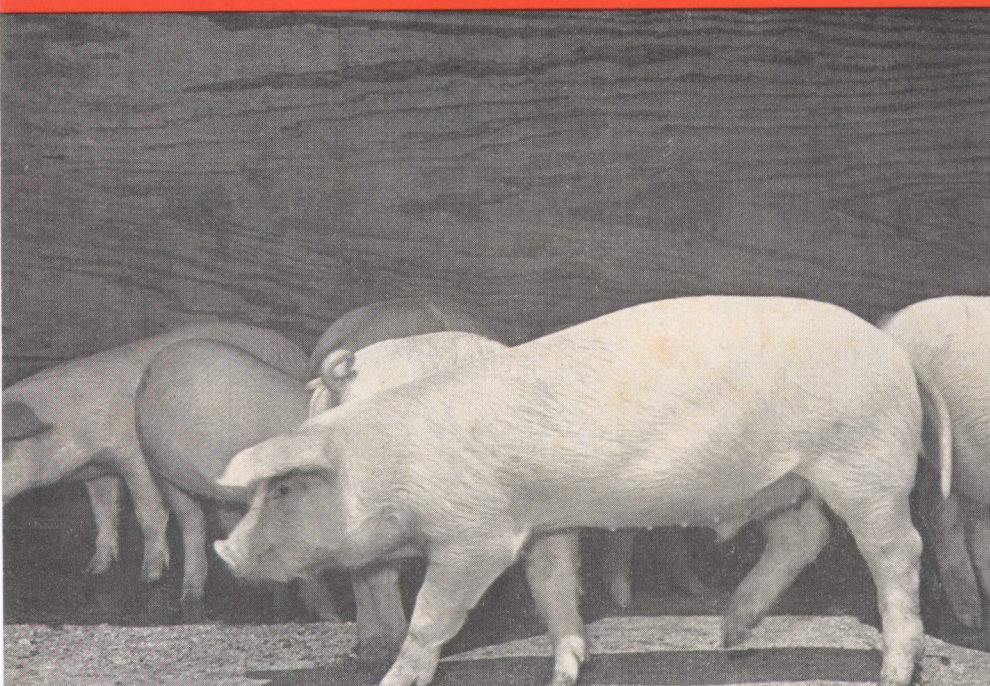
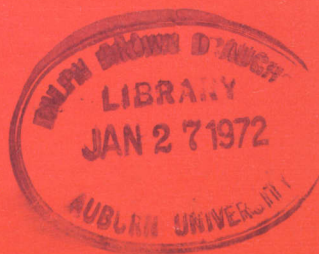


Costs and Returns of Producing Feeder Pigs in Alabama



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*Costs and Returns of Producing Feeder Pigs in Alabama*¹

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INTRODUCTION

FEEDER PIG PRODUCTION is one of the enterprises farmers with small acreages can use to improve their labor efficiency and increase profits. This enterprise can be easily adapted to many farms in Alabama and adjusted in size to make use of surplus operator's labor.

Many Alabama farmers have started producing feeder pigs as evidenced by the feeder pig sales organized and operating in many areas of the State. These sales provide a ready market for almost any farmer who wishes to produce feeder pigs.

Objectives of Study

Additional farmers are considering changing the organization of their farm businesses to include a feeder pig enterprise. Accurate and realistic budgets are needed to determine the competitive position of feeder pigs with other farm enterprises. The purpose of this study was to determine costs, returns, investment, and labor requirements for feeder pig enterprises. The effects of size of enterprise and level of management on costs and returns of feeder pig production were also determined.

¹This study was conducted under research project Ala. I-046 and was supported by State funds. Appreciation is expressed to the feeder pig producers who supplied data for use in the study.

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The primary objectives of this study were:

1. To determine resources used and investment required for feeder pig enterprises.
2. To determine dollar value of inputs used (cost) and returns for producing feeder pigs.
3. To determine the optimum size of feeder pig enterprise.

Selection of Sample

This study was based on data collected by personal interviews of 14 feeder pig producers designated as Swine Expansion Demonstrators by the Alabama Cooperative Extension Service as part of the swine expansion program. Data were based on feeder pig production in 1967. All of these producers received varying amounts of specialized help through the Cooperative Extension Service. To qualify as demonstrators these farmers had agreed to keep detailed records on their swine enterprises.

It is recognized that the sampling procedure permitted bias in favor of those receiving specialized help, but this bias was accepted because of the need for cooperation in obtaining accurate information.

All costs, returns, investments, and labor requirements were determined and analyzed on the basis of per pig sold. Budgets were also developed for two sizes of enterprises estimating the total costs and returns that could be expected.

Cost Procedures

Farm produced corn, harvested and fed to hogs, was charged at the average price received by farmers as reported by Alabama Crop and Livestock Reporting Service. Corn purchased was charged at the price reported paid by the farmer.

All other feeds, such as supplements, minerals, vitamins, antibiotic mixes, and creep feed were charged at the price reported paid by the farmer.

Pasture charges were based on budgets developed as part of this study, Appendix Tables 1, 2, and 3. Only variable expenses were charged. The variable expenses of pasture production were based on quantities and prices reported by farmers.

Variable expenses, other than feed, pasture, and interest on operating capital, were charged at the rate reported by farmers. Interest on operating capital was charged at 8 per cent per annum for a 6-month period.

Charges for buildings, equipment, and fences were based on

the annual rate of depreciation as calculated with the straight line method. An expected life of 20 years with a salvage value of 5 per cent was used for calculating charges for the farrowing-nursery houses, finishing parlors, and fencing. Grain storage facilities were estimated to have an expected life of 15 years and a 5 per cent salvage value. Charges for equipment and miscellaneous items were based on an estimated life of 10 years with no salvage value.

Interest was charged at a rate of 6 per cent on the average value of fixed capital and the average value of the breeding herd.

Insurance was charged for buildings, equipment, and breeding herd. This charge was based on the estimated value when new and calculated at \$0.375 per \$100.

Tax charges were based on the average value of land and buildings. Taxes were calculated by assessing the items taxed at 30 per cent of their average value and applying the millage rate of the county in which the farm was located.

All labor, both operator and hired, was charged at \$1.50 per hour. The labor requirements were based on labor estimates as reported by the farmers.

Description of Farms

Schedules were obtained from these 14 producers, who were marketing pigs weighing from 40 to 50 pounds.

The 14 farms ranged in size from 7 to 800 acres with an average acreage of 339. These farms had an average of 98 acres of cropland and 115 acres of improved pasture. Various row crops were produced with corn, the most common crop enterprise, being grown on eight farms. Cotton was produced on six farms. Three farmers reported small acreages of soybeans, three grew small grains, and five produced other crops.

All producers were utilizing permanent farrowing houses. Most houses were of pole type construction with open sides. The others were frame type construction with closed sides. All houses had concrete floors. Twelve houses were used as farrow-nursery combinations. Two producers provided separate nursery facilities.

All farrowing houses were equipped with heating systems. These consisted of heat lamps only except for a few houses that also had heaters which were used in extremely cold weather. Four houses were equipped with fans for cooling.

Two producers furnished field shelters for the brood herd. The other producers utilized natural cover for brood herds.

All producers were attempting to market feeder pigs at an average weight of 50 pounds. All producers were marketing cross-bred pigs. The most popular cross was Hampshire on Landrace. Many other crosses were also used.

Half of the producers were using performance tested boars (boars themselves tested for rate and efficiency of gain and carcass quality tests conducted on their littermates).

Nine producers planned to expand production, with various reasons given for further expansion. The two predominant reasons were to improve labor efficiency and increase volume of business. Three producers planned to reduce the size of their hog enterprise because of decreased labor supply, while two producers planned to maintain the hog enterprise at its present size.

Pigs were weaned between 3 and 8 weeks of age with the average age being 5.9 weeks. The average age of pigs at marketing time was 9.6 weeks.

Some of the personal characteristics of the farmers interviewed were as follows:

<i>Characteristics</i>	<i>Average no. of years</i>
Age.....	44
Formal education.....	11.6
Experience operating farm.....	14
Experience raising hogs.....	10

Most producers were using recommended production practices. Some of the production practices and per cent of producers using them are shown in Table 1.

TABLE 1. PER CENT OF FEEDER PIG PRODUCERS USING SELECTED PRACTICES, ALABAMA, 1967

Practice	Producers using practice
	<i>Pct.</i>
Disinfect farrowing house.....	100
Treat pigs for anemia.....	100
Clip and treat naval cords.....	86
Worm brood herd.....	86
Clip needle teeth.....	71
Worm feeder pigs.....	57
Rotate pastures.....	57
Vaccinate for cholera.....	57
Vaccinate for leptospirosis.....	36
Vaccinate for erysipelas.....	29

Labor requirements varied depending upon the amount of labor saving equipment, managerial ability of the operator, and size of the enterprise. Hired labor was utilized on only one farm.

The other 13 producers performed all the work and made all management decisions.

COST AND RETURNS

Total cost per feeder pig sold varied from \$11.82 to \$28.29 for the 14 producers. The average total cost of production was \$16.28 per pig sold, Table 2. The largest single cost item in producing feeder pigs was feed, which comprised 46.6 per cent of the cost. Labor was the second most important cost item, accounting for 26.8 per cent of the average total cost.

TABLE 2. AVERAGE COSTS PER PIG SOLD FOR 14 FEEDER PIG ENTERPRISES, ALABAMA, 1967¹

Item	Amount
	<i>Dol.</i>
Feed costs	
Corn.....	3.51
Protein supplement.....	1.55
Feed additives ²15
Creep and starter.....	2.38
Total.....	7.59
Non-feed variable costs	
Pasture.....	.54
Replacement stock.....	.84
Vaccination and veterinary charges.....	.34
Trucking.....	.15
Electricity.....	.26
Repairs.....	.13
Other cash expenses.....	.09
Interest on oper. cap.....	.39
Total.....	2.74
Fixed costs	
Capital depreciation.....	.50
Interest, taxes, insurance.....	.72
Total.....	1.22
Other costs	
Land.....	.37
Labor.....	4.36
Total.....	4.73
Total cost	16.28

¹ The average number of pigs sold per enterprise was 451.2. This was an average of 16 pigs sold per sow per year.

² Vitamins, minerals, and antibiotics.

The average gross receipts per pig sold was \$16.41, Table 3. This included total receipts per pig sold, the pro rata share of culled sows and boars sold, and the change in inventory for the year. The majority of the feeder pigs were sold through cooperative feeder pig sales in Alabama.

TABLE 3. AVERAGE COSTS AND RETURNS PER PIG SOLD FOR 14 FEEDER PIG ENTERPRISES, ALABAMA, 1967

Item	Amount
	<i>Dol.</i>
Gross receipts	
Gross sales.....	15.16
Inventory change.....	1.25
Total.....	16.41
Costs	
Feed.....	7.59
Non-feed variable.....	2.74
Total fixed.....	1.22
Total.....	11.55
Returns	
Returns to land, labor, and mgt.....	4.86
Cost of land.....	.37
Return to labor and mgt.....	4.49
Cost of labor.....	4.36
Return to management.....	.13
Av. investment.....	16.34
Return to investment.....	1.11

The average net return to land, labor, and management was \$4.86 per pig sold. When land was charged at 6 per cent of its market value the net return to labor and management was \$4.49 per pig sold. Using a labor charge of \$1.50 per hour for the average labor requirement of 2.91 hours per pig, the total labor charge was \$4.36. When the total labor charge was subtracted, the average return to management was \$.13 per pig sold. The operators received an average labor income of \$1.50 per hour and a 6 per cent return on their average investment in addition to the return to management of \$.13 per pig.

The fixed cost per pig sold was \$1.59 or 9.8 per cent of the cost of production. The average investment in buildings and equipment (new) was \$9.83 per pig sold, Table 4. The average investment in brood stock was \$5.18 per pig sold. In addition to these capital investments, the farmers had an average investment in land of \$6.17 per pig. The average total investment (new) was \$21.18 per pig sold. The operators earned an average of 5.24 per cent on this investment.

Number of Pigs Sold

To determine if economies of size (production costs decrease as size of enterprise increases) were present, the data were divided into two size groupings: producers selling less than 400 pigs annually and those selling 400 or more pigs. Analysis of

TABLE 4. AVERAGE INVESTMENT IN CAPITAL ASSETS (NEW) AND AVERAGE LABOR REQUIREMENT PER PIG SOLD FOR 14 FEEDER PIG ENTERPRISES, ALABAMA, 1967

Item	Amount
	<i>Dol.</i>
Buildings and equipment	
Fencing.....	1.51
Farrowing-nursery facilities.....	5.84
Feed storage.....	1.56
Equipment.....	.86
Miscellaneous.....	.06
Total.....	9.83
Brood stock	
Brood sows.....	3.88
Gilts.....	.71
Boars.....	.59
Total.....	5.18
Total investment per pig sold	15.01
	<i>Hr.</i>
Labor requirement per pig sold	2.91

these results indicated that cost of production did decrease as size of pig enterprise increased, Table 5.

Total cost of production was significantly lower for the large enterprise, Appendix Table 4. The average cost of production was \$20.81 per pig sold for the producers with small enterprises. The large enterprise group had average costs of \$14.48 per pig sold.

All cost items tended to decrease as the size of enterprise increased. However, analysis of these individual components indicated that only non-feed variable costs were significantly lower for the large enterprise group. There was no significant difference in labor requirements between the two size groups.

Producers with smaller enterprises had higher gross receipts per pig sold because of a much greater increase in inventories, Table 6. However, the large producer group had much higher net return. The average net return for management was \$1.49 per pig sold for the large producer group as compared with minus \$3.30 per pig sold for the producers with small enterprises.

Producers with large enterprises had a smaller investment in buildings and equipment per pig sold than producers with smaller enterprises, Table 7. Investment in brood stock per pig sold was relatively the same. The large group earned 16.2 per cent on the average investment compared with minus 10.2 per cent earned on the average investment by the small group.

Much of the difference noted between these two producer

TABLE 5. AVERAGE COSTS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY SIZE OF ENTERPRISE, ALABAMA, 1967

Item	Size of enterprise	
	Small	Large
No. of producers.....	8	6
Av. no. of pigs sold.....	224.5	753.5
Av. no. of pigs sold per sow.....	13.75	17.56
	<i>Dol.</i>	
Feed costs		
Corn.....	4.11	3.27
Protein supplement.....	2.05	1.35
Feed additives ¹27	.10
Creep and starter.....	2.62	2.30
Total.....	9.05	7.02
Non-feed variable costs		
Pasture.....	.79	.44
Replacement stock.....	1.69	.51
Vaccination and veterinary charges.....	.47	.29
Trucking.....	.21	.13
Electricity.....	.49	.16
Repairs.....	.24	.09
Other cash expenses.....	.10	.06
Interest on oper. cap.....	.51	.35
Total.....	4.50	2.03
Fixed costs		
Capital depreciation.....	.66	.44
Interest, taxes, insurance.....	.81	.68
Total.....	1.47	1.12
Other costs		
Land.....	.55	.30
Labor.....	5.24	4.01
Total.....	5.79	4.31
Total cost	20.81	14.48

¹ Vitamins, minerals, and antibiotics.

groups can be attributed to the large producer group selling more pigs per sow. Most costs incurred in a feeder pig enterprise are for maintaining the brood herd. Thus, as more pigs are sold per litter this cost is spread over a larger number of pigs and cost per pig is reduced.

Least-squares regression techniques were used to estimate the relationship between size of enterprise and cost of producing feeder pigs as size varied. Costs were calculated for each of the 14 observations. The estimates are shown in Appendix Table 5.

The calculated average total cost curve is shown in Figure 1. The curve indicates continued economies of size up to 1,400 pigs sold annually. The curve indicates that diseconomies of size or increasing cost of production per pig would prevail if output were increased beyond 1,400 pigs sold annually.

The relationship between the cost of all productive factors ex-

TABLE 6. AVERAGE COSTS AND RETURNS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY SIZE OF ENTERPRISE, ALABAMA, 1967

Item	Size of enterprise	
	Small	Large
No. of producers.....	8	6
Av. no. of pigs sold.....	224.5	753.5
	<i>Dol.</i>	
Gross receipts		
Gross sales.....	14.50	15.42
Inventory change.....	3.01	.55
Total.....	17.51	15.97
Costs		
Feed.....	9.05	7.02
Non-feed variable.....	4.50	2.03
Total fixed.....	1.47	1.12
Total.....	15.02	10.17
Returns		
Returns to land, labor, and mgt.....	2.49	5.80
Cost of land.....	.55	.30
Return to labor and mgt.....	1.94	5.50
Cost of labor.....	5.24	4.01
Return to management.....	-3.30	1.49
Av. investment.....	20.34	14.66
Return to investment.....	-2.08	2.37

TABLE 7. AVERAGE INVESTMENT IN CAPITAL ASSETS (NEW) AND AVERAGE LABOR REQUIREMENT PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY SIZE OF ENTERPRISE, ALABAMA, 1967

Item	Size of enterprise	
	Small	Large
No. of producers.....	8	6
Av. no. of pigs sold.....	224.5	753.5
	<i>Dol.</i>	
Buildings and equipment		
Fencing.....	2.23	1.22
Farrowing-nursery facilities.....	7.29	5.26
Feed storage.....	1.39	1.63
Equipment.....	1.03	.79
Miscellaneous.....	.21	.01
Total.....	12.15	8.91
Brood stock		
Brood sows.....	3.84	3.90
Gilts.....	.63	.73
Boars.....	.61	.59
Total.....	5.08	5.22
Total investment	17.23	14.13
	<i>Hr.</i>	
Labor requirement	3.49	2.67

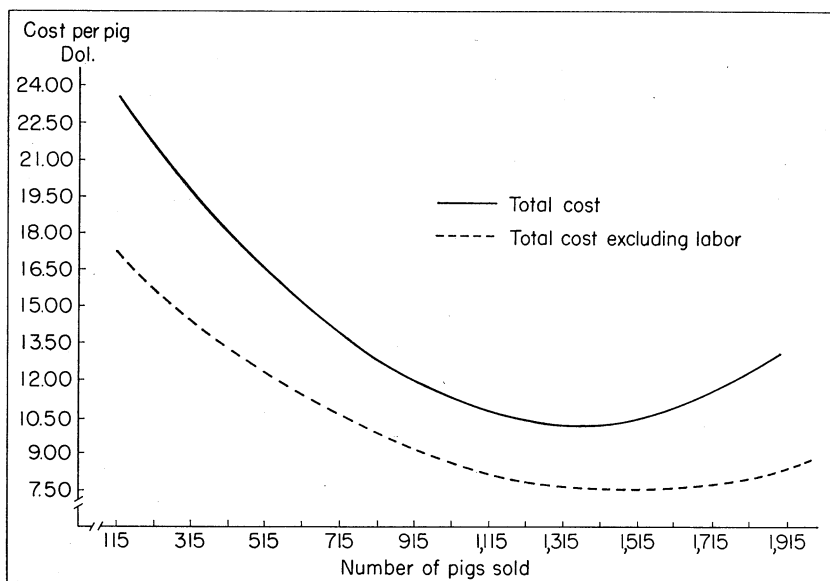


FIG. 1. Relationship between the unit costs of producing feeder pigs and size of enterprise, Alabama, 1967.

cept labor and size of enterprise was also computed. This calculated cost curve, total cost excluding labor, is also shown in Figure 1. This cost curve indicated continued economies of size for these productive factors up to an annual output of 1,500 pigs. For an output greater than 1,500 pigs sold, diseconomies of size were indicated. Estimates were made of relationships between cost of each of the productive factors and size of enterprise. The individual cost curves are shown in Figure 2.

This analysis indicated that the cost of all productive factors, except feed, decreased as the size of the enterprise increased up to 1,200 pigs annually. The analysis also indicated that enterprises from which more than 1,200 pigs were sold annually would have diseconomies of size with non-feed variables and labor inputs. Fixed costs demonstrated economies of size up to 1,700 pigs sold annually.

Optimum Size of Enterprise

The optimum size enterprise is found at the output where marginal cost equals marginal returns ($MC = MR$). This point may or may not be at the minimum point of the average cost curve.

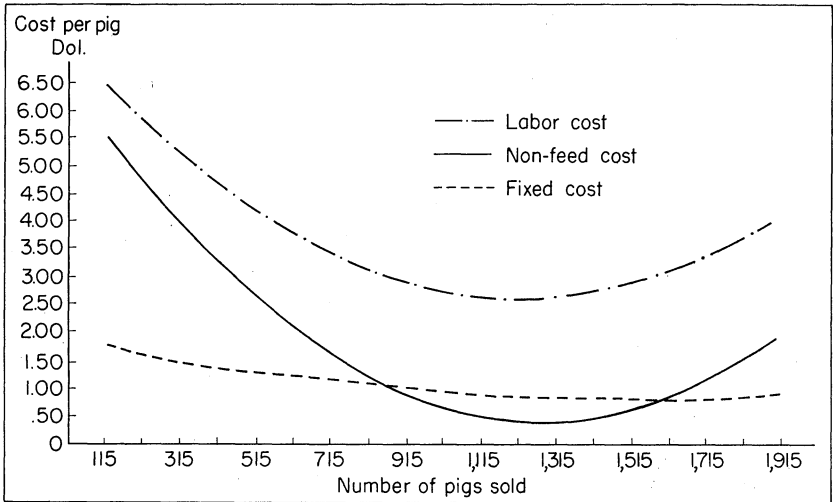


FIG. 2. Relationship between the unit costs of non-feed variable inputs; fixed inputs; labor; and size of enterprise for feeder pig enterprises, Alabama, 1967.

The estimated average cost curve reached a minimum at an output of 1,400 feeder pigs sold annually, Figure 1. Decreasing returns to size were indicated with larger output. This would indicate that the optimum size enterprise would have annual sales of 1,400 feeder pigs or greater. Since the marginal cost and marginal revenue curves were not derived, it was not possible to determine the exact level of output that would maximize profits.

Number of Pigs Sold Per Sow Per Year

To determine how the number of pigs sold per sow affected costs and returns, the data were divided into two groups based on number of pigs sold per sow. Seven producers had averaged selling 15 or more feeder pigs per sow and seven had averaged selling less than 15 pigs per sow.

All cost components were less for the producers who sold 15 or more pigs per sow than for those producers who sold fewer, Appendix Table 6. The average cost was \$21.57 per pig for the producers who sold less than 15 pigs per sow while the average total cost was \$14.29 per pig for the producers who sold more than 15 pigs per sow, Table 8.

The cost of feed was less for the producers who sold 15 or more pigs per sow. The primary feed cost in a feeder pig enterprise is feed for the sow. The cost of feeding a sow was relatively the

TABLE 8. AVERAGE COSTS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY NUMBER OF PIGS SOLD PER SOW, ALABAMA, 1967

Item	Producer groups	
	Less than 15 pigs sold per sow	15 or more pigs sold per sow
No. of producers.....	7	7
Av. no. of pigs sold.....	246.9	655.6
Av. no. of pigs sold per sow.....	12.57	17.82
	<i>Dol.</i>	
Feed costs		
Corn.....	4.65	3.08
Protein supplement.....	1.99	1.38
Feed additives ¹22	.13
Creep and starter.....	2.44	2.36
Total.....	9.30	6.95
Non-feed variable costs		
Pasture.....	.87	.42
Replacement stock.....	1.77	.49
Vaccination and veterinary charges.....	.54	.26
Trucking.....	.20	.13
Electricity.....	.47	.17
Repairs.....	.28	.08
Other cash expenses.....	.05	.10
Interest on oper. cap.....	.53	.34
Total.....	4.71	1.99
Fixed costs		
Capital depreciation.....	.65	.44
Interest, taxes, insurance.....	.95	.64
Total.....	1.60	1.08
Other costs		
Land.....	.49	.33
Labor.....	5.47	3.94
Total.....	5.96	4.27
Total cost	21.57	14.29

¹ Vitamins, minerals, and antibiotics.

same for each group. Thus, producers were able to reduce the cost of sow feed per pig by increasing the output per sow. The cost of creep feed was relatively the same per pig so the total cost of feed per pig was reduced.

The producers who had sold 15 or more pigs per sow had lower labor costs than producers who sold less than 15 pigs per sow. Again, the majority of the labor in the feeder pig enterprises is used for the care and feeding of the brood stock. Most of the labor used at farrowing is a relatively fixed amount per sow regardless of the number of pigs farrowed and weaned. Thus, producers were able to reduce the labor cost per pig by increasing output per sow.

The returns also reflected the importance of selling more pigs per sow. Average returns to labor and management varied from \$1.37 per pig sold for the producers who sold less than 15 pigs per sow to \$5.66 per pig sold for the producers who sold more than 15 pigs per sow, Table 9.

TABLE 9. AVERAGE COSTS AND RETURNS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY NUMBER OF PIGS SOLD PER SOW, ALABAMA, 1967

Item	Producer groups	
	Less than 15 pigs sold per sow	15 or more pigs sold per sow
No. of producers	7	7
Av. no. of pigs sold.....	246.9	655.6
	<i>Dol.</i>	
Gross receipts		
Gross sales.....	14.64	15.35
Inventory change.....	2.83	.66
Total.....	17.47	16.01
Costs		
Feed.....	9.30	6.95
Non-feed variable.....	4.71	1.99
Total fixed.....	1.60	1.08
Total.....	15.61	10.02
Returns		
Returns to land, labor, and mgt.....	1.86	5.99
Cost of land.....	.49	.33
Return to labor and mgt.....	1.37	5.66
Cost of labor.....	5.47	3.94
Return to management.....	-4.10	1.72
Av. investment.....	21.33	14.50
Return to investment.....	-2.82	2.59

The average return to management was further affected by the economies in labor realized by selling more feeder pigs per sow. The average return to management for the producers who sold less than 15 pigs per sow was minus \$4.10 per pig sold as compared with \$1.72 per pig sold for the producers who sold more than 15 pigs per sow.

The producers who sold 15 or more pigs per sow were able to reduce investment per pig much more than the producers selling less than 15 pigs per sow, Table 10. This was because the investment in buildings and equipment per sow was relatively the same regardless of the number of pigs sold per sow. The cost of buildings, equipment, and the brood herd can be analyzed by the fixed costs for the two different groups. The producers who sold 15 or more pigs per sow had significantly lower fixed cost per pig than those who sold less than 15 pigs per sow.

TABLE 10. AVERAGE INVESTMENT IN CAPITAL ASSETS (NEW) AND AVERAGE LABOR REQUIREMENT PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY THE NUMBER OF PIGS SOLD PER SOW, ALABAMA, 1967

Item	Producer groups	
	Less than 15 pigs sold per sow	15 or more pigs sold per sow
No. of producers.....	7	7
Av. 100 lb. of pork sold.....	246.9	655.6
		<i>Dol.</i>
Buildings and equipment		
Fencing.....	2.21	1.24
Farrowing-nursery facilities.....	8.62	4.79
Feed storage.....	2.60	1.17
Equipment.....	.84	.87
Miscellaneous.....	.21	.01
Total.....	14.48	8.08
Brood stock		
Brood sows.....	4.12	3.80
Gilts.....	1.09	.55
Boars.....	.68	.56
Total.....	5.89	4.91
Total investment	20.37	12.99
		<i>Hr.</i>
Labor requirement	3.65	2.63

The producers who sold 15 or more pigs per sow earned 17.9 per cent on their average investment. The producers who sold less than 15 pigs per sow earned a minus 13.2 per cent return on the average investment.

Least-squares regression techniques were used to estimate the relationship between the number of pigs sold per sow per year and the total cost per pig sold. Costs were calculated for each of the 14 observations. The estimating equation is shown in Appendix Table 7.

As expected, an inverse relationship existed between the number of pigs sold per sow per year and the cost per pig sold. Cost decreased very rapidly as the number of pigs sold per sow increased from 8 to 20 per year, Figure 3.

An estimate of the relationship between the number of pigs sold per sow per year and the net return to management per pig sold was also computed. Returns were calculated for each of the 14 producers. The estimating equation is shown in Appendix Table 7. The curve shown in Figure 4 indicates a direct relationship between the number of pigs sold per sow and the return to management per pig sold. Returns increased very rapidly from 8 to 18 pigs sold per sow. Returns continued to increase beyond 18 pigs per sow but not as rapidly. The curve indicates that more

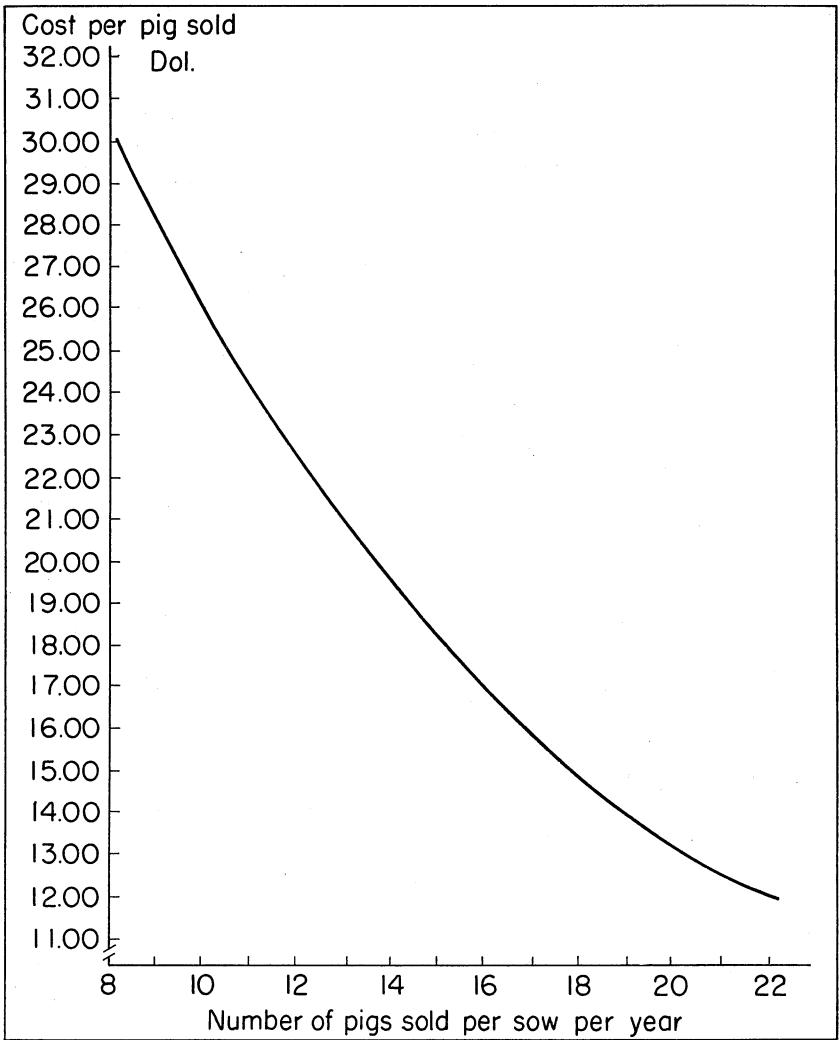


FIG. 3. Relationship between the total cost per pig sold and the number of pigs sold per sow, Alabama, 1967.

than 15.8 pigs per sow would have to be sold in order to obtain a positive return to management under the prices and conditions stated previously.

This direct relationship was expected because of the inverse relationship between production cost per pig and the number of pigs sold per sow. Gross returns per pig remained relatively the

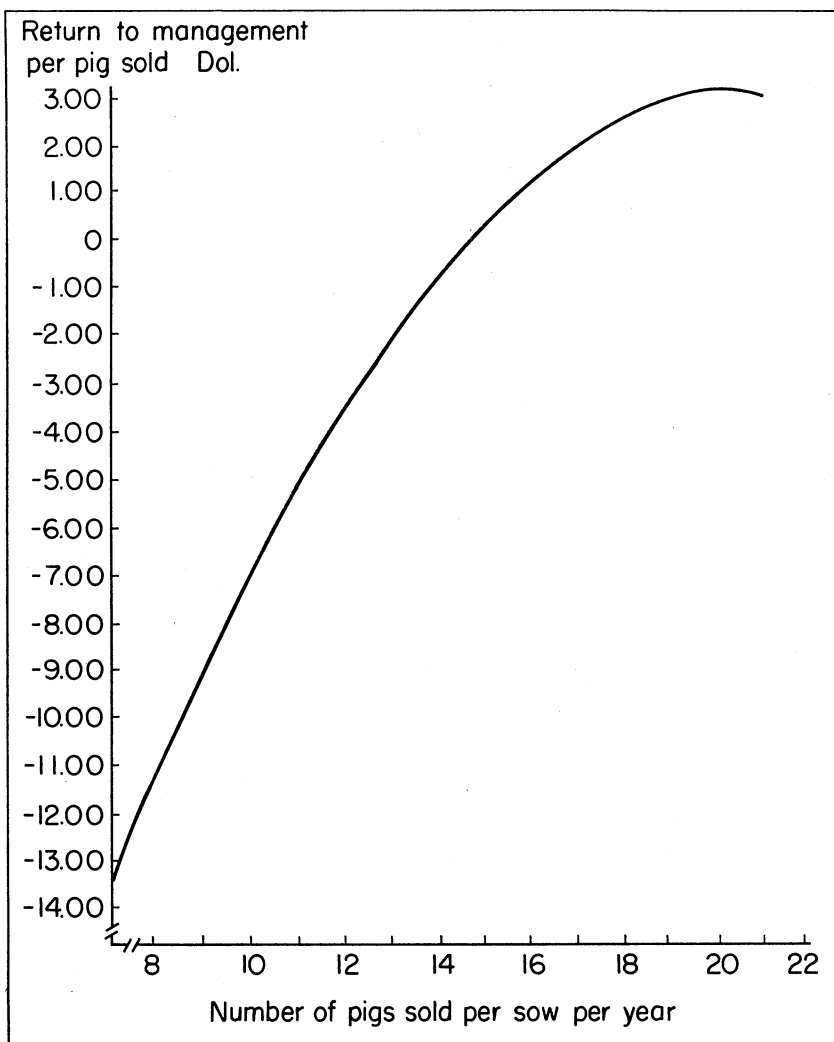


FIG. 4. Relationship between the return to management per pig sold and the number of pigs sold per sow, Alabama, 1967.

same while cost per pig decreased thus resulting in greater net returns per pig sold.

Cost of Production

The 14 feeder pig enterprises were divided into two groups according to their cost of production. Seven producers were classified as high-cost producers with costs per pig sold greater than

\$19.00. The seven producers with costs per pig sold less than \$19.00 were classified as low-cost producers.

The total cost per pig sold varied from a high of \$28.29 to a low of \$10.82. The average cost per pig sold for the low-cost producer group was \$14.25 compared with an average cost of \$22.23 per pig sold for the high-cost producer group, Table 11.

TABLE 11. AVERAGE COSTS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY COST OF PRODUCTION, ALABAMA, 1967

Item	Producer group	
	Low cost	High cost
No. of producers.....	7	7
Av. no. of pigs sold.....	673.3	229.0
Av. no. of pigs sold per sow.....	17.62	12.57
	<i>Dol.</i>	
Feed costs		
Corn.....	3.19	4.47
Protein supplement.....	1.38	2.05
Feed additives ¹13	.19
Creep and starter.....	2.25	2.78
Total.....	6.95	9.49
Non-feed variable costs		
Pasture.....	.41	.92
Replacement stock.....	.52	1.78
Vaccination and veterinary charges.....	.29	.48
Trucking.....	.13	.22
Electricity.....	.18	.47
Repairs.....	.08	.04
Other cash expenses.....	.09	.29
Interest on oper. cap.....	.35	.54
Total.....	2.05	4.74
Fixed costs		
Capital depreciation.....	.42	.74
Interest, taxes, insurance.....	.65	.92
Total.....	1.07	1.66
Other costs		
Land.....	.29	.61
Labor.....	3.89	5.73
Total.....	4.18	6.34
Total cost	14.25	22.23

¹ Vitamins, minerals, and antibiotics.

Much of the difference in cost between the two groups can be explained by the average number of pigs sold per sow. The low-cost producer group had sold an average of 17.62 pigs per sow while the high-cost producer group had sold an average of 12.57 pigs per sow.

Some of the differences in costs could be related to economies of size. The average size of enterprise was much larger for the

low-cost producer group than for the high-cost producer group. Since economies of size were indicated in feeder pig production, the low-cost producer group with larger enterprises would be expected to have lower costs.

The most significant cost differences between the two groups were in non-feed variable expenses and labor costs, Appendix Table 8. Feed expenses and fixed costs were somewhat lower for the low-cost producer group.

The average total feed cost was \$9.49 per pig sold for the high-cost group while only \$6.95 per pig sold for the low-cost group. The difference in the feed cost was because of the lower cost of corn and supplement of the low-cost producer group. The corn and supplement were fed primarily to the brood herd. Since the low-cost producer group was selling more pigs per sow than the high-cost group, they were able to reduce the cost per pig sold.

The low-cost producer had lower non-feed variable expenses than the high-cost group. Much of the differences in these costs can again be explained by the low-cost producer group selling more pigs per sow. Costs such as pasture, electricity, repairs, and replacement stock were due primarily to the number of sows in the brood herd. These costs were spread over a larger output per sow. The larger volume handled by the low-cost group explained part of the lower costs of veterinary supplies and trucking expenses.

Labor costs were significantly lower per pig sold for the low-cost group. One way the low-cost producer group was able to reduce the time requirement per pig, and thus cost per pig, was to sell more pigs per sow. These producers also benefited by having larger herds that further reduced the labor requirement per sow because of economies of size. Organization and the use of labor saving devices also contributed to the reduced labor cost of the low-cost producer group.

The low-cost producer group had higher average gross sales per pig (receipts per pig plus the pro rata share of receipts from culled sows and boars) than the high-cost producers, Table 12. This could indicate that the low-cost producer group was selling a greater volume of culls per pig sold than the high-cost producer group since it is unlikely that the low-cost producer group was receiving a higher price.

The gross receipts per pig (returns per pig plus the change in inventory) were greater for the high-cost producer group be-

TABLE 12. AVERAGE COSTS AND RETURNS PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY COST OF PRODUCTION, ALABAMA, 1967

Item	Producer group	
	Low cost	High cost
No. of producers	7	7
Av. no. of pigs sold.....	673.4	229.0
	<i>Dol.</i>	
Gross receipts		
Gross sales	15.49	14.18
Inventory change.....	.45	3.61
Total	15.94	17.79
Costs		
Feed	6.95	9.49
Non-feed variable	2.05	4.74
Total fixed.....	1.07	1.66
Total	10.07	15.89
Returns		
Returns to land, labor, and mgt.....	5.87	1.90
Cost of land29	.61
Return to labor and mgt.....	5.58	1.29
Cost of labor	3.89	5.73
Return to management	1.69	-4.44
Av. investment	14.16	22.67
Return to investment	2.54	-3.08

cause of a much greater change in inventory per pig sold. This greater change in inventory coupled with larger expenditures for replacement stock would indicate that the producers in the high-cost group had expanded faster during 1967 than the producers in the low-cost group.

The low-cost producer had a much higher net return to labor and management per pig sold, \$5.58, than the high-cost group, \$1.29, even though the high-cost group had greater gross receipts per pig sold. Because of the lower production costs, the low-cost group received \$1.69 return to management per pig sold compared with minus \$4.44 for the high-cost group.

Investments in buildings and equipment (new) per pig sold were much lower for the low-cost group, Table 13. Most of the buildings and equipment in the feeder pig enterprise were constructed according to the number of sows to be handled. By selling more pigs per sow, the low-cost producer group was able to spread this investment over a larger volume. The larger enterprises of the low-cost group enabled them to utilize the facilities more efficiently. Both these aspects were reflected in lower fixed costs per unit for the low-cost group.

Investments in brood stock were lower per pig sold for the low-

TABLE 13. AVERAGE INVESTMENT IN CAPITAL ASSETS (NEW) AND AVERAGE LABOR REQUIREMENT PER PIG SOLD FOR FEEDER PIG PRODUCER GROUPS BY COST OF PRODUCTION, ALABAMA, 1967

Item	Producer group	
	High cost	Low cost
No. of producers.....	7	7
Av. 100 lb. of pork sold.....	229.0	673.4
	<i>Dol.</i>	
Buildings and equipment		
Fencing.....	2.25	1.25
Farrowing houses.....	8.67	4.88
Feed storage.....	1.75	1.50
Equipment.....	.97	.82
Miscellaneous.....	.22	.01
Total.....	13.86	8.46
Brood stock		
Brood sows.....	4.19	3.78
Gilts.....	.75	.68
Boars.....	.66	.57
Total.....	5.60	5.03
Total investment	19.46	13.49
	<i>Hr.</i>	
Labor requirements	3.82	2.59

cost group. The larger number of pigs sold per sow for the low-cost group accounted for most of this.

The low-cost producer group earned an average of 17.9 per cent on their average investment. The high-cost producer group earned minus 13.6 per cent on their average investment.

Feeder Pig Budgets

Enterprise budgets were developed using the cost and investment data developed in the analysis of economies of size. These budgets indicate the costs and returns that might be expected from two different size enterprises. These two enterprise sizes were budgeted because they conform closely to the average size of the operations analyzed for economies of size.

It was assumed that 16.5 pigs could be raised per sow each year. Sows would have to be replaced every 2 years. Thus, after selection of replacement gilts, an average of 16 pigs per sow could be sold each year at an average weight of 50 pounds each. Half of the sow herd would be sold each year at an average weight of 325 pounds per sow with an average annual death loss of 2 per cent subtracted from this. In order to prevent the complications that can arise because of inbreeding, boars were assumed to be replaced annually. By using these assumptions it was possible,

for practical purposes, to determine the number of sows necessary to attain a level of output equivalent to the average size of operations encountered in the analysis of economies of size.

The costs, returns, and investments were derived by multiplying the total number of pigs sold by the adjusted cost per pig sold. Cost and investment data determined in the analysis of economies of size were adjusted to correct for variation in the number of pigs sold per sow by the two producer groups. The correction factor was determined by dividing the average number of pigs sold per sow as determined for the appropriate producer group in the analysis of economies of size by the number of pigs sold per sow assumed for the budget. This correction factor was then used to adjust the cost and investment data for the two producer groups to make more realistic estimates of costs. Minor corrections were necessary due to rounding.

As expected, this adjustment neutralized many of the cost advantages indicated for the larger producers in the analysis of enterprise size. The primary factor contributing to the lower cost of production for the larger producers was their selling more pigs per sow. This resulted in a lower cost per pig. By adjusting the cost data to 16 pigs sold per sow for both the 14- and 48-sow enterprises, the variation in the cost of production was not as great as indicated in the economies of size analysis.

The enterprise budgets indicated that the producers with larger enterprises had lower costs than those with the smaller enterprises, Tables 14 and 16. Total expenses per sow were \$178.39 for the enterprise with 48 sows as compared with \$196.87 for the 14-sow enterprise. Total expenses per pig sold were \$11.15 for the 48-sow enterprise and \$12.30 for the 14-sow enterprise.

The costs of all non-feed variable inputs were lower for the 48-sow enterprise. Feed expenses per sow were slightly lower for the large enterprise.

It was hypothesized that fixed expenses per sow would decrease as the size of the enterprise increased. However, the fixed cost per sow for the 48-sow enterprise was \$20.11 compared with \$19.55 for the 14-sow enterprise. The capital investments were based on the actual investments quoted by the farmers in the two size groupings determined for the analysis of economies of size. The producers with smaller enterprises in this study were able to adapt existing facilities much more easily than the producers with larger enterprises. By adapting these existing buildings, the pro-

TABLE 14. ESTIMATED COSTS, RETURNS, AND INVESTMENT FOR A 14-SOW FEEDER PIG ENTERPRISE, ALABAMA, 1967

Item	Description	Unit	Quantity ¹	Rate		
				Dol.	Dol.	Dol.
Receipts						
Hogs.....	224 @ 40-50# ea.	head	224	15.00	3,360.00	240.00
Sows.....	7 @ 325# ea. ²	cwt.	22.3	16.00	356.80	25.48
Boar.....	1 @ 400# ea.	cwt.	4.0	12.00	48.00	3.43
Total receipts.....					3,764.80	268.91
Variable Expenses						
Pasture.....		acre	7	22.06	154.42	11.03
Corn.....		bu.	561	1.41	791.01	56.50
Protein supplement.....		cwt.	73	5.39	393.47	28.10
Creep & starter feed.....		cwt.	88	5.75	506.00	36.14
Other feeds.....					51.98	3.71
Vaccination and veterinary.....		head	231	.39	90.09	6.44
Electricity.....		mo.	12	7.86	94.32	6.74
Trucking.....		head	224	.18	40.32	2.88
Boar.....		head	1	200.00	200.00	14.29
Repairs.....					46.20	3.30
Other cash expenses.....					19.25	1.37
Int. on oper. cap. (\$2,387.06 for 6 mos. @ 8%).....					95.48	6.82
Total variable expenses.....					2,482.54	177.32
Fixed expenses (from Table 15).....					273.69	19.55
Total expenses.....					2,756.23	196.87
Returns to land, labor, and mgt.						
Charge for land.....		acre	8.8	12.00	105.60	7.54
Return to labor and management.....					902.97	64.50
Charge for labor.....		hour	672	1.50	1,008.00	72.00
Return to management.....					-105.03	-7.50

$$^1 \text{ Correction factor} = \frac{13.75}{16.00} = .85938$$

² 2% death loss subtracted.

TABLE 15. ESTIMATED INVESTMENT AND ANNUAL FIXED COSTS FOR A 14-SOW FEEDER PIG ENTERPRISE, ALABAMA, 1967

Item	Value		Annual fixed costs		
	New	Average	Interest, taxes, and Depreciation		Total
			Dol.	Dol.	
Brood sows.....	739.20	739.20	47.12	-----	47.12
Gilts.....	121.28	121.28	7.73	-----	7.73
Boar.....	117.42	117.42	7.48	-----	7.48
Farrowing-nursery parlor.....	1,403.33	701.66	52.62	66.66	119.28
Feed storage.....	267.58	133.79	10.03	16.95	26.98
Miscellaneous.....	40.42	20.21	1.21	2.02	3.33
Equipment.....	198.28	99.14	8.77	19.83	28.60
Fencing.....	429.28	214.64	12.88	20.39	33.27
Total.....	3,316.79	2,147.34	147.84	125.85	273.69

TABLE 16. ESTIMATED COSTS, RETURNS, AND INVESTMENT FOR A 48-SOW FEEDER PIG ENTERPRISE, ALABAMA, 1967

Item	Description	Unit	Quantity ¹	Amount		
				Rate	Dol.	Per sow
				<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>
Receipts						
Hogs.....	768 @ 40-50# ea.	head	768	15.00	11,520.00	240.00
Sows.....	24 @ 325# ea. ²	cwt.	76.44	16.00	1,223.04	25.48
Boar.....	2 @ 400# ea.	cwt.	8.0	12.00	96.00	2.00
Total receipts.....					12,839.04	267.48
Variable Expenses						
Pasture.....		acre	17	22.06	375.02	7.81
Corn.....		bu.	1,955	1.41	2,756.55	57.43
Protein supplement.....		cwt.	211	5.39	1,137.29	23.69
Creep and starter feed.....		cwt.	337	5.75	1,937.75	40.37
Other feeds.....					84.29	1.76
Vaccination and veterinary.....		head	792	.31	245.52	5.12
Electricity.....		mo.	12	11.24	134.88	2.81
Trucking.....		head	768	.14	107.52	2.24
Boar.....		head	2	200.00	400.00	8.33
Repairs.....					75.86	1.58
Other cash expenses.....					50.57	1.05
Int. on oper. cap. (\$7,305.25 for 6 mos. @ 8%).....					292.21	6.09
Total variable expenses.....					7,597.46	158.28
Fixed expenses (from Table 17).....					965.30	20.11
Total expenses.....					8,562.76	178.39
Returns to land, labor, and mgt.						
Charge for land.....		acre	21	12.00	252.00	5.25
Return to labor and management.....					4,024.28	83.84
Charge for labor.....		hour	2,250	1.50	3,375.00	70.31
Return to management.....					649.28	13.53

$$^1 \text{ Correction factor} = \frac{17.56}{16.00} = 1.0975$$

² 2% death loss subtracted.

TABLE 17. ESTIMATED INVESTMENT AND ANNUAL FIXED COSTS FOR A 48-SOW FEEDER PIG ENTERPRISE, ALABAMA, 1967

Item	Value		Annual fixed costs		
	New	Average	Interest, taxes, and Depreciation		Total
			Insurance		
	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>	<i>Dol.</i>
Brood sows.....	3,287.23	3,287.23	209.56	-----	209.56
Gilts.....	615.30	615.30	39.23	-----	39.23
Boar.....	497.30	497.30	31.70	-----	31.70
Farrowing-nursery parlor.....	4,433.55	2,216.78	166.26	210.59	376.85
Feed storage.....	1,373.89	686.94	51.52	87.01	138.53
Miscellaneous.....	8.43	4.22	.25	.42	.67
Equipment.....	665.88	332.94	22.48	66.59	89.07
Fencing.....	1,028.31	514.16	30.85	48.84	79.69
Total.....	11,909.89	8,154.87	551.85	413.45	965.30

ducers with smaller enterprises were able to reduce their capital investment and thus reduce their fixed costs. The average initial investment for both enterprises was \$242.51 per sow.

These budgets indicate that the producers with large enterprises could expect a lower cost of production and thus greater net returns than those with small enterprises. However, as pointed out previously, the primary factor determining the profitability of the feeder pig enterprise is the number of pigs sold per sow.

SUMMARY

The average cost of production per pig sold for 14 feeder pig producers in 1967 was \$16.28. The largest single cost item was feed, comprising 46.6 per cent of the cost. Labor was the second most important cost item making up 26.8 per cent.

The average gross receipts per pig sold was \$16.41. The average net return to land, labor, and management was \$4.86 per pig sold. When cost for labor and land was subtracted, the average return to management was \$.13 per pig sold.

The producers had an average initial investment in capital assets of \$21.18 per pig sold. A return of 6.8 per cent was realized on the average investment.

The data indicated that economies of size existed in the production of feeder pigs. Average costs of production were \$20.81 per pig sold for the small enterprises (less than 400 pigs sold per year) and \$14.48 per pig sold for the large enterprises (400 or more pigs sold per year).

The average total cost of \$14.29 for the producers who averaged selling 15 or more pigs per sow was lower than the \$21.57 for the producers selling less than 15 pigs per sow. The total costs of all productive factors were lower for the producers who sold 15 or more pigs per sow.

To determine why some producers were more efficient in producing feeder pigs than others, the data were divided into low-cost producer group and high-cost producer group. The average total cost per pig sold was \$14.25 for the low-cost group while the high-cost group had an average total cost of \$22.23 per pig sold.

The average investment per pig sold was much lower for the low-cost group than for the high-cost producer group. The low-cost producer group had an average return on investment of 17.9 per cent while the high-cost group had a return of negative 13.6 per cent.

Enterprise budgets were developed for both 14- and 48-sow feeder pig enterprises using the cost data developed for the analysis of size of enterprise. These budgets indicated that costs of producing a feeder pig decreased as the size of enterprise increased. When the cost data were adjusted for variation in the number of feeder pigs sold per sow, the total expenses per sow were \$178.39 for the 48-sow enterprise and \$196.87 for the 14-sow enterprise. The cost per pig sold was \$11.15 for the 48-sow enterprise and \$12.30 for the 14-sow enterprise. The lower cost of production for the 48-sow enterprise was a result of lower costs for non-feed variable inputs. The primary factor determining the profitability of feeder pig production was the number of pigs sold per sow.

CONCLUSIONS

Economies of size were indicated for the feeder pig enterprises. The average total cost decreased at a decreasing rate as the size of enterprise increased up to 1,400 pigs sold annually.

The optimum size feeder pig enterprise was 1,400 pigs or more sold annually. Diseconomies of size were indicated with more than 1,400 pigs sold annually. Because of the insufficient number of observations at high levels of output, the extent of these diseconomies could not be determined.

A direct relationship existed between the number of pigs sold per sow and the net return to management. This analysis indicated that more than 15.8 pigs per sow would have to be sold to obtain a positive return to management.

The enterprise budgets developed in this study indicate that even a small feeder pig enterprise might be considered a good secondary source of farm income for producers able to sell 16 or more pigs per sow per year. Producers with 14-sow enterprises could expect to earn 6 per cent on their average investment and \$1.34 per hour return to labor and management. Producers with larger herds could expect to earn a greater return to labor and management. The budget for the 48-sow enterprise indicates a return of \$1.79 per hour to labor and management and 6 per cent return on the average investment.

A sound management program based on increasing the number of pigs sold per sow should contribute to larger profits in feeder pig production.

APPENDIX

APPENDIX TABLE 1. VARIABLE EXPENSES PER ACRE FOR TEMPORARY WINTER PASTURE FOR TEN HOG ENTERPRISES, ALABAMA, 1967

Item	Variable expenses per acre
	<i>Dol.</i>
Seed.....	4.33
Lime.....	2.32
Fertilizer.....	10.02
Ammonium nitrate.....	2.25
Tractor and equipment oper. expenses.....	6.59
Total.....	25.51

APPENDIX TABLE 2. VARIABLE EXPENSES PER ACRE FOR TEMPORARY SUMMER PASTURE FOR SEVEN HOG ENTERPRISES, ALABAMA, 1967

Item	Variable expenses per acre
	<i>Dol.</i>
Seed.....	3.23
Lime.....	.86
Fertilizer.....	8.64
Ammonium nitrate.....	3.82
Tractor and equipment oper. expenses.....	5.86
Total.....	22.41

APPENDIX TABLE 3. VARIABLE EXPENSES PER ACRE FOR IMPROVED PERMANENT PASTURE FOR 17 HOG ENTERPRISES, ALABAMA, 1967

Item	Variable expenses per acre
	<i>Dol.</i>
Lime.....	2.00
Fertilizer	
(a) Mixed.....	8.49
(b) Ammonium nitrate.....	5.09
Tractor and equipment oper. expenses.....	2.69
Total.....	18.27

APPENDIX TABLE 4. ANALYSIS OF VARIANCE BETWEEN FEEDER PIG PRODUCER GROUPS BY SIZE OF ENTERPRISE, ALABAMA, 1967

Item	Source of variation	D.F.	Estimated variance	F	P
Feed costs.....	Treatment	1	7.63	2.38	N.S.
	Error	13	3.21		
Non-feed variable costs.....	Treatment	1	21.83	10.46	.01
	Error	13	2.09		
Fixed costs.....	Treatment	1	.10	.40	N.S.
	Error	13	.25		
Labor costs.....	Treatment	1	6.06	2.88	N.S.
	Error	13	2.10		
Total costs (excluding land and labor).....	Treatment	1	70.69	7.27	.025
	Error	13	10.03		
Total costs.....	Treatment	1	118.15	5.90	.05
	Error	13	16.26		
No. of pigs sold per sow.....	Treatment	1	28.97	7.05	.025
	Error	13	4.91		

APPENDIX TABLE 5. RELATIONSHIPS BETWEEN THE UNIT COSTS OF FEED; NON-FEED VARIABLE INPUTS; FIXED INPUTS; LABOR; TOTAL COST EXCLUDING LAND AND LABOR; TOTAL COSTS WITH SIZE OF ENTERPRISE, ALABAMA, 1967

Relationships between variables	Correlation coefficients	Comments
A. Unit cost of feed and size of enterprise $Y = 9.582 - .00312X + .0000056X^2$ S.E. ¹ = ± \$0.81.....	.463	Not sig. at .05 level
B. Unit cost of non-feed variable inputs and size of enterprise $Y = 6.587 - .00975X + .00000385X^2$ S.E. = ± \$1.38.....	.678	Sig. at .01 level
C. Unit cost of fixed inputs and size of enterprise $Y = 1.805 - .00114X + .00000033X^2$ S.E. = ± \$0.33.....	.534	Sig. at .05 level
D. Unit cost of labor and size of enterprise $Y = 7.240 - .00759X + .0000031X^2$ S.E. = ± \$1.23.....	.606	Sig. at .025 level
E. Total cost (excluding land and labor) and size of enterprise $Y = 18.885 - .01551X + .0000054X^2$ S.E. = ± \$2.89.....	.646	Sig. at .01 level
F. Total cost and size of enterprise $Y = 26.125 - .02310X + .0000085X^2$ S.E. = ± \$3.50.....	.693	Sig. at .01 level

¹ Standard error of estimate.

APPENDIX TABLE 6. ANALYSIS OF VARIANCE BETWEEN FEEDER PIG PRODUCER GROUPS BY THE NUMBER OF PIGS SOLD PER SOW, ALABAMA, 1967

Types of costs	Source of variation	D.F.	Estimated variance	F	P
Feed	Treatment	1	11.74	4.05	.10
	Error	13	2.90		
Non-feed variable	Treatment	1	30.32	21.20	.001
	Error	13	1.43		
Fixed	Treatment	1	.58	4.46	.10
	Error	13	.13		
Labor	Treatment	1	10.52	5.69	.05
	Error	13	1.85		
Total (excluding land and labor)	Treatment	1	101.26	13.18	.01
	Error	13	7.68		
Total	Treatment	1	175.58	14.83	.01
	Error	13	11.84		

APPENDIX TABLE 7. RELATIONSHIPS BETWEEN THE TOTAL COST PER PIG SOLD AND THE RETURNS TO MANAGEMENT PER PIG SOLD WITH THE NUMBER OF PIGS SOLD PER SOW FOR FEEDER PIG ENTERPRISES, ALABAMA, 1967

Relationships between variables	Correlation coefficient	Comment
A. Total cost per pig sold and number of pigs sold per sow per year $Y = 50.66 - 3.04X + .0581X^2$ S.E. ¹ = ± \$2.89	.813	Significant at .001 level
B. Returns to management per pig sold and the number of pigs sold per sow per year $Y = 38.987 + 3.908X - .0914X^2$ S.E. = ± \$1.98	.875	Significant at .001 level

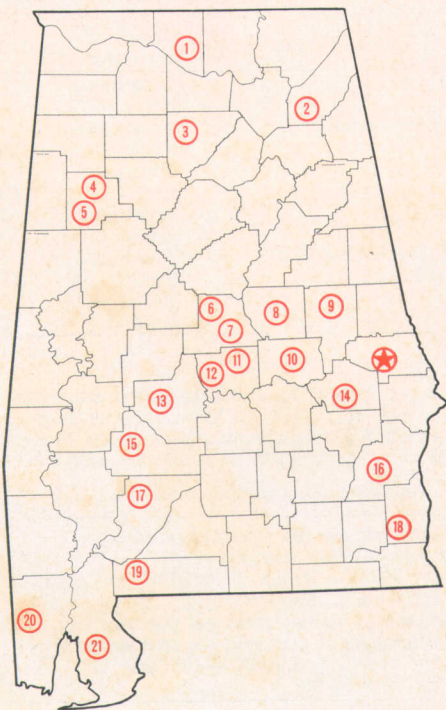
¹ Standard error of estimate.

APPENDIX TABLE 8. ANALYSIS OF VARIANCE BETWEEN FEEDER PIG PRODUCER GROUPS BY COST OF PRODUCTION, ALABAMA, 1967

Item	Source of variation	D.F.	Estimated variance	F	P
Feed costs	Treatment	1	13.80	5.04	.05
	Error	13	2.74		
Non-feed variable costs	Treatment	1	27.44	16.63	.01
	Error	13	1.65		
Fixed costs	Treatment	1	.86	7.82	.025
	Error	13	.11		
Labor costs	Treatment	1	13.47	8.80	.025
	Error	13	1.53		
Total costs (excluding land and labor)	Treatment	1	109.93	15.68	.01
	Error	13	7.01		
Total costs	Treatment	1	200.34	20.13	.001
	Error	13	9.95		
No. of pigs sold per sow	Treatment	1	72.98	14.09	.01
	Error	13	5.18		

AGRICULTURAL EXPERIMENT STATION SYSTEM OF ALABAMA'S LAND-GRANT UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, live-stock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

 Main Agricultural Experiment Station, Auburn.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Thorsby Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. Tuskegee Experiment Field, Tuskegee.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Ornamental Horticulture Field Station, Spring Hill.
21. Gulf Coast Substation, Fairhope.