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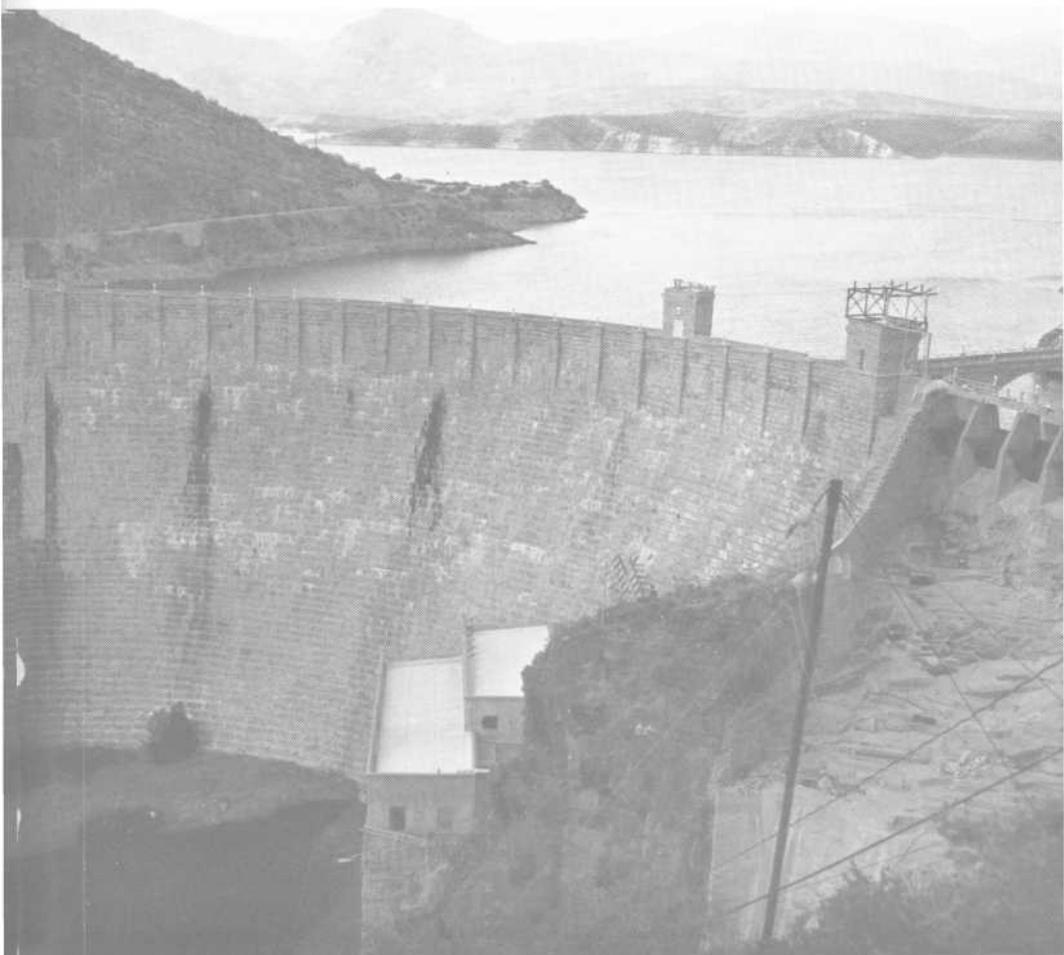
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# ARIZONA

# Agriculture

# 1963



BULLETIN A-25

Agricultural Experiment Station and Cooperative Extension Service

The University of Arizona

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### Our Cover

#### Roosevelt Dam

Because **Water** is of increasing importance to agriculture in Arizona, an unusually large amount of space is given this subject—along with the subject of **Land**—in this issue.

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is issued by  
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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture. George E. Hull, Director of Extension Service, The University of Arizona College of Agriculture, Tucson, Arizona. 10M—February 1963—Bulletin A-25.

# ARIZONA AGRICULTURE 1963

This is the 33rd annual issue on income, production, and costs in Arizona's agriculture. It was compiled by members of the Department of Agricultural Economics, The University of Arizona. All communications should be addressed to Jimmye S. Hillman, Head of Department.

## Crop and Livestock Receipts Up 11 Percent

Arizona farmers, ranchers, and related producers received estimated \$573.9 million as gross cash income in 1962. This is 11 percent higher than 1961 when this figure was \$516.2 million.

Data for 1962 income with comparisons are shown in Table 1. This

**Table 1. Cash Receipts for Crops and Livestock Produced in Arizona for Sale.**

Commodity	1962 <sup>a</sup>	1961	10-Year Average 1952-61
	(millions of dollars)		
Cotton lint and cottonseed	163.3	158.3 <sup>b</sup>	166.2
Cattle and calves	184.5	147.8	119.6
Vegetable crops <sup>c</sup>	80.1	67.7 <sup>b</sup>	60.1
Dairy products	25.7	26.0	20.3
Feed grains	21.4	23.2	17.2
Hay	27.1	28.0	17.1
Sheep, lambs and wool	6.1	5.1	5.3
Citrus fruit and grapes	10.5	13.9 <sup>b</sup>	7.0
Poultry and eggs	7.5	7.0	5.2
Seed crops	6.3	5.7	3.8
Miscellaneous crops	16.7	11.9	9.8
Miscellaneous livestock and livestock products	2.6	2.6	2.4
Federal government payments <sup>d</sup>	5.9	4.5	3.1
<b>Total value</b>	<b>557.7</b>	<b>501.7<sup>b</sup></b>	<b>437.1</b>
Forest products	16.2	14.5	
<b>Total value Agriculture and Forestry</b>	<b>573.9</b>	<b>516.2<sup>b</sup></b>	

<sup>a</sup>Preliminary. The Arizona Crop and Livestock Reporting Service assisted in collecting this information.

<sup>b</sup>Revised from 1961.

<sup>c</sup>Year ended August, 31.

<sup>d</sup>Includes irrigated land on Indian reservation \$1,529,000; Feed Grain Program \$3,234,697; Wool Payments \$649,431; Soil Bank Payments \$102,963; and Wheat Stabilization Program \$386,300.

gross value figure includes some double counting as in the case of hay and feed grains which are produced and fed in Arizona. Also, all livestock figures include a value for some animals sold both off ranch and off feed, and a value of animals shipped in from out-of-state.

Minor adjustments have been made in some of the 1961 value figures due to changes which were made in the final estimates of receipts published after the release of Arizona Agriculture last year. In accordance with this policy, 1962 figures are marked "preliminary." This will permit small statistical adjustments and will conform with other statistical reporting in the state.

Considerable increases in value were made in cattle and calves, vegetable crops and cotton in that order. Sheep, lambs and wool; poultry and eggs; and seed crops registered small increases. Citrus showed the most notable decrease but small decreases were made in the feed grains and hay categories.

The largest single increase was shown by cattle and calves, where receipts were up \$36.7 million, or 23 percent, over the year before. Increased numbers of cattle sold off feed and increased prices for

slaughter steers accounted for most of this gain.

Cotton receipts were \$163.3 million—up 5.0 million dollars from the 1961 figure. This was due primarily to yield increases in upland cotton and increased acreage and yields for American-Egyptian. Both prices and acreage for upland cotton were below their 1961 levels.

Vegetables also made a sizeable gain over the year before. Gross income for vegetable crops was \$80.1 million in the 1962 crop year, compared to \$67.7 million the year before. Prices for lettuce were substantially higher — from 25 to 50 percent—over a year earlier.

Government payments increased from \$4.5 million to \$5.9 million. The greatest amount of this increase came in the Feed Grains Program.

The income from "Miscellaneous" crops was \$4.8 million more than in 1961 due to the sharp increase in safflower production. The value of the safflower crop itself was estimated at \$6.6 million. Receipts from most other crops in this category declined.

Cotton, cattle, and vegetables accounted for almost 77 percent of the total crop and livestock value.

## Agricultural Prices

Prices for Arizona agricultural products were generally up in the 1962 crop year with the exception of cotton and eggs (see Table 2 on page 5).

Notable price increases occurred for choice slaughter steers with prices up approximately \$2.38 per hundredweight over last year. A greater percentage rise was shown

in lettuce prices, which were up from 25 to 50 percent over the 1961 crop. Prices for the fall lettuce crop, though up from the year before, remained a bit under the previous ten-year average.

Cotton dropped off about a cent a pound from the previous year and about a half cent from the ten-year average. Hay moved slowly during

**Table 2. Prices Received by Growers for Major Arizona Agricultural Products, 1962, 1961, and 1952-61 Average.**

Commodity	Unit	1962	1961 <sup>c</sup>	1952-61 Average
Upland cotton <sup>a</sup>	pound	.317	.3289	.3234
Alfalfa hay <sup>a</sup>	ton	24.60	23.50	26.37
Barley <sup>a</sup>	cwt.	2.52	2.23	2.38
Grain sorghum <sup>a</sup>	cwt.	2.07	2.02	2.33
Choice slaughter steers	cwt.	26.33	23.95	24.68
Choice yearling feeder steers	cwt.	24.53	24.32	22.33
Choice feeder steer calves	cwt.	26.95	25.44	23.75
Milk, wholesale <sup>b</sup>	cwt.	5.11	5.08	5.40
Wool <sup>b</sup>	pound	.375	.350	.408
Eggs <sup>b</sup>	dozen	.383	.448	.505
Lettuce <sup>a</sup>				
Winter	carton	2.10	1.51	1.75
Early Spring	carton	2.44	1.34	1.79
Fall	carton	1.93	1.74	2.02

Source: Arizona Crop and Livestock Reporting Service, SRS, USDA, Phoenix except cattle price quotations from Livestock Market News Service, AMS, USDA, Phoenix.

<sup>a</sup>Season average price.

<sup>b</sup>Calendar year average price.

<sup>c</sup>Revised.

the first part of the year but prices recovered sharply during the fall and winter when U. S. No. 1 alfalfa hay was selling for as much as \$37

per ton. Barley price increased from \$2.23 per hundredweight to \$2.52 due primarily to the Feed Grains Program.

## Land

The leading issue for 1963 with respect to lands—particularly rural lands—in Arizona will be tax levels and tax equalization. Rising government expenditures at all levels within the state mean rising real estate tax rates unless values are increased. Inequitable valuation of the lands to which these tax rates are applied, whether it be between classes of properties and/or between individuals within classes,

result in inequitable sharing of the tax load, regardless of whether the tax rate is high or low or whether the rate is raised or lowered.

What is an equitable value? This is the difficult and currently much debated question. The 1963 legislature will be much occupied with it. The most difficult problems in the whole issue revolve around speculative values attached to lands adapted to urban, suburban, and

rural residential use. Because these lands frequently are agricultural lands, privately owned and used for crop and livestock production purposes, taxation based on a speculative value will often put agricultural users in a real squeeze. If such lands were assessed at their "full cash market value," tax burdens would often be so high that agricultural use could no longer continue on some of them; yet not to assess them at their "full cash market value" means giving the land speculator a break in property tax burdens on his business. It also encourages holding land out of development while waiting for a higher speculative price, thus causing "leap-frogging" by development and subdivision, and the spreading of the speculative price rise in wider circles around the expanding urban center.

The agricultural owner and user of lands in the path of this speculative price rise is caught in the squeeze whether he himself wishes to be a "speculator" or not. For if assessed values are increased to reflect full cash market value, he will be required to pay on such values and hence become a "speculator."

There is no easy solution to this problem. The most widely discussed solution (in other states) is some device whereby lands in bona-fide agricultural use are assessed and taxed at their agricultural productive value until they are sold or developed for nonagricultural uses. At such a time a form of "severance" tax would be applied which taxes the difference between their assessed values for agricultural purposes and their assessed values in the nonagricultural uses, so as to

**Table 3. Distribution of Land Ownership by Counties: 1962.<sup>a</sup>**

County	Total acres <sup>b</sup>	Federal acres	State acres	Private acres	Indian acres
Apache	7,151,360	645,986	695,123	1,210,548	4,467,931
Cochise	4,003,840	958,859	1,363,454	1,565,807	---
Coconino	11,886,720	4,770,363	1,033,852	1,543,770	4,415,896
Gila	3,040,000	1,766,120	30,150	124,880	1,149,000
Grham	2,950,400	1,132,519	503,834	240,045	989,000
Greenlee	1,199,360	970,952	143,308	68,018	---
Maricopa	5,904,640	3,700,663	464,891	1,438,193	251,604
Mohave	8,486,400	5,639,448	436,747	1,783,424	559,972
Navajo	6,343,040	621,429	342,680	1,140,714	4,329,404
Pima	5,914,240	1,723,592	920,822	706,919	2,480,120
Pinal	3,441,920	700,007	1,225,884	788,954	599,480
Santa Cruz	797,440	426,000	62,298	299,139	---
Yavapai	5,178,240	2,672,480	1,271,602	1,215,465	3,578
Yuma	6,390,400	5,425,060	233,891	498,651	226,921
Totals	72,688,000	31,168,582	8,728,536	12,566,799	19,472,906

<sup>a</sup>The totals of acreages in the several classes of ownership in the state do not coincide as between Tables 3 and 4. They were obtained from different sources and were compiled in different ways and at different dates. The totals in Table 4 are correct as of June 30, 1960. The distribution of lands by counties do not correspond to the totals by classes of ownership. Whether the discrepancies report-

ed are proportional over all counties or whether they are concentrated in a few counties is not known.

<sup>b</sup>This figure is the total area of the county as given in the 1954 *Census of Agriculture*, excluding areas inundated by the construction of new reservoirs, lakes, or ponds since 1947. Source: State Land Department, Phoenix.

capture part of the taxes they would have paid over the years if taxed at their "full market value." No doubt this possibility will come up for an airing during the legislative discussions. If the legislature finally comes out with a "uniform assessment" bill calling for "full market value" assessment and doesn't make any concessions to agricultural lands caught in the speculative squeeze, it will place an added burden on agricultural owners and operators of these lands.

Taxing speculative land values at their full cash market value would have an offsetting benefit to the agricultural user in that the specu-

lative land market would not be so flush. Speculative values would likely decline, and agricultural lands caught in the squeeze would find the squeeze loosened a bit due to a decline in their "full cash market value."

A related problem is thought to be in the large acreage of publicly owned lands in Arizona. Many taxpayers feel that the presence of these tax-exempt lands pyramids the taxes on their privately owned tax-paying lands. Much too much can be made of this issue, but for those not acquainted with the make-up and distribution of land ownership in Arizona, Tables 3 and 4 are presented.

**Table 4. Distribution of Lands by Classes of Ownership, June 30, 1960.**

	Acres Administered	Percent of Total
<b>Federal Government-Owned, Controlled, Managed, and Trust Lands</b>	<b>54,015,101</b>	<b>74.3</b>
Indians Reservations	21,514,921	29.6
Bureau of Land Management	13,060,805	18.0
Forest Service	11,381,561	15.7
Department of Defense	3,645,895	5.0
Fish and Wildlife Service	1,526,977	2.1
Bureau of Reclamation	1,454,621	2.0
National Park Service	1,404,132	1.9
Bureau of Indian Affairs	23,509	.03
Other federal agencies	2,680	.003
<b>State of Arizona (Trust Lands)</b> (This figure does not include 658,775 acres of school sections in place in the national forests and for which indemnity lands have not been selected.)	<b>9,269,188</b>	<b>12.8</b>
<b>Patented (Deeded and Private Lands)</b>	<b>9,403,711</b>	<b>12.9</b>
<b>TOTAL</b>	<b>72,688,000</b>	<b>100.0</b>

Source: *Statistical Appendix to Annual Report*, Bureau of Land Management, U.S. Department of Interior, fiscal year ended June 30, 1961.

The Department of Agricultural Economics, University of Arizona, with the cooperation of the Bureau of Reclamation, U. S. Department of Interior, has completed a survey of all irrigated lands in the State. The full report and an irrigated map will be published later, but the acreages of irrigated land by counties as of 1961 are given in Table 5.

For that study, irrigated land was defined as follows: (1) that land subject to the application of water by some means of control as to the application and timing of such water applications, and (2) including all land meeting the above conditions which were observed on ASCS aerial photos of 1957 or later. Areas developed since photos were taken were also included in direct observation and consultation with informed people.

**Table 5. Irrigated Land by Counties.\***

County	Acreage
Apache	23,328
Cochise	113,962
Coconino	5,290
Gila	1,381
Graham	43,680
Greenlee	6,940
Maricopa	555,243
Mohave	6,431
Navajo	14,039
Pima	67,285
Pinal	391,045
Santa Cruz	7,845
Yavapai	23,314
Yuma	200,647
<b>State Total</b>	<b>1,460,430</b>

\*Includes irrigated land on Indian reservation. Data are complete as of 1961.

## Water

During the year which ended in the spring of 1962, total water use in Arizona was 7 million acre-feet, about 200,000 acre-feet less than the amounts used in each of the two previous years. However, surface flow diversions were down by 400,000 acre-feet to 2.3 million, and pumpage volume was up by 200,000 acre-feet to 4.7 million. Deficient surface water supplies during the year occasioned the rather marked reduction in surface water use, a shortage that was partly made up from the ground water reservoir. Thus, once again, the importance of the ground water reservoir as the stabilizer of water use in Arizona was demonstrated. However, this

resulted in increased depletion, as underground water levels continued to recede—in some areas, markedly so.

Since 1953, total pumpage of ground water has been relatively stable at about 4.5 million acre-feet a year. About half of this pumpage (2.2 million acre-feet) and most of the increase in 1960 occurred in the Salt River Valley. Another fourth of the total pumpage occurred in the lower Santa Cruz. The remaining one fourth of the pumped water was used for irrigation in smaller irrigated areas and for municipal, domestic and industrial uses. Approximately 90 percent of all pumped water is used for growing crops

## Ground Water Pumped

Year	Acre-feet (millions)
1952	3.7
1953	4.8
1954	4.5
1955	4.4
1956	4.5
1957	4.5
1958	4.5
1959	4.7
1960	4.5
1961	4.7

in Arizona.

For the state, excess of withdrawals over recharge to the ground water is more than 3 million acre-feet annually. In the areas of heaviest withdrawal, the ground-water level has fallen markedly in each year since 1953 as shown in the following table. Lifts in some localities in these areas appear to be approaching their economic limit for crop production (approximately 500 feet) under conditions of present prices and technology.

### Decline in Groundwater Levels (in feet)

Year	Salt River Valley	Lower Santa Cruz Basin
1952	6.4	10.7
1953	5.8	12.0
1954	5.6	7.3
1955	5.2	9.0
1956	5.0	7.0
1957	5.6	7.0
1958	5.8	7.3
1959	4.6	2.7
1960	5.2	6.3
1961	5.8	5.3
<b>Total</b>		
<b>1952-61</b>	<b>55.0</b>	<b>74.6</b>

Surface water diversions in the state were significantly less than during immediately preceding years because of abnormally low supplies. During the 1960 crop year the flow in all principal streams excepting the Colorado river was 527,380 acre-feet which was about 21 percent of the previous 30-year flow of these streams. For the highly important Salt river, the 1960 flow was the lowest on record, which dates back to 1913.<sup>1</sup>

Had it not been for the highly important surface reservoir storages on these streams, the impact on the state's economy and on ground water reservoirs would have been much worse. During the 1961 crop year, the volume of surface water storage on these streams declined by about 300,000 acre-feet in spite of an over-all decrease in surface water diversion in the state of about 400,000 acre-feet.

Useable stored water in Arizona (again excepting Colorado river storage) at the end of the 1962 crop year has recovered only about 71,000 acre-feet of the 300,000 acre-feet lost during 1961. Colorado river storage in 1962 increased about 5 million acre-feet, exceeding by 4 million acre-feet the one million it lost in 1961. It is flows such as this that point up the significance for Arizona of the suit now awaiting final decision by the Supreme Court of the United States. This addition to storage in one year alone is enough to supply the requirements of the Central Arizona

<sup>1</sup>All data above relative to ground and surface water usage in Arizona were supplied by the *Annual Report on Ground Water in Arizona, Spring 1961 to Spring 1962* by Natalie D. White et al., Water Resources Report No. Eleven Arizona State Land Dept. and the Geological Survey, U. S. Dept. of Interior, cooperating. Oct. 1962.

## Useable Stored Water

Reservoir	Dec. 31, 1962 acre-feet	Dec. 31, 1961 acre-feet	Long Time Average acre-feet
San Carlos (Gila river)	53,220	70,040	104,400 (33 yrs.)
Combined storage, Salt and Verde rivers	991,600	907,700	608,800 (52 yrs.)
Lakes Mead and Mohave	24,689,000	19,704,000	18,450,000 (27 yrs.)

Project for 4 years if and when it can be developed.

The surface water supply outlook for the 1963 irrigation season is a little better than average for the state as a whole. However, the prospects range from very good on the Gila to poor on the Verde. Snow cover on January 15, 1963, was above average (131%) on the Gila and much below average (55%) on the Verde. On the Salt and Little Colorado drainages, the snow cover is about average (118% on the Salt and 94% on the Little Colorado). However, reservoir storage, even excepting that on the Colorado, is considerably above average except for the San Carlos and Lake Pleasant reservoirs. An unfavorable condition is the low level of soil moisture on many watersheds in northern Arizona resulting from the dry summer and fall of 1962. Much above-normal precipitation will be required on the Verde to produce average run-off, whereas good run-off may be expected even with normal precipitation on the Gila.<sup>2</sup>

<sup>2</sup>Water Supply Outlook and Federal-State Private Cooperative Snow Surveys for Arizona as of January 15, 1963, USDA, Soil Conservation Service, Salt River Valley Water Users Association, and Arizona Agricultural Experiment Station, cooperating.

The chief matter of long-run interest with respect to Arizona's water problems is the final decision of the U. S. Supreme Court in the Arizona-California water suit and the related approval and commencement of the Central Arizona Project. The ruling and recommendation by the Special Master appointed by the Court has been in the hands of the Court for more than two years. A decision is expected shortly. In anticipation of a favorable decision, the Bureau of Reclamation with assistance from the State of Arizona has revised plans for the Central Arizona Project and has them ready for submission to Congress for immediate authorization and appropriation.

Another item of interest was the announcement by the Secretary of the Interior in early 1963 of a possible Lower Colorado development scheme similar to that of the Upper River project launched several years ago. The year 1963 could be the fateful year for Arizona concerning the issue of additional waters from the Colorado river and its availability to underpin the long-run stability of the Arizona economy.

The supply of water in sight for Arizona will be the final limiting factor in the development of the state. A continual striving to enhance the efficiency of water use will be imperative for continuing economic development.

The Rockefeller Foundation is supporting research on a project en-

titled, **Water in Relation to Social and Economic Growth in an Arid Environment**. This grant is supplemented by economic research funds in the Agricultural Experiment Station. More information on this work may be had by writing the Department of Agricultural Economics, University of Arizona, Tucson.

## Farm Programs

The federal government's agricultural price support and acreage control programs in 1962 directly affected products grown on about two-thirds of Arizona's cropland. Major Arizona crops included in these programs were: cotton, sorghum, barley, and wheat. Sheep and dairy cattle are the only livestock directly affected by price support programs.

Arizona's upland cotton acreage allotment was reduced about two percent, but extra long staple cotton was increased enough to just about offset the decrease in acreage of upland cotton. Upland cotton support prices were increased about two cents per pound over 1961.

In 1963, upland cotton allotments were decreased to 331,738 from 370,644. Extra long staple cotton allotments were increased from 42,433 in 1962 to 63,739 acres in 1963.

Under the 1962 Feed Grains Program, Arizona farmers who complied with the provisions of the program were eligible to receive payments for acres diverted from the production of corn and sorghum grain and to receive support prices

for other designated feed grains grown by them. Those farmers not participating in the program were not eligible for "diversion" payments or price support for their feed grains.

Another federal farm program of importance to Arizona is the federal market milk order, which includes approximately 97 percent of the milk produced in the state. Through this order the farm price of milk is established on a formula basis, and all receivers of milk pay a uniform price. This program has been helpful in stabilizing the Arizona dairy industry.

In addition to the above government programs for stabilizing farm prices and income, Arizona farmers and ranchers participated in agricultural conservation programs under the Conservation Reserve feature of the Soil Bank and in the Agricultural Conservation Program. Arizona turkey and potato growers participated in the hearings for national marketing orders for these commodities and also participated in the turkey marketing order referendum. In the referen-

dum turkey growers did not approve of the proposed marketing orders. The referendum for the potato marketing order has not yet been held.

The land use adjustment provisions of the Food and Agricultural Act of 1962 are expected to have wide implications for Arizona in

the next few years. These provisions would facilitate shifts in use of land from crops to grass, forests, wildlife, and recreation. They would also facilitate an expanded program of rural renewal and conservation-development projects to be carried out by local groups and agencies under the provisions of the Rural Areas Development Program.

## Rural Areas Development

For practical purposes the Rural Areas Development Program (RAD) began in Arizona in the first part of 1961. The program is sponsored by the U. S. Department of Agriculture, but it is entirely locally oriented and run by local people interested in improving economic and social conditions in their areas.

Three counties within the state (Apache, Mohave, and Navajo) were designated under the Area Re-development Act of 1961 by the U. S. Department of Commerce as counties qualified for special aid and emphasis in resource development. However, people in any county in the state may organize their own Resource Development Council and work under the RAD Program if there is sufficient interest in developing the economic and social resources of an area. County Agricultural Agents can furnish additional information on organizing and initiating resource development activities.

At the end of 1962, three northern counties (Apache, Mohave, and Navajo) were fully organized. Parts of Coconino, Gila, Graham and

Greenlee counties were involved in resource development on a less than county-wide basis. Since resource development can best be handled on a county-wide basis, efforts are being made in these counties to develop organization plans for the entire counties.

Major work emphasis by the organized groups so far has been in surveying resources, acquiring land and water rights for towns and areas, obtaining sufficient electrical power for areas, improving agricultural income through efficient business analysis, training of individuals for nonfarm jobs, and obtaining non-agricultural businesses and plants for local areas.

During 1963, major emphasis will be directed toward completing overall plans for development; obtaining additional water rights for rural population centers; expanding recreation industries; developing public facilities such as water and sewer systems, libraries, etc., re-training people for different kinds of jobs; and working toward higher incomes for people in the organized counties.

## Farm Labor

The trend in farm labor prices points inexorably upward. The past year saw the introduction of the 210-day bracero rule limiting growers to 210 days or 35 weeks of bracero (Mexican National) labor, as well as increased minimum bracero wage rates. In 1962 the 210-day rule did not go into effect until March 24. But, unless the rule is modified, the rule will apply from January 1 to December 31 in 1963. It is possible that the Mexican National program will be abandoned in the future.

Political reaction of Arizona farmers to the new rulings have been energetic. Economic reactions have been equally energetic. Both reactions may have strong effects on the structure of Arizona agriculture. The shift to machine harvesting of cotton was almost complete as the minimum pay rate per hundred-weight of cotton was set at

\$3.75 in Maricopa county, \$3.25 in Yuma and Pinal counties, and \$2.75 in Cochise county. Lettuce growers operating in several areas throughout the West have given the 210-day rule as the reason for shifting to other crops as well as feedlot enterprises. All farmers, even growers of such traditionally high labor using crops as citrus, lettuce, and onions, are attempting to mechanize in order to reduce their labor needs.

With this situation in mind, an analysis of the demand for and the supply of farm labor is under way by an interdepartmental study group of the University. Objectives of this study are to project the demand for hired labor under alternative effective wage rates, to examine how wage rates affect the rate of farm mechanization, and to estimate the effects of mechanization in the make-up of the farm labor force as well as its supply.

## International Trade

The United States exports about 12 percent of its total agricultural production. Agricultural exports make up 20-25 percent of all U. S. exports. Much of the exports of agricultural commodities are composed of cotton and other crops produced in Arizona. The European Common Market countries take nearly one-quarter of these exports. Policy developments, in this fast-growing area of Europe, which may affect future trade in agriculture, are of major concern to Arizona producers.

Other areas of the world are also of concern to Arizona producers. For instance, the U. S. exports of agricultural products to Asian countries in 1961 were valued at \$1.4 billion of which over \$400 million consisted of cotton and linters. United States imports amounted to \$720 million. Latin American countries took \$434 million and shipped the U. S. over \$1.5 billion of agricultural products. Mexico, with ports of entry bordering on Arizona, imported about \$60 million of agricultural products and exported

nearly \$263 million to the U. S. A large part of these exports from Mexico consist of products also pro-

duced in Arizona, such as cattle, beef, fruits, vegetables, and even some cotton.

## Agricultural Credit

Farmers and ranchers in Arizona continued the upward trend in volume of credit used in their businesses in 1962. Farm real estate loan data are not complete, but preliminary figures on nonreal estate farm loans held January 1, 1963, by commercial banks, production credit associations, other financing institutions, and the Farmers Home Administration totalled \$146.7 million. This was an increase of 23 percent over a year earlier (Table 6). Much of this increase was the result of expanded cattle feeding operations in the state. The volume of real estate and nonreal estate lending has increased four times since 1950.

Loan delinquency was small January 1, 1963, and about the same as a year earlier. The interest rate on real estate loans was the same to a little lower January 1, 1963, compared with a year earlier, while average rates charged on nonreal estate loans were generally about the same to one-half percentage point higher.

Individuals, insurance companies and commercial banks provide the major part of the agricultural credit in Arizona. Individuals and insurance companies combined held 82 percent of the real estate loans January 1, 1962, and commercial banks held 89 percent of the nonreal estate loans outstanding January 1, 1963.

While the continuing increase in use of credit in agriculture may be

a cause for concern in some individual cases, in the aggregate, agriculture in Arizona probably is in a very sound financial position. Data on the value of assets are not available for the state, but nationally the value of agricultural assets is over seven times the total debt outstanding. The total of deposits, currency, and U. S. savings bonds held by farmers is nearly equal the total farm nonreal estate debt.

The situation in Arizona probably is somewhat better than the national average. Moreover, other factors which contribute to a sound credit situation are more favorable in Arizona than for the nation as a whole. Farms and ranches are larger in Arizona and produce a more adequate income, thereby providing a sounder basis for profitable use of credit and for carrying the risk associated with credit use. Too, farm income in Arizona tends to be more stable from year to year which strengthens repayment capacity of borrowers and reduces the risk involved in use of credit.

Two new developments during 1962 strengthened, indirectly at least, the agricultural credit situation in the state. One was initiation of what promises to be an annual **Arizona Bankers Agricultural Credit Conference**. The first conference, held in October, 1962, was well attended. The other development was organization of **The Arizona Society**

**Table 6. Farm and Ranch Loans in Arizona, by Lender Groups.<sup>a</sup>**

Lender Group	Outstanding January 1			1962 as a Percent of 1950	Lender Percent, 1962
	1950	1960	1962		
<b>Real Estate Loans</b>					
Individuals and others	20.3	60.3	69.2	346	47
Insurance companies	7.4	43.5	51.3	698	35
Commercial banks	2.0	4.07	4.14	203	3
Federal Land Bank of Berkeley	5.6	16.3	18.1	321	12
Farmers Home Administration	.8	1.9	4.2	546	3
Total	36.1	126.1	146.9	407	100
<b>Nonreal Estate Loans</b>					
Commercial banks	26.0	98.1	103.8	399	88
Production credit associations	1.9	8.4	10.4	540	9
Other financing institutions <sup>b</sup>	1.8	7.2	4.1	224	2
Farmers Home Administration	1.3	1.4	1.3	97	1
Total	31.0	115.1	119.4	385	100

<sup>a</sup>USDA data, except for 1963, which were compiled or estimated in the Agricultural Economics Department, University of Arizona, Tucson.

<sup>b</sup>Discounting with the Federal Intermediate Credit Bank of Berkeley.

of Farm and Ranch Managers and Rural Appraisers, and affiliation of the Arizona Society with the long-established American Society. Objectives of the Society include, among other things, development and improvement of methods of farm and ranch management and

rural appraisal by practical operation and application of research, establishment of a code of ethics for professional farm and ranch managers and rural appraisers, and full cooperation with all agencies and businesses striving to improve rural life on a sound basis.

## Cotton

Arizona's total cotton crop was up nearly 7 percent from the previous year. The 1962 crop is expected to be approximately 858,000 bales when the harvest is completed. The final tally on the 1961 crop was 828,000 bales. The increased production resulted from increases in both harvested acreage and yields per acre (Table 7). About 25 percent of the acreage was skip-row planted and contributed to the increased yields.

Arizona again led the nation in yields of both upland and American-Egyptian cotton. The leading states in per-acre yields of upland cotton were Arizona, 1,114; California, 1,082; New Mexico, 689; Missouri, 583; Mississippi, 515. The yields on American-Egyptian cotton were Arizona, 569; Texas, 495; New Mexico, 415.

Lower prices for both lint and seed partially offset the increased production with the result that in-

Table 7. Arizona Cotton Production, 1962.

	Arizona			U. S.
	1962 est.	1961	1951-1960	1962 est.
<b>Production</b>	..... bales .....			
All cotton	885,000	828,000	835,000	14,723,000
Upland	837,000	799,900	803,800	14,624,000
American-Egyptian	48,000	28,100	31,200	99,000
<b>Per-acre Yields</b>	..... pounds .....			
All cotton	1,059	1,010	903	455
Upland	1,114	1,045	929	455
American-Egyptian	569	518	540	510
<b>Acreage</b>	..... acres .....			
All cotton	401,000	392,000	461,000	15,521,000
Upland	360,500	366,100	431,700	15,427,800
American-Egyptian	40,500	25,900	29,100	93,200

come from cotton increased by only about three percent from \$158,348,000 in 1961 to \$163,334,000 in 1962. The upland price per pound of lint declined from \$.3289 to \$.3170, and the cotton seed price per ton declined from \$54.70 to \$49.00 in 1962.

The harvest was marked by increased mechanical picking, partly as a nonavailability of bracero labor, and by increased use of mechanical scrapping in order to recover cotton which was left on the ground and on the plant following mechanical picking. These changes in harvesting were among factors contributing to the drop in the grade index from 99.4 in 1961 to about 96.0 in 1962.

The shift of planting from the Acala varieties to Deltapine Smoothleaf continued in the 1962 season, reaching almost 80 percent of planted acres (Table 8).

Unusually high proportions of the early harvested cotton in the state moved into the government loan program. Later in the season, mid-

south cotton quality declined slightly giving Arizona a more favorable position in the market.

Long staple cotton yielded somewhat lower grades because of gray-ing from leaf-mold fungi. Somewhat shorter staple lengths were also observed.

With the increasing carryover of cotton from the 1961 season, the 1963 national upland cotton allotment was reduced to the legal minimum of 16,000,000 acres. This means a 1963 allotment for Arizona of approximately 330,000 acres of short staple following a 1962 season allotment of 370,694 acres.

The Arizona acreage allotment of long staple cotton was increased for the second straight year. The 1963 allotment is approximately 68,650 acres after a 60 percent increase from 42,433 acres in 1962.

Irrigated cotton growers voluntarily contributed \$1,341,405 (at the rate of \$1 per bale) to the treasury of the Cotton Producers Institute during its first year. The trustees have set aside \$1,000,000 for advertising and promotion, and made re-

**Table 8. Percentage of Arizona Cotton Acreage Planted to Specific Varieties, 1958-1962.**

Year	Acala 44 and 4-42	Acala 1517C and D	Pima S-1 and S-2	DPL Smooth- leaf	Other	Total
1958	87	5	6	0	2	100
1959	87	7	5	0	1	100
1960	63	9	4	1	23	100
1961	17	7	4	71	1	100
1962	6	6	5	79	4	100

Table 9. Estimated Costs and Returns for Producing Upland Cotton Per Acre, Arizona, 1963.

Costs and Returns per Acre for Two-bale Yield	Salt River Project	Arizona Pump Areas		
		200' Lift	300' Lift	400' Lift
<b>Receipts</b>				
Lint (1,000 lbs.) at .317 cents/lb.	\$ 317.00	317.00	317.00	317.99
Seed (1,600 lbs.) at \$49.00/ton	39.20	39.20	39.20	39.20
Total receipts	\$356.20	356.20	356.20	356.20
<b>Costs</b>				
<b>Preharvest cost</b>	<b>per acre</b>			
Land preparation <sup>a</sup>	17.50			
Planting <sup>b</sup>	4.00			
Cultivation (3 times)	6.00			
Hoeing and thinning <sup>c</sup>	.500			
Irrigation and ditch labor	10.00			
Seed (22 lbs.)	3.41			
Chemical weed control (mat. and appl.) <sup>d</sup>	5.90			
Fertilizer (mat. and appl.) <sup>e,f</sup>	25.60			
Insecticide (mat. and appl.) <sup>g</sup>	22.50			
Defoliation (mat. and appl.)	5.60			
Production credit	4.50			
Industrial insurance and social security	.75			
Cash farm overhead <sup>h</sup>	10.00			
Preharvest cost less water	120.76	120.76	1207.6	120.76
Water (cash cost only) 5 acre-feet	21.00	27.00	40.00	53.00
Total preharvest cost Per Bale Per Acre	141.76	147.76	160.76	173.76
Picking <sup>i</sup>	24.75	59.50		
Contracting	.55	1.10		
Hauling	1.75	3.50		
Ginning	17.25	34.50		
Misc. charges <sup>k</sup>	1.65	3.30		
Total harvest cost \$45.95	91.90	91.90	91.90	91.90
Total Direct Cost	233.66	239.66	252.66	265.66
Fixed Cost (overhead)				
Rental value of cotton land <sup>l</sup>	70.00	65.00	55.00	45.00
Taxes <sup>m</sup>	8.50	6.40	4.20	3.85
Total Fixed Cost	78.50	71.40	59.20	48.85
Total Cost Exclusive of Management	312.16	311.06	311.86	314.51
Returns Above Direct Cost	122.54	116.54	103.54	90.54
Returns to Management, per acre	44.04	45.14	44.34	41.69

a Includes cut stalks, disc plow, disc, float, furrow out.

b Includes a preplant tillage operation, e.g., a light discing or mulching, the planting operation and an operation to knock down caps after planting to insure uniform depth of planting.

c This is primarily a once-over thinning operation.

d Chemical weed control with Monuron or Diuron. See County Agent for recommend-

ation in your area.

e For 140 pounds N and 70 pounds P<sub>2</sub>O<sub>5</sub> plus application cost.

f The amounts of fertilizer and insecticide shown are not necessarily recommendations of The University of Arizona, but rather are estimates of average amounts actually used by Arizona farmers.

g For 2 air applications, 25 pounds each, of 15-5-40 dust, plus 2 air applications, 7 gallons each of 4-2 emulsion.

search contracts that will total about \$350,000. The University of Arizona received a grant of \$23,000

to be matched by the University to make a study of how nitrogen is used by the cotton plant.

## Hay

Hay prices in Arizona averaged about \$1.00 per ton higher in 1962 than in 1961. Acreage was down slightly with yields about the same resulting in a somewhat smaller crop.

Hay acreage in 1962 was 257,000 acres, down 7 percent from 1961 and slightly less than the 1951-60 average. Average yield was 4.36 tons per acre. Total production of hay was 1,108 thousand tons, down 8 percent from 1961 but 31 percent greater than the previous ten-year average.

In the Salt River Valley early-year prices paid to producers for No. 2 Green old-crop alfalfa held steady at about \$30 per ton f.o.b. warehouse. Large numbers of sheep and cattle on pasture combined with cold weather delayed harvesting of new-crop alfalfa until mid-April. Most of the new-crop hay went to dairies for around \$25 per ton f.o.b. field. Feeders waited for mid-summer hay and paid \$18-20

per ton for good quality alfalfa baled in the field. Large numbers of cattle on feed and short supplies of hay pushed the price of good quality last cutting hay to \$25-27 per ton baled in the field. By year-end feeders were paying up to \$37 f.o.b. warehouse for earlier storage hay comparable to No. 2 Green or better for grinding.

In the Yuma county area cold weather delayed harvesting of new-crop alfalfa until mid-April. Early-year marketings of old-crop hay were generally light with a price of \$22-25 per ton. New-crop hay met an active demand from dairies at \$24-25 per ton. Prices held steady through June. By July hay quality had fallen and trading slowed. Prices for good hay were about \$18-20 baled in the field. Last cutting hay found good demand. Prices for good quality last cutting hay began at \$25-26 per ton in October but had risen to \$29-30 by the end of the year reflecting strong demand and short supplies.

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h Includes such items as car and truck expense, general farm labor, fencing, irrigation siphons and tarps, hand tools, book-keeping, dues and subscriptions, insurance, and general utilities.

i Includes: minimum 2 acre-feet at \$1.25 per acre-foot, 1 acre-foot surface developed and normal flow at \$3.50, and 2 acre-feet pump right water at \$7.50 per acre-foot.

j Based on picking 90 percent machine and 10 percent hand.

k Includes: 35c bale sterilization, 20c contribution to National Cotton Council, and 10c contribution to Arizona Cotton Growers Assn., \$1 contribution to Cotton Producers Institute.

l This figure represents the average net rental value of cotton land capable of a 2-bale yield at the various pump levels.

m Based on an assessed value of \$100 for SRV and, \$75 for 200-foot lift land, \$55 for 300-foot lift land, \$50 for 400-foot lift land multiplied by the average rural tax rate for similar areas.

Table 10. Estimated Costs and Returns for Producing Alfalfa for Hay, Per Acre, 1963.

Costs and Returns per Acre for 6-ton Yield	Salt River Project	Arizona Pump Areas		
		200' Lift	300' Lift	400' Lift
<b>Receipts</b>				
Hay (6 tons at \$24.60 per ton)				
Total receipts	147.60	147.60	147.60	147.60
<b>Costs</b>				
Establishing Stand per acre				
Land preparation <sup>a</sup> 17.50				
Drilling 2.00				
Seed (20 lbs.) 9.00				
Fertilizer <sup>b</sup> 8.10				
Irrigation (twice) 2.50				
Water, 1½ acre-feet	7.15	10.66	15.99	21.33
Total cost of establishing stand	46.25	49.76	55.09	60.43
One-third charged each year	15.42	16.59	18.36	20.14
Growing and Harvesting				
Irrigation labor 10.00				
Mowing and raking 15.00				
Bale and roadside (6 tons) 30.00				
Fertilizer and application <sup>c,d</sup> 9.95				
Insecticide application <sup>c,d</sup> 7.56				
Total growing and harvesting cost	72.51	72.51	72.51	72.51
Water (cash cost only) 5 acre-feet	21.00 <sup>f</sup>	27.00	40.00	53.00
Cash farm overhead expense <sup>g</sup> 10.00	10.00	10.00	10.00	10.00
Total direct cost	118.93	126.10	140.87	155.65
Fixed cost (overhead)				
Rental value of land <sup>h</sup> 40.00	40.00	35.00	25.00	15.00
Taxes <sup>i</sup> 8.50	8.50	6.40	4.20	3.85
Total fixed cost	48.50	41.40	29.20	18.85
Total cost exclusive of Management	167.43	167.50	170.07	174.50
Returns above direct cost	28.67	21.50	6.73	-8.05
Returns to Management, per acre	0.00	0.00	0.00	0.00

a Includes cut stalks, disc, plow, dics, float, border and land plane.

b For 32 lbs. N 40 lbs. P<sub>2</sub>O<sub>5</sub> plus cost of application.

c For 200 lbs. Tribel Super Phosphate plus application.

d The amounts of fertilizer and insecticide shown are not necessarily recommendations of the University of Arizona, but rather are estimates of average amounts actually used by Arizona farmers.

e For 25 lbs. of malathion and air application.

f Includes: minimum 2 acre-feet at \$1.25 per acre-foot, 1 acre-foot surface developed and normal flow at \$3.50, plus 2 acre-feet pump right water at \$7.50 per acre-foot

g Includes such items as car and truck expense, general farm labor, fencing, irrigation siphons and tarps, hand tools, bookkeeping, dues and subscriptions, insurance, and general utilities.

## Feed Grains

Acreage, yield and production of feed grains in Arizona were down in 1962. Prices were generally higher.

Barley acreage was 120 thousand acres, down 27 percent from 1961. Grain sorghum acreage was 98 thousand acres down 15 percent. In addition, there were 22 thousand acres of sorghum for silage and nine thousand acres of forage, about the same as the year before. The Emergency Feed Grain Program was expanded from 1961, when it applied to corn and grain sorghum, to include barley in 1962. This program combined with the expansion of safflower acreage appeared to be mainly responsible for the large drop in feed grain acreage in Arizona.

Average yields of both barley and grain sorghum in 1962 were down from the record highs in 1961. Grain sorghum dropped from 1.82 to 1.74 tons per acre and barley dropped from 1.63 to 1.56 tons.

Arizona produced 187 thousand tons of barley and 170 thousand tons of grain sorghum in 1962. This was a decrease from 1961 of 30 and 19 percent, respectively. Corn production was 10 thousand tons, down 8 percent and oats production was 5.8 thousand tons down 9 percent from 1961.

Barley prices in Arizona averaged \$2.52 per hundredweight in 1962, 29 cents higher than in 1961. The first part of the year barley prices averaged \$2.40 per hundredweight. By midyear the price had risen to \$2.50 and by August to \$2.60 per hundredweight where it remained for the rest of the year. Grain sorghum prices averaged \$2.07 per hundredweight in 1962, five cents higher than in 1961. The year began with prices for grain sorghum 10 cents lower than in 1961, but at the end of the year the price had risen to 5-10 cents higher than the year before.

## Oilseeds

Safflower was the principal oilseed grown in Arizona during 1962. In 1950, due to cotton acreage restrictions, about 5,000 acres were grown in the state. In 1958, a root rot resistant variety (Gila) was introduced, and in 1959, approximate-

ly 350 acres were grown. In 1960, acreage was estimated at 3,500. In 1961, acreage shot up to around 14,000; then last year mushroomed to perhaps 55,000 to 65,000 acres.

This rapid increase in acreage of safflower was due primarily to root rot resistance, good prices, and acreage restrictions on cotton and grain crops. Yields in Arizona are also relatively high. For instance, during 1962 Arizona had about one-tenth of the safflower acreage in the U.S.,

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h This figure represents a net rental value for alfalfa land capable of a 6-ton yield at the various pump levels.

i Based on an assessed value of \$100 for SRV land, \$75 for 200 ft. lift land, \$55 for 300 ft. lift land, \$50 for 400 ft. lift land multiplied by the average rural tax rate for similar areas.

**Table 11. Estimated Cost and Returns for Producing Grain Sorghum, per Acre, Arizona, 1963.**

Cost and Returns per Acre for 2-ton Yield	Salt River Project	Arizona Pump Areas		
		200' Lift	300' Lift	400' Lift
<b>Receipts</b>				
Sorghum grain (2 tons at \$2.08 per cwt.)				
Total receipts	83.20	83.20	83.20	83.20
<b>Costs</b>				
Preharvest cost per acre				
Land preparation <sup>a</sup>	13.50			
Planting	4.00			
Cultivating	3.00			
Seed (12 lbs. hybrid)	2.40			
Irrigation and ditch labor	7.00			
Fertilizer and application <sup>b,c</sup>	16.65			
Water (cash cost only) 3½ acre ft.	9.75 <sup>d</sup>	16.67	28.00	37.33
Cash farm overhead <sup>e</sup>	10.00	10.00	10.00	10.00
Total preharvest cost	66.30	73.22	84.55	93.88
Harvest cost				
Combining	7.00			
Hauling	3.50			
Total harvest cost	10.50	10.50	10.50	10.50
Total direct cost	76.80	83.72	95.05	104.38
Fixed cost (overhead)				
Rental value of land <sup>f</sup>	40.00	35.00	25.00	15.00
Taxes <sup>g</sup>	8.50	6.40	4.20	3.85
Total fixed cost	48.50	41.40	29.20	18.85
Total cost exclusive of management	125.30	125.12	124.25	123.23
Returns above direct cost <sup>h</sup>	6.40	—52	—11.85	—21.18
Returns to management, per acre	0.00	0.00	0.00	0.00

a Includes: disc, plow, disc, furrow out.

b For 32 lbs. N, 40 lbs. P<sub>2</sub>O<sub>5</sub> plus cost of application.

c The amount of fertilizer shown is not necessarily recommendations of the University of Arizona, but rather is an estimate of average amounts actually used by Arizona farmers.

d Includes: minimum 2 acre-feet at \$1.25 per acre-foot plus 1 acre-foot surface developed and normal flow at \$3.50, and ½ acre-foot of pump right water at \$7.50 per acre-foot.

e Includes such items as car and truck expense, hand tools, bookkeeping, dues and subscriptions, insurance, and general utilities.

f This figure represents a net rental value for grain sorghum land capable of a 2-ton yield at the various pump levels.

g Based on an assessed value of \$100 for SRV land, \$75 for 200 ft. lift land, \$55 for 300 ft. lift land, \$50 for 400 ft. lift land multiplied by the average rural tax rate for similar areas.

h It has been estimated by members of the agronomy and plant breeding departments, University of Arizona, that sorghum or small grain contributes organic matter or enters into disease control to such an extent that it increases the production of the following cotton crop by at least ¼ bale per acre. Therefore, if grain sorghum or small grain is grown in rotation with cotton, a credit should be given to these crops for the beneficial effects to other crops in the rotation.

Table 12. Estimated Cost and Returns for Producing Barley per Acre, Arizona, 1963.

Cost and Returns per Acre for 1.8-ton Yield	Salt River Project	Arizona Pump Areas		
		200' Lift	300' Lift	400' Lift
<b>Receipts</b>				
Barley (1.8 tons at 2.52 per cwt.)				
<b>Total Receipts</b>	90.72	90.72	90.72	90.72
<b>Costs</b>				
Preharvest cost per acre				
Land preparation <sup>a</sup> 13.50				
Drilling 2.00				
Seed (100 lbs.) 4.15				
Irrigation and ditch labor 6.00				
Fertilizer and application <sup>b,c</sup> 16.50				
Water 3 acre-feet	6.00 <sup>d</sup>	16.00	24.00	32.00
Cash farm overhead <sup>e</sup>	10.00	10.00	10.00	10.00
Total preharvest cost	58.15	68.15	76.15	84.15
Harvest cost				
Combining 6.00				
Hauling 3.15				
Total harvest cost	9.15	9.15	9.15	9.15
Total direct cost	67.30	77.30	85.30	93.30
Fixed cost				
Taxes <sup>f</sup>	8.50	6.40	4.20	3.85
Rental Value of Land <sup>g</sup>	40.00	35.00	25.00	15.00
Total fixed cost	48.50	41.40	29.20	18.85
Total cost exclusive of management	115.80	118.70	114.50	112.15
Returns above direct costs <sup>h</sup>	23.42	13.42	5.42	-2.58
Returns to management, per acre	0.00	0.00	0.00	0.00

a Includes: cut stalks, disc, plow, disc, border.

b For 90 lbs. N and 50 lbs. P<sub>2</sub>O<sub>5</sub> plus cost of application.

c The amount of fertilizer shown is not necessarily recommendations of the University of Arizona, but rather is an estimate of average amounts actually used by Arizona farmers.

d Includes: minimum 2 acre-feet at \$1.25 per acre-foot plus 1 acre-foot surface developed and normal flow water at \$3.50.

e Includes such items as car and truck expense, general farm labor, fencing, irrigation siphons and tarps, hand tools, bookkeeping, dues and subscriptions, insurance, and general utilities.

f Based on an assessed value of \$100 SRV land, \$75 for 200 ft. lift land, \$55 for 300 ft.

lift land, \$50 for 400 ft. lift land multiplied by the average rural tax rate for similar areas.

g This figure represents the net rental value of land capable of producing 1.8 tons of barley at the various pump levels.

h It has been estimated by members of the Agronomy and Plant Breeding Departments, University of Arizona, that sorghum or small grain contributes organic matter or enters into disease control to such an extent that it increases the production of the following cotton crop by at least ¼ bale per acre. Therefore, if grain sorghum or small grain is grown in rotation with cotton, a credit should be given to these crops for the beneficial effects to other crops in the rotation.

but produced around one-third of the total production.

During 1962, with prices around \$100 per ton, safflower showed the second highest returns per acre in field crops. Prices of safflower could drop to about \$75 per ton before the crop would cease to rank next to cotton in returns per acre. Apparently, returns per acre of safflower would compare to returns per acre of cotton produced for world markets at around 25 to 26 cents per pound.

Estimates of safflower acreage in Arizona for 1963 range up to 200,000 acres; however, a linear projection of recent acreage increases indicates a 1963 acreage of much lesser proportions. In December, 1962, seedmen in the state estimated that 1963 acreage would be something over 100,000 acres.

Since returns per acre of safflower appears to be second to cot-

ton in field crops, acreage for the 1963 harvest could reach 130,000 acres or more; that is, if farmers have not depended upon the possibility that Congress will provide for additional cotton acreage at world prices. To the extent that farmers hold land in anticipation of additional cotton acreage allotments or feed grains acreage, the acreage of safflower could be somewhat less.

Many other oil seed crops have been commercially grown in Arizona in past years. Most of these have not been profitable to the grower and cannot be considered as economic alternatives to cotton and feed grains. Under certain conditions, flax, peanuts, sesame, and castor beans have returned profits to Arizona farmers. Production of oil seed crops other than safflower, however, cannot be considered of major importance in Arizona's agricultural production.

## Vegetables and Melons

During the vegetable crop year of 1961-62, 58,179 carlot equivalents of vegetables and melons were shipped from Arizona. The total value of production was \$80,100,000 compared to \$67,700,000 or an 18 percent increase over the 1960-61 income. This increase is the result of higher value of production for broccoli, cabbage, cauliflower, celery, winter and spring lettuce, and onions. These increases were partially offset by lower values for all melon crops, carrots, and late fall lettuce.

The lettuce acreage, decreased from 58,318 in 1961 to 55,473 acres in 1962. Acreage was divided as follows: Salt River Valley (including

Harquahala, Eloy, Redrock, and Casa Grande areas) 27,602 (spring 14,501, fall 13,101), Aguiña-Salome 7,495 (spring 3,255, fall 4,240) Willcox 5,693 (spring 2,180, fall 3,513). Approximately 96.3 percent of the crop moved in regular packed cartons and 3.7 percent was wrapped individually in cellophane before being packed.

The potato acreage, 8,474 acres, declined for the first time since 1959. Decreases were seen in all districts except the Phoenix area which increased from 2,597 in 1961 to 3,293 in 1962. The Yuma area showed the largest decrease with only 80 acres produced in 1962 as

**Table 13. Value of Major Arizona Vegetables and Melons.**

Product	Value of Production		
	1961-62	1960-61 <sup>a</sup>	Average 1951-60
	(millions of dollars)		
Lettuce	49.2	36.8	31.9
Cantaloup <sup>b</sup>	12.0	14.9	12.0
Potatoes	5.8	5.8	c
Watermelons	1.4	1.8	1.8
Onions	2.1	1.8	1.5
Carrots	2.6	2.9	3.4
Celery	.4	.2	.6
Broccoli	.7	.5	.5
Cabbage	1.5	.5	.7
Cauliflower	.5	.4	.4
Miscellaneous vegetables	3.9	1.8	c
	80.1	67.2	

<sup>a</sup>Revised.

<sup>b</sup>Includes honeydews.

<sup>c</sup>Data not available, hence totals are not made for these years.

Source: *Vegetable, Melon and Citrus Crop 1961 Annual Summary and Annual Crop Summary*, USDA, Statistical Reporting Service, Phoenix, December, 1962.

compared to 1,658 acres in 1961. This reduction in acreage at Yuma is apparently due to lower yield and quality and little or no price advantage due to time of marketing.

Watermelons and cantaloups continue to be important crops in Arizona. There were 16,500 acres of spring cantaloups at Yuma compared to 14,500 a year earlier. In the Salt River Valley production dropped from 1,800 acres in 1961 to 1,700

in 1962. Watermelons produced in the Salt River Valley (including Casa Grande-Eloy area) amounted to 2,739 acres. Other areas of importance in watermelons are Bowie-Benson area (170 acres), Yuma (762 acres), and Theba-Hyder (470 acres). In addition to watermelons and cantaloup, Arizona produced 520 acres of honeydews, 37 acres of Cranshaws, 23 acres of Persians, and 10 acres of Casabas.

## Citrus and Grapes

In November 1962, orange production in Arizona for the 1962-63 crop year was forecast at 1,050,000 boxes compared with the 1961-62 crop of 1,440,000 boxes. Grapefruit production was forecast at 1,900,000 boxes compared with the 1961-62 crop of 2,270,000 boxes. The 1962-63

lemon production was estimated at 500,000 boxes, less than one-third of the 1,540,000 boxes produced in 1961-62.

The preceding estimates do not reflect the damage from cold weather in January, 1963. Harvest of navel oranges and lemons was

near completion at the time of the freeze; therefore, grapefruit and Valencia oranges suffered the greatest loss in production of fruit for this season. Estimates of the amount of loss, however, were not available at the time of this writing.

Prices received for lemons and grapefruit were much improved over the 1961-62 price. Navel oranges, however, were moving at prices much lower than a year ago. Prices of all citrus advanced after the freezing weather damaged fruit throughout citrus areas of the country.

Freezing weather in January caused a considerable amount of damage to lemons and grapefruit. A few lemon groves in the Glendale areas were completely devoid of fruit for the 1962-63 pick. Other areas of the Salt River Valley had yields equal to only about 10 percent of normal. The lemon crop in the Yuma area was also considerably reduced; however, a 30 to 40 percent crop was harvested in that area. Damage to navel and Valencia oranges was less severe than damage to lemons and grapefruit in early 1962.

During January 1963, freezing caused considerable damage to citrus in the Salt River Valley area. The Chandler Heights and Baseline areas received the heaviest damage, while damage in the Mesa area was less severe. Damage from freezing in the Yuma area appears to be small from the January cold weather.

In Texas during the early part of 1962, freezing severely damaged grapefruit. Only about 100,000 boxes of grapefruit are expected to be shipped in 1962-63 from that area in comparison to 2,650,000 in 1961-62.

Florida also received severe cold weather during December 1962. Reliable sources estimate about a 20 percent damage to grapefruit available for harvest at the time of the freeze. All of the damage occurred in the interior area.

Table 14 shows the acreage of bearing and nonbearing citrus fruits by variety as reported in 1962. Salt River Valley data were compiled from a survey of citrus packers in the Salt River Valley. Data for the Yuma area were calculated

**TABLE 14. Arizona Citrus Acreage, 1962**

Kind of Citrus	Acres						Total Arizona
	Bearing			Nonbearing			
	Yuma	SRV	Total	Yuma	SRV	Total	
Valencias	2,487	3,076	5,563	6,112	894	7,006	12,569
Navels	111	3,038	3,149	186	498	684	3,833
Grapefruit (white)	1,060	4,093	5,153	243	0	243	5,396
Grapefruit (red)	576	276	852	15	351	366	1,218
Lemons (all)	5,449	1,022	6,471	399	1	400	6,871
Tangerine (all)	215	373	588	425	304	729	1,317
Sweet oranges	90	834	924	135	15	150	1,074
Limes—misc.	20	7	27	44	5	49	76
	10,008	12,719	22,727	7,559	2,068	9,627	32,354

Source: Yuma county data based on Yuma County Citrus Survey by Agricultural Extension Service, Yuma, 1962.

Salt River Valley data based on survey of citrus packers in Salt River Valley, 1962.

from a continuing survey by the Yuma county agricultural extension office.

Total production of grapes for 1962 at 12,100 tons (641 carlot equiv.) was the fourth largest on

record. Average yield was 6.1 tons in 1962 compared with 4.6 tons in 1961. Grape prices were somewhat lower in 1962, producing an estimated income of \$2,480,500 compared with \$2,123,000 in 1961.

## Beef Cattle and Calves<sup>1</sup>

The gross value to Arizona beef cattle producers for the period December 1961 to December 1962 is estimated at \$184.5 million compared to \$147.8 million for the same period a year earlier. Cattle and calves shipped into the state from July 1961 through June 1962 were valued at \$78 million. The value of cattle and calves shipped into the state July 1960 through June 1961 was \$52.3 million. The net cash value (gross value minus value of inshipments) of cattle sold in Arizona in 1962 was \$106.5 million—\$11 million greater than that of 1961.

Gross and net cash value increased in 1962 as compared to 1961 due to more cattle and calves being fed in the state and the increase in both stocker and feeder and slaughter cattle prices. The United States Department of Agriculture estimated that 571 million head of cattle and calves were marketed out of Arizona feedlots from December 1961 through November 1962. During a similar period a year earlier 505 million were marketed.

Slaughter cattle prices increased approximately two cents a pound in 1962 while stocker and feeder calf prices increased about one and

one-half cents a pound and stocker and feeder yearling prices increased about one half a cent a pound.

Shipment of cattle and calves out-of-state during the last month of 1961 and the first eleven months in 1962 totaled 756,703 head compared to 656,837 head for the same period a year earlier. The outshipments of steers one year old and older increased by 77,000 head, and the outshipments of calves increased by about 19,000 head. This increase can be accounted for by the increase in slaughter cattle being shipped to California and Texas, with most of the increase going to California.

Inshipments of cattle and calves during the period July 1961 through June 1962 totaled 654,936—an increase of 198,544 head over that of a year earlier.

Total commercial slaughter of cattle in Arizona for the 12 months ended December 1, 1962, is estimated at 195,300 head or a total of 171,298,000 pounds live weight. Commercial calf slaughter totaled 10,000 head or 4,674,000 pounds live weight for the same period. Commercial cattle slaughter was up from a year earlier over 19,000 head or an estimated 17,392,000 pounds live weight. Commercial calf slaughter decreased by an estimated 2,300 head or 344,000 pounds live weight.

The value of the gain put on in Arizona feedlots during 1962 is es-

<sup>1</sup>Data on number of cattle on feed, inshipments and outshipments of cattle and calves, the number of beef calves produced in Arizona, and commercial slaughter of cattle and calves were taken from reports published by the Arizona Crop and Livestock Reporting Service, Phoenix, Arizona.

**Table 15. Average Composition of Rations Fed in Arizona Feedlots, 1957 and 1961.**

Kind of Feed	Percent of Feed Fed <sup>a</sup>	
	1957	1961
Hay and straw (mostly alfalfa hay) <sup>b</sup>	26.6	20.1
Roughages		
Silage (mostly sorghums) <sup>a</sup>	18.0	7.3
Green chop <sup>a</sup>	2.4	2.9
Cottonseed hulls	3.9	2.8
Other roughages <sup>c</sup>	0.9	-
Total roughages	51.8	33.1
Concentrates		
Grain (mostly barley and sorghum <sup>d</sup> )	36.5	53.8
Molasses	4.7	4.6
Cottonseed meal	6.0	3.6
Commerical mixed feed	0.3	2.5
Fat	-	0.9
Other concentrates <sup>c</sup>	0.7	1.5
Total concentrates	48.2	66.9
Total, all feed	100.0	100.0

<sup>a</sup>All-dry weight.

<sup>b</sup>In 1961, 84% was alfalfa hay; other hay, 3%; and straw, 13%.

<sup>c</sup>Other roughages include cotton gin trash and cull vegetables.

<sup>d</sup>In 1961, 57% was grain sorghum; barley, 42%, and other feed grains, 1%.

<sup>e</sup>Other concentrates include cottonseed, brewers' and distillers' grains, rice bran, potatoes, salt, and minerals.

timated at \$52 million compared to \$42.2 million in 1961. The 1962 calf crop is valued at \$30.8 million, while the 1961 calf crop was valued at \$25.7 million. The value of other beef cattle produced on Arizona ranges and pastures during 1962 is about \$23.7 million compared to \$27.6 million for the year earlier.

There has been a marked trend toward the use of rations containing a higher percentage of concentrates during recent years (Table 15). The percentage of grain in the rations has been markedly increased. Recently, many feedlots have started adding fat to rations to increase their energy value. Use of commercially mixed feeds has increased a

great deal since 1957. These commercial "pre-mixes" supply protein, minerals, trace elements, vitamins, and sometimes stilbestrol. Cottonseed meal has been supplanted in part by commercial pre-mixes. Less roughage, especially silage, is now fed than in 1957. Many feedlots have discontinued feeding silage.

Most cattle feeders increase the percentage of concentrates in the ration as the animals gain in weight. In 1961, starting rations were made up of about equal proportions of roughage and concentrates. The average finishing ration, however, contained 84 percent grain and other concentrates.

## Sheep and Wool<sup>1</sup>

Cash income from the sale of sheep and wool in Arizona during 1962 was estimated at \$6.1 million—\$4.8 million from the sale of sheep and lambs, and \$1.3 million from the sale of wool. This is \$1,000,000 more than the total cash receipts for sheep and wool in 1961.

The number of lambs produced in the state during 1962 was estimated at 291,000 head, down 2 percent from 297,000 produced in 1961. White-owned lambs dropped from 123,000 head in 1961 to 120,000 head in 1962. At the same time the number of breeding ewes one year old and older decreased from 350,000 head on January 1, 1961, to 339,000 head on January 1, 1962—a little over 3 percent.

Wool production in 1962 was 3,431,000 pounds compared to 3,509,000 pounds for 1961. The average price for wool in 1962 was 37.5 cents per pound or 2.5 cents a pound more than the 1961 average price. The increase in price of wool more than offset the decrease in wool production, resulting in an increased income of \$60,000 more than in 1961—\$1.29 million in 1962 compared to \$1.23 million in 1961. The fact that the number of lambs fed in the state during 1962 increased 65 percent over 1961 (76,000 compared to 46,000 head), and the price of lambs increased  $\frac{1}{2}$  to 3 cents a pound accounts for an additional increase in cash income to sheep and lamb producers during 1962.

## Dairy

Dairymen in Arizona delivered about 443.9 million pounds of milk to handlers regulated under the Federal Milk Marketing Order in 1962. Class I sales equalled 370.6 million pounds or 83.5 percent of the total. Class II and III deliveries reached 55.3 and 18.0 million pounds, respectively (12.5 and 4.0 percent).

The three class accounting system for milk was initiated in June, 1962. Class II now includes cottage cheese and milk sold to food processing establishments. Class III includes milk powder, butter, ice cream mix and other cheese.

Cash receipts from dairying are estimated at \$25.7 million during 1962. Approximately \$22.7 million was from the sale of milk and milk products while \$3.0 million was received from the sale of dairy animals.

Milk prices received by farmers for 1962 averaged \$5.12 per hundredweight compared to \$5.08 in 1961. These prices represent weighted average prices received for all milk sold and not the average blend price for 3.5 percent milk.

Cull rates nearly equalled the 1961 pace. DHIA records for 1962 indicated 32.0 percent of the cows left the herds during the year.

Herd size continued to increase as well as herd production. According to DHIA records there were 19,756 cow years reported in 154 herds. This was an increase of 748

<sup>1</sup>Estimates for wool production, size of lamb crop, price of wool, and number of sheep and lambs on Arizona farms and ranches are those data published by the Arizona Crop and Livestock Reporting Service, Phoenix, Arizona.

cow years and a decrease of 6 herds. The number of cow years per herd increased from 119 in 1961 to 128 in 1962. The decline in dairy enterprises was in part a result of the cost-price squeeze and a favorable "climate" to sell out.

The Federated Producers Association was given cooperative status by the USDA. Arizona now has three official dairy marketing cooperatives. Sporadic retail "milk wars" occurred throughout the year. Two small but new processing plants started operating in 1962.

On the national scene, milk pro-

duction increased over 1961 and consumption ran below supplies. In 1962, a gain in aggregate consumption of milk and dairy products occurred. Major reasons for the increase were the gain in civilian population and the increase in donations of government-owned dairy products to welfare and national school lunch programs.

The per capita consumption of milk in all forms in 1962 is expected to be at the 1961 level or 640 pounds per person. If so, this is the first year since 1955 that consumption per person has not declined.

## Poultry and Eggs

Total sales from poultry and eggs in Arizona during 1962 amounted to \$7.5 million compared to \$7.0 million in 1961. Eggs were the major source of income, producing \$5.2 million, up from \$5.0 million in 1961.

The average number of laying hens and the number of eggs produced per hen increased. Egg prices, however, fell from 45.2 cents in 1961 to 38.2 in 1962. Total eggs produced in the state increased from 145 million in 1961 to 167 million in 1962 as a result of a larger number of hens and a higher rate of lay.

Farm prices of eggs in Arizona were about 7 cents lower than in 1961. Changes in demand appear to have played an important role in establishing 1962 egg prices in Ari-

zona and in the nation. Arizona's laying flock was considerably larger than in 1961. For the nation as a whole, egg production increased about 1.5 percent with average prices down from 44.8 cents to 38.3 cents per dozen in 1962. Consumers used slightly fewer eggs per capita this year, even though prices were lower. The decline in demand for eggs since World War II appears to be continuing.

The prices for poultry during 1962 was about the same as in 1961. Farm poultry (primarily cull hens) averaged 11.7 cents per pound. Broiler prices averaged below 1961 at 19.7 cents per pound. Turkeys held at 25.2 cents per pound even though production rose to 181 thousand birds, an increase of 74,000.

## Principal Arizona Crops in 1962 — Estimated Acreage by Counties and Production for the State

CROP	State Total	Apache	Cochise	Coconino	Gila	Graham	Greenlee	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz	Yavapai	Yuma
Alfalfa: Acres cut for hay	210,000	2,500	14,600	600	300	7,300	1,300	104,000	2,500	5,100	2,800	17,500	1,700	6,000	44,000
Hay production, tons	1,008,000														
Cotton: Upland, acres harvested	360,500	0	14,900	0	40	9,500	1,850	132,500	250	0	24,200	142,200	2,020	10	33,000
Bales (500 lbs. gross wt.)	837,000														
American-Egyptian, acres harvested	40,500	0	220	0	15	11,500	0	16,700	0	0	3,200	8,440	25	0	400
Bales (500 lbs. gross wt.)	48,000														
Barley: Acres harvested for grain	120,000	0	1,800	200	50	5,030	200	61,000	550	100	6,100	34,000	200	800	10,000
Grain production, tons	187,200														
Corn: Acres harvested, all purposes <sup>a</sup>	28,000	2,500	2,200	1,400	80	500	280	4,600	100	11,500	300	500	80	3,700	260
Grain production, tons <sup>b</sup>	10,080														
Sorghums: Acres harvested, all purposes <sup>a</sup>	129,000	100	33,500	100	150	3,300	1,950	47,000	600	300	9,500	19,000	600	400	12,500
Grain production, tons <sup>b</sup>	170,130														
Wheat: Acres harvested for grain	24,000	50	400	400	0	10	140	7,500	50	450	100	8,300	0	800	5,800
Grain production, tons	30,240														
Vegetables: Acres harvested <sup>c</sup>	96,650	300	6,000	0	0	50	100	49,000	250	700	700	6,300	100	150	33,000
Production, commercial, cwt.	15,989,000														
Grapefruit: Total acres <sup>d</sup>	6,645	0	0	0	0	0	0	4,700	0	0	20	25	0	0	1,900
Production, 1961-62 crop, cartons	4,540,000														
Oranges: Total acres <sup>d</sup>	17,500	0	0	0	0	0	0	8,350	0	0	20	30	0	0	9,100
Production, 1961-62 crop, cartons	2,880,000														
Lemons: Total acres <sup>d</sup>	6,870	0	0	0	0	0	0	1,020	0	0	10	0	0	0	5,850
Production, 1961-62 crop, cartons	3,080,000														
Other crops: Acres <sup>e</sup>	129,000	600	3,900	2,300	400	2,000	500	65,000	600	800	3,800	21,800	300	1,800	25,200
Total Acreage Cropped	1,168,665	6,050	77,520	5,000	1,035	39,160	6,320	501,370	4,930	18,950	50,550	258,095	5,025	13,660	181,010

<sup>a</sup>Includes acreage harvested for grain, silage and forage.

<sup>b</sup>Does not include grain harvested from acreage harvested for silage and forage.

<sup>c</sup>Year ended August 31, 1962. County acreages based on data from Arizona Fresh Fruit and Vegetable Standardization Service and County Agents.

<sup>d</sup>County Agricultural Agents and Dept. of Agr. Econ. U. of A.

<sup>e</sup>Includes safflower, miscellaneous hays, oats, flax, sugarbeet seed, bermudagrass, and grapes. Does not include pasture. Data from the Arizona Crop and Livestock Reporting Service and from County Agents.

Source: The Arizona Crop and Livestock Reporting Service, Phoenix, Arizona, unless otherwise noted. Includes both irrigated and dry-land crops.