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ADJUSTING TO A CHANGING WATER SUPPLY — TEXAS HIGH PLAINS

Declining water levels are a cause of growing concern among farming, business, and financial interests on the Texas High Plains, according to the Texas Agricultural Experiment Station. The decline, which began shortly after irrigation was developed on a significant scale, was accelerated by increased rates of water use and expanded irrigation development during the 1950-56 drought period. The decrease continued, although at a reduced rate in most places, under the improved moisture conditions of 1957-58.

The Texas Agricultural Experiment Station has made a study of an area in the Texas High Plains designated by the State Board of Water Engineers as Subdivision No. 1 of the High Plains Underground Water Reservoir. The purpose of the study was to determine the effects of the decline in water levels and the adjustments that have been made in response to the change in water supplies.

The decline in the static water levels in the area averaged about 43 feet between January 1937 and January 1959, ranging from a few feet to around 100 feet in different parts of the reservoir. The effects of this decline and the number, types, and extent of adjustments vary greatly, depending on major soil types, initial thickness of the water-bearing stratum, the permeability of water-bearing materials, and the proportional amount of depletion experienced in specific hydrologic situations.

The principal short-run physical effects of a decline in water levels are reflected by a reduction in well yields. Special practices or adjustments induced by, or associated with, the decrease in water supplies include: (1) increasing the number of hours of pump operation, (2) lowering pumps, (3) drilling additional wells, (4) putting in closed water-distribution systems, (5) installing smaller pumps in old wells, (6) decreasing the acreage of summer-irrigated crops and increasing the acreage of crops irrigated in the fall and winter, (7) staggering planting dates for grain sorghums, (8) concentrating the available water supply on cotton, (9) irrigating alternate rows, and (10) reducing the number of acres of cropland irrigated per farm.

According to the Texas Agricultural Experiment Station, several factors combine to obscure the full physical and economic effects of the water-level decline. Among these are the continuation — although at a slower rate — of irrigation development, elimination or reduction of transmission losses through the use of a closed distribution system, modified irrigation programs, and the change from butane to natural gas for pumping fuel.

Elimination or reduction of transmission losses, particularly, has had a masking effect. In some instances, piping the water to the place of use may have saved a substantial amount. Thus, although a well's yield may have deteriorated substantially, the acreage served by the well might be about the same as that served before the conduits were installed.

Closed distribution systems — composed mainly of underground concrete tile — served

FEDERAL RESERVE BANK OF DALLAS
DALLAS, TEXAS

approximately 40 percent of the land irrigated in the Texas High Plains in 1958. About 80 percent of the systems used that year had been installed during 1954-58. The proportion of farms equipped with these systems ranged from 16 percent in areas where water supplies were lightly depleted to 100 percent in some of the more severely depleted areas.

Since the full effects of past water-level declines have been offset, to some extent, by the elimination or reduction of transmission losses, future declines are likely to result in a larger reduction in irrigated acreage and a greater increase in costs than those which occurred during 1954-58. The effects of adjusting to declining water supplies are reflected in increased per acre investment in irrigation facilities, higher operating costs per acre, and a reduction in the acreage of cropland irrigated per farm.

Livestock and Meat Imports Down

United States imports of livestock and meat during 1960 were equal to 6.5 percent of the total domestic production, contrasted with 8.6 percent in each of the preceding 2 years, according to Lloyd Bergsma, formerly with the Texas Agricultural Extension Service.

Imports of beef and veal declined 23 percent during 1960, and those of live animals decreased 5 percent to a total of 664,000 head. As a result of lower cattle prices, the reduction in import value was substantially greater than the reduction in import numbers.

The value of cattle imported during 1960 was 50 percent below the all-time high reached in 1958. The value of meat and other livestock products imported amounted to $464 million, reflecting a 16-percent decline from the 1959 total. Most of the imports of cattle and meat were from Mexico, Canada, New Zealand, and Australia.

Expanded Market for Processed Food

Expenditures for employee food services at factories are likely to increase, reports the United States Department of Agriculture. During a recent 4-week survey period, such expenditures were at a $20 million level.

To a large extent, the increase in expenditures for employee food services probably will accompany the construction of new plants and the expansion of old ones. The USDA study shows that food service for employees is provided more frequently in new plants than in older ones.

Nearly all of the $20 million spent during the 4-week period was for foods that had been processed in some manner. However, about one-half of the expenditures were for foods with only a limited amount of processing. The more highly processed foods ranged from canned goods to foods brought to the plants ready to eat.

Belle Patna Rice Released

Seed of Belle Patna, a new early-maturing long-grain rice variety, was released recently to certified rice seed growers, according to the United States Department of Agriculture.

In tests by both agricultural experiment stations and industry, Belle Patna exhibited high processing and cooking qualities. In a 3-year test, rough rice yields from the first harvest of Belle Patna averaged 3,521 pounds per acre. In the same test, Century Patna 231 averaged 3,849 pounds and Bluebonnet 50 produced 3,555 pounds per acre.

The new rice variety matures about 18 days before Century Patna 231 and is the earliest maturing long-grain variety for southern rice areas. In a 3-year test, Belle Patna matured in an average of 108 days from the time of seeding. Early maturity is advantageous in irrigated sections, since the crop is ready for harvest at the time irrigation water may be needed elsewhere.

Belle Patna plants are about 2 inches shorter than plants of Century Patna 231. The stems are relatively thin, but lodging has not been serious except under adverse weather conditions, even with heavy rough rice yields of up to 4,000 pounds an acre.

The new variety is resistant to straighthead, a disease that causes rice heads to remain upright at maturity because the few grains formed are too light to bend the heads over normally. Belle Patna shows some tolerance to hoja blanca, a serious virus disease which whitens or

mottles plant leaves, stunts plant growth, and prevents normal grain development. Under Texas and Louisiana conditions, the new rice is moderately susceptible to blast, a fungus-caused infection that may produce leaf blight.

The long, slender grains of Belle Patna have processing characteristics similar to those of Rexoro and Texas Patna. However, the new variety requires more care than most rice varieties in order to obtain satisfactory yields. Seedling growth is slow and is affected adversely by low temperatures and by excessive or deep irrigation early in the season. Since plants tend to lodge from late or excessive fertilizer applications, all fertilizer should be applied during the first 30 days of growth. Tests indicate that Belle Patna is best suited for growing in Texas.

Hale, New Castor-bean Variety

Hale — a new dwarf-internode castor-bean variety adapted to such irrigated areas as the High Plains of Texas, Oklahoma, Kansas, and New Mexico — has been released cooperatively by the United States Department of Agriculture and the Texas Agricultural Experiment Station.

A limited amount of Hale seed is available to seed producers for planting this year. Names of seed suppliers may be obtained from the Texas Agricultural Experiment Station, College Station, Texas; no seed will be distributed by the USDA. Seed will be available to farmers in 1962.

The new castor-bean variety produces good yields and has potential as a male parent in hybrid combinations, since its hybrid offspring also yield well. The variety is resistant to bacterial leaf spot and to Alternaria leaf spot.

Hale has a better root system than many other castor-bean varieties. However, its stems tend to be weak if the plants are grown under conditions of excessive amounts of nitrogen and soil moisture. Weak stems, together with a heavy fruit set and high winds before harvest, can cause lodging.

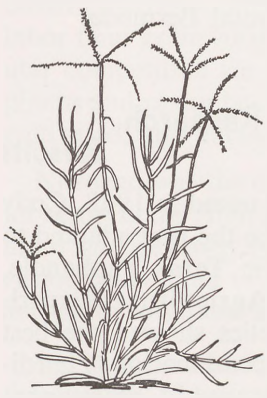
Hale matures about 1 week later than Baker-296, the leading commercial variety on the High Plains, and about 1 week earlier than the Dawn variety. The new castor bean yielded as much as 2,325 pounds of beans per acre in 1960 in farm trials on the High Plains of Texas.

Hale plants are adapted to mechanical harvesting, since the first fruiting spike is well above ground level and fruiting branches are erect. The seed capsules are nonshattering and, after frost, are easily removed from the dry plants by mechanical harvesters.

The seed weight, size, and quality of Hale beans are acceptable for planting and for crushing. Seed hulling and cleaning are easy, and nearly all foreign material separates from the seed. The oil content averages 51 percent, which is 1 to 2 percent more than in available dwarf-internode varieties.

Hale performed well in irrigation tests in the Southern Great Plains region of Texas, Oklahoma, Kansas, and New Mexico. The variety has some drought tolerance but is not generally recommended for dry-land planting as satisfactory yields are not obtained consistently. Moreover, it is not recommended for areas of high rainfall because of possible mold damage to the seed capsules.

Coastal Bermuda Grass for Conservation Acres



Farmers participating in the feed grain program who are having difficulty deciding how to use their diverted acres might find the establishment of Coastal Bermuda grass to be very profitable, says George McBee, Extension Pasture Specialist with the Texas Agricultural Extension Service. This hybrid grass continues to gain favor because of its adaptability and high yields.

Under the feed grain program, a farmer may receive up to one-half of the program payment at the time he signs up to divert corn or grain sorghum land to soil-conserving uses. Mr.

McBee suggests that this money can be used to establish a new field of high-yielding, good-quality Coastal Bermuda where additional forage is needed. He points out that Texas farmers generally have been able to purchase satisfactory feed grains but many of them are often disappointed with the quality and price of available forage.

The pasture specialist recommends that only fresh sprigs of good-quality Coastal Bermuda be planted. The seedbed should be moist, well prepared, and clean. Where moisture is limited, difficulty may be encountered in obtaining a stand of the grass unless irrigation is available.

Mr. McBee suggests planting the Coastal Bermuda in 36- or 42-inch rows, with the sprigs at 36-inch intervals in the row. This spacing will require about 9 bushels of sprigs per acre. Closer row spacing will require more sprigs but will result in a faster ground cover and less competition from weeds.

Fertilization should be carried out in accordance with soil test findings. Mr. McBee recommends placing the fertilizer in a band 3 to 4 inches to the side and below where the sprigs are to be planted. He says that it may be advisable to wait until the Coastal Bermuda is growing to apply the fertilizer, especially if weeds and grasses are expected to be a problem. Fertilizer should never be broadcast on land to be planted to Coastal Bermuda.

Recent Research Results

★ Of six alfalfa varieties tested in 1958, Cody and Lahontan appear to be the best adapted to growing conditions in the Texas Panhandle. According to the Texas Agricultural Experiment Station, these varieties showed the best winter survival through a combination of hardiness and spotted alfalfa aphid resistance. Forage and seed yields of Cody and Lahontan were comparable with those of the other four varieties tested.

★ Pigweed, henbit, fumitory, sheep sorrel, and lamb's-quarters are weeds which present problems to vegetable growers in the Winter Garden area of Texas. Pigweed is the most troublesome for warm-season crops, and henbit is the predominant winter weed. According to the Texas Agricultural Experiment Station, chemicals are effective for controlling all of these weeds, but the herbicides should be used only in accordance with instructions on their labels.

★ In tests conducted during 1960 in Texas (exclusive of the High Plains), 23 grain sorghum hybrids produced average yields which were 17 percent to 40 percent above those of Martin and Combine 7078, the standard varieties for this area. The Texas Agricultural Experiment Station points out that such characteristics as earliness, quick-drying heads, and resistance to lodging and diseases may be as important as yielding ability.

New Egg Products on the Way

The egg business is becoming modernized, says Fred Gardner of the Poultry Science Department at Texas A. & M. College. Research personnel are developing new packaging ideas and new uses for eggs in order to enable the housewife to spend less time and energy in the preparation of egg dishes.

A recently developed scrambled egg package enables the housewife to prepare enough scrambled eggs for the entire family in 30 seconds. Another new product is instant French toast. These are just two of the many new egg products that are expected to be on grocers' shelves in the near future, according to Mr. Gardner.

Fungus for Nematode Control?

A newly discovered species of fungus is being tested for possible use in biological control of nematodes, according to the United States Department of Agriculture and the Louisiana Agricultural Experiment Station.

Nematodes, or eelworms, are almost microscopic in size and live in the soil. Many destructive varieties of nematodes feed on plant roots.

In laboratory tests, the new fungus *(Catenaria vermicola)* killed root-knot, sting, sheath, dagger, lance, ring, meadow, citrus, and stunt nematodes. It is a type of water mold and apparently is not harmful to plant life.