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chemicals and fertilizers, utilities, and services experience the greatest adverse effects from the decreased level of cotton production. The total effect on gross domestic products in Arizona for 1966 is estimated by the model to be nearly $44.5 million.

By comparing the total effects on the Arizona economy with the direct effect on cotton, we derive an income multiplier for the cotton sector. The value of this multiplier is 1.26. This means that for every dollar decrease in production in the cotton sector the total decrease in the entire Arizona economy will be $1.26. This value is somewhat smaller than the majority of the multipliers in the Arizona economy; 18 of the 25 sectors have larger multipliers.

Cotton occupies a rather unique place in the economic structure of Arizona. All of the cotton output is sold to places outside of Arizona and is, in the context of the input-output model, produced for final demand. Cotton does not serve as an input for any other Arizona producing sector but affects, directly or indirectly, nearly every other sector by its own input purchases.

How About Other Crops

The decreases in production in the Arizona sectors could be offset if some other crop (or crops) were being grown on the acres diverted from cotton. However, the government program was designed to reduce surpluses and, therefore, prohibits farmers from taking their land out of cotton, for which they receive government payment, and planting some other surplus crop. There are a few minor crops which could be planted on the diverted acreage, but these do not appear to have any significance.

In the long run, over the next one to five years, it is possible that cotton growers will release part of their allotments and shift some of their acres into alternative crops. This is not taking place in the current year, thus there is little offset to the decreased cotton acreage planted.

Although cotton production is expected to decrease in value by more than $35 million, cotton farmers will not fare as badly as may appear at first glance. Arizona cotton farmers are receiving payments for taking acres out of production in 1966. These payments are based on the expected production which would have occurred had the land actually been planted. On this basis, Arizona cotton farmers should receive about $12.7 million in direct government payments for taking their land out of production.

The question of the welfare of the cotton farmer depends on what happens to his net income per acre on the diverted acres in 1966 as compared with what might have occurred had he not diverted. Arizona cotton budgets show a top return per bale of $64.62 before fixed costs and a low return of $46.22 per bale before fixed costs. (Fixed costs are those costs which occur whether or not a crop is grown, for example taxes.) The difference in the return per bale depends largely on the cost of water needed for irrigation. The scale of government payments on diverted acres will yield a net return of about $52.50 per bale before fixed costs. Thus, even though the value of cotton production will be greatly reduced in 1966, and in turn the level of economic activity in the entire state will be affected, the net income of cotton farmers will not be altered much.

Seriously Affects Labor

Another way to measure the impact of the 1966 decrease in cotton production is to look at its effect on labor in the state economy. In order to produce cotton, labor is required as one of the productive factors. To supply the other material inputs which cotton buys from other Arizona sectors, labor is also required. Thus, the initial decrease in cotton production will decrease its own demand for labor but will also cause decreased labor demands in all other Arizona sectors which directly or indirectly supply inputs for cotton production. These effects are shown in column two of Table 2. The values in column two depend on the labor intensity of the various sectors and also the extent to which they provide inputs for the cotton sector. Miscellaneous agriculture, utilities, trade and transportation, and services, along with cotton, have the largest decrease in man-hour labor requirements. In the entire State economy, the estimated reduction in labor demand is about 4.1 million man-hours.

The 1966 decrease in cotton production will also affect Arizona's scarce primary resource, water. Each producing sector has some requirements for water as an input. The size of this requirement varies greatly between the 25 Arizona sectors. Column three of Table 2 gives the decrease in water requirements for each sector as a result of the decrease in cotton production. Diverting acreage from cotton production saves nearly 471,000 acre-feet of water in that sector alone; another 38,000 acre-feet is saved in the other sectors because of the reduced levels of output required.

Nearly all of the decreases in water requirements occur in the agricultural sectors (1 through 10) because of their large water intake per dollar of output. The manufacturing, trade and service industries use relatively small amounts of water per dollar of production. The 509,000 acre-foot decrease in water requirements represents roughly seven percent of Arizona's annual water usage.

Conclusions which emerge from this input-output study of the 1966 decrease in cotton production are:

1. **There will be large decreases in gross output and labor requirements in the cotton sector and those other producing sectors which, directly or indirectly, provide inputs to cotton growers.**
2. **The net income position of cotton growers should not be greatly affected by the 1966 program because of the payments received for diverting acres.**
3. **Water requirements in the Arizona economy, particularly in agriculture, will show a substantial decrease.**

Barley Cross Is Released as Breeding Stock

The Agricultural Experiment Stations of The University of Arizona and Cornell University, and the Crops Research Division, ARS, U.S. Department of Agriculture, announce release as a breeding stock of the Composite Cross XXVII of world winter barleys.

This cross is the result of cooperative efforts of members of the Agronomy Department, University of Arizona; the Department of Plant Breeding, Cornell University; and the Crops Research Division, ARS, U.S. Department of Agriculture. Work here was done by Dr. R. T. Ramage, ARS and UA barley geneticist, and R. K. Thompson, research associate in agronomy.

Composite Cross XXVII is the result of harvesting naturally pollinated male sterile segregates in a bulk planting of the F_2 generation of the original composite cross of world winter barleys, which was released to plant breeders in 1964. Seed from

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A Dairyman's Trek to Europe

By F. E. Nelson

The 17th International Dairy Congress was held last summer in Munich, Germany. I attended as a member of the United States delegation.

More than 2,500 men engaged in dairy research, production, processing and marketing in all parts of the world attended. While numerous papers on current research are submitted and printed in the proceedings of the Congress, individual papers are not read; rather, several people summarize important points of the papers, emphasis being on the present state of knowledge in that specific area.

While this arrangement does save time, one does not have the advantage of the specific viewpoints of the individual authors, and discussion frequently is minimized. Control of microbial contamination and prevention of chemical deterioration, particularly of fats, received considerable attention.

New Machinery Shown

An international dairy machinery exhibition and a book exhibition were held simultaneously with the congress. Each was the largest of its type held in the world. The machinery exhibit was particularly impressive, occupying several large exhibition halls. Particularly impressive were several systems for mechanized cheese making, a number of types of equipment for aseptic packaging of continuously sterilized fluid milk products, and a wide variety of new packages for milk and milk products.

Whereas much of the developmental emphasis in the United States is on plastic bottles, the Europeans are beginning to use flexible plastic bags ("pillow packs") or are forming containers from rolls of properly treated paper immediately before the filling operation. While European equipment for pasteurizing and handling milk and milk products usually is beautifully made and has the reputation of functioning well, American exhibitors reported that they sold much equipment, often because they could produce and deliver more rapidly than could most of the Europeans.

Following the congress, I had the privilege of observing some aspects of the food industries in Switzerland, Austria, The Netherlands, Denmark, Sweden and Norway. All of these countries import considerable amounts of concentrates for animal feeding, because both of climate and local demands for human needs limit the local supplies. Interesting was the extensive industrial support provided for the various laboratories that do research and development work, even though the laboratories are also supported to some degree by various governmental agencies. This situation has resulted in many of these laboratories being unusually well staffed and equipped.

Fewer "Convenience Foods"

Use of partially or completely processed convenience foods is much less common in Europe than in the United States, but is increasing rapidly. Ice cream is becoming much more popular and more available than it has been. However, general use of frozen foods must be preceded by more general availability of home freezers for holding these products prior to use. Home gardens still are very popular, and fresh vegetables are found in great quantity and variety in the various markets. The great variety and general high quality of European bakery products made it very difficult to pass by these shops. However, a good steak or a good beef roast as we know it is extremely hard to find, as they have no beef production of consequence, other than the slaughter of cows no longer useful for dairy production.

Much of Europe, and particularly the Scandinavian area, appears to be suffering from inflation and high taxation. Sales taxes are as high as 12 percent and special taxes may more than double the costs of such things as automobiles, coffee, cigarettes and beer in some areas.

"Bargains" for the American traveller are increasingly difficult to find, particularly in the urban centers frequented by tourists. Where prices remain low, a government subsidy, such as that for buses and trains, frequently is involved. One hears considerable comment about the high costs, but the people still support the governments that are taxing them to support the socialistic programs.

The author is a professor in the Department of Dairy Science.

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F_1 plants of the original cross (now named Composite Cross XXVI) has been distributed to over 50 barley breeders in the United States and abroad.

A portion of this F_1 seed was planted at Mesa, Ariz., in the fall of 1964. The resulting F_2 crop segregated for male sterility and fertility. About 8,000 male sterile plants were tagged at flowering time and seed from them was bulked at harvest. About 65 pounds of hybrid seed from natural pollination was produced on these plants, a portion of which was planted at Mesa in 1965-66. The increase is now available for distribution to barley breeders.

Previous studies with composite crosses indicate that the extremely large number of new combinations in World Composite Cross XXVII may hold valuable potential for any winter barley growing area of the world, due to its wide germ plasm base. It can be grown at a given location in bulk from successive crops with relatively little time and expense. Natural selection for a period of generations will tend to favor types that are adapted at that location. Certain characters will be eliminated more rapidly at some locations than at others.

Composite Cross XXVII should contain a large number of recombinations not present in CC XXVI. No more cycles of crossing are planned of this material for distribution purposes, but reserve hybrid seed will be increased in subsequent years as needed. It is expected that the CC XXVII will not be used directly for commercial production, but as a source from which plant breeders may select superior strains.

Un contenido de 3.50 a 3.75% de calcio en la ración de las aves es suficiente para que pongan huevos con cáscara de buena calidad. Además, la eficiencia del alimento (kilos de alimento necesarios para producir una docena de huevos) es algo mejor con este sistema de alimentación (calcio incluido en la harina) en comparación con el antiguo sistema de suministrar 2.25% de calcio en la harina más harina de conchas de ostión para consumo a voluntad.

DOS TIPOS DE HORMONAS, el estrogénico que producen los ovarios y el gonadatrópico que se compone de extractos de la pituitaria y otros que actúan sobre los ovarios se han empleado para tratar la esterilidad de la vaca. Por los resultados obtenidos, se estima que quedaron cargadas un 60% de las vacas tratadas.