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ECONOMIC ANALYSIS OF SWINE ENTERPRISES, PLAINS AREAS OF TEXAS PARTIAL CONFINEMENT SYSTEMS

TEXAS A&M UNIVERSITY

TEXAS AGRICULTURAL EXPERIMENT STATION

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- SWINE BUSINESS -

Economic Analysis of Swine Enterprises, Plains Areas of Texas Partial Confinement Systems

by

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ECONOMIC ANALYSIS OF SWINE ENTERPRISES, PLAINS AREAS OF TEXAS PARTIAL CONFINEMENT SYSTEMS

William R. Masch*

Recent advances in swine production technology and in favorable prices have resulted in a rapid expansion of the swine industry in certain areas of Texas. The profit margin per head for operators already in the business has been quite attractive, and many farm operators are considering swine as a possible supplemental enterprise in their farming operation.

If a farm operator has the management ability and available capital, incorporating a swine enterprise into his farm plan can provide a means of maintaining or perhaps increasing net income.

The following budgets may be used as guidelines by farmers and their financiers, investors and other considering swine as a possible business venture. Because of the recent increases in construction costs, a newly constructed swine enterprise may not show a profit margin as high as an enterprise constructed when costs were lower. Investors, farmers and others considering a swine enterprise must make their decisions based on what is possible with current construction costs, expected feed costs and expected

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slaughter swine prices. The following tables and budgets reflect construction and feed costs that existed when these budgets were prepared (summer 1969).[1/] Budgets and tables were developed mainly from personal interviews with producers and university personnel.

ASSUMPTIONS

These budgets were constructed assuming two different levels of management - "above average" and "average" management. The "above average" management is generally expected to save more pigs per litter and obtain a higher feed conversion ratio than "average" management. Specifically, the assumptions made concerning the tables reflecting "above average" management practices were as follows:

1. 2.2 litters per sow per year
2. 8.5 pigs marketed per litter
3. 45-pound sale weights for the feeder pig enterprise and 40-pound weaning weights for the farrow to finish enterprise
4. A feed conversion ratio of 3.2:1 in the finishing house
5. An overall, including sow and boar feed, conversion ratio of 3.84:1
6. Milo costing $2.40 per hundredweight including mixing, grinding and hauling charges
7. Specific-Pathogen-Free (SPF) breeding stock
8. Other expenses and incomes as noted in the footnote section of the budgets.

[1/] This material was taken from a study by W. R. Masch, NDEA Fellow, Department of Agricultural Economics and Sociology, Texas A&M University, which includes an analysis of the supplemental position of swine with other possible farm enterprises on the High Plains of Texas.

The assumptions made concerning the tables reflecting "average" management practices that differ from "above average" management were as follows:

1. 2.1 litters per sow per year
2. 7.6 pigs marketed per litter
3. A feed conversion ratio of 4:1 in the finishing house
4. An overall, including sow and boar feed, conversion ratio of 4.6:1.

RESULTS

The estimated initial investment necessary to start a 120 sow herd, excluding land and truck cost was $67,709 for a farrow to finish swine enterprise and $47,307 for a farrow to feeder swine enterprise. With land and truck cost included, the initial investment was estimated at $72,709 for the farrow to finish enterprise and $52,307 for farrow to feeder. These estimates apply specifically to the plains areas of Texas during the summer of 1969.

Above Average Management

The following tables vividly show the importance of good management practices in the farrowing, nursery, and finishing houses.

In Tables 1 - 4, the column headed $2.40/cwt., milo is the summary of the costs developed throughout this study. This $2.40/cwt. for milo represents $2.00/cwt. for grain, and a $0.40/cwt. storage, grinding, mixing and hauling charge. Because milo prices are seldom stable for any period of time, breakeven analyses were developed, using four milo prices.

As the price of milo, the major component of the swine ration, changes, the finished swine price necessary to cover all production costs also changes. Table 1 contains the price of feeder and finished swine necessary

to repay production costs including labor, assuming "above average" management.

Table 1. Breakeven Analysis; Above Average Management

Cost Item	Milo prices / Milo costs [a]	$1.70 / $2.10	$1.80 / $2.20	$1.90 / $2.30	$2.00 / $2.40
Farrow-feeder Enterprise					
Variable costs/hd.		$12.51	$12.63	$12.75	$12.87
Investment cost/hd.		3.36	3.36	3.36	3.36
Total costs/hd.		$15.87	$15.99	$16.11	$16.23
Farrow-finish Enterprise					
Variable costs/cwt.		$14.50	$14.76	$15.02	$15.28
Investment cost/cwt.		2.13	2.13	2.13	2.13
Total costs/cwt.		$16.63	$16.89	$17.15	$17.41

[a] Milo costs include $0.40 per cwt. storage, grinding, mixing and hauling charge.

Assuming that prices of all other feedstuffs remain constant, a decrease in milo price of $0.10/cwt. reduced finishing production cost by $0.26/cwt. and feeder production cost by $0.12 per head, given "above average" management practices as defined.

In the farrow to finish enterprise, with "above average" management, finished swine prices at $18.75/cwt., and feed costs as shown (Table 5), returns to management are $63.58 per sow (Table 8). If milo costs declined to $2.30/cwt. (milo priced at $1.90/cwt. and the same $0.40/cwt. storage, grinding, mixing and hauling charge), returns to management are increased by $10.70 per sow (Table 2).

Table 2. Costs and Returns per Sow as Milo Price and Slaughter Swine Price Change, Above Average Management

Cost Item	Milo prices / Milo costs [a]	$1.70 / $2.10	$1.80 / $2.20	$1.90 / $2.30	$2.00 / $2.40
Farrow-finish					
Costs per sow					
Variable costs		$596.53	$607.23	$617.92	$628.62
Investment costs		87.63	87.63	87.63	87.63
Total costs		$684.16	$694.86	$705.55	$716.25
Net Returns per sow (Returns to Management)					
Swine Prices/cwt.[b]					
$16 (gross receipts/sow $658.24)		$-25.92	$-36.62	$-47.31	$-58.01
$18 (gross receipts/sow $740.52)		56.36	45.66	34.97	24.27
$20 (gross receipts/sow $822.80)		138.64	127.94	117.25	106.55
$24 (gross receipts/sow $987.36)		303.20	292.50	281.81	271.11
Farrow-feeder					
Costs per sow					
Variable costs		$233.94	$236.18	$238.43	$240.67
Investment costs		62.83	62.83	62.83	62.83
Total costs		$296.77	$299.01	$301.26	$303.50
Net Returns per sow (Returns to Management)					
Swine Prices/hd.[c]					
$12.24 (gross receipts/sow $228.89)		$-67.88	$-70.12	$-72.37	$-74.61
$13.77 (gross receipts/sow $257.50)		-39.27	-41.51	-43.76	-46.00
$15.30 (gross receipts/sow $286.11)		-10.66	-12.90	-15.15	-17.39
$18.36 (gross receipts/sow $343.33)		46.56	44.32	42.07	39.83

[a] Milo costs include the $0.40/cwt. storage, grinding, mixing and hauling charge.

[b] 220 pound finished pig, 2.2 farrowings per sow per year, and 8.5 pigs marketed per litter.

[c] Price per head of feeder pig is arrived at as follows:

1.7 x Price of Finished Swine x 45 Pounds = Price Per Head.

Average Management

Table 3 contains the price of feeder and finished swine, with "average" management, necessary to cover all production costs, again including labor, connected with a farrow to feeder pig and a farrow to finish pig enterprise.

Table 3. Breakeven Analysis; Average Management

Cost Item	Milo prices / Milo costs [a]	$1.70 / $2.10	$1.80 / $2.20	$1.90 / $2.30	$2.00 / $2.40
Farrow-feeder Enterprise					
Variable costs/hd.		$13.60	$13.74	$13.88	$14.02
Investment cost/hd.		3.94	3.94	3.94	3.94
Total costs/hd.		$17.54	$17.68	$17.82	$17.96
Farrow-finish Enterprise					
Variable costs/cwt.		$17.53	$17.86	$18.19	$18.52
Investment cost/cwt.		2.49	2.49	2.49	2.49
Total costs/cwt.		$20.02	$20.35	$20.68	$21.01

[a] Milo costs include $0.40 per cwt. storage, grinding, mixing and hauling charge.

As milo price decreases by $0.10/cwt., assuming all other feeds remain constant, finishing production costs decreased by $0.33/cwt., and feeder pig production costs decreased by $0.14 per head.

Table 4 contains the costs and returns per sow, with "average" management, as milo and swine prices change.

Given today's high operating and investment costs, supplemented with the unlikely probability of prices exceeding $22/cwt. for finished hogs over long periods (Table 15), production of swine under the conditions defined as "average" management is not likely to be very profitable.

Table 4. Costs and Returns per Sow as Milo Price and Slaughter Swine Price Change, Average Management

Cost Item	Milo prices	$1.70	$1.80	$1.90	$2.00
	Milo costs [a]	$2.10	$2.20	$2.30	$2.40
Farrow-finish					
Costs per sow					
Variable costs		$615.51	$627.10	$638.69	$649.57
Investment costs		138.34	138.34	138.34	138.34
Total costs		$753.85	$765.44	$777.03	$787.91
Net Returns per sow (Returns to Management)					
Swine Prices/cwt.[b]					
$16 (gross receipts/sow $561.76)		$-192.09	$-203.68	$-215.27	$-226.15
$18 (gross receipts/sow $632.02)		-121.83	-133.42	-145.01	-155.89
$20 (gross receipts/sow $702.24)		-51.61	-63.20	-74.79	-85.67
$24 (gross receipts/sow $842.69)		88.84	77.25	66.06	54.78
Farrow-feeder					
Costs per sow					
Variable costs		$217.06	$219.29	$221.52	$223.76
Investment costs		62.88	62.88	62.88	62.88
Total costs		$279.94	$282.17	$284.40	$286.64
Net Returns per sow (Returns to Management)					
Swine Prices/hd.[c]					
$12.24 (gross receipts/sow $195.35)		$-84.59	$-86.82	$-89.05	$-91.29
$13.77 (gross receipts/sow $219.77)		-60.17	-62.40	-64.63	-66.87
$15.30 (gross receipts/sow $244.19)		-35.75	-37.98	-40.21	-42.45
$18.36 (gross receipts/sow $293.03)		13.09	10.86	8.63	6.39

[a] Milo costs include the $0.40/cwt. storage, grinding, mixing and hauling charge.

[b] 220 pound finished pig, 2.1 farrowings per sow per year, and 7.6 pigs marketed per litter.

[c] Price per head of feeder pig is arrived at as follows:

1.7 x Price of Finished Swine x 45 Pounds = Price Per Head

CONCLUDING COMMENTS

Throughout these budgets, all labor has been charged $1.50 per hour. If, however, the owner-operator had supplied one man-year of labor, 2,500 hours, to the "above average" finished swine operation, his labor-management return would include the $7,659.74 return to management (Table 8) plus $3,750.00 reduced payment to labor. This would represent a total return to the owner-operator of $11,409.74 annually.

For the farrow to feeder enterprise with "above average" management, the total return to the owner-operator would be $2,059.75 (Table 10). In other words, the feeder pig enterprise, even with above average management, returns substantially less than $1.50 per hour to the owner-operator.

Neither the farrow to finish nor the farrow to feeder pig enterprise under average management yields sufficient gross income to pay all costs of production, let alone any labor or management return to the owner-operator (Tables 12 and 14). All of the above returns assume a price of $18.75 per hundredweight for a 220 pound hog and $2.40 per hundredweight cost of milo.

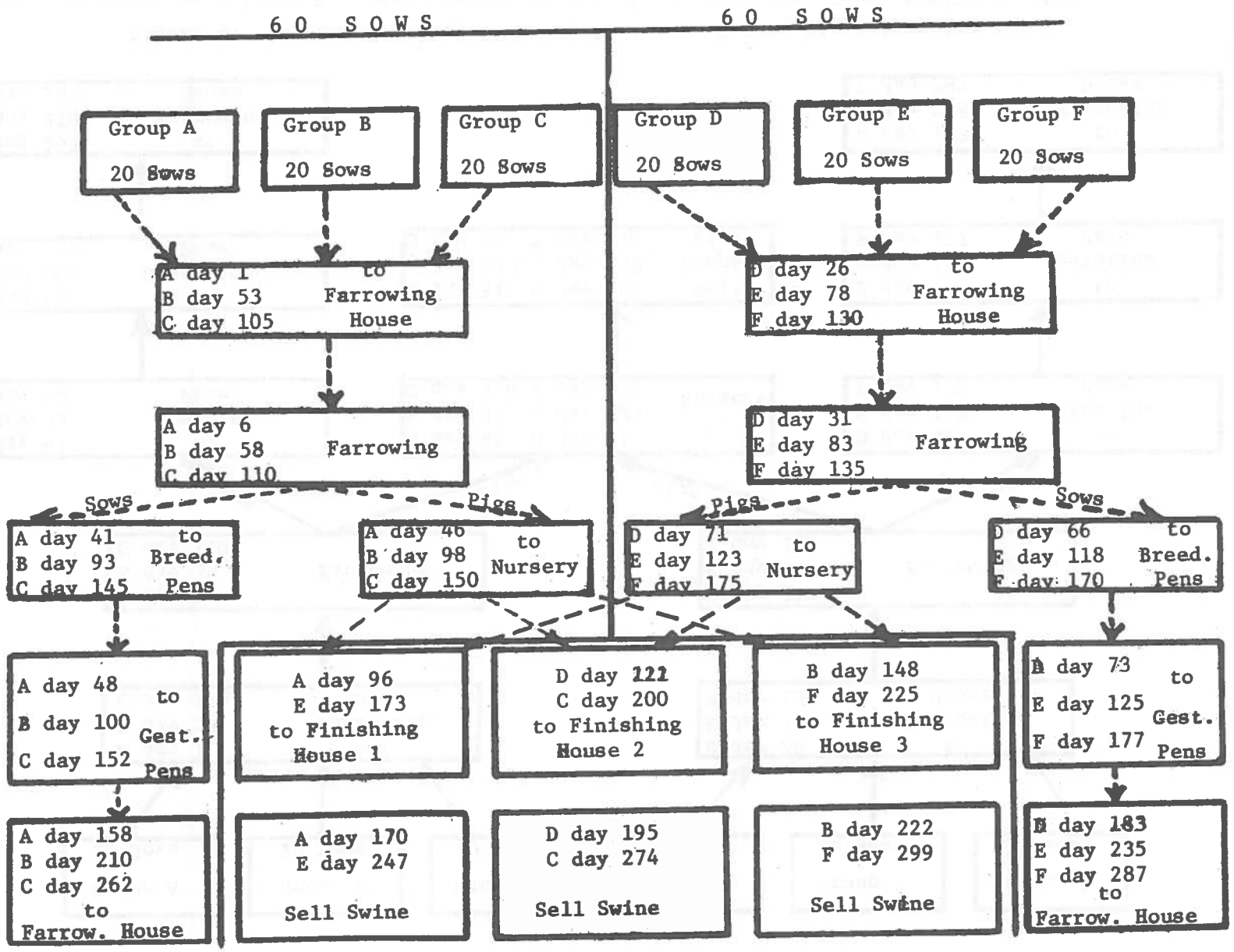

Figure 1. Sow and Pig Flow Diagram, Farrow to Finished Pig Enterprise

Source: Compiled by William R. Masch consulting with T. D. Tanksley, Texas A&M University.

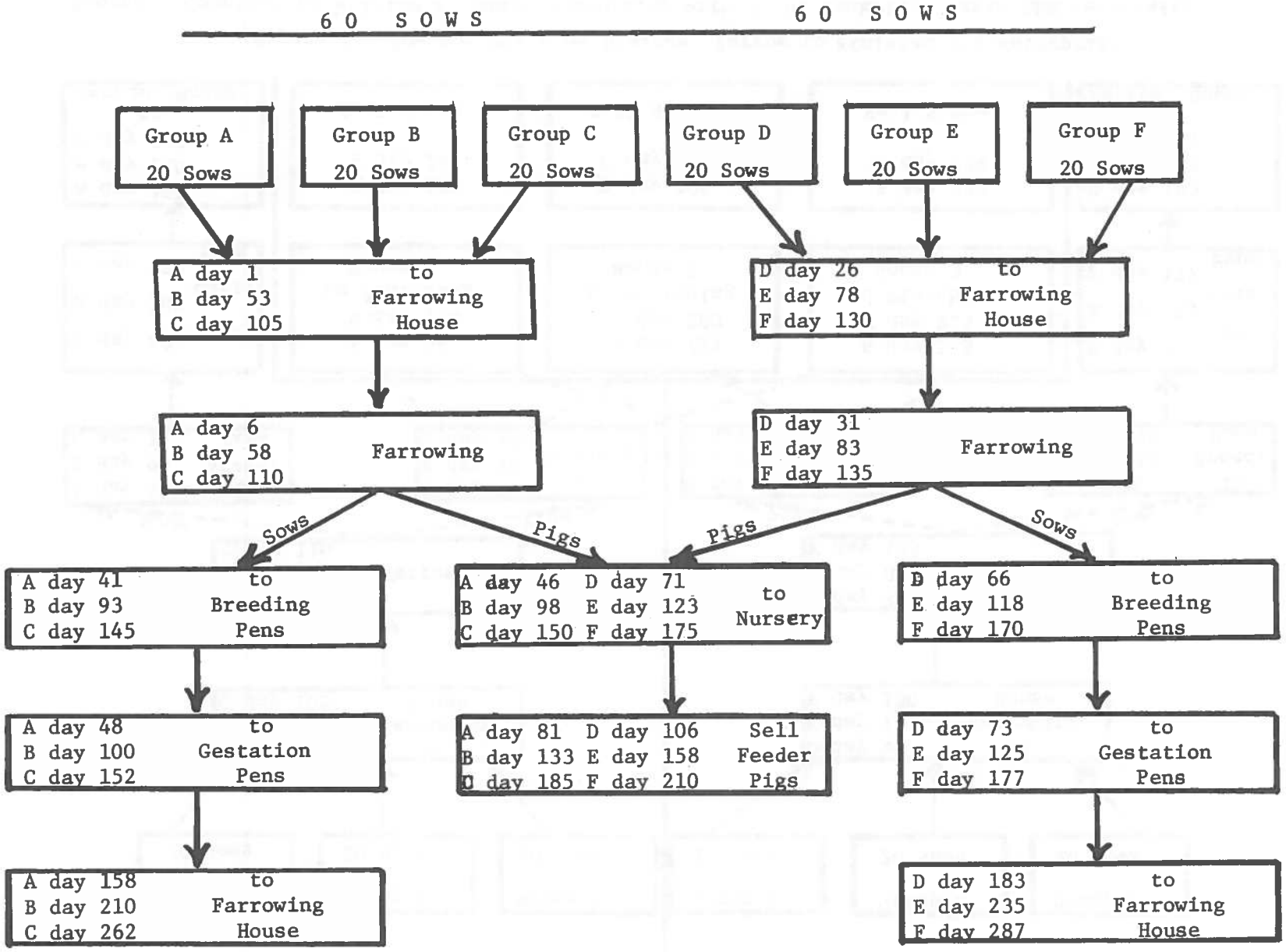

Figure 2. Sow and Pig Flow Diagram, Farrow to Feeder Pig Enterprise

Source: Compiled by William R. Masch consulting with T. D. Tanksley, Texas A&M University.

Table 5. Swine Ration and Ration Costs

Ration	Unit	Price per Unit[a]	Number of Units[b]	Total Cost
Ration A				
Grain sorghum	cwt.	$2.40[c]	14.81	$35.55
Soybean oil meal	cwt.	5.50	4.15	22.83
Dehydrated alfalfa	cwt.	3.40	.50	1.70
Deflorinated phosphate	cwt.	6.00	.33	1.98
Salt	cwt.	1.35	.10	.14
Trace minerals	cwt.	10.00	.03	.30
Vitamins	cwt.	25.00	.05	1.25
Antibiotics	lb.	.40	.03	1.20
Total			20.00	$64.95
Cost of Ration A	cwt.	$3.25		
Ration B				
Grain sorghum	cwt.	$2.40[c]	15.90	$38.16
Soybean oil meal	cwt.	5.50	3.10	17.05
Dehydrated alfalfa	cwt.	3.40	.50	1.70
Deflorinated phosphate	cwt.	6.00	.32	1.92
Salt	cwt.	1.35	.10	.14
Trace minerals	cwt.	10.00	.03	.30
Vitamins	cwt.	25.00	.05	1.25
Total			20.00	$60.52
Cost of Ration B	cwt.	$3.03		
Ration C				
Creep feed	cwt.	$5.75		

[a] Estimated prices paid for feedstuffs, summer 1969.

[b] Ration composition supplied by Dr. Donald B. Hudman, TAES, TAMU.

[c] Milo costs include $0.40/cwt. charge for storage, grinding, mixing and hauling.

Table 6. Facilities, Investment, and Depreciation, for a 120 Sow Herd, Partial Confinement System, Multiple Farrowing[a]

Item	Number of Units	Cost per Unit	Years Useful Life[b]	Total Cost	Annual Depreciation
Land (Acre)	5	$500.00	--	$2,500.00	-----
Sow Pens (60' X 200' each, 12' X 15' shed, open-front, solid-floors, 2 foggers per house	4	150.00	10	600.00	$60.00
Concrete slab 8' X 50' with 50' trough	4	120.00	15	480.00	32.00
Automatic waterer on 16 sq. ft. concrete slab	4	9.00	15	36.00	2.40
Fencing; 1480 ft. @ $0.20 per ft., one fence charger for 120 sows and boars)	4	80.00	5	320.00	64.00
Total		$359.00		$1,436.00	$158.40
Boar and Breeding Pens (5' X 8' open-front, solid-floor sheds in 15' X 20' pen, woven wire fence, electrically charged	6	$75.76	5	$454.00	$90.80
Automatic waterer on 16 sq. ft. concrete slab, hand feeder)	6	9.00	15	54.00	3.60
Total		$84.67		$508.00	$94.40
Farrowing House (25' X 55', with twenty 5' X 8' stalls; 3 ft. center isle, 3 ft. isle on each end of the farrowing stall, office, wash room; metal slats; pads and fans 3% of the floor area; all metal farrowing crates; individual sow waterers, pig creep feeders, heat lamps; 100,000 BTU heater; lagoon and transfer pipes; one-ton bulk feeder per house)	2	$10,000.00	15	$20,000.00	$1,333.33

Table 6. (Continued)

Item	Number of Units	Cost per Unit	Years Useful Life[b/]	Total Cost	Annual Depreciation
Nursery [Farrow to finish enterprise] (25' X 35', with ten 7' X 10.5' pens, all slatted oak floors; one 8-hole self-feeder per 2 pens; 100,000 BTU heater; one waterer per pen, 3.68 sq. ft. per pig, 4 ft. center isle; 200 pigs per nursery, 3% of the floor area pads and fans; lagoon and tran-fer pipes)	2	$3,010.00	15	$6,020.00	$401.33
Nursery [Farrow to feeder enterprise] (25' X 63', with eighteen 7' X 10.5' pens, all slatted oak floors; one 8-hole self-feeder per 2 pens; 100,000 BTU heater; one waterer per pen, 3.68 sq. ft. per pig, 4 ft center isle; 360 pig nursery; 3% of the floor area pads and fans; lagoon and transfer pipes)	1	$5,418.00	15	$5,418.00	$361.20
Finishing House (40' X 48', with twelve 8' X 18' pens, 4 ft. center isle, 1536 sq. ft.; 200 pig capacity; totally slatted floors; one waterer per pen; one 12-hole wooden self-feeder per 2 pens; 4-ton bulk feed bin per house with auger system to feeders; lagoon and transfer pipes; pads and fans 3% of floor area)	3	$6,600.00	15	$19,800.00	$1,320.00
Water System	1	$1,995.40	20	$1,995.40	$99.77

Table 6. (Continued)

Item	Number of Units	Cost per Unit	Years Useful Life[b]	Total Cost	Annual Depreciation
3/4-Ton Pickup and Stock Trailer	1/2[c]	$5,000.00	5	$2,500.00	$450.00
Total Investment and Depreciation (excluding land and breeding stock)				$52,259.40	$3,857.23
Breeding Herd[d]					
Sows	120	$135.00	15[e]	$16,200.00	$576.00
Boars	7	250.00	3	1,750.00	436.33
Total				$17,950.00	$1,012.33
Total Investment and Depreciation, Farrow to finish Enterprise (excluding land)				$70,209.40	$4,869.56

[a] This facilities, investment, and depreciation budget was developed from personal interviews with swine producers, and from existing publications.

[b] The majority of the facilities are assumed to have a 15 year life. Note in later budgets that 4.5 percent of total investment is charged annually for maintenance and repairs to replace those items known to have less than a 15 year life; i.e. automatic waterers, heat lamps, pads, etc.

[c] Pickup and 18 ft. stock trailer will more than adequately service 2 of these 120 sow units. Salvage value of truck and trailer is $500.00.

[d] Based on prices at 8 major markets, 1965-68, the differential between sow and barrow and gilt prices was $3.00 per cwt., Livestock Marketing Statistics, ERS, USDA. The salvage value of the breeding herd, with $18.75 finished swine prices, is $15.75 x 400 lbs. or $63.00 per head.

[e] One-third of the sow herd is replaced each year with raised replacements, fifteen year planning period.

Table 7. Estimated Variable Costs, 120 Sow Herd, Farrow to Finish, Partial Confinement System, Multiple Farrowing (Above Average Management)

Item	Unit or Ration	Number of Units	Cost per Unit	Total Cost per Animal	Total Cost
Feed Costs					
Sow[a]					
Gestation	B	11.93	$3.03	$36.15	$4,338.00
Lactation	A	12.00	3.25	39.00	4,680.00
Boar	B	16.43	3.03	49.78	348.46
Pig[b]					
Creep feed[c]	C	.50	5.75	2.88	6,462.72
Swine feed[d]	A	2.56	3.25	8.32	18,670.08
Swine feed	B	3.20	3.03	9.70	21,766.80
Total feed costs					$56,266.06
Marketing costs[e]	hd.	2,244	$1.00		$2,244.00
Veterinary and drugs[f]	hd.	2,244	1.25		2,805.00
Electricity[g]	hd.	120	3.12		374.40
Labor[h]	hr.	4,488	1.50		6,732.00
Insurance[i]	dol.	70,209.40	.01		702.09
Taxes[j]	hd.	2,244	.15		336.60
Miscellaneous & repairs[k]	dol.	70,209.40	.045		3,159.42
Total Estimated Variable Costs					$72,619.57

[a] 2.2 farrowings per year, and a 115 day gestation period.
[b] Conversion ratio of 3.2:1 in the finishing house.
[c] 8.5 pigs marketed per sow per litter.
[d] Birth to 40 pounds, 50 pounds creep feed per head, Ration A 40 to 120 pounds, from 120 pounds to 220 pounds, Ration B.
[e] Includes phone calls, pickup and trailer expense.
[f] Veterinary and drug charge of $1.25 per marketed pig.
[g] Electricity charge of $3.12 per sow per year.
[h] Two hours labor per marketed pig.
[i] One percent of total investment.
[j] Taxes of $0.15 per marketed pig.
[k] Four and one-half percent of the investment.

Table 8. Estimated Costs and Returns, per 120 Sows, Farrow to Finish Swine Enterprise, Partial Confinement System, Multiple Farrowing (Above Average Management)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Estimated Capital Investment					
Land	acre	5	$500.00	$2,500.00	-----
Breeding herd					
Sow	head	120	135.00	16,200.00	$576.00[a/]
Boar	head	7	250.00	1,750.00	436.33
Buildings and equipment					
Sow facilities	pen	4	359.00	1,436.00	158.40
Boar and breeding facilities	pen	6	84.67	508.00	94.40
Farrowing house	house	2	10,000.00	20,000.00	1,333.33
Nursery house	house	2	3,010.00	6,020.00	401.33
Finishing house	house	3	6,600.00	19,800.00	1,320.00
Water system	well	1	1,995.40	1,995.40	99.77
Pickup and trailer		1/2	5,000.00	2,500.00	450.00
Total				$72,709.40	$4,869.56
Cash Expenses					
Taxes	head	120	$ 2.81	$ 336.60	
Insurance	head	120	5.85	702.09	
Marketing costs	head	2,244	1.00	2,244.00	
Veterinary and drugs	head	2,244	1.25	2,805.00	
Electricity	head	120	3.12	374.40	
Miscellaneous and repairs	head	120	26.33	3,159.42	
Feed costs	head	120	468.88	56,266.06	
Total				$65,887.57	

Table 8. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Gross Receipts					
Market swine (220 lbs./hd.)[b/]	head	2,204	$41.25	$90,915.00	
Cull sows	head	40	63.00	2,520.00	
Cull boars	head	2.33	63.00	146.79	
Total				$93,581.79	
Gross Receipts minus Cash Expenses				$27,694.22	
Other Expenses					
Interest on investment					
Land charge	dol.	2,500.00	$0.075	$ 187.50	
Breeding herd	dol.	17,950.00	0.085	1,525.75	
Buildings and equipment	dol.	52,259.40	0.075	3,919.46	
Operating capital	dol.	65,887.57	0.0425	2,800.21	
Depreciation	dol.	-----	----	4,869.56	
Labor	hour	4,488	1.50	6,732.00	
Total				$20,034.48	
Annual Returns Over Specified Expenses (Management Returns)				$7,659.74	

Table 8. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Seasonal Labor Requirements per 120 Sows					
January - February	hour	748	$1.50	$1,122.00	
March - May	hour	1,122	1.50	1,683.00	
June - July	hour	748	1.50	1,122.00	
August - December	hour	1,870	1.50	2,805.00	
Total		4,488		$6,732.00	

a/ Allowance has been made to replace 40 head of cull sows and 2.33 cull boars per year. Sows will be replaced with raised gilts; boar replacements will be purchased. Typically, only the original complement of sows is purchased. Thus, depreciation of this investment is prorated not over its useful life (3 years), but over the entire 15 year planning period. Cull sows and boars are valued at $15.75 per cwt. and weigh 400 pounds.

b/ Data from "Texas Hog Statistics", Bulletin 37, p. 14, July 1967, would indicate the sixteen year average mid-month price, based on selected auction markets, received for hogs sold within the State of Texas is $17.76 per cwt. Information from the San Antonio, Texas market would suggest that U. S. Number 1, 2, and 3 grade barrows and gilts sell for $1.00 per cwt. more than the average price would reflect, hence the market price set for finished swine is $18.75 per cwt.

Table 9. Estimated Variable Costs, 120 Sow Herd, Farrow to Feeder Pig, Partial Confinement System, Multiple Farrowing (Above Average Management)

Item	Unit or Ration	Number of Units	Cost per Unit	Total Cost per Animal	Total Cost
Feed Costs					
Sow[a]					
Gestation	B	11.93	$3.03	$36.15	$4,338.00
Lactation	A	12.00	3.25	39.00	4,680.00
Boar	B	16.43	3.03	49.78	348.46
Pig[b]					
Creep feed[c]	C	.60	5.75	3.45	7,741.80
Swine feed	A	2.88	3.25	9.36	374.40
Swine feed	B	3.20	3.03	9.70	388.00
Total feed costs					$17,870.66
Marketing costs[d]	hd.	2,244	$ .10		$ 224.40
Veterinary and drugs[e]	hd.	2,244	1.00		2,244.00
Electricity[f]	hd.	120	2.12		254.40
Labor[g]	hr.	2,805	1.50		4,207.50
Insurance[h]	dol.	49,807.40	.01		498.07
Taxes[i]	hd.	2,244	.15		336.60
Miscellaneous & repairs[j]	dol.	49,807.40	.045		2,241.33
Total Estimated Variable Costs					$27,876.96

[a] 2.2 farrowings per year and a 115 day gestation period.
[b] Feeder pigs receive creep feed only. Conversion ratio of 3.2:1 for replacement gilts to breeding age.
[c] 8.5 pigs marketed per litter.
[d] Marketing costs are $0.10 per head to cover telephone and miscellaneous expenses.
[e] Veterinary and drug charges of $1.00 per marketed pig.
[f] Electricity charge of $2.12 per sow per year. (Note: No finishing houses).
[g] 1.25 hours labor per feeder pig sold.
[h] One percent of total investment.
[i] Taxes of $0.15 per pig sold.
[j] Four and one-half percent of investment.

Table 10. Estimated Costs and Returns, per 120 Sows, Farrow to Feeder Pig Enterprise, Partial Confinement System, Multiple Farrowing (Above Average Management)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Estimated Capital Investment					
Land	acre	3	$500.00	$1,500.00	-----
Breeding herd					
Sows	head	120	135.00	16,200.00	$576.00[a/]
Boars	head	7	250.00	1,750.00	436.33
Buildings and equipment					
Sow facilities	pen	4	359.00	1,436.00	158.40
Boar and breeding facilities	pen	6	84.67	508.00	94.40
Farrowing house	house	2	10,000.00	20,000.00	1,333.33
Nursery house	house	1	5,418.00	5,418.00	361.20
Water system	well	1	1,995.40	1,995.40	99.77
Pickup and trailer		1/2	5,000.00	2,500.00	450.00
Total				$51,307.40	$3,509.43
Cash Expenses					
Taxes	head	120	$ 2.81	$ 336.60	
Insurance	head	120	4.15	498.07	
Marketing costs	head	2,244	0.10	224.40	
Veterinary and drugs	head	2,244	1.00	2,244.00	
Electricity	head	120	2.12	254.40	
Miscellaneous and repairs	head	120	18.68	2,241.33	
Feed costs	head	120	148.92	17,870.66	
Total				$23,669.46	

Table 10. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Gross Receipts					
Feeder pigs[b/]	head	2,204	$14.34	$31,605.36	
Cull sows	head	40	63.00	2,520.00	
Cull boars	head	2.33	63.00	146.79	
Total				$34,272.15	
Gross Receipts minus Cash Expenses				$10,602.69	
Other Expenses					
Interest on investment					
Land charge	dol.	1,500.00	$0.075	$ 112.50	
Breeding herd	dol.	17,950.00	0.085	1,525.75	
Buildings and equipment	dol.	31,857.40	0.075	2,389.31	
Operating capital	dol.	23,669.46	0.0425	1,005.95	
Depreciation	dol.	3,509.43	----	3,509.43	
Labor	hour	2,805	1.50	4,207.50	
Total				$12,750.44	
Annual Returns Over Specified Expenses (Management Returns)				$-2,147.75	

Table 10. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Seasonal Labor Requirements per 120 Sows					
January - February	hour	468	$1.50	$ 702.00	
March - May	hour	701	1.50	1,051.50	
June - July	hour	468	1.50	702.00	
August - December	hour	1,168	1.50	1,752.00	
Total		2,805		$4,207.50	

a/ Allowance has been made to replace 40 head of cull sows and 2.33 cull boars each year.

b/ Feeder pigs are sold out of the nursery at 45 pounds per head. These feeder pigs are sold on a per head basis, at 1.7 times the market price for finished hogs. Example: (1.7 x .1875 x 45) = $14.34.

Table 11. Estimated Variable Costs, 120 Sow Herd, Farrow to Finish, Partial Confinement System, Multiple Farrowing (Average Management)

Item	Unit or Ration	Number of Units	Cost per Unit	Total Cost per Animal	Total Cost
Feed Costs					
Sow[a]					
Gestation	B	11.93	$3.03	$36.15	$4,338.00
Lactation	A	12.00	3.25	39.00	4,680.00
Boar	B	16.43	3.03	49.78	348.46
Pig[b]					
Creep feed[c]	C	.50	5.75	2.89	5,534.35
Swine feed[d]	A	3.59	3.25	11.67	22,348.05
Swine feed	B	4.01	3.03	12.15	23,267.25
Total feed costs					$60,516.11
Marketing costs[e]	hd.	1,915	$1.00		$1,915.00
Veterinary and drugs[f]	hd.	1,915	1.25		2,393.75
Electricity[g]	hd.	120	3.12		374.40
Labor[h]	hr.	3,830	1.50		5,745.00
Insurance[i]	dol.	70,209.42	.01		702.09
Taxes[j]	hd.	1,915	.15		287.25
Miscellaneous & repairs[k]	dol.	70,209.42	.045		3,159.42
Total Estimated Variable Costs					$75,093.02

[a] 2.1 farrowings per year and a 115 day gestation period.
[b] Conversion ratio of 4:1 in the finishing house.
[c] 7.6 pigs marketed per litter.
[d] Birth to 40 pounds, 50 pound creep feed per head, Ration A 40 to 120 pounds, from 120 pounds to 220 pounds, Ration B.
[e] Includes phone calls, pickup and trailer expense.
[f] Veterinary and drug charge of $1.25 per marketed pig.
[g] Electricity charge of $3.12 per sow per year.
[h] Two hours labor per marketed pig.
[i] One percent of total investment.
[j] Taxes of $0.15 per marketed pig.
[k] Four and one-half percent of investment.

Table 12. Estimated Costs and Returns, per 120 Sows, Farrow to Finish Swine Enterprise, Partial Confinement System, Multiple Farrowing (Average Management)

Item	Unit	Number or Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Estimated Capital Investment					
Land	acre	5	$500.00	$2,500.00	-----
Breeding herd					
Sows	head	120	135.00	16,200.00	$576.00[a/]
Boars	head	7	250.00	1,750.00	436.33
Buildings and equipment					
Sow facilities	pen	4	359.00	1,436.00	158.40
Boar and breeding facilities	pen	6	84.67	508.00	94.40
Farrowing house	house	2	10,000.00	20,000.00	1,333.33
Nursery house	house	2	3,010.00	6,020.00	401.33
Finishing house	house	3	6,600.00	19,800.00	1,320.00
Water system	well	1	1,995.40	1,995.40	99.77
Pickup and trailer		1/2	5,000.00	2,500.00	450.00
Total				$72,709.40	$4,869.56
Cash Expenses					
Taxes	head	120	$ 2.39	$ 287.25	
Insurance	head	120	5.85	702.09	
Marketing costs	head	1,915	1.00	1,915.00	
Veterinary and drugs	head	1,915	1.25	2,393.75	
Electricity	head	120	3.12	374.40	
Miscellaneous and repairs	head	120	26.33	3,159.42	
Feed costs	head	120	504.30	60,516.11	
Total				$69,348.02	

Table 12. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Gross Receipts					
Market swine (220 lbs./hd.)[b/]	head	1,875	$41.25	$77,343.75	
Cull sows	head	40	63.00	2,520.00	
Cull boars	head	2.33	63.00	146.79	
Total				$80,010.54	
Gross Receipts minus Cash Expenses				$10,662.52	
Other Expenses					
Interest on investment					
Land charge	dol.	2,500.00	$0.075	$ 187.50	
Breeding herd	dol.	17,950.00	0.085	1,525.75	
Buildings and equipment	dol.	52,259.40	0.075	3,919.46	
Operating Capital	dol.	69,348.02	0.0425	2,947.29	
Depreciation	dol.	-----	----	4,869.56	
Labor	hour	3,830	1.50	5,745.00	
Total				$19,194.56	
Annual Returns Over Specified Expenses (Managment Returns)				$-8,532.04	

Table 12. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Seasonal Labor Requirements per 120 Sows					
January - February	hour	638	$1.50	$ 957.00	
March - May	hour	958	1.50	1,437.00	
June - July	hour	638	1.50	957.00	
August - December	hour	1,596	1.50	2,394.00	
Total		3,830		$5,745.00	

a/ Allowance has been made to replace 40 head of cull sows and 2.33 cull boars per year. Sows will be replaced with raised gilts; boar replacements will be purchased. Typically, only the original complement of sows is purchased. Thus, depreciation on this investment is prorated not over its useful life (3 years), but over the entire 15 year planning period. Cull sows and boars are valued at $15.75 per cwt. and weigh 400 pounds.

b/ Data from "Texas Hog Statistics", Bulletin 37, p. 14, July 1967, would indicate the sixteen year average mid-month price, based on selected auction markets, received for hogs sold within the State of Texas is $17.76 per cwt. Information from the San Antonio, Texas market would suggest that U. S. Number 1, 2, and 3 grade barrows and gilts sell for $1.00 per cwt. more than the average price would reflect, hence the market price set for finished swine is $18.75 per cwt.

Table 13. Estimated Variable Costs, 120 Sow Herd, Farrow to Feeder Pig, Partial Confinement System, Multiple Farrowing (Average Management)

Item	Unit or Ration	Number of Units	Cost per Unit	Total Cost per Animal	Total Cost
Feed Costs					
Sow[a]					
Gestation	B	11.93	$3.03	$36.15	$4,338.00
Lactation	A	12.00	3.25	39.00	4,680.00
Boar	B	16.43	3.03	49.78	348.46
Pig[b]					
Creep feed[c]	C	.60	5.75	3.45	6,606.75
Swine feed	A	3.59	3.25	11.67	466.80
Swine feed	B	4.01	3.03	12.15	486.00
Total feed costs					$16,926.01
Marketing costs[d]	hd.	1,915	$ .10		$ 191.50
Veterinary and drugs[e]	hd.	1,915	1.00		1,915.00
Electricity[f]	hd.	120	2.12		254.40
Labor[g]	hr.	2,394	1.50		3,591.00
Insurance[h]	dol.	49,807.40	.01		498.07
Taxes[i]	hd.	1,915	.15		287.25
Miscellaneous & repairs[j]	dol.	49,807.40	.045		2,241.33
Total Estimated Variable Costs					$25,904.56

[a] 2.1 farrowings per year and 115 day gestation period.
[b] Feeder pigs receive creep feed only. Conversion ratio of 4:1 for replacement gilts to breeding age.
[c] 7.6 pigs marketed per litter.
[d] Marketing costs of $0.10 per head to cover telephone and miscellaneous expenses.
[e] Veterinary and drug charges of $1.00 per marketed pig.
[f] Electricity charge of $2.12 per sow per year. (Note: No finishing houses).
[g] 1.25 hours of labor per feeder pig sold.
[h] One percent of total investment.
[i] Taxes of $0.15 per pig sold.
[j] Four and one-half percent of investment.

Table 14. Estimated Costs and Returns, per 120 Sows, Farrow to Feeder Pig Enterprise, Partial Confinement System, Multiple Farrowing (Average Management)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Estimated Capital Investment					
Land	acre	3	$500.00	$1,500.00	------
Breeding herd					
Sows	head	120	135.00	16,200.00	$576.00[a/]
Boars	head	7	250.00	1,750.00	436.33
Buildings and equipment					
Sow facilities	pen	4	359.00	1,436.00	158.40
Boar and breeding facilities	pen	6	84.67	508.00	94.40
Farrowing house	house	2	10,000.00	20,000.00	1,333.33
Nursery house	house	1	5,418.00	5,418.00	361.20
Water system	well	1	1,995.40	1,995.40	99.77
Pickup and trailer		1/2	5,000.00	2,500.00	450.00
Total				$51,307.40	$3,509.43
Cash Expenses					
Taxes	head	120	$ 2.39	$ 287.25	
Insurance	head	120	3.95	498.07	
Marketing costs	head	1,915	0.10	191.50	
Veterinary and drugs	head	1,915	1.00	1,915.00	
Electricity	head	120	2.12	254.40	
Miscellaneous and repairs	head	120	17.77	2,241.33	
Feed costs	head	120	141.05	16,926.01	
Total				$22,313.56	

Table 14. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Gross Receipts					
Feeder pigs[b/]	head	1,875	$14.34	$26,887.50	
Cull sows	head	40	63.00	2,520.00	
Cull boars	head	2.33	63.00	146.79	
Total				$29,554.29	
Gross Receipts minus Cash Expenses				$7,240.73	
Other Expenses					
Interest on investment					
Land charge	dol.	1,500.00	$0.075	$ 112.50	
Breeding herd	dol.	17,950.00	0.085	1,525.75	
Buildings and equipment	dol.	31,857.40	0.075	2,389.31	
Operating capital	dol.	22,313.56	0.0425	948.33	
Depreciation	dol.	3,509.43	----	3,509.43	
Labor	hour	2,394	1.50	3,591.00	
Total				$12,076.32	
Annual Returns Over Specified Expenses (Management Returns)				$-4,835.59	

Table 14. (Continued)

Item	Unit	Number of Units	Cost or Return /Unit	Total Cost or Return	Annual Depreciation
Seasonal Labor Requirements per 120 Sows					
January - February	hour	399	$1.50	$ 598.50	
March - May	hour	598	1.50	897.00	
June - July	hour	399	1.50	598.50	
August - December	hour	998	1.50	1,497.00	
Total		2,394		$3,591.00	

a/ Allowance has been made to replace 40 head of cull sows and 2.33 cull boars each year.

b/ Feeder pigs are sold out of the nursery at 45 pounds per head. These feeder pigs are sold on a per head basis, at 1.7 times the market price for finished hogs. Example: (1.7 x .1875 x 45) = $14.34.

MARKET PRICE FREQUENCIES FOR TEXAS HOGS

J. Michael Sprott[1/]

Until recently, hog price cycles were an established fact, usually requiring about 4 years to go from peak to trough and back to peak again. Price uncertainty resulted from the variation in length and magnitude of the cycles. Often, investment decisions and farrowing rates were based on prices at the peak of the cycle, and profits did not reach the level expected due to price declines as the cycle proceeded. Too often, farmers tend to base decisions on price levels of the recent past rather than being aware of price changes over a longer period.

Favorable hog prices from mid-1965 to the present have had a tendency to cause the $13 per cwt. and $14 per cwt. prices of the early 1960's to be forgotten. As a consequence, the following table was prepared to show the number of months during the past 4, 8, 12, or 16 years that the monthly average market price for hogs in Texas was equal to or greater than specific prices.

This information may be used as estimates of future probabilities if it is assumed that the conditions and trends of the period 1953-69, or any of the other periods selected, continue into the future.

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Table 15. Frequency of Average Monthly Prices for Barrows and Gilts in Texas, July 1953 - June 1969[a]

Time Period	Monthly Market Price/Cwt.[b] $16	$17	$18	$19	$20	$21	$22	$23
	Frequency of Occurrance of Stated Price or Greater							
	- - - - - - - - - - - - - - percentage - - - - - - - - - - - - - -							
Last 4 years	100	100	94	77	60	48	42	33
Last 8 years	86	72	52	41	31	25	21	17
Last 12 years	83	67	48	37	28	23	15	12
Last 16 years	83	67	49	37	29	24	18	15

[a] Maximum likelihood estimators; probability of market price being table value or greater.

[b] Prices are those reported for all hogs, Texas, by Statistical Reporting Service, USDA, Austin, Texas, based on mid-month average prices at selected auction markets, plus the addition of $1.00 per cwt. to account for the differential between barrow and gilt prices and all hog prices. (See Table 8, p. 18, for explanation of the derivation of this differential).

Source: Texas Hog Statistics, Bulletin No. 37, Texas Crop and Livestock Reporting Service, SRS, USDA, Austin, Texas, July 1967. Also monthly price reports May 1967 through June 1969.

For example, if the decision to invest in hog facilities is based on budgets which use a finished swine price of $18 per cwt. and the investor feels that the last 8 years of price data are what he can expect to occur, on into the future, he would go to the column headed $18 per cwt. and row headed "Last 8 years" and find that during the last 8 years the price for finished swine has been $18 per cwt. or greater approximately 52% of the time. That is, in 50 of the last 96 months, the price equaled or exceeded $18 per hundredweight.

The monthly prices used in this tabulation were unadjusted for the increase in prices paid by farmers or any other index which might more equitably relate 1953 prices to 1969 prices. As such, they present a conservative estimate of the probabilities.