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DO AGRICULTURAL PRICES AFFECT SUPPLIES?

Do supply and demand still affect agricultural prices?

Frederick V. Waugh, Director of the Agricultural Economics Division of the Agricultural Marketing Service, says that almost everyone accepts the law of demand — namely, that consumers will buy more at a lower price than at a higher price. Statisticians have measured the effect of prices on consumption and have been able to forecast rather accurately what would happen to consumption when prices change.

However, some people seem to doubt whether the law of supply still works in agriculture; and, until recently, statisticians had not found convincing evidence that it does. The law of supply tells us that farmers will produce more at high prices than at low prices. If both the law of supply and the law of demand still work, prices which are too high will lead to surpluses since they will restrict consumption and, at the same time, encourage production.

If the law of supply did not operate, farmers might be able to raise their incomes permanently by selling less at higher prices. However, as supplies decline and prices rise, in accordance with the law of supply, it generally becomes profitable to increase output in order to take advantage of the higher prices. Consequently, the larger supplies forthcoming as a result of favorable prices tend to lower prices, which, in turn, reduces the attractiveness of a further increase in output.

In the past, the law of demand has proved easier to study than the law of supply. In agriculture, considerable time often is required for a change in price to affect supply. For example, the output of cotton, apples, or milk cannot respond immediately to a change in price. Production takes time, and the farmer must estimate the price that he is likely to receive when his commodities are ready for market.

Today's price does not affect today's supply of farm products but may affect supplies next month, next year, or two or more years in the future. Other complications — such as drought and Government allotments and quotas — may develop during the time required for a change in price to affect output. Therefore, the extent to which a change in price affects the supply of any farm product is not easily determined.

According to Mr. Waugh, we are nearer than ever to an answer on the effect of changes in price on supplies. Skilled mathematicians, economists, and statisticians are using higher mathematics and the new electronic calculating machines to work on this problem.

These specialists are finding that the law of supply does still work in agriculture. Marc Nerlove, of the Agricultural Economics Division of the Agricultural Marketing Service, has already published studies on cotton, wheat, and corn. He and William Addison, also of the Agricultural Economics Division, are completing studies of approximately 20 vegetable crops. Without exception, they have found that (1) high prices of any of these commodities, if maintained over a long enough period, definitely will raise production and (2) low prices, if maintained over a long enough period, will

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reduce production. Additional studies on other crops, livestock, and livestock products will be made as rapidly as possible. The specialists have every reason to expect that the findings for these commodities will be similar.

The AMS studies do not conclude that price is the only factor affecting production. Farm output is also affected by weather, acreage allotments and marketing quotas, changes in technology, and several other things. The studies do show that price is a powerful factor. For example, an attractive price maintained over several years may defeat attempts to control production; an unprofitable price, in time, will reduce outturn.

The studies also make highly questionable the statement sometimes heard that farmers tend to increase output in periods of declining incomes. Doubtless, there are times when some farmers increase output to offset a decline in price. However, the average farmer usually tries to produce the commodities he thinks will be most profitable, and the producer is interested in expanding output only if the expected price is high enough to cover expected costs and to provide a profit.

Mr. Waugh says that one of the major difficulties in analyzing changes in supply in response to changes in price is the problem of finding out what price the farmer expects to receive for his future production. The statistician must use one of two methods: He can survey farm opinion, or he can try to determine what prices farmers expect by studying their reactions to past prices. The AMS specialists are obtaining good results by using the second method, which assumes that farmers' expectations are based largely on actual prices in the past.

The new methods of studying the effect of prices on supply also have proved useful in studying demand. A change in price may affect consumption both in the short run and in the long run. The immediate effect often may be slight; but, over a long period, a high price may cause consumers to substitute commodities, or a low price may result in the development of new and larger markets.

New Systemic Insecticide Controls Cattle Grubs

A new systemic insecticide for controlling cattle grubs — the cause of heavy annual losses to livestock producers — has shown promise and versatility in experimental use by entomologists at the United States Department of Agriculture.

The chemical, an organophosphorous compound, can be administered either orally or as a spray. Used orally, at the highest test dosage, the insecticide provided 94- to 100-percent control; as a spray, it gave 99- to 100-percent control.

Experimental treatments were most effective when the dosage administered in bolus or capsule form amounted to 20 or 25 milligrams of the new chemical to each kilogram (about 2.2 pounds) of body weight of the test animals. Fair results were obtained when oral dosages of only 4 to 15 milligrams per kilogram of body weight were given.

Almost perfect control of cattle grubs was obtained when 4 quarts of spray were used per animal, while a 2-quart application provided about 70- to 80-percent control. The spray formulation included a wettable powder containing 0.75 percent active material. Sprays were applied under an operating pressure of 250 to 300 pounds.

Good Brooder Management Essential

The first week after hatching is the most critical period in a chick's life. Since dead chicks return no profit, every effort should be made to provide as nearly ideal conditions in the brooder as possible, says Ben Wormeli, Extension Poultry Husbandman at the Texas Agricultural Extension Service.

High-quality chicks should be purchased from a reputable hatchery, and the brooder should already be set up and regulated when they arrive. The brooder, all watering and feeding utensils, and the inside walls of the house should be cleaned and scrubbed with a solution which will kill external parasites. The thermostat on the brooder should be cleaned

and adjusted so that it will operate within a 3° to 5° range. About 10 square inches of floor space per chick should be allowed under the hover, and the temperature should be set according to the recommendations of the brooder manufacturer.

Feed and water should be easily accessible to the chicks. One inch of feeder space per chick and a broad-base watering fountain for each 100 chicks are sufficient. The lip of the feeders should not be more than 2 inches above the floor, and the feeders should be kept full for the first week or so, in order that the chicks can eat easily.

A draft guard around the brooder will lower fuel costs and prevent chicks from wandering away from the hover. The guard should be 1 foot to 1½ feet high and should be located about 4 feet from the brooder.

Litter should be about 3 inches deep and should be kept free of dust and mold. Wood shavings, peanut hulls, ground corn cobs, and cane hay are commonly used for litter.

Mr. Wormeli points out that observance of the above rules can mean higher chick livability and more profit in the long run.

"Space" Insects Aid Scientists

Insects sent into the stratosphere on Navy balloons are helping scientists at the United States Department of Agriculture to find answers to some of the space-flight questions brought about by recent advances in rocketry.

Because of their small size and light weight, insects are useful for experiments to test survival of organisms in outer space. Many thousands of insects and spores can be included in a single 1-pound package. Moreover, insects can stand tremendous decompression, and their chances of survival at extreme altitudes are far greater than those of higher animals.

Since most species of insects produce several generations each year, the effects of space travel on genetics can be determined. Entomologists at the USDA's Agricultural Research Center test the insects returning from the balloon flights for mortality, sterility, and genetic mutations.

Orientation Planting for Corn

Test plots of corn planted with oriented kernels outyielded plots seeded in the usual manner by 3 to 23 bushels per acre, report agronomists with the United States Department of Agriculture and the Illinois Agricultural Experiment Station. (Orientation planting means seeding the corn kernels with their points down and flat sides parallel with the row.)

In the natural growth pattern of corn, the first two leaves appear at right angles to the flat side of the kernel, and the other leaves occur slightly counterclockwise to the original pair. Orientation-planted corn produces leaves which spread across the row, so that up to 90 percent less sunshine strikes the ground. The leaves are less likely to shade one another, and each plant receives more sunshine. The ground is much better shaded, resulting in less evaporation of moisture. The results are higher per acre yields of corn.

Since the tests were for only a 1-year period, additional experiments will be necessary before the crop scientists recommend that corn farmers try orientation planting. Moreover, a method of mechanical orientation will have to be developed.

Texas-Grown Grains

A study recently completed by the Texas Agricultural Experiment Station provides information on seven major grains produced in the State.

In reporting on the study, Clarence Moore, of the Department of Agricultural Economics of Texas A. & M., says that the average yield per acre of grain sorghums during 1953-57 was almost double that in 1935-39. Although annual variations were large, yields showed a rising trend over the 23-year period (1935-57). The higher yields resulted from the use of improved sorghum varieties, increased use of irrigation, more widespread planting of superior hybrids, better cultural practices, and wiser use of fertilizer. In addition, acreages diverted from cotton and corn to sorghums in the past few years may have been more productive.

The study reveals that the average acreage and production of corn during 1953-57 were only about one-half the 1935-39 levels. Corn declined from 52 percent of the State's total feed grain output during 1935-39 to 16 percent in 1955-57, while grain sorghums rose from 20 percent to over 70 percent. Mr. Moore attributes this change to the lower production costs of the sorghums.

Since 1950, the relative importance of wheat has decreased, while that of rice has increased. This change has been due mainly to the more favorable market for rice since World War II; at the same time, there has been a surplus of wheat.

"Heavy" Eater

The United States Department of Agriculture says that this is the story of a bull that acquired hardware disease with a vengeance.

The Vermont Extension Service recently reported that, when slaughtered, the animal was found to have the following items in its stomach: a set of gold bridgework, half an inner tube, two plastic bags, nine pennies, a rubber doll, a toy wrist watch, a fishing spinner, five clothespins, six can lids, a 4-inch stack of bobby pins, 24 bottle caps, two earrings, two hypodermic needles, some small arms cartridge casings, two men's rubber heels, five coffee can bands, one keychain, a broken pop bottle, some safety pins, a gold watch band, and 16 nails.

Paint for Safety

Specialists at the Louisiana Agricultural Extension Service say that paint can make the farm a safer place on which to live and work. Bright colors, such as red and yellow, can be used for caution signs around the farm. Black and yellow stripes often are used as a sign of danger; paint them wherever caution is needed. Strips of paint on power equipment, such as the handle of a portable grinder or the shield of a power saw, will remind the farmer to be careful when using the equipment.

Boosting Cotton Yields in the El Paso Valley

Increasing irrigation water from 34 inches to 52 inches resulted in highly significant gains in cotton yields in the El Paso Valley during 1957-58, according to D. E. Longenecker and P. J. Lyerly, Associate Agronomist and Superintendent, respectively, at the El Paso Valley Experiment Station at Ysleta, Texas.

In tests on sandy loam during 1957, additional water alone increased seed cotton yields 500 pounds per acre. During 1958, yields on clay loam soil were raised 900 to 1,000 pounds per acre by seven additional summer irrigations.

The combined effect of additional water and heavy fertilization boosted seed cotton yields on sandy loam 1,000 to 1,200 pounds per acre. On the more fertile clay loam, additional water was more effective than fertilizer in raising yields.

With more frequent irrigation, cotton yields were increased by phosphate additions to the sandy loam soil, especially at the higher nitrogen levels. No gains were obtained from the addition of phosphate to the clay loam soil, indicating that sufficient available phosphate was present in the soil.

Temperature Affects Sheep Breeding

The reproductive performance of sheep in a late-spring breeding program can be improved by "cooling" the rams and by shearing the ewes later than usual, according to trials at the Oklahoma Agricultural Experiment Station.

During a 3-year test period, rams which were maintained in a room where the daytime temperature did not exceed 85° Fahrenheit produced 15 to 20 percent more lambs than did similar rams kept in a stall where the temperature reached as high as 97° Fahrenheit. Ewes shorn about 10 days prior to the breeding season produced 15 percent more lambs than did ewes shorn 5 to 6 weeks earlier.

The FARM AND RANCH BULLETIN is prepared in the Research Department under the direction of J. Z. Rowe, Agricultural Economist.