

# FARM AND RANCH BULLETIN

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## UTILIZATION RESEARCH IN AGRICULTURE

In agriculture the search for new and expanded uses for farm raw materials is known as utilization research. According to W. D. Maclay, Assistant Administrator of the Agricultural Research Service of the U. S. Department of Agriculture, utilization research is to the farmer what industrial research is to industry. Utilization research is aimed at expanding markets for farm commodities through the development of new and improved products for food and industrial uses — that is, providing consumers with products of better quality and greater variety, in more convenient forms, and at lower cost.

The specialist points out that utilization research is an effective instrument in helping to balance output with economic use of agricultural commodities. Moreover, it contributes to better, more stable farm income and more efficient use of our agricultural resources.

Mr. Maclay says that the ceaseless competition for the consumer's dollar motivates research to develop new or better products, whether they are derived from petroleum; coal, air, and water; or forest and farm commodities. Agricultural utilization research in textiles, as well as in other uses generally called "industrial" (fuels, fibers, plastics, lubricants, adhesives, and the like), is in direct competition with the tremendous research operations of the major corporations that create consumer goods from nonfarm commodities.

Agriculture does have allies, of course, in the research laboratories of companies that process

farm products. However, most industries do not feel obligated to risk their own resources in the search for ways to use more farm products as raw materials in their operations, according to Mr. Maclay. Examples cited are the textile, shoe, and detergent industries. If the consumer's criteria for preference are better met by products made from petroleum than from agricultural materials (such as cotton, wool, leather, starch, vegetable oils, or naval stores), industries will move away from farm products as their raw materials or lose their business to companies that do.

USDA utilization research is a function of the Agricultural Research Service. The work is carried out in 4 regional research laboratories, which are located in Albany, California; New Orleans, Louisiana; Peoria, Illinois; and Philadelphia, Pennsylvania; and in 10 smaller field stations. The total professional staff consists of about 1,000 persons. In addition, approximately \$2 million a year in foreign currencies, generated under the Public Law 480 program, is used to support more than 100 research projects in foreign countries to supplement the utilization research program in this country.

The whole spectrum of agricultural commodities is included in the program — cereals and forages; cotton, wool, and other fibers; fruits and vegetables; oilseeds; new and special plants; and poultry, dairy, and animal products. Currently, research effort is divided about equally between food and feed uses and industrial purposes. Approximately one-third of the research is basic in nature, and the goal of the

USDA is to increase this proportion to at least 50 percent within the next few years.

In some 20 years of operation, USDA utilization research and development have added over \$2.5 billion in new sales and additional value to farm commodities at a research cost of less than \$175 million, which is a benefit-to-cost ratio of nearly 15 to 1. Each succeeding year has yielded greater annual returns for the total research expenditure; during the past 5 years, the benefit-to-cost ratio has increased to a level of 25 to 1.

The ARS specialist says that ideal industrial outlets for farm commodities should (1) be new, (2) be noncompetitive with other agricultural products, (3) have an elastic demand, and (4) provide a profitable market for surplus agricultural products. Although not many developments can satisfy all of these demands, epoxidized oils (45 million pounds now used as plasticizers) come close to meeting the requirements.

Agricultural products as raw materials for industrial use are essentially carbohydrates, fats and oils, and proteins. According to Mr. Maclay, researchers must take advantage of the complex nature of agricultural products. It is difficult for these products to compete with fossil-based raw materials to produce many organics. For any particular use, three approaches are available: (1) Utilize the refined product as it is or in slightly modified form, (2) tailor-make a chemical derivative with desired properties, or (3) find the desired product as a constituent of a new plant or through plant breeding.

USDA scientists believe that some of the best opportunities for increased industrial use of agricultural products are found in paper and paper products, industrial chemicals, textiles, and fibers.

### Seasonal Changes in Cattle Prices

A knowledge of seasonal variation in cattle prices is one of the best tools the farmer or rancher can use in planning a profitable cattle operation, points out the Texas Agricultural Extension Service. The major reason for this seasonal price fluctuation is the change in the

number of cattle marketed during different periods of the year. Variations occur in the number of cattle marketed at different seasons because of weather conditions, breeding dates, range conditions, and production costs.

In Texas, as in most of the Nation, calves generally are dropped in the spring and are weaned and sold in the fall. Consequently, the lowest prices are received in the fall when marketings are greatest, and the highest prices occur in the spring when marketings are at their lowest levels. Prices for the higher grades of feeder cattle do not vary as much from season to season as do quotations for the lower grades. The demand for feeder animals remains strong throughout the year, while that for stockers to be placed on pastures and ranges is greater in the spring.

The slaughter calf trade — which is unique to Texas and a few other areas—has increased in importance. Today, more and more calves are being fed for slaughter; several years ago, such animals would have been sold mainly as grass-fat or well-finished weaned calves. The market for slaughter calves varies more than that for any other class of cattle.

### New Cotton Boll Separator

An experimental cotton boll separator attachment for cotton stripper-harvesters may lead to earlier harvesting and an improved cotton crop on the High Plains of Texas and Oklahoma, says Ivan W. Kirk, Engineer with the U. S. Department of Agriculture. The attachment effectively separates immature cotton bolls from mature bolls — a problem that complicates early harvesting.

Cotton harvesting on the High Plains is a nonselective process in which all bolls, regardless of maturity, are stripped from the plant at the same time. The crop usually is gathered after the first killing frost, but with the increased use of chemical defoliant, the trend is toward earlier harvesting, according to Mr. Kirk.

Cotton harvested before a killing frost is exposed to less weathering and, therefore, has a higher lint quality than that gathered after frost. Cotton harvested before frost, however,



contains many immature bolls that must be separated from the mature cotton before ginning.

During harvesting, the separator blows the light, fluffy mature cotton through a conveyor into a tractor-drawn wagon or a basket mounted on top of a tractor. The heavier immature bolls drop into a box and are later piled in the field to dry. Although it is of low quality, the lint from immature bolls can be sold after it has dried.

### Treated Pine Posts Best Buy



Properly treated pine posts are the landowner's best fencing buy, states Bill Smith, Forester with the Texas Agricultural Extension Service. These posts can substantially reduce fencing costs and offer the lowest cost per year of service life of any

wooden posts available.

Treated fence posts are extremely resistant to decay and are more resistant to grass fires than are other types of posts. According to Mr. Smith, posts that are commercially pressure-treated with pentachlorophenol creosote are the best buy.

Untreated posts of certain woods are also decay resistant. Cedar, mulberry, bois d'arc, and locust are naturally durable woods, but posts of these woods should contain at least two-thirds heartwood. The lighter-colored sapwood is not decay resistant and will not last as long as will the heartwood. Home-treated pine posts can be expected to last 25 years or longer if procedures developed by the Texas Forest Service are followed.

Additional information on treatment of pine posts is included in Texas Forest Service Circular No. 34, *The Preservative Treatment of Pine Fence Posts with Pentachlorophenol by the Cold-Soaking Method*. Copies of the circular may be obtained from local county agricultural agents or from the district headquarters of the Texas Forest Service.

### Report on Dual Grading

Dual grading of beef carcasses has been in effect since July 1, 1962, points out Ed Uvacek, Livestock Marketing Specialist with the Texas Agricultural Extension Service. The system is available to the packing industry on a trial basis. It provides separate grades for two of the major factors that determine the value of a beef carcass — the quality or palatability of the meat and the amount of trimmed retail cuts obtained from the carcass.

Approximately one-half of the beef which was commercially produced from July 1, 1962, to February 28, 1963, was federally graded, and 3 percent of this amount was graded under dual specifications. About 1 percent of the 10 billion pounds of beef produced in the United States during the period was dual-graded.

Approximately 96 percent of all the dual-graded beef was classified into U. S. Choice or Good grades, and nearly twice as much fell into the first grade as into the second. According to the specialist, the lower-quality grading carcasses tended to have higher yield grades. Since dual grading has been used very little, an accurate appraisal of the system cannot be made at this time.

### Farmers Use More Credit

The use of credit by the Nation's farmers and ranchers probably will continue to increase for several years, says John McHaney, Economist with the Texas Agricultural Extension Service. This outlook is based on trends toward the continued consolidation and enlargement of farms, further increases in capital investments, and higher prices for farm real estate and many production items.

Farm mortgages recorded in 48 states during 1962 amounted to \$3.5 billion, reflecting a 16-percent gain over the preceding year. The number of farm mortgages recorded advanced 2 percent, and the average amount per loan was 13 percent larger than in 1961.

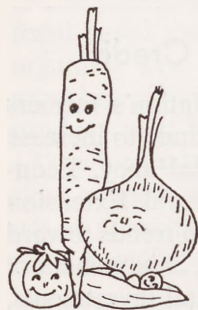
New technology and the price-cost squeeze are major factors that have increased the need for more credit, according to the economist. Funds generally are wanted for additional land,

livestock, or equipment; shifts from crop to livestock production; increased use of fertilizer and control of insects and weeds; and the modernization of facilities for efficient agricultural production. Mr. McHaney says that another reason for increased borrowing may be the reduced farm income and depleted financial reserves resulting from inefficient farm operation.

The price-cost squeeze, the trend toward larger farms, and the need for greater investment per farm likely will continue to create heavy demands for credit during the next few years, says the specialist. In addition, more and more small operators probably will seek off-farm employment to supplement their incomes.

A bright spot for borrowers is that land values have risen along with the farm debt, resulting in increased aggregate equities for farm operators. The value of farm real estate — which accounts for approximately two-thirds of the total assets of farmers and ranchers — was at a record level in mid-1962 in most states and is expected to continue to advance through 1963, according to Mr. McHaney.

### Where Do Texans Get Their Vegetables?



Approximately one-half of the vegetables consumed by Texans in 1959 came from out of the State, according to the Texas Agricultural Extension Service. Moreover, 71 percent of the wholesale purchases of vegetables in that year were from outside Texas. Vegetables grown in other states furnish part of Texas requirements, since the production of most vegetables in the State is seasonal.

A recent publication of the Texas Agricultural Experiment Station, *Sources of Vegetables Consumed in Texas*, contains charts and tables which show the 13 principal areas of vegetable production in Texas, together with the length of the production seasons for the major crops. From this information, vegetable growers can tell which crops are in limited

supply and when additional quantities are needed. Copies of the publication, MP-617, may be obtained from the Agricultural Information Office, College Station, Texas.

### Overhauling Tractor Governor Pays

Overhauling the governor on a tractor may save a farmer as much as \$48 a year, points out Henry O'Neal, Agricultural Engineer with the Texas Agricultural Extension Service.

A Kansas State University study of 50 farm tractors showed that 40 of the tractors had faulty governors and did not maintain proper engine speeds. Only one-fourth of these governors could be corrected by adjustment, while the remainder required complete overhauling.

When the tractor governors were in proper adjustment, the overall maximum horsepower of the tractors showed a 9.1-percent increase and fuel consumption decreased 4.8 percent. Thus, according to Mr. O'Neal, farmers who spend \$1,000 annually for tractor fuel can reduce their fuel expense \$48 a year on this one service item alone.

Proper engine speeds are essential for maximum tractor efficiency. Speeds higher than those recommended by the manufacturer can lead to overheating and tractor breakdown, while speeds less than those recommended cause loss of horsepower and result in poor performance. The tractor engine should be checked when it is under a full load, as well as without a load. Mr. O'Neal recommends having a qualified mechanic check the tractor with a dynamometer.

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Texas cotton growers used 6,777 spindle-type pickers and 37,540 stripper-type machines to harvest about three-fourths of the planted acreage in 1962. The increase in cotton acreage harvested by machines was substantial, according to Fred C. Elliott, Cotton Specialist with the Texas Agricultural Extension Service. Lateral oiling for grass and weed control was used on three times as many acres in 1962 as a year earlier. More than 44,000 growers were assisted in fitting cotton into a balanced farming program under the 7-Step Cotton Program.