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THE USE OF COVER AND GREEN MANURE CROPS

The accumulation of decayed plant and animal matter in the soil, known as soil organic matter or humus, has long been recognized as an effective agent in the nourishment of plants and as one of the Nation's most important natural resources. This resource has been rapidly depleted, however, by the removal of native vegetation and the use of land for cultivated crops. The removal of the native vegetation, which acted as a cover for the soil, exposed the land to winds and beating rains, and, as a result, a large part of the top soil, containing most of the accumulated supply of organic matter, has been lost through erosion. Replacement of organic matter has been prevented by clean cultivation and the removal of crops from much of the farm land. As the supply of organic matter has been reduced, the structure of the soil has been destroyed, and the soil particles have tended to run together and become packed. Soil drainage and the circulation of air have been impaired, and the amount of run-off increased. The activity of many small organisms necessary to the replenishment of the soil has been retarded, and the formation of new soils through the decomposition of the parent rock material has been slowed.

The reduction in the amount of soil organic matter and the losses in soil fertility represent a cost to farmers, even though it is a cost which, by not having to be covered each year, may not be immediately apparent. Where the fertility of the land is so low that the annual changes in its productivity are immediately reflected in crop yields, the cost is recognized at once; but in areas of high fertility, annual losses may not be immediate-

ly reflected in lower crop yields. However, even in those fertile areas, the first stages of erosion represent a cost which must ultimately be covered unless the erosion is checked before it affects the crop yield. Reduction in organic matter in the earlier stages of erosion paves the way for acceleration in the rate of loss, so that it is worth while to take preventive or ameliorative measures as soon as possible.

It may be impossible to replace fully organic matter already removed from the soil as long as the growing of row crops is continued. However, the supply can be increased substantially by the use of cover and green manure crops, which will not only prevent further deterioration, but even improve the productivity of the land. The use of cover crops will protect the soil from the impact of rain and reduce the amount of run-off. Moreover, a leguminous plant used as a cover crop will increase the nitrogen content of the soil. Turning under the cover crop will add organic matter to the soil and improve its structure. The land will become easier to cultivate, the absorptive and water-holding capacity of the soil will be increased, and the circulation of air and water improved.

Either legumes or non-legumes can be used as cover and green manure crops. The chief difference between them is that legumes add both organic matter and nitrogen to the soil, while non-legumes add only organic matter. From the standpoint of maintaining organic matter in the soil, such non-leguminous crops as rye or sorghums may be most efficient, but the bacteria responsible for the decay of these crops when they are turned under must have access to nitrogen if they are to perform their proper function. If the nitrogen carried in the green manure crop is not sufficient, the bacteria will be forced to draw upon the

available nitrogen already in the soil and may so deplete the supply as to ruin the following crop. On the other hand, a legume crop, such as clover, vetch, cowpeas, or soybeans, has the ability to take nitrogen from the air and store it in the plant, and thus, when turned under, it carries more than enough nitrogen for its decay. As the plant decays, the excess nitrogen is changed by soil bacteria to ammonia and finally to a soluble nitrate form that will be available to subsequent crops grown on the land.

Both spring- and fall-planted cover crops are used extensively, but the planting of cover crops during the fall months is usually preferable since this protects the land during the winter season when the soil is generally exposed and when erosion and leaching are most extensive. Planting in the fall will also make it possible to include a cover and green manure crop in the rotation system of many farms without sacrificing a cash crop. The United States Department of Agriculture and the Texas Experiment Stations have recommended several leguminous crops that may be planted in the fall, between September 15 and November 1, and will furnish excellent winter cover. When turned under in the spring or summer, these crops will increase the productiveness of the land and replace some of the organic matter lost each year through erosion and leaching or used up in the production of other crops. In east Texas, first choice is given to hairy vetch, with Austrian winter peas recommended for use on loam soils. Annual yellow sweet clover and Hubam clover are recommended for most of southeast Texas except on very sandy soils, where vetch is preferable. In central and south Texas, Hubam clover and annual yellow sweet clover are recommended for fall planting. Hairy vetch is recommended for the Cross Timbers section. In central west and northwest Texas, hairy vetch may be planted between August 15 and November 1, and alfalfa may be sown in either spring or fall. Biennial sweet clover, however, is the only legume suitable to this entire area, and it is recommended that it be planted between March 1 and May 1. Many other legumes are

adapted to different parts of the Southwest, and still others are in the trial stage. Farmers may obtain detailed information regarding any of these crops from their local county extension agent or from the nearest agricultural experiment station.

It has been found that best results are achieved on most soils if fertilizer is applied to the land to be planted in cover crops. For most soils in the Southwest region, it is recommended that 150 to 200 pounds of 20 per cent superphosphate be applied per acre. On lighter, sandy land, however, it is recommended that 200 to 300 pounds of 0-14-7 fertilizer be used. It is also advisable to inoculate all legume seed before planting, whether or not legumes previously have been grown on the land, as this will assure an adequate supply of the nitrogen-fixing bacteria necessary for the proper functioning of the crop. This practice is inexpensive and will result in a better growth of plants and the addition of a greater amount of nitrogen to the soil. At least two weeks should elapse between the turning under of a cover crop and the planting of the succeeding crop in order that newly-planted seeds or young plants may not be injured by the decay of the green manure crop.

FARM POPULATION INCREASES

The trend in the farm population of the United States turned upward during 1945 for the first time since 1932. Recently released estimates of the United States Department of Agriculture reveal that the Nation's farm population totaled 25,990,000 at the beginning of 1946, or more than three per cent above the population of the preceding year. In the West South Central region, which is comprised of Arkansas, Louisiana, Oklahoma, and Texas, the farm population also increased about three per cent during 1945. This compares with a maximum increase of seven per cent in the Pacific region and a minimum of two per cent in the West North Central and the South Atlantic regions.

Returning servicemen accounted for over one-half of the increase in population, while the remainder was due to the customary nat-

ural increase arising from the excess of births over deaths among the farm population. The migration of civilian population from farms in 1945 was completely offset by migration to farms. In the Nation as a whole, 264,000 more people moved to farms than during the previous year, and 212,000 fewer migrated from farms. This balancing of migration is in marked contrast with the condition existing between 1920 and 1945, when migration from farms resulted in an average annual net decline of about 600,000 in the farm population.

FARM PRICES

New Price Regulations

Under the Price Control Extension Act, some farm products previously controlled were left free, while others have been returned to price control at or above June price levels. Products for which the supply at any time is considered sufficient to meet the demand at "reasonable" prices have been or may be decontrolled. The prices of certain products of minor importance in the cost of living may not be put under control even though supply may be short and prices high.

Dairy products, poultry, eggs, and such grains as wheat, rye, corn, oats, barley, and sorghums, or any livestock or poultry feed containing only these grains will remain free of price controls unless supplies become short and prices rise unreasonably above June 30 ceilings plus subsidies in effect at that time.

The Department of Agriculture has estimated that "the second quarter of 1947 is likely to be a critical one as far as meat production is concerned." The hog-corn ratio has been such as to make it doubtful that pork production would be increased without an increase in hog prices. The present shortage of beef, it is said, is likely to become most critical during the first part of 1947; consequently, ceiling prices of beef cattle have been raised to \$20.25, Chicago basis, or 12.5 per cent above previous ceilings, in an effort to insure that more cattle will be moved to feeder lots now and held for the market next year. Ceilings on hogs also have been increased to \$16.25 per hundredweight, or 9.4 per cent above the June 30 price. Lamb ceilings were

raised on an average of about \$2.85 per hundredweight.

Because there is still a critical shortage of fats and oils, price controls have been re-established on flaxseed, soybeans, and cottonseed, and any foods or feeds derived from them or containing byproducts of them, since their prices, in the opinion of the Decontrol Board, have risen "unreasonably."

COMMODITY NOTES

Acreage of Hybrid Corn Continues to Increase

A recent report released by the United States Department of Agriculture indicates a significant increase in the acreage of hybrid corn in the Southwest in 1946. The total hybrid acreage in the five Southwestern states of Texas, Oklahoma, Louisiana, New Mexico, and Arizona was estimated at about 1,246,000 acres, compared with 814,000 acres in 1945. In spite of this sizeable increase of over 50 per cent, however, the proportion of the total corn acreage planted with hybrid seed in this area continues small. Hybrids accounted for only about 18 per cent of the total corn acreage in these states in 1946, compared with 68 per cent for the United States and 99 to 100 per cent in several Corn Belt states. Farmers using this type of improved corn have achieved yields at least 20 per cent above the average derived from open-pollinated types. In the Southwest, where only a small acreage of hybrid type is planted, the average yield of corn per acre ranges from 11 bushels in Arizona to 16 bushels in Texas and Oklahoma, while in the North Central states, where about 90 per cent of all corn land is planted with hybrid seed, average yields range from 40 to 50 bushels per acre.

Cotton Crop Insurance Program for 1947

The new program for cotton crop insurance, approved by the Acting Secretary of Agriculture last month, makes it possible for cotton growers to insure their crops against many of the risks involved in cotton production during 1947 and succeeding years. The amount of insurance per acre of cotton can not exceed 75 per cent of the average yield of lint for the farm. Premiums are paid by

notes which are redeemable in cotton or cash, or both.

The insurance contract covers such loss in yield of lint cotton (and cotton-seed production, if insured) resulting from damage due to climate, insects, disease, or other conditions as may be determined by the Board of Directors of the Federal Crop Insurance Corporation. Loss of irrigated cotton due to failure of the water supply which could not have been prevented by the insured is also covered.

Government Wool Buying Program Extended

The Government has extended its program of buying wool until April 15, 1947. Prices will continue at present levels, or about 42 cents a pound, nationally. This extension was considered necessary in order to provide an incentive for domestic wool growers to maintain the present production level of wool, lamb, and mutton, to facilitate transition of domestic wool production to a peacetime basis, and to provide domestic growers with protection against foreign competition. The Commodity Credit Corporation will administer the program, using normal trade channels in purchasing, selling, and handling the wool.

TECHNOLOGICAL DEVELOP- MENTS

New Insecticides Developed

A new chemical, known as Hexaethyl Tetraphosphate, will kill many garden and orchard insects immune to DDT, such as aphids and mites. DDT has worked to the advantage of these insects by destroying their natural insect enemies, thus making their control more difficult. This new chemical destroys mites and aphids on contact, and thus it is not necessary for them to swallow the material. A further advantage of this new chemical is that it will decompose within a matter of days after application and does not have to be washed off food products before marketing.

Another new insecticide, a chlorinated hydrocarbon referred to as "1068", is reported to be effective in combatting aphids, Colo-

rado potato beetles, squash bugs, mosquitoes, roaches, and grasshoppers. It may be formulated for use as an oil solution, an oil emulsion, a dust, or liquid.

A further development in this field appears in the form of a dust to combat plant disease and insects in one operation. A dust containing both DDT and a fixed copper fungicide for application to potatoes is now available through dealers.

ANNOUNCEMENTS

Texas State Fair

The Texas State Fair will be held in Dallas, October 5-20. There will be extensive exhibits of Texas agricultural products, as well as of products of canning, dehydration, and freezing, and the methods and machines for processing them.

New Publications

Austin Wheat, 1027 Progress Report, I. M. Atkins and E. S. McFadden, Texas Agricultural Experiment Station, College Station. This is a report on results of experiments undertaken to develop a rust-resisting wheat for Texas growers. Austin wheat is a new variety of soft, red winter wheat recently made available to growers in central and southern Texas. It resists rust and smut, but is not hardy enough to be grown in northern Texas.

Factors Influencing Cotton Harvesting Methods on the High Plains, 1029 Progress Report, D. L. Jones and H. D. Lynn, Texas Agricultural Experiment Station, College Station. This report discusses briefly certain factors influencing cotton harvesting that are peculiar to the High Plains region, and calls attention to recent developments that would help to speed up cotton harvesting in that area.

Chemical Defoliation of Cotton, Henry E. Dunlavy, I. M. Parrott, Merrill Gober, and Charles H. Brett, Oklahoma Agricultural Experiment Station, Oklahoma A. & M. College, Stillwater. This bulletin reports briefly the results of experiments in chemical defoliation tests conducted in 1945.

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