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THE ONE-MAN FARM

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ABSTRACT

One-man farms that are technically optimum in size are presented in seven examples. Discussed are changes and underlying causes, the economies associated with buying and selling, and diseconomies. Returns to operator labor, to operator management, and to land on the technically optimum farms are compared with both larger and smaller farms.

Keywords: Economies, Efficiency, Farm size, Income, Labor, Management, Rent.

FOREWORD

This piece was originally written in answer to some questions posed by a subcommittee in Congress. We asked our staff members to develop models of technically optimum farms for the specific types of farming with which they were familiar because of their location and their research.

The results at first seemed startling, particularly in view of the aggregate statistics on farm size in the United States. But one-man farms this large are already found in many farming communities. At the same time, we would caution the reader, as has the author, that one-man farms this large require managerial skills well above average, achievable by only a minority of the present and would-be farm operators.

And yet in each community there probably are enough farm operators with sufficient managerial skills to provide a steady competitive pressure for buying or controlling farmland as it becomes available for transfer. This is the most significant explanation of why farms in general are becoming larger.

The intended audience for this essay is the general public. Professional agriculturalists should be aware that the figures in the examples are generalized and not intended to precisely depict widely varying individual farm situations.

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HIGHLIGHTS

The fully mechanized one-man farm, producing the maximum acreage of crops of which the man and his machines are capable, is generally a technically efficient farm. From the standpoint of costs per unit of production, this size farm captures most of the economies associated with size. The chief incentive for farm enlargement beyond the optimum one-man size is not to reduce unit costs of production, but to achieve a larger business, more output, and more total income.

The technically optimum one-man farm is larger, requires more capital, and demands a higher level of managerial talent than is found on most one-man farms today in the United States. In fact, the capital and managerial requirement is roughly comparable to that of a small manufacturing plant.

The chief economies associated with increasing farm size occur in the range below the technically optimum one-man farm. Up to that point, there is substantial incentive for the operator to enlarge his farm so that he can employ his labor and his machines more fully.

For various reasons, many farm operators do not reach the technically optimum size. Some are part-time farmers who have nonfarm jobs (full- or part-time) which claim their attention. Some cannot accumulate the necessary capital. Some lack the managerial skills required to achieve growth and successful operation of the optimum one-man farm. Some are not maximizers. They feel safer with less debt even though it means a more moderate income and life style. For all of these reasons smaller farms continue to exist.

Specialized crop farms, even the technically optimum ones, do not fully employ the operator because the work is seasonal. Therefore, many operators work off their farms part-time or have off-farm business interests. The supplementary effect of such off-farm income is particularly useful to operations smaller than the technically optimum one-man farm. Many of the smaller farms have another associated opportunity—custom hiring crop harvesting and sometimes other cropping operations.

The three components of farm income are returns to operator labor, to operator management, and to land. Owner-operators receive all three components, but they typically have smaller farms than tenant operators who receive only the returns to operator labor and management. Some owner-operators custom hire all cropping operations, perform no labor, and so receive only the returns to management and land (net rent).

THE ONE-MAN FARM

by

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INTRODUCTION

Interest in the economies of size in farming has led to such questions as: Is the family farm efficient? Can it compete cost-wise with large-scale farms? What is necessary for family-farm survival?

We are so conditioned to equate bigness with efficiency that nearly everyone assumes that large-scale undertakings are inherently more efficient than smaller ones. In fact, the claim of efficiency is commonly used to justify bigness. But when we examine the realities we find that most of the economies associated with size in farming are achieved by the one-man fully mechanized farm.[2]

But what is a *technically optimum* one-man farm? How large is it in terms of acreage and capital investment? How does the optimum vary by type of farming? What are the returns to labor and management?

THE TECHNICALLY OPTIMUM ONE-MAN FARM

The term "technically optimum" is defined as optimum from the standpoint of operational efficiency and cost per unit of product. Observation tells us that in crop farming many items of cost such as seed, fertilizer, and pesticides are the same *per acre* and *per unit of production*, almost regardless of farm size. The main item of production cost that *does* vary with size of farming operation is tractor and machine services. This may represent a fixed annual charge whether the machines are partly or fully utilized.

Therefore, to identify a technically optimum one-man crop farm, we use the concept of "the man and his complement of tractor and machines." The optimum one-man farm represents the maximum acreage of a specified combination of crops that the man and his machines can produce—plant, cultivate, and harvest—annually. Some one cultural operation will be limiting. For example, the planting dates for spring wheat may be confined to a specific 10-day period. Any later planting sharply reduces the eventual yield. Size of the technically optimum one-man farm, therefore, depends chiefly on the number of working days available for performing the most critical farming operations—planting, cultivating, harvesting—in their respective seasons. If a man can harvest 500 acres of corn, cultivate 400 acres, but can only plant 300 acres, then his *effective* optimum may be 300 acres of corn.

The number of working days and the size of operation of a one-man crop farm could increase if the land were in two separate parts, each located in a different climatic zone; for example, northern and southern Kansas. The planting seasons and harvesting seasons do not coincide, so both parts of the "farm" could be operated by the same man and his machines, which could be transported between the two units.

The same man and his machines may grow a secondary crop if its cultural operations do not coincide with the critical dates of the primary crop; for example, spring-seeded barley and fall-seeded wheat. However, because secondary crops usually require one or more specialized machines and are less

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[1]Deputy Director, Commodity Economics Division, Economic Research Service, U.S. Department of Agriculture. The following persons provided basic data for the farm budgets: Fred T. Cooke, Jr., Earle E. Gavett, Arthur Gerlow, Walter G. Heid, Jr., Charles W. Nauheim, and Jerry A. Sharples.

[2]See *Economies of Size in Farming* by J. Patrick Madden, Agr. Econ. Rpt. No. 107, Econ. Res. Serv., U.S. Dept. Agr., Feb. 1967.

profitable, the trend has been toward greater specialization and less diversification. Farms now have but two or three enterprises; they formerly had five or six.

Farms smaller than optimum are technically less efficient because they underemploy both the farmer and his machines. Farms larger than "optimum" are essentially multiples of the optimum farm, and are technically no more efficient than the one-man farm.

This oversimplifies the problem because a farm operator may custom hire part of his peak season planting or harvesting. Thus the use of custom services, when available, may increase the technically optimum size of a one-man wheat farm. Conversely, the use of custom services may *reduce* the overhead of the smaller than one-man farm, because the operator need not own an expensive machine.

Incidentally, the typical "farm" today is frequently not one contiguous area of land—like a 160-acre homestead. Instead, it may consist of several noncontiguous pieces—40, 80, 160 acres, and so on—each rented from a different landowner. The collection of pieces making up the "farm" may vary from year to year; that is, some may be dropped as others are added.

Seven Examples

Examples of seven types of technically optimum one-man farms are shown below:

	Acres	Land value	Other capital
Montana: Wheat-barley	1,960	$245,000	$57,000
Kansas: Wheat-grain sorghum	1,950	200,000	55,000
Indiana: Corn-soybeans	800	480,000	130,000
Louisiana: Rice-soybeans	360	108,000	50,000
Delta: Cotton-soybeans	600	255,000	80,000
California: Irrigated cotton	400	320,000	64,000
California: Vegetables	200	400,000	85,000

The specialized *crop* farm models are tenant operated, though land capital is shown as another dimension of farm size. Greater detail for each example may be found in tables 2-8, grouped at the end of this report.

The technically optimum one-man farms are larger and represent more capital investment than many farms in the United States today. For example, the *average* size of commercial cash-grain farms reported by the 1970 Census of Agriculture was 263 acres in Indiana and 694 acres in Kansas.

The technically optimum farm also demands a high level of managerial talent by the farm operator. The requirement for capital, management, and technical skill is roughly comparable to that of a small manufacturing plant. For various reasons many farm operators do not reach the technically optimum size for a one-man farm.

The example farms illustrate the wide range in the technically optimum size of one-man farms by types of farming. In dryland farming regions, wheat farms have an acre in fallow for each acre in crop. Therefore, they are twice as large in acreage as are wheat farms in humid, annual cropping regions.

For some types of farming, acreage is not the best measure of size. The criterion of size in cattle ranching is the cow herd, nominally about 300 head, rather than the number of acres. The number of pasture acres to support such a herd varies widely: in irrigated areas, 150 acres; in humid areas, 900 to 1,500 acres; in dryland areas, 4,500 to 6,000 acres; in the southwest desert, 27,000 to 36,000 acres. For dairy farms, the size of the cow herd is also the most meaningful measure. In hog farming, the number of pig litters—not the number of brood sows—is the measure because sows may be "programmed" for single or multiple litters a year. With range sheep, the criterion is the "band"—nominally 1,200 head. Obviously, acres do not serve as a measure of size in nonland-based farming such as broiler or egg production.

The best overall measure is the number of man-units, again based on the concept of "the man and his complement of tractor and machines."

Changes and Underlying Causes

The technically optimum size of one-man crop farms has increased about 50 percent in the last 10 to 15 years, mainly because of increases in the size and capacity of tractors and other farm machines. Prior to the 1960's, most planting and cultivating machines for row crops—corn, soybeans, cotton, potatoes, and vegetables—were four-rowed. With the machines of that time, four rows were about all the machine operator could monitor to be sure that everything was working properly.

Since then, machines have become technically more advanced, more automated, so the machine operator can monitor more rows. We have shifted to six-row planters and cultivators for cotton and six- to eight-row machines for corn and soybeans. We plant and cultivate vegetable crops with four-bed, eight-row machines. Wheat, barley, and rice producers are using wider tillage machines and wider seeding drills. We have multiple-row cotton harvesters. The cutting width of the grain combine-harvester has been increased from 12-14 feet to 18-20 feet.

Future Change

It is not clear whether the size of tractors and farm machines will continue to increase in the next 10 years. The change during the last 10 to 15 years has been equivalent to a quantum leap. To some extent the size of farm machines changes in response to buyer demand, which in turn depends upon the

buyer's ability to acquire additional land, either by rental or purchase. Farmland in the specialized crop production areas is commonly available for rent on the basis of crop share or cash. "Field renting" pieces of land—in contrast to whole farms—is much more common now than it was 10 to 20 years ago. This has facilitated the trend toward larger machines and larger technically optimum one-man farms.

OTHER CONSIDERATIONS

Buying and Selling

Economies in purchasing production inputs generally do not extend beyond the customary carload or truckload lots. That is, quantity discounts are often granted for full truckloads delivered to one stop. Additional discounts may be given to the very large purchaser who is willing to take delivery at the convenience of the vendor. An example is tractor diesel fuel delivered in the "off" season.

In general, the quantity discounts are in the range of 5 to 10 percent. In a recent survey of Montana wheat farms, the total discounts off list price on purchased inputs ranged from $1.05 per crop acre on the 3,000-acre farms to $1.84 per crop acre on the 9,000-acre farms, a difference of only 79 cents per crop acre where the total variable cost is about $30 per acre.

Farm firms that are large enough to acquire a local dealership in fertilizer, tractor fuel, or other production inputs can, of course, enjoy the wholesale-retail differential in price markup. But only a few firms can acquire such dealerships in one community.

On balance, the large farm's purchasing advantage is not the controlling force in the arena of competitive advantage. These advantages are not sufficient in themselves to cause farms to become larger or to force one-man farmers out of business. The cost advantages here do not exceed those that are readily captured by local farmer cooperatives and rebated to the farmer members.

Economies of scale in product selling are possible but not large. Some of the larger corn growers, for example, can command a premium of up to 5 or 6 cents on their grain because they will contract it in large lots for delivery on a regular schedule. The purchaser can pay a price premium because the service actually reduces his procurement costs.

Diseconomies

Technical economies are achieved by farms within a given size range, but beyond that range there may be *diseconomies* due to the increasing burden of supervision and communication between supervisor and workers.

In crop farming, workers are often far apart. When a machine breaks down, the hired machine operator may not know how to solve the problem and must communicate with his supervisor for assistance. Thus, machine time can be lost. In the case of the one-man farm, the worker and supervisor are the same person and communication is instantaneous.

The incentive for increasing farm size beyond the technically optimum one-man farm is not to reduce costs per unit of production, but to increase the volume of business, output, and total income.

FARM SIZE AND INCOME

To indicate how farm size can affect the income, we have estimated the returns for three sizes of the example crop farms. One is the technically optimum one-man farm. Another is a farm half that size, and the third is twice the size of the one-man farm (table 1).

Income Components

Net farm income on crop farms includes three identifiable components or sources—a return to operator labor, a return to management, and a return to land capital.

Let us see not only how the three components of income compare but also how they vary with size of farm.

The farm operator of American tradition receives all three income components. He is the self-employed owner-operator. But there are also self-employed tenant-operators who receive the returns to operator labor and management, but not the return to land—paid as rent to a landlord. There is also the manager-owner-operator who hires all labor, but he receives the returns to management and to land.

Such operators often have full-time off-farm jobs or businesses. Typically, they custom hire all cropping operations, and own no tractors or other machines. Their returns to management are somewhat smaller than those shown in table 1. Still, they receive a good return to management in addition to the rent they would otherwise get functioning only as a landlord. For the owner-operator the acreage of land owned is

Table 1—Net returns to operator labor, to management, and to land on farms of specified sizes[1]

Farm size[2]	Acres	Return to—		
		Operator labor	Operator management	Land[3]
		Montana: Wheat-barley		
1/2-man	980	$2,000	$1,300	$6,000
1-man	1,960	2,700	6,800	12,000
2-man	3,920	2,700	14,500	24,000
		Kansas: Wheat-grain sorghum		
1/2-man	975	2,000	1,500	3,500
1-man	1,950	2,700	7,200	7,000
2-man	3,900	2,700	15,600	14,000
		Indiana: Corn-soybeans		
1/2-man	400	4,600	2,000	12,500
1-man	800	6,000	14,400	25,000
2-man	1,600	6,000	29,800	50,000
		Louisiana: Rice-soybeans		
1/2-man	180	2,700	4,200	5,700
1-man	360	4,200	11,000	11,400
2-man	720	4,200	22,200	22,800
		Delta: Cotton-soybeans		
1/2-man	300	3,600	2,400	7,500
1-man	600	4,800	12,800	15,000
2-man	1,200	4,800	25,600	30,000
		California: Irrigated cotton		
1/2-man	200	4,500	4,500	8,000
1-man	400	6,000	14,000	16,000
2-man	800	6,000	24,000	32,000
		California: Vegetable		
1/2-man	100	6,000	5,000	9,000
1-man	200	6,000	25,000	18,000
2-man	400	6,000	46,000	36,000

[1] Data drawn or adapted from tables 2-8. [2] One-man farm is technically optimum. [3] Land rent net of taxes; net return of debt-free landowner.

not critical because custom machine rates are about the same per acre, provided the fields are large enough for standard machines.

Return to Operator Labor

Most farm operators are self-employed, and though they do not pay themselves wages, some part of their income is properly a return to operator labor. Return to operator labor is inputed to the farmer's actual input of labor at a hired worker's wage; that is, the amount of money the farm operator saves by working himself instead of hiring the work done. In each farm type the return to operator labor is more than half as large on the smaller farm as on the one-man farm. The reason is that the operator of the smaller farm himself performs some work that would be hired on the larger farm. The return to operator labor is no greater on the two-man farm than on the technically optimum one-man farm, because both operators are equally employed.

In any case, the return to operator labor is not large on specialized crop farms—wheat, rice, cotton, corn—ranging from $2,000 to $6,000 a year (table 1). Returns to operator labor are no larger than they are because the crop work is seasonal, providing only about half-time productive employment and corresponding "wages." Therefore, there is little opportunity to accumulate working capital by savings from "wages."

Forty years or more ago, farming was more diversified, more self-sufficient, and it employed the farm operator more fully. His employment was not confined to cash crop operations. Farmers raised their own "horsepower" and the "fuel" required. They had vegetable gardens, a few pigs, a cow or two, and some chickens. They were actually more fully

employed than today's specialized crop farmer. Moreover, the farmer of 40 years ago did not depend wholly on crop sales for his living. Crop sales provided for his cash income needs and met his mortgage payments. Today's crop farmer depends on his crop sales for his entire livelihood.

Return to Management

Fortunately, on today's specialized crop farms, there is an opportunity for return to operator management, and the opportunity is increasing.

Return to management is a residual component after the returns imputed to labor and to land have been subtracted from net farm returns. Returns to management are, of course, meager on the smaller farms. In fact, on such farms the return to management is often less than the return to operator labor. But, on the technically optimum one-man farms, returns to management are from two to four times the return to operator labor. And on the two-man farms, the return to management is almost double that of the one-man. Thus, opportunities for managerial returns are strongly associated with increasing farm size (table 1).

Before the advent of modern scientific farming, there was little opportunity for a return to operator management. Crop yields were chiefly a function of "nature," rather than inputs applied by man. Moreover, farming was characteristically a "wage" industry—it employed relatively little capital, and even the land values were low. Today's technically optimum one-man crop farm uses several hundred thousand dollars of land and other capital. The operator also uses a vast array of technical and scientific knowledge which he packages into a production program.

Because of the opportunity for a return to management, farm operators without much capital prefer to invest what capital they have in a larger farming operation on *rented* land, rather than in a smaller operation they of necessity would have on owned land. As tenant operators they get the returns to both operator labor and management (table 1).

Return to Land

On rented farmland, the return to the landowner is the net rent—gross rent minus taxes, upkeep, and other land-related expenses. This is how the return to land shown in table 1 is computed. In the same way a farm operator who owns his land can impute the returns to his own land. Incidentally, he shares such returns with any land mortgage holder, the extent depending upon the indebtedness. Note in table 1 that the return to land is directly proportional to size of farm, because rents are charged on a per acre basis.

On the smaller crop farms, the return to land often exceeds the returns to operator labor and management; the opposite is true on the larger farms. Income from land explains why many small-scale, debt-free owner-operators are able to make a living—they are living off their capital. They may have inherited the land or bought it when land values were lower.

OFF-FARM INCOME

Many crop farmers employed only seasonally are combining farming with other off-farm employment or business. Having two or more sources of income is consistent with the pattern in the rest of our society. One-third of American households have two or more wage earners. A similar situation in agriculture is indicated by the fact that since 1970 the farm population has received more of its net income from off-farm than from home-farm sources.

We can expect this situation to continue, because it has advantages to many farmers. The nonfarm wages are a source of funds for farm operation or for family living until the next crop is harvested. The farm-nonfarm combination may also facilitate entry into farming, and the establishment of a viable farm business.

Off-farm employment opportunities are becoming more available to farm operators and their families. Farmpeople are now better educated, they are more adaptable to work situations, and they commute on better highways. Laborsaving devices have removed the drudgery of farmwork and have provided farmers with more free time. A 4-day workweek in industry, when it comes, will further facilitate farm-nonfarm combinations.

Table 2—Montana: Wheat-barley farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
		Acres	
Land	980	1,960	3,920
Wheat	270	540	1,080
Barley	150	300	600
		Dollars	
Income:			
Wheat	10,550	21,100	42,200
Government payment	5,650	11,300	22,600
Barley	4,550	9,100	18,200
Government payment	1,100	2,200	4,400
	21,850	43,700	87,400
Expenses:			
Land rent	7,250	14,500	29,000
Machine charges	5,200	6,800	13,600
Hired labor	500	1,700	5,200
Other	5,600	11,200	22,400
	18,550	34,200	70,200
Net	3,300	9,500	17,200
Return to:			
Operator labor	2,000	2,700	2,700
Management	1,300	6,800	14,500
Capital managed:			
Land	122,500	245,000	490,000
Machinery	43,000	57,000	114,000
	165,500	302,000	604,000

[1] All crops are grown on land fallowed for 1 year. The farm includes 1,000 acres of fallow and program set-aside land. Barley is the alternate crop on acres not permitted in wheat. The farm has 1 heavy tractor and 1 light tractor and a complete line of machines including tillage, seeder drills, and a grain combine-harvester. With these machines, a man can grow 540 acres of fall-seeded wheat and 300 acres of spring-seeded barley. The farm operator puts 850 hours of his own labor directly into these crops and hires labor seasonally during June-August for crop operations that require 2 men such as harvesting and hauling the grain from harvester to storage. The 1/2-man farm has smaller machines and the farm operator puts about 650 hours of his own labor directly into wheat and barley production. The 2-man farm is double the 1-man farm in crop acreage and machines.

Table 3—Northwest Kansas: Wheat-grain sorghum farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
	Acres		
Land	975	1,950	3,900
Wheat	285	570	1,140
Grain sorghum	90	180	360
	Dollars		
Income:			
Wheat	11,100	22,200	44,400
Government payment	4,450	8,900	17,800
Grain sorghum	2,950	5,900	11,800
Government payment	600	1,200	2,400
	19,100	38,200	76,400
Expenses:			
Land rent	3,750	7,500	15,000
Machine charges	4,800	6,600	13,200
Hired labor	400	900	3,300
Other	6,650	13,300	26,600
	15,600	28,300	58,100
Net	3,500	9,900	18,300
Return to:			
Operator labor	2,000	2,700	2,700
Management	1,500	7,200	15,600
Capital managed:			
Land	100,000	200,000	400,000
Machinery	40,000	55,000	110,000
	140,000	255,000	510,000

[1] Crops usually are grown on land fallowed for 1 year. The farm includes 900 acres of fallow and program set-aside land. Grain sorghum is grown on acres restricted from wheat. The farm has 1 heavy tractor and 1 light tractor and a complete line of machines including tillage, seeder drills, and a grain combine-harvester. With these machines, a man can grow 570 acres of fall-seeded wheat and 180 acres of grain sorghum. The farm operator puts 850 hours of his own labor directly into these crops and hires labor seasonally during June-August for crop operations that require 2 men such as harvesting and hauling the grain from harvester to storage. The 1/2-man farm has smaller machines. The operator puts in about 630 hours of his own labor in producing wheat and barley. The 2-man farm is double the 1-man in crop acreage and machines.

Table 4—Indiana: Corn-soybean farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
	Acres		
Land	400	800	1,600
Corn	170	340	680
Soybean	175	350	700
	Dollars		
Income:			
Corn	27,500	55,000	100,000
Government payment	3,200	6,400	12,800
Soybeans	20,000	40,000	80,000
	50,700	101,400	202,800
Expenses:			
Land rent	16,000	32,000	64,000
Machine charges	13,600	20,000	40,000
Hired labor	1,850	3,700	12,400
Other	12,650	25,300	50,600
	44,100	81,000	167,000
Net	6,600	20,400	35,800
Return to:			
Operator labor	4,600	6,000	6,000
Management	2,000	14,400	29,800
Capital managed:			
Land	240,000	480,000	960,000
Machinery	90,000	130,000	270,000
	330,000	610,000	1,330,000

[1]The farm has 1 heavy tractor and 1 light tractor plus a complete line of corn and soybean machines, including tillage, planters, a corn picker-sheller, and a soybean combine-harvester. With these machines, a man can grow 340 acres of corn and 350 acres of soybeans. In addition, there are 107 acres of program set-aside land. The farm operator puts 900 hours of his own labor directly into these crops and hires labor seasonally for crop operations that require 2 men such as grain harvesting and hauling. The 1/2-man farm has somewhat smaller machines and the operator puts in about 700 hours of labor in producing corn and soybeans. The 2-man farm is double the 1-man farm in crop acreage and machines.

Table 5—Louisiana: Rice-soybean farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
	Acres		
Land	180	360	720
Rice	50	100	200
Soybeans	120	240	480
	Dollars		
Income:			
Rice	10,250	20,500	41,000
Soybeans	10,500	21,000	42,000
	20,750	41,500	83,000
Expenses:			
Land rent	5,850	11,700	23,400
Machine charges	3,200	5,000	10,000
Hired labor	300	500	5,000
Other	4,500	9,100	18,200
	13,850	26,300	56,600
Net	6,900	15,200	26,400
Return to:			
Operator labor	2,700	4,200	4,200
Management	4,200	11,000	22,200
Capital managed:			
Land	54,000	108,000	216,000
Machinery	32,000	50,000	100,000
	86,000	158,000	316,000

[1]The 1-man farm has 2 tractors and a full complement of tillage and seeding machines capable of growing 100 acres of rice and 240 acres of soybeans. The 1-man farm operator puts 1,800 hours of his own labor into rice and soybean production. The 1/2-man farm has smaller machines and the operator labor input is about 1,300 hours. The 2-man farm is double the 1-man farm in crop acreage and machines.

Table 6—Delta: Cotton-soybean farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
		Acres	
Land	300	600	1,200
Cotton	100	200	400
Soybeans	150	300	600
		Dollars	
Income:			
Cotton	27,200	54,400	108,800
Soybeans	11,000	22,000	44,000
	38,200	76,400	152,800
Expenses:			
Land rent	8,000	16,000	32,000
Machine charges	9,700	13,000	26,000
Hired labor	2,000	4,800	14,400
Other	12,500	25,000	50,000
	32,200	58,800	122,400
Net	6,000	17,600	30,400
Return to:			
Operator labor	3,600	4,800	4,800
Management	2,400	12,800	25,600
Capital managed:			
Land	127,500	255,000	510,000
Machinery	60,000	80,000	160,000
	165,000	335,000	670,000

[1]The 1-man farm has 1 heavy tractor and 1 light tractor and a full complement of 6-row planting and tillage machines, plus a cottonpicker and a bean harvester. The farm operator puts 2,000 hours of his own labor directly into crop production. The 1/2-man farm has smaller, 4-row machines, and the operator puts about 1,350 hours of labor into crop production. The 2-man farm is double the 1-man farm in crop acreage and machines.

Table 7—California: Irrigated cotton farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
		Acres	
Land	200	400	800
Cotton	80	160	320
Alfalfa	90	180	360
Potatoes	20	40	80
		Dollars	
Income:			
Cotton	32,500	65,000	130,000
Alfalfa hay	24,000	48,000	96,000
Potatoes	18,000	36,000	72,000
	74,500	149,000	298,000
Expenses:			
Land rent	10,500	21,000	42,000
Machine charges	9,000	12,000	24,000
Hired labor	5,000	14,000	18,000
Other	41,000	82,000	164,000
	65,500	129,000	268,000
Net	9,000	20,000	30,000
Return to:			
Operator labor	4,500	6,000	6,000
Management	4,500	14,000	24,000
Capital managed:			
Land	160,000	320,000	640,000
Machinery	48,000	64,000	128,000
	208,000	384,000	768,000

[1]The 1-man farm has 1 heavy tractor and 1 light tractor and a complete complement of tillage and seeding machines, plus a cotton harvester. The farm operator puts 1,600 hours of his own labor directly into crop production and additional time into management activities. The 1/2-man farm has smaller machines and the operator puts about 1,200 hours into crop production. The 2-man farm is double the 1-man farm in crop acreage and machines.

Table 8—California: Vegetable farm[1]

(Tenant-operated)

Item	Farm size		
	1/2-man	1-man	2-man
	Acres		
Land	100	200	400
Crops	110	220	440
	Dollars		
Income:			
Vegetable sales	110,000	220,000	440,000
Expenses:			
Land rent	11,000	22,000	44,000
Machine charges	15,000	20,000	40,000
Hired labor	9,500	20,000	50,000
Other	63,500	127,000	254,000
	99,000	189,000	388,000
Net	11,000	31,000	52,000
Return to:			
Operator labor	6,000	6,000	6,000
Management	5,000	25,000	46,000
Capital managed:			
Land	200,000	400,000	800,000
Machines	45,000	65,000	130,000
Irrigation equipment	10,000	20,000	40,000
	255,000	485,000	970,000

[1]The 1-man farm has 1 heavy tractor and 1 light tractor plus a full complement of tillage, planting, and cultivating machines. Vegetables are harvested by the packer-shipper on contract. The 1-man farm operator puts 1,500 hours of his own labor into crop production, and he puts additional time into management activities. The 1/2-man farm has smaller machines, but labor input is about equal to the 1-man farm operator. The 2-man farm is double the 1-man farm in crop acreage and machines.

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