Costs and Returns on

Field Crop Farms

along the Upper Gila River

by Billy M. Comer
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This article reports the findings of a recently completed study of costs and returns for crop farms in Graham and Greenlee Counties along the Gila River.** Comparisons are made with the results of a companion study for the Sulphur Springs Valley located in Graham and Cochise Counties by V. W. Lee and R. A. Young, reported in the May-June 1968 issue of Progressive Agriculture.

The irrigated acreage along the upper Gila River is composed of about 40,000 acres in Graham County (concentrated in the Safford-Thatcher area) and about 6,000 acres in Greenlee County (mostly in the Duncan-Franklin area). Cotton, alfalfa, barley and grain sorghum are the predominate crops. Graham County is unique in Arizona in that more American-Egyptian than upland cotton acres are grown. No American-Egyptian cotton is grown in Greenlee County.

Irrigation water is obtained from both canal companies and farm wells. In Graham County, canal companies provide an average of about 2.78 acre-feet per acre per year at an assessment cost of about $7.53 per acre. For Greenlee County, an average of 1.88 acre-feet per acre per year is supplied by the canal companies at an assessment cost of $6 per acre. In both counties, the remaining water needs are pumped from farm wells. Pumping lifts are quite small — typically from about 50 to 100 feet. Because the pumpage occurs near the river, the water table has been quite stable over time.

The cost and return estimates shown in Tables 1 and 2 were developed from a field survey of one-third of the farm operators in the Gila River areas having over 30 cropped acres. A total of 63 farmers were interviewed. Three farm sizes were defined for each county area based on the modal sizes observed. They are for Graham County, Size I, 90 acres; Size II, 290 acres; Size III, 850 acres; and for Greenlee County, Size I, 70 acres; Size II, 290 acres; and Size III, 560 acres. The average farm size was 260 acres in Graham County and 171 acres in Greenlee County.

Costs and returns were computed on the basis of price conditions and government programs prevailing in 1966. In particular, upland cotton income and acreage reflect the assumption of diversion of 25 percent of the cotton allotment.

Note that the percentage returns on invested capital (line VI of Table 2) vary from negative on the smallest Greenlee County farms to a very profitable rate on the largest farms in both counties, but especially on the large farms in Graham County. The reasons for these differences are discussed below, taking each item in the order listed in Table 2.

Gross sales on the Size III farms are greater than proportionate to the number of cropped acres when compared to Sizes I and II. This is for two reasons. The operators of the larger farms typically own cotton allotments (both upland and American-Egyptian) that are a larger percentage of their total acreage than do the operators of the smaller farms. Secondly, these larger farm owners are obtaining higher per acre yields on all crops except barley. For example, Size III farms in Graham County had an average projected yield of 915 pounds of upland cotton lint while Sizes I and II had projected yields of only about 860 pounds.

Operating costs when put on a per acre basis are the same on Sizes II and III farms, although they are higher in Graham County than in Greenlee County. This is because Graham County farms have a larger percentage of their total acreage in cotton. Per acre operating costs on Size I farms are higher than on the larger farms in both counties because they cannot afford to own cotton harvesting equipment and must hire a custom harvester.

Even though the small farms do not typically own cotton harvesting equipment, their per acre investment in machinery and equipment is still very much higher than for the larger farms. In Graham County the average value of machinery and equipment investment per acre (calculated by taking one-half the 1966 new cost of each item) was $233 for Size I farms, $131 for Size II farms, and $85 for Size III farms. Greenlee County per acre machinery and equipment investment was similar for the larger two farm sizes and somewhat lower for farm Size I. Irrigation investment for both counties also shows large economies with increased farm size.

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** *Billy M. Comer, Aspects of Resource Combination and Enterprise Selection on Eastern Arizona Farms, Thesis for M.S. degree, University of Arizona, 1967.*

Table 1. Average Value of Investment by Size of Farm, Graham and Greenlee Counties, 1966.

Item	Graham County			Greenlee County		
	Size I (90 Acres)	Size II (290 Acres)	Size III (850 Acres)	Size I (70 Acres)	Size II (290 Acres)	Size III (560 Acres)
	(Dollars)					
Power Units	5,635	13,267	24,003	5,356	11,851	15,051
Field Equipment	15,336	24,822	48,383	6,934	27,239	31,423
Irrigation Equipment	6,700	15,310	39,973	10,130	17,128	25,831
Trucks and Miscellaneous	1,560	3,295	7,333	1,560	1,620	4,080
Land[a]	58,500	188,500	552,500	35,000	145,000	280,000
Total	87,731	245,194	672,192	58,980	202,838	356,385

[a] *Land, excluding irrigation improvements shown elsewhere, is valued at $650 per acre in Graham County and $500 per acre in Greenlee County.*

Table 2. Costs and Returns by Size of Farm, Graham and Greenlee Counties, 1966 Conditions.

	Item	Graham County			Greenlee County		
		Size I (90 Acres)	Size II (290 Acres)	Size III (850 Acres)	Size i (70 Acres)	Size II (290 Acres)	Size III (560 Acres)
		(Dollars)					
I.	Gross Sales	16,877	53,847	175,981	9,465	40,766	88,881
II.	Gross Expenses						
	Operating Costs	9,623	27,856	80,579	6,180	22,767	44,116
	Cash Overhead Costs	1,179	2,368	5,190	979	3,343	2,584
	Depreciation	3,498	6,489	13,312	2,862	7,536	9,811
	Total	14,300	36,713	99,081	10,021	33,646	56,511
III.	Return to Management and Investment	2,577	17,134	76,900	-556	7,120	32,370
IV.	Management Charges (Five Percent of Gross Income)	843	2,692	8,799	473	2,038	4,444
V.	Return to Investment	1,734	14,442	68,101	-1,029	5,082	27,926
VI.	Percent Return on Average Investment	1.97	5.89	10.13	-1.74	2.51	7.84

Total investment costs by farm size and investment class are shown in Table 1 with the annual costs of these items shown as Depreciation in Table 2.

Subtracting Gross Expenses from Gross Sales results in an estimate of the Return to Management and Investment. This balance must cover interest charges and, if necessary, payments on principal before any remainder is available for family living. (Also available for family living expense is the value of any labor performed by the operator or his family. All labor was charged as a cash operating expense.) Return to Investment alone is computed by deducting a charge for the coordinating and supervisory activities of the manager.

The estimates of Return to Investment and Percent Return to Investment illustrate that Size I farmers must improve their management and increase their farm size if they are to long continue in business. Operators of Size II farms in Greenlee County are on the margin of a reasonable farm income. However, Size III farms in Greenlee County and Sizes II and III farms in Graham County are producing an excellent return.

These results may be compared to those for the Sulphur Springs Valley, reported in the study cited above. Return on investment in the Sulphur Springs Valley is lower than on farms along the Gila River for each comparable size of farm although the same general tendencies of better management and economies associated with increased farm size exist.

Investment in field machinery and equipment is comparable in the two areas but irrigation investment is higher in the Sulphur Springs Valley since all water is pumped and the water table is deeper. However, the major difference is in total gross sales. Per acre yields are approximately the same in both areas but farms along the Gila have much larger cotton allotments and much less of their total farm in fallow. Per acre operating costs are thus somewhat higher in the Gila area, especially in Graham County, but not enough higher to offset their larger gross sales. As one would expect, land prices are considerably higher in the Gila area than in the Sulphur Springs Valley in response to the larger farm incomes, but they are not overpriced relative to income as they apparently are in the Valley.