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RIGHT USE OF FERTILIZERS PAYS

The application of commercial fertilizers to field crops is increasing rapidly in the Southwest. Totalling hundreds of thousands of tons annually, these fertilizers range from compressed gases to liquids and dry granular products. They are applied to a wide range of crops grown on an equally wide range of soils and under varying climatic conditions. Experience has shown that use of these fertilizers may produce definitely harmful results or may be highly beneficial, depending on such factors as the composition of the fertilizer, climatic conditions, differences in type and condition of soils, and the placement of the fertilizer with respect to the seed and plants. This extreme variability in effectiveness, together with the increasing use of fertilizers, emphasizes the need for better understanding of their proper application.

While farmers generally agree that it is profitable to use fertilizers, and experimentation and practice support this position, there are still many problems associated with their application. One of the major problems is the selection of fertilizers that will be most suitable for a farmer's soils and will be most effective in production of his particular crops. A problem of equal importance, and one about which relatively little is known, is the correct placement of fertilizers to secure maximum benefits. Fertilizer placement studies are being carried on at experiment stations throughout the country, and each year the volume of available data increases. However, the magnitude of the fertilizer placement problem also increases each year, due to developments in agricultural science and technology and to changes in farm practices.

The farmer who wants to get the most from the use of fertilizers will want to find

out which fertilizers are needed in his soils. A good soil test is the best method for doing this, and such tests or analyses can be made by the agricultural experiment stations. Although soil tests may not indicate the exact needs of the soil, they do give a good estimate of the response a farmer can expect from different fertilizers. Soils in the Southwest are extremely variable, and most of them are deficient in some of the nutrient elements needed for good plant growth. The three most commonly lacking—nitrogen, phosphorus, and potassium—are the elements usually sold in commercial fertilizers.

If the soils of a farm are lacking in only one of the principal plant food elements, that one should be applied. Most soils, however, are deficient in more than one nutrient element, and many farmers have soils needing each of these elements and possibly others of less importance. It is well to recognize that a deficiency of any one of the fertilizer elements can limit crop yields. Just as the water level in a barrel will be no higher than the shortest stave, the yields of a crop will be no higher than the level permitted by the fertilizer element in shortest supply. They not only must be available but also must be in the proportion needed. It is important to consider, also, that too much as well as too little of one element can reduce the effectiveness of the fertilizer.

Crops differ greatly in their food requirements, and consideration of the crops to be grown must enter into a correct choice of fertilizers. For example, on most soils corn gives a better response to potassium fertilizers than do small grains or hays; legume crops do not require nitrogen fertilizers since they ob-

tain nitrogen from the air; small grains usually need both nitrogen and phosphate. Even on the same soil, therefore, different crops will respond in various ways to the same application of fertilizer.

A very important phase in the correct use of fertilizers is their placement with respect to the seed or plant. This subject has received considerable attention within recent months due to announcements regarding the use of radioactive isotope tracers to follow fertilizer elements through plants in order to determine the elements' best use as fertilizer. While it has been assumed generally that the placement of fertilizers anywhere within a few inches of the crop plants was all that was needed, more careful examination and study of this practice indicate that the farmer may increase his yields and income significantly by placing the fertilizers in a more beneficial location with respect to the crop grown.

In the January 1949 issue of *Iowa Farm Science*, L. B. Nelson points out that corn and oat crops in that State do better when the fertilizers are applied at planting time and are placed close to the seed. Fertilizing at planting time gets the plant off to a good start. It increases early growth, advances maturity, and may increase the final yield—in the case of corn, by as much as 7 to 10 bushels. Fertilizers applied to corn are much more effective when placed in the hill or row than when broadcast. Likewise, oat yields from plots where phosphate was drilled along with the seed were two to four bushels per acre higher than in similar fields where the fertilizer was broadcast.

The Iowa studies of fertilizer application have shown also that fertilizers placed at seed depth are considerably more effective than those placed several inches below the seed level. Seedlings of many field crops, such as corn, have small roots and do not benefit immediately from fertilizers placed at the lower depths. Furthermore, these roots tend to grow laterally when there is sufficient moisture in the soil, and deposits of fertilizer at lower depths may be a partial loss.

General recommendations for more efficient use of fertilizers are contained in a recent report entitled, "Methods of Applying Fertilizer," which was prepared by the National Joint Committee on Fertilizer Application. This report indicates, for example, that fertilizers under cotton should be applied simultaneously with planting of the seed and should be placed in narrow strips or bands approximately two and one-half inches to either one or both sides of the seed row and two to two and one-half inches below the seed level. Peanuts generally are best fertilized by supplying sufficient amounts of fertilizer to the preceding cash or cover crop to insure adequate residual fertility. Fertilizer applied for direct use of the peanut crop should be placed in a band two to three inches to each side of the row and two inches below seed level.

While the farmer can benefit from knowledge gained by experimental work in his own state and other states and by general recommendations made concerning methods of applying fertilizers, it is well that he recognize that soil, climatic, and other conditions on his own farm may be different from those under which the experiments were conducted. Therefore, he will want to do some experimenting of his own, while keeping up with the latest information on this general subject.

In conclusion, it should be emphasized that the farmer will get maximum returns from use of fertilizers only in a balanced system of farming; he must use them with the knowledge that many other practices are involved in producing high crop yields. Good crop rotations, control of weeds, proper tillage, and use of manure and other sources of organic matter are also important to high yields. Fertilizers are most effective only when these and other items are making their full contribution to fertility.

FARM MANAGEMENT

Certified Seed and Good Cultural Practices Recommended for Watermelon Production

Watermelon production can be more profitable if farmers use the best certified seed, grow varieties demanded by the consumer,

and follow recommended cultural practices, reports John A. Cox, Extension Horticulturist at Louisiana State University. Seed-borne diseases can be controlled by treatment of the seed with red copper oxide (cuprocide) before planting. This is done by placing the seed in a glass jar, adding one level tablespoonful of cuprocide for each pound of seed, and shaking the jar until the seed are well-coated with the chemical, after which the excess dust is screened off.

Watermelons should not be planted on wilt-infested soils; but if a farmer is forced to use this soil because of land shortage, he should use melon varieties which are wilt-resistant, such as the Black Lee, Kleckley Sweet No. 6, and Thurmond Gray. The most popular commercial variety of watermelon in Louisiana, says Mr. Cox, is the Black Diamond, which is known also as the Florida Giant and the Cannonball. The Black Diamond is a large, nearly round, dark green melon with meat that is bright red, crisp, and sweet and with black seed. It produces high yields and is a good shipper because of its tough rind.

Mechanization of Texas Agriculture Moves Forward Rapidly

Texas farmers are making long strides toward complete mechanization of crop production, according to H. P. Smith, Agricultural Engineer of the Texas Agricultural Experiment Station. Information obtained in a recent survey of power used on Texas farms indicates that horses or mules are not used in crop production in about 40 Texas counties. With the exception of some hand-hoeing and hand-harvesting of cotton, crop production in these counties is completely mechanized. Thirty counties use less than 25 horses or mules, while in another 35 counties less than 100 horses or mules are used in crop production.

Tractor power is used almost exclusively in the production of all crops in a block of 77 northwest Texas counties. It is reported that a few farmers in those counties still keep a team or two for odd jobs about the farm or for hauling feed. The survey shows that east

Texas farmers still use considerable animal power. This is due partly to the type of farming and the fact that farms generally are small units. East Texas farmers are reported to use horses and mules ranging in number from a few hundred per county to more than 6,000.

Control Measure Recommended for Pecan Tree Scale

A small, ashy gray insect is causing serious damage to pecan trees in the Southwest and may keep the farmer from harvesting pecans next fall, says Allen C. Gunter, Associate Extension Entomologist of Texas A. & M. College. The small insect, which is covered with a circular waxy scale, is found on the bark but cannot be seen moving over the tree. It feeds on the sap of the tree by injecting a small, needle-like beak through the bark. The scale does not bother the leaves or the pecans, but often a large limb or a whole tree may be killed by this pest.

Control of the scale is difficult, says Mr. Gunter, because it is so well-protected. The best control method is to spray the trees thoroughly during the winter or dormant season with a 3 percent dormant oil. Growers are cautioned not to use the oil spray if there are leaves on the trees.

Improved Practices Give Increased Peach Production

A farmer who plans to set a peach orchard this spring or to increase the size of his present orchard should consider soil type, orchard location, and use of adapted varieties, advises D. H. Spurlock, Louisiana Extension Assistant Horticulturist. Select a sandy or sandy loam soil with a porous clay subsoil, because good drainage and aeration are absolutely necessary, says Mr. Spurlock. Peaches will not grow well on soils where water stands or on soils that stay damp and cold over long periods of time. A hillside with suitable soil is the ideal place for a peach orchard, as it helps provide good water and air drainage. Fruit trees on a northern slope are less likely to bud before the late spring freezes, and there will be less tree crotch injury resulting from sud-

den drops in temperature during the winter months.

Land that has been in cultivation for at least three or four years is preferable, as peach trees may suffer from root decay and termite damage if planted on new land. The soil should be well prepared before planting, and enough terraces of medium height should be built to protect against erosion. Mr. Spurlock advises farmers to cultivate and break the land for planting a summer cover crop if they expect to plant trees next winter and suggests *crotalaria spectabilis* as a cover crop.

Cotton Growers Advised to Plant Good-Quality Seed

Cotton growers can produce more and higher quality cotton by planting seed not more than one or two years removed from the breeder, says the Louisiana Agricultural Extension Division. It has been found in Experiment Station studies that seed more than two years removed from the breeder generally will be inferior because of the mixing of seed at the gin and because of cross-pollination by insects in the field. On the other hand, tests at the Northeast Louisiana Station in 1948 indicate that it is not absolutely necessary to plant first-year seed to get the highest yield. In fact, these tests show a slight difference in favor of second-year seed.

Although planting certified seed is advisable, seed with just as much purity often can be bought from a neighbor or from a one-variety community, if the seed has been produced under appropriate field conditions and handled properly at the gin. If farmers buy such seed, they are advised to determine the germination of the seed first. Since the 1948 season was favorable to seed production, high-quality and high-germination seed should be more plentiful this year, says the Extension Division.

FARM PRICES

Support Programs for Butterfat and Hogs Announced

The Department of Agriculture announced recently a program to support the price of

butterfat at a national average of 90 percent of parity during 1949. The support operations will be carried out through offers by the Department to purchase wholesale butter, when necessary. In carrying out any necessary support operations during the year, the Department will offer to buy in any area butter of U. S. Grade A or higher at 59 cents per pound for delivery before September 1 and at 62 cents for delivery on and after September 1. The Department's purchase prices for U. S. Grade B butter will be 2 cents lower in each period.

The Department of Agriculture, in a step to assure a more stable meat supply next fall and winter, has announced that hog prices will be supported at 90 percent of parity through March 1950, the end of the marketing season for 1949 spring pigs. Specific price supports with the usual seasonal variations will be announced next fall and will be based on the September 15, 1949, parity price.

FARM INCOME

Net Farm Income Lower in 1948

Farm operators in the United States in 1948 realized net incomes tentatively estimated by the United States Department of Agriculture at \$17,400,000,000. The decline from \$17,800,000,000 in 1947 was more than 2 percent and was the first drop in 10 years. Realized net income of farm operators includes the value of crops and livestock sold, placed under government loan, or used in the farm home during the year, plus government payments to farmers and the rental value of farm dwellings and minus production expenses. It does not include the value of net changes in farm inventories of crops and livestock. Cash receipts and gross farm income increased more than 2 percent in 1948, reaching a new record high, but production expenses increased almost 8 percent. Cash farm receipts in the five states of the Eleventh Federal Reserve District were 4 percent larger in 1948 than in 1947.