer.

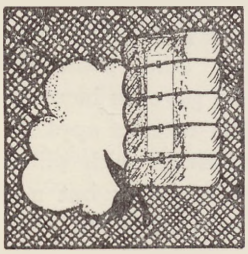
Application of the fertilizers was divided, with the phosphorus applied in bands at planting time and the nitrogen applied as topdressing in the early spring. Applications of potash also were included in the tests in north Texas, but no significant increase in yields was noted from the use of this ingredient.

Yields of forage from oats were more than tripled by the application of 60 pounds of nitrogen and 60 pounds of phosphorus per acre in the fall. Applications of nitrogen alone did show significant increases in forage yields, while applications of phosphorus in combination with nitrogen gave greatly increased yields. The most profitable combination for winter pasture appears to be the application of 60 pounds of phosphorus per acre at plant-

ing time. The main effect of the nitrogen seems to be improvement of the grain yield rather than forage production.

These tests were conducted on soils typical of northcentral and central Texas and may or may not be indicative of results in other areas. However, tests throughout the eastern half of Texas and northern Louisiana have shown that investments in fertilizer for small grains usually return from $3 to $5 for each dollar invested in fertilizer. In planning the fertilizer program, soil samples should be sent to the nearest soil-testing laboratory for analysis. Local county agricultural agents can give information as to the location of such soil-testing laboratories.

Defoliation — A Must for Mechanical Harvesting



The success of mechanical cotton harvesting will be highly dependent upon a satisfactory job of defoliation. Removal of cotton leaves makes picking by machine more effective and also eliminates considerable trash from seed cotton, making it possible to turn out a better sample of lint cotton at the gin. Defoliation also hastens the opening of immature bolls and in heavy, rank cotton permits more even maturity of the crop.

The success of defoliation applications depends upon the chemical used, rate and method of application, amount of moisture in the soil, temperature, cultural practices in growing the crop (such as fertilization), and the cotton variety. Defoliation is more successful when the plants have been growing rapidly and when moisture is adequate up to the time of defoliation. However, excessive rainfall immediately after application of the chemicals materially reduces the effectiveness of the operation. Cotton plants that have suffered from lack of moisture during the growing season are particularly hard to defoliate.

Time of application appears to be extremely important in the defoliation process. In general, the defoliant should be applied from 10 days to 2 weeks prior to the start of mechanical harvesting. Additional applications may be required to complete defoliation and to prevent regrowth. In tests conducted last year by the Texas Agricultural Experiment Station, applications in the Weslaco area were made from June 18 to July 31; in the Brazos River Valley, from August 7 to September 8; at Temple, from August 5 to September 15; at Lubbock, during October; and in the El Paso Valley, from October 5 to October 7.

In the 1953 tests in Texas, the chlorate-borates, SEX, and Phillips defoliants gave the best results at Weslaco. Endothal, chlorate-borates, and Phillips defoliants were the most effective in the Brazos River Valley, while Endothal gave the best performance at Temple, and Aero Cyanamide soluble was most effective at Lubbock and in the El Paso Valley. Phillips experimental compounds, in addition to giving a fairly high percentage of leaf fall, also dried the remaining foliage. Pentachlorophenol gave good defoliation in all areas and caused the highest percentage of leaf drop at Temple.

A relatively new chemical, called Amino triazole and sold under the trade name "AMI-ZOL," was as good as or better than any of the other defoliants tested in 1953 at four locations; too, when incorporated into other defoliant sprays as an additive, it gave a substantial increase in defoliation. The material also was effective in inhibiting regrowth at Weslaco and in some of the Brazos River Valley and Temple tests.

A high-clearance ground sprayer appeared to be more effective in applying the defoliants than air machines.

Marketing Tips for Cattlemen

Every cattleman probably has his own theory with respect to the most efficient way of marketing cattle. Some cattlemen like to give cattle plenty of hay before loading them for the market; others follow the practice of withholding water until after the cattle reach the market.

The Texas Agricultural Experiment Substation at Beeville, Texas, has made a series of studies during the past 7 years of the methods of marketing cattle. Results of these experiments do not bear out all the common theories relative to marketing of cattle.

For example, it was found that the practice of reducing the concentrates and silage in the rations of steers 1 to 2 days before shipment had little effect upon shrinkage. If their rations were reduced somewhat the day before they were shipped, the steers were cooler when they arrived at the market.

It is desirable to feed cattle a good-quality, nonlegume hay for a week in advance of marketing from green pastures. Such a practice was found to reduce the amount of shrinkage between the farm and the market.

The experiments indicate several things that livestockmen can do to reduce loss between the feed lot or pasture and the market.

(1) In hot weather, cattle should be loaded in the late afternoon and be ready for sale the next morning, whenever possible.

(2) If a very short haul is involved, cattle can be moved early in the morning and offered for sale without being fed or watered.

(3) If the cattle are moved long distances and arrive the day preceding the sale, they should be given water and feed overnight.

(4) Careful handling of the cattle to avoid unnecessary excitement or irritation reduces shrinkage and results in carcasses of higher quality and less cutting waste due to bruises. It also reduces the incidence of beef that cuts dark in color and, thus, is undesirable for the fresh-meat trade.

"Hardware Disease" of Cattle

Cattlemen suffer substantial losses every year simply because their cattle have access to junk piles and scrap heaps where metal and glass objects are easily picked up. Mature cattle have a habit of licking various objects and, consequently, often swallow nails, pieces of baling wire, glass, and other objects. Veterinarians frequently refer to this as "hardware disease."

Metal objects also may be in chopped hay and silage. Loose nails in feed bunks and mangers are another source of "hardware." Providing the cattle with proper mineral mixtures will reduce their urge to lick and chew objects, but even when adequate mineral mixtures are available, cattle may pick up foreign objects left about the premises.

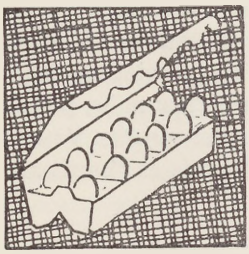
When a cow swallows a piece of "hardware," the object sometimes punctures the stomach walls and, in extreme cases, may even injure vital organs, such as the heart and liver.

Symptoms of "hardware disease" include many behaviors that are also symptoms of other diseases. Hence, it may be quite difficult to determine the presence of foreign material. Symptoms include going off feed, reluctance to move, diarrhea, and pain when moved suddenly. Dr. C. M. Patterson of the Texas Agricultural Extension Service says that the symptoms may come and go in some animals, while in others they may become progressively worse. In many cases where the symptoms are noticed early, veterinarians may remove the object by operating and searching for the foreign material in the digestive tract.

One of the best preventive programs for losses to cattlemen from "hardware disease" is keeping the premises clean and neat and

never permitting baling wire, nails, and other objects to accumulate in or around the feed troughs or bunks or in areas where animals can get to them. In harvesting silage and hay, care should be exercised to keep foreign objects out of the forage material.

More Money from Eggs



A Grade AA egg will become inedible in 3 days at 98-degree temperature and in 8 days at 77 degrees but will remain in marketable condition for 45 days if kept at a temperature of 45 degrees, according to F. Z. Beanblossom, Extension poultry marketing specialist of Texas A. & M. College.

Mr. Beanblossom points out that high temperatures and low humidity are two of the greatest enemies of good egg quality. Eggs usually will remain Grade A for 6 months if kept at a temperature just above freezing.

These facts emphasize the importance of gathering eggs two or three times a day during hot weather. After gathering, the eggs should be stored in a cool, humid, and well-ventilated place; also, they should be taken to market often and regularly.

Poultrymen will find it profitable to take these extra precautions during hot weather to maintain egg quality.

"Automatic" Delouser

Cattle will apply their own insecticides if given the opportunity, according to results of tests by the United States Department of Agriculture. Cattle provided with an insect-treated device against which they could rub completely freed themselves of biting and blood-sucking insects in less than 4 weeks.

The device used in these tests was relatively simple, consisting of a burlap-wrapped wire stretched from the top of a 5-foot post and anchored to the ground 9 feet from the base of the post. The burlap was saturated with a gallon of 5-percent chlordane oil solution. In rubbing against this burlap-wrapped wire, the cattle applied the insecticide to their bodies.

Four of the herds tested in these experiments were virtually free of lice at the end of 15 days, and on the twenty-fifth day, no live lice were found on any of the animals in the nine herds under tests. Moreover, none were found during the next 30 days.

Publications

Oklahoma Agricultural Experiment Station, Stillwater:

Urea in Rations for Cattle and Sheep, Bulletin No. B-409, by Willis D. Gallup and others.

Factors Affecting Cotton Planting for Mechanized Production, Technical Bulletin No. T-50, by Jay G. Porterfield and others.

Texas Agricultural Experiment Station, College Station:

Sudan for Grazing and Hay, Progress Report 1657, by E. C. Holt and F. L. Vabra.

Fruit and Vegetable Statistics for Texas, Circular 135, by C. A. Bonnen and L. P. Gabbard.

Agricultural Research Publications Available, Circular 136.

Copies of these bulletins may be obtained by request to the publishers.

The *Agricultural News Letter* is prepared in the Research Department under the direction of CARL H. MOORE, Agricultural Economist.