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High-Speed Farming

The operation of field machinery at speeds of 15 to 18 miles per hour was carried out successfully this spring by Texas A. & M. College on its Brazos River Valley farm. The implement used was a trailer-type rotary hoe, designed especially for the project.

Pulling this machine over fields at speeds up to 18 miles per hour enabled the operators to cover cotton fields at the rate of 6 to 8 acres per hour, killing young weeds effectively and breaking the crust. This is about two and one-half to three times the rate that fields can be covered with conventional rotary hoes mounted on tractors.

Because of the high speeds, the cotton fields could be rotary hoed during intervals between heavy rain showers. Also, the trailer-type rotary hoe could be used several days before the soil dried sufficiently for regular sweep cultivation, permitting weeding of the cotton and breaking of the crust several days earlier than would have been possible with conventional equipment.

The research specialists operating the machinery and appraising the results estimate that 65 to 70 percent of the annual weed and grass seedlings were controlled by one rotary hoeing with the new machine; 85 to 90 percent, with two or more such hoeings; and 95 to 98 percent, when rotary hoeing was preceded by the use of pre-emergence chemicals.

Careful examination of the cotton after the rotary hoeing at high speeds showed that over 95 percent of the cotton plants survived without any interruption in growth. This was true even though the cotton ranged in age from 1 to 5 weeks.

The rotary hoe used in these experiments has two banks of rotary hoe wheels mounted behind the trailer axle. Each bank holds six or eight rotary wheels and is mounted on a separate axle so that each bank covers one row. The rotary wheels are raised and lowered by raising and lowering the tongue of the trailer through the hydraulic mechanism of the tractor. This gives finger-tip control over the depth to which the rotary wheels can penetrate and facilitates lifting the rotary wheels for turning and for transporting the implement to other fields.

This equipment was used in the Brazos River Valley during the period May 8 to May 19, 1954. Four inches of rain fell from April 28 to May 3, and another 4 inches fell during the night of May 11. Cotton on 60 of the 90 acres used in the experiments emerged after the rain on April 28. The remaining acreage, which was on Norwood silty clay loam, was approximately 4 weeks old when the heavy rains started.

A thick stand of weeds and grasses emerged following the first rains, and subsequent dry-

ing conditions caused a thick soil crust. Operation of the new rotary hoe was started on May 5, but the soil was not dry enough for sweep cultivation until about 2 days later. Hence, the breaking of the crust and killing of the young weeds and grass were accomplished fully 2 days earlier than would have been possible with conventional cultivation equipment. Use of the new rotary hoe increased the available working time between the two 4-inch rains by 166 percent over that which would have been available for sweep cultivation or for the use of rotary hoeing attachments with sweep cultivation.

The 60 acres of cotton that emerged after the April 28 rains were on Miller clay soil that never was dry enough between the heavy rains for satisfactory operation of a broadcast-type rotary hoe. Much of the cotton was rotary hoed three times with the new machine before moisture conditions would permit sweep cultivation.

Some fields of the 5-week-old cotton were thinned prior to the rotary hoeing; others were thinned afterwards. The use of the rotary hoe did not affect adversely the thinning operation or damage the stands of previously thinned cotton.

The wheels of the tractor pulling the rotary hoe packed middles to some extent, but this was overcome readily by cultivation with sweeps as soon as the soil dried sufficiently.

A new crop of weeds and grasses germinated after the heavy rain on May 11, and rotary hoeing with the new machine was started again on May 17. Sixty acres were rotary hoed the first day, and the rest of the acreage was covered by midafternoon of the second day. Tractor cultivators were not able to start on the lighter soils until the afternoon of May 17, and completion of cultivation on the heavier Miller clay was not feasible until 4 days later.

Following the successful operation of the high-speed implement early in May, several neighboring farmers in the Brazos River Valley improvised equipment for use on their fields. They took the sweeps off their tractor cultivators and used only rotary hoeing attachments. These attachments customarily accommodate only four rotary wheels per row and, hence, require very careful guiding of the tractor to keep the rotary hoes on the row. However, they have been used successfully in the Brazos River Valley, and it also has been reported that such improvised equipment is in general use in the El Paso cotton-growing area.

Equipment similar to that used by Texas A. & M. College probably can be improvised and built by many farmers or by local shops. Details of the implement's construction, including dimensions and methods of assembly, can be obtained from the Texas Agricultural Experiment Station at College Station, Texas. A more complete discussion of the tests and pictures of the implement are available in the Texas Agricultural Experiment Station's Progress Report 1691, a copy of which is available from most county agricultural agents and from the experiment station.

A Report on Buffelgrass

Tests during 1952 and 1953 by the Texas Agricultural Experiment Station provide interesting information on buffelgrass — a relatively new warm-season bunch grass in Texas.

Buffelgrass is native to Africa and the southern Mediterranean area. There are two general groups. One has a fibrous root system, bright green foliage, and purplish seed heads. The second type, usually called Blue buffel, has a rhizomatous root system (like Johnson grass, it spreads by underground shoots), bluish foliage, and light-colored seed heads.

Reports from South Africa state that in that area, buffelgrass is resistant to drought and produces good yields but is subject to frost damage. Accurate information is not yet available as to its cold resistance in the Southwest.

The test plots used at the Texas A. & M. Experiment Station at College Station con-

tained both types of buffelgrass. Seeding was at the rate of 2 pounds of unhulled seed per acre in 40-inch rows, with fairly heavy applications of fertilizer at the time of seeding and a later application as a side dressing. Plots were cultivated until the grass became established, and additional fertilizer was applied at the beginning of the second year.

Several observations can be made concerning the results of the tests at the experiment station. One, buffelgrass produces satisfactory yields under conditions of good fertility and moisture but is not necessarily superior to many other summer grasses that have been grown in the area.

Two, the rhizomatous type of buffelgrass may be superior to the fibrous-root type, but additional tests will be required to establish this fact.

Three, differences in forage quality between buffelgrass and other varieties were not particularly significant, except that the phosphorus content dropped sharply following the first harvest during the first year of growth. This was not true during 1953.

Four, buffelgrass usually requires some grazing management to obtain maximum sustained production. Based on the results of the 2 years, best yields apparently can be obtained by allowing the grass to approach maturity, then removing practically all of the forage and permitting the grass to regrow. This would indicate that rotation grazing is extremely important in gaining the maximum benefits from buffelgrass.

Forage Production in the Texas Winter Garden Area

Victorgrain oats gave the highest yield of forage in tests at the Texas Agricultural Experiment Substation at Winter Haven, Texas, in the 1952-53 season. Yields from the New Nortex variety of oats and Abruzzi rye were only slightly lower than that of Victorgrain oats.

In the tests carried on by the substation, 10 varieties of small grains were planted, consisting of the three mentioned above, Arkwin oats, Selection 37 oats, Southland oats, Mustang oats, Goliad barley, Seabreeze wheat, and Wimmera rye grass. Total forage production from each of the three high-yielding varieties was about 5 tons of air-dried forage per acre; yields of other varieties ranged from 3 to 4½ tons.

Tests of seeding rates of Mustang oats, varying from 1½ to 3 bushels per acre, showed no significant difference in forage yields due to variations in seeding rates.

A third check was made on the effect of fertilization on forage yields of small grains, and it was found that 120 pounds of nitrogen per acre gave the highest yield of forage. The use of phosphate and potash, either alone or in combination with nitrogen, did not give significant increases in yields.

New Clover Shows Great Promise

A new clover, called Floranna, has given unusually good results in southeast Texas counties. The new clover, developed by the Florida Experiment Station as a selection from Hubam clover, was tested in Calhoun County, Texas, in 1953.

In field tests of some 30 different varieties of legumes and small grains seeded in rice stubble, Floranna germinated earlier, grew faster, and matured 2 weeks or more earlier than Hubam clover. A Calhoun County farmer's crop of Floranna was ready for harvest of seed on April 27 — more than a month ahead of Hubam. Late plantings of Floranna also made excellent growth.

Farmers interested in seed of this new variety should contact C. L. Cook, Calhoun

County Agricultural Agent, Port Lavaca, Texas, for further information.

Small Grain Varieties for Northcentral Texas

Small grains are among the more important cash and feed crops grown on many farms of Texas, and the use of improved varieties is one of the first steps toward efficient and profitable production of these grains.

The Texas Agricultural Experiment Substations at Denton, Greenville, and Stephenville, Texas, have carried out extensive tests with all varieties. The following recommendations are made for the 1954 planting season.

Wheat

Recommended varieties are Quanah for hard red winter wheat and Frisco for soft red winter wheat. Acceptable varieties, which will produce satisfactorily but are not as good as the recommended varieties, are Comanche, Ponca, Triumph, and Wichita for hard red winter wheat and Red May and Mediterranean for soft red winter wheat. The recommended seeding rate is 60 to 75 pounds per acre; October 15 is the recommended seeding date in northcentral Texas.

Oats

Recommended varieties for fall seeding are Mustang and for spring seeding, Alamo. Acceptable varieties are New Nortex, Ferguson 922, and Nortex 107 for fall seeding and Fultex, Mustang, New Nortex, and Ferguson 922 for spring seeding. The recommended seeding rate for oats is 2½ bushels per acre for fall seedings and 3 bushels per acre for spring seedings. The recommended seeding date for fall is October 15 and for spring, January 15.

Barley

Recommended varieties are Cordova and Harbine for fall seedings and Cordova and Texan for spring crops. Acceptable varieties for fall seedings are Texan, Wintex, and Tenkow. The recommended seeding rate for barley is 60 pounds per acre in the fall and 72 pounds per acre for spring-planted fields. The recommended seeding dates in northcentral Texas are October 15 and January 1.

All planting seed of small grains should be cleaned and then treated with an improved fungicide, such as Ceresan M, to control surface-borne smut organisms and to reduce losses from seedling rots and from blight on oats.

Small grains are an excellent source of high-protein, succulent forage during the fall and winter months if adequate moisture is received for growth. With proper management, pasturing will not reduce the yield of grain.

It generally is recommended that livestock be removed from the fields during wet weather to avoid damage to the stands. They also should be removed before the plants begin to joint in the spring. In the Denton area, this usually is about February 15 for barley and March 1 for wheat and oats. Barley produces the earliest fall grazing.

Fertilizing with nitrogen and phosphate at recommended rates usually will result in increased production of both forage and grain.

Stockmen are advised to be on the lookout for screwworms and to treat all livestock wounds to prevent worm infestation. EQ-335 smear is effective if applied at 1-week intervals following injury.

Use of chemicals without sanitation is an ineffective way to control flies. A cleanup campaign, together with proper chemicals, can do the job.

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