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# Analysis of Costs and Benefits to Feed Manufacturers From Financing And Contract Programs in the Midwest

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# Analysis of Costs and Benefits to Feed Manufacturers From Financing And Contract Programs in the Midwest<sup>1</sup>

by Richard Phillips<sup>2</sup>

Contract farming (or vertical integration) has been discussed widely during the past few years. It has been the subject of many articles in farm magazines, trade publications and professional journals.<sup>3</sup> Authors differ greatly in their interpretations of contract farming and in their attitudes toward it. Opinions differ, and uncertainty persists concerning future developments and trends in contract farming under midwestern conditions.

Presumably, contract farming must result in greater economy or efficiency than alternative methods of production and marketing if it is to continue. This efficiency could occur in any one or more of the three segments in the agribusiness system — the distribution of farm supplies, farm production and the marketing of farm products. If contracting does result in sufficient efficiency and competitive advantage in at least one of these sectors, then the push will be toward more and more vertical integration in agriculture.

But even when there are potential efficiencies to be gained from contract farming, contracting develops only as individual firms see advantages to be gained. Firms in one or more of the three sectors must be integration innovators by making contract programs available. Furthermore, the contract programs being offered must have enough appeal to gain acceptance. Thus, three conditions must exist to cause development and expansion of contract farming: (1) basic efficiency and competitive advantage over other systems of production and marketing, (2) innovating firms who see a profit incentive in offering contracts and (3) acceptance of the contracts by the segment to which they are offered.

Firms in the feed industry represent important potential integration innovators. Feed manufacturers and dealers have been among the first to offer financing and contract programs to livestock farmers in the South and in other sections of the country. This industry has been one of the leaders in the development and use of contracts in the Midwest. In 1959, an estimated 18.6 percent of total industry sales of livestock feeds in Iowa, Illinois,

Missouri, Minnesota, Nebraska and South Dakota were made under some sort of financing or contract program. These programs ranged from loose financing arrangements, with no supervision of the farmers' production operations, to highly integrated programs for livestock supply and final marketing as well as for the feed and other production supplies. The one common characteristic of the programs is that they provide a farmer with credit for the feed to be used over a specified time period (or livestock production cycle) in return for which he agrees to use the manufacturer's (or dealer's) feed during the period of the agreement.<sup>4</sup>

The extent and direction of future developments in financing and contract programs in the Midwest depend largely on the attitude of feed firms toward contracting and the success they have with contracts. If feed manufacturers have a strong profit motive for doing so, they will continue to be integration innovators. If they find continued acceptance by livestock feeders and over-all efficiency resulting from the programs, feeder contracting is likely to continue to expand — possibly replacing other systems in the Midwest. On the other hand, if there is little or no profit motive for feed manufacturers to be integration innovators, then feeder contracting is not likely to expand under midwestern conditions. In this case, vertical integration might be innovated by processors of agricultural products, by farmers, or by some other group in the agribusiness complex. But without the profit motive to be innovators, feed manufacturers are unlikely to be leaders in any movement toward widespread development of contract farming and vertical integration in the Midwest.

This study was designed to measure the specific added costs and added benefits (both direct and indirect) to feed manufacturers of different types of financing and contract programs for different types of livestock. These effects were studied in detail for 48 distinct financing and contract programs of 24 feed manufacturers operating in Iowa and surrounding states. The programs studied were selected to represent the kinds of programs and types of livestock covered by the 120 contracting arrangements used by feed firms in the Midwest.<sup>5</sup>

The cost and income figures, upon which the study is based, represent conditions in the feed industry during 1959 and 1960. With the somewhat depressed agricultural

<sup>1</sup>Project 1224, Iowa Agricultural and Home Economics Experiment Station. Based on research conducted under Contract No. 12-25-010-851 with the Marketing Economics Division, Economic Research Service, USDA.

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<sup>3</sup>Cf. American Feed Manufacturers Association, Inc. Bibliography of contract agriculture. The author, 53 West Jackson, Chicago, Ill. May 1958; and Nellie G. Larson. Contract farming and vertical integration; a selected list of references. U. S. Dept. Agr. Library List No. 64, June 1958.

<sup>4</sup>Richard Phillips. Feed industry financing and contract programs in Iowa and surrounding states. Iowa Agr. and Home Econ. Exp. Sta. Spec. Rpt. 28. Ames, Iowa. April 1961.

<sup>5</sup>Ibid.



conditions, total industry feed sales in the Midwest reached a plateau in the long-run growth trend during this period. This factor may have reflected slightly higher costs and slightly lower incomes to feed manufacturers than would have been true in an earlier or a later period. However, because the cost and income data collected were limited to specific *added costs* and specific *added incomes* under contract and financing programs compared with other feed sales, any effects of the leveling off in the rate of growth in industry sales on the results obtained would be small. The effects of the leveling off could be expected to have a much larger effect on feed manufacturers' total costs and total incomes for all sales than on the net added effects of their financing and contract programs.

## NATURE OF STUDY AND SOURCES OF DATA

Early in 1959, the Iowa Agricultural and Home Economics Experiment Station entered into a contract with the present Economic Research Service of the United States Department of Agriculture to study contract farming in the Midwest from the standpoint of the feed industry. The study was organized into two phases. The objective of the first phase was to obtain detailed information of the financing and contract programs being used by the feed industry in Iowa and surrounding states. The results of this phase were published in April 1961.<sup>6</sup>

The objective of the second phase has been to measure the advantages, if any, to the feed industry of alternative financing and contract programs, with a view toward projecting the probable direction and extent of developments in contracting by the feed industry. The results of this second phase are presented in this report.

The data upon which this report is based were obtained by personal interview early in 1961 from the officials and records of 24 feed manufacturers conducting feed financing and contract programs in Iowa and surrounding states. Forty-eight different programs conducted by the 24 manufacturers were selected from 120 financing and contract programs reported in the first phase of the study. The 48 were selected to represent the full range in types of programs offered. Programs were not included in the second phase of the study if (1) they had not been in operation for a full year, (2) they were experimental rather than operational in nature or (3) they were conducted in 1959 but dropped in 1960.

Detailed worksheets were used for recording data on volume, costs, income and indirect benefits to the feed manufacturer under each of the programs studied. Where possible the needed information was taken from the manufacturer's accounting records. Information which could not be obtained from records was estimated by officials of the cooperating feed manufacturers. Data were obtained for each program either for 1959 or 1960, and changes between the two years were noted in each case.

## PROGRAMS COVERED BY THE STUDY

Following the classification developed in the previous phase of the study,<sup>7</sup> the programs were grouped into five classes, ranging from informal financing agreements to risk-sharing contract programs as follows:

<sup>6</sup>Ibid.

<sup>7</sup>Ibid.

## Informal Financing Agreements

*Class I.* Relatively loose arrangements under which the company furnishes the farmer credit for his feed in return for which he agrees to use the specified brand of feed over some stated time period. Little or no production supervision is given the farmer.

*Class II.* More formalized arrangements between the company and the producer which provide some supervision of the farmer's livestock operation as well as financing of the feed in return for which the farmer uses a specified feed and feeding program.

## Formalized Contractual Programs

*Class III.* Specific contractual programs whereby the farmer meets certain minimum production standards and carries out a specified kind of feeding and management program in return for the feed credit given him, so that his feeding operation is controlled as well as supervised.

*Class IV.* Specific contractual programs whereby, in addition to meeting certain minimum production standards and carrying out a specified kind of feeding and management program, the farmer utilizes a specified source or type of feeder (or breeder) stock, marketing program or both. Financing furnished to the farmer typically extends to other production capital as well as to the feed.

## Risk-Sharing Contract Programs

*Class V.* Rather complete integration programs where, in addition to the provisions of the Class IV programs, the feed company offers arrangements which result in some sharing with the farmer in the production or price risks on the livestock enterprise.

Table 1 shows the number of financing programs by class which were included in the study and the tonnage of feed represented. Taking all types of livestock together, 11 of the programs were in Class I, 15 were in Class II, 10 were in Class III, 7 were in Class IV and 5 were in Class V. By type of livestock, 23 of the arrangements studied were hog programs, 10 were cattle programs, 9 were turkey programs and 6 were pullet programs. Not all cells in table 1 are filled since there were no hog programs in Class IV, no cattle programs in classes III or IV, no turkey programs in classes I or II and no pullet programs in Class II or Class V.

The annual volume sold under the 48 programs in the study came to about 330,000 tons. Of this, roughly 6 percent was Class I, 27 percent was Class II, 35 percent was Class III, 28 percent was Class IV, and only 4 percent was Class V. By livestock, about 45 percent was hog feed, 6 percent was cattle feed, 38 percent was turkey feed, and 11 percent was sold under the pullet programs. The annual sales per agreement averaged highest for the programs in classes III and IV and lowest for those in Class I.

## ADDED INCOME UNDER THE PROGRAMS

The study was designed to measure the *added* income to feed manufacturers from all sources under the 48



Table 1. Number of financing and contract programs in the study and the tonnage represented.

Programs	All livestock programs			Hog programs			Cattle programs			Turkey programs			Pullet programs		
	No.	Tonnage		No.	Tonnage		No.	Tonnage		No.	Tonnage		No.	Tonnage	
		total	average		total	average		total	average		total	average		total	average
Class I	11	17,105	1,555	6	13,708	2,285	4	1,897	474	0	.....	.....	1	1,500	1,500
Class II	15	89,249	5,950	10	70,750	7,075	5	18,499	3,700	0	.....	.....	0	.....	.....
Total informal programs	26	106,354	4,091	16	84,458	5,279	9	20,396	2,266	0	.....	.....	1	1,500	1,500
Class III	10	116,828	11,683	5	56,628	11,326	0	.....	.....	3	46,000	15,333	2	14,200	7,100
Class IV	7	93,309	13,330	0	.....	.....	0	.....	.....	4	72,799	18,200	3	20,510	6,837
Total formal programs	17	210,137	12,361	5	56,628	11,326	0	.....	.....	7	118,799	16,971	5	34,710	6,942
Class V															
Risk-sharing programs	5	13,297	2,659	2	7,147	3,574	1	300	300	2	5,850	2,925	0	.....	.....
All programs	48	329,788	6,870	23	148,233	6,444	10	20,696	2,070	9	124,649	13,850	6	36,210	6,035

financing and contract programs studied. Each manufacturer's income under his programs was measured in relation to the income received from feed sales outside the programs. No data were collected on the total manufacturing and distributing margin received by the manufacturers, either on normal feed sales or on sales under the financing and contract programs. The incomes reported in this section arise from charges and savings on the programs studied which do not occur on feed sales outside the programs.

### The Sources of Added Income

The sources of added income to feed manufacturers under the financing and contract programs studied include:

#### A. Charges on the feed:

1. Interest charges on the feed financed,
2. Per-ton service charges on the feed financed,
3. Savings on cash discounts available on cash sales,

#### B. Charges on production items:

1. Interest charges on production supplies financed,
2. Margins on supplies tied in with the programs,
3. Margins on feeder and breeder stock tied in with the programs,
4. Miscellaneous sources of income,

#### C. Cost savings in feed production and distribution:

1. Savings on ingredient costs because of improved production scheduling,
2. Savings on delivery costs because of larger orders and
3. Savings in production costs because of larger volumes.

*Charges on the feed financed* include interest charges, service charges and cash and other discounts saved because sales under the programs do not qualify for them. The interest charge was reported at an annual rate on the outstanding balance; conversion was made to a per-ton basis, considering, for each program, the average dollar sales per agreement and the capital turnover rate in the farmer's production cycle, and dividing by the average tonnage per agreement.<sup>8</sup> The service charges were reported by the manufacturers directly on a per-ton basis. Manufacturers listed the per-ton discounts offered on regular sales for which sales under the contract programs

do not qualify. These discounts included quantity discounts, bulk discounts, booking discounts and other discounts, as well as cash discounts. All were reported on a per-ton basis.

*Charges on production items* include interest charges, margins received on production supplies furnished, margins received on breeder or feeder stock furnished and income from other sources (such as margins on death insurance furnished). The interest charge was converted to a per-ton basis, considering the average total dollar amount of such items financed per agreement, the average turnover of capital on these items and the average tonnage sold per agreement under each specific program. The income to manufacturers from the margin on production supplies and equipment furnished under the specific programs was converted to dollars per ton of feed on the basis of the average dollar amount of such production supplies and equipment furnished per agreement and the average tonnage of feed sold per agreement under the specific program. The income from margins on feeder and breeder stock tied in with the programs was converted to a per-ton basis in the same manner as that from margins on supplies and equipment. Other sources of income under the specific programs listed by the manufacturers included margins on livestock and livestock products marketed, margins on insurance furnished and miscellaneous sources. Reported income from these sources was converted to a per-ton basis for the feed tonnage sold under the programs.

Notwithstanding the direct costs to manufacturers for legal fees, printing, registration, etc., no agreement fees were collected under any of the 48 programs studied.

The *indirect benefits* of the financing and contract programs to the manufacturers came through resultant savings in ingredient costs, savings in the cost of transporting feeds and lowered manufacturing costs through increases in volume. For 21 percent of the programs, the manufacturers indicated a saving through the opportunity to buy ingredients ahead and in larger quantities against known future production. When the response to the size of the savings was given on a percentage basis rather than in terms of an average per-ton saving, it was converted to a per-ton basis by applying average ingredient costs for the type of feed manufactured.<sup>9</sup>

The manufacturers also were asked, "Have your costs of transporting feeds changed in any way by the operation of your financing and contract programs? If yes, how much did the average size of shipment increase or decrease, and how much did the average distance of haul

<sup>8</sup>Except for certain special programs where the financing extended for an unusually long or unusually short period, the turnover factors used were 0.45 for hog programs, 0.60 for cattle programs, 0.70 for turkey programs and 0.55 for pullet programs.

<sup>9</sup>See: Richard Phillips. Costs of procuring, manufacturing, and distributing mixed feeds in the Midwest. U. S. Dept. Agr. Marketing Res. Rpt. 388. April 1960. pp. 8-15.



increase or decrease?" The answers to these questions were converted to a net gain or loss per ton on the basis of the functional relationship between these factors and average per-ton delivery costs.<sup>10</sup> The manufacturers indicated a resultant saving in feed transportation costs for 21 of the programs and a resultant increase in these costs for 2 of the programs.

Finally, the manufacturers visited were asked to list, for the six-state area, their total tonnage of sales, their total tonnage under the contract programs and their estimate of what total tonnage would have been if there had been no financing or contract program. The estimated tonnage which would be lost if the program was dropped varied among the 48 programs from nothing to about twice the total sales under the program. The expected tonnage loss was greater as the programs were more formal and complete. Some volume drop was expected if the programs were discontinued for 40 of the 48 programs studied.

The per-ton value in reduced manufacturing costs of the added tonnage gained under the contracts was determined on the basis of the long-run relationship between volume and per-unit manufacturing costs in the Midwest.<sup>11</sup> The long-run variables in the functional relationship were used on the assumption that the mills should be given time to adjust production capacity to sales volume, both with and without the financing and contract programs. The first step in making this adjustment was to compare the average long-run per-ton manufacturing cost at the present volume of the manufacturer with this cost at the volume he expected without the financing and contract program. This difference was then multiplied by his present total volume to obtain the total dollar amount of the saving. This figure was divided by the tonnage under the contract program to determine the savings in manufacturing costs to the company in terms of the volume under the program being studied.

#### The Value of Added Income to Manufacturers

The average value of the added income to manufacturers from the financing and contract programs is shown by source of income for the five classes of pro-

<sup>10</sup>Ibid., pp. 49-59.

<sup>11</sup>Richard Phillips, Empirical estimates of cost functions for mixed feed mills in the Midwest. Agr. Econ. Res. 8, No. 1:1-8. January 1956.

Table 2. Average per-ton added income to feed manufacturers by class of financing and contract programs (all figures in dollars).

Source of income	Type of program					All programs
	Class I	Class II	Class III	Class IV	Class V	
<b>Feed:</b>						
Interest .....	1.90	2.13	2.97	3.96	1.30	2.90
Service charge .....	1.92	0.93	0.22	0.00	0.00	0.43
Cash discount saved .....	0.68	0.50	0.07	0.10	0.88	0.26
<b>Total .....</b>	<b>4.50</b>	<b>3.56</b>	<b>3.26</b>	<b>4.06</b>	<b>2.18</b>	<b>3.59</b>
<b>Supplies:</b>						
Interest .....	0.20	0.04	1.19	1.46	2.69	0.96
Margin on supplies .....	0.06	0.00	0.00	0.38	0.17	0.12
Margin on stock .....	0.00	0.00	0.00	0.00	1.62	0.07
Other .....	0.00	0.00	0.00	0.00	0.03	0.00
<b>Total .....</b>	<b>0.26</b>	<b>0.04</b>	<b>1.19</b>	<b>1.84</b>	<b>4.52</b>	<b>1.15</b>
<b>Total direct income .....</b>	<b>4.75</b>	<b>3.60</b>	<b>4.45</b>	<b>5.90</b>	<b>6.70</b>	<b>4.74</b>
<b>Plant savings:</b>						
Ingredients .....	0.00	0.09	0.00	0.00	0.01	0.02
Delivery .....	0.11	0.66	0.87	0.15	1.25	0.59
Increased volume .....	0.43	0.77	0.35	0.70	0.91	0.59
<b>Total .....</b>	<b>0.54</b>	<b>1.52</b>	<b>1.22</b>	<b>0.85</b>	<b>2.17</b>	<b>1.20</b>
<b>Total income .....</b>	<b>5.29</b>	<b>5.12</b>	<b>5.68</b>	<b>6.75</b>	<b>8.87</b>	<b>5.94</b>

Table 3. Average per-ton added income to feed manufacturers from financing and contract programs by type of livestock (all figures in dollars).

Source of income	Type of livestock			
	Hogs	Cattle	Turkeys	Pullets
<b>Feed:</b>				
Interest .....	2.16	2.34	3.93	2.73
Service charge .....	0.87	0.61	0.00	0.00
Cash discount saved .....	0.30	0.82	0.17	0.07
<b>Total .....</b>	<b>3.33</b>	<b>3.77</b>	<b>4.10</b>	<b>2.80</b>
<b>Supplies:</b>				
Interest .....	0.05	0.00	2.36	0.43
Margins on supplies .....	0.01	0.00	0.31	0.00
Margins on stock .....	0.11	0.24	0.00	0.00
Other .....	0.00	0.02	0.00	0.00
<b>Total .....</b>	<b>0.16</b>	<b>0.26</b>	<b>2.67</b>	<b>0.43</b>
<b>Total direct income .....</b>	<b>3.49</b>	<b>4.03</b>	<b>6.77</b>	<b>3.23</b>
<b>Plant savings:</b>				
Ingredients .....	0.05	0.04	0.00	0.00
Delivery .....	0.62	(0.24) <sup>1</sup>	0.82	0.19
Increased volume .....	0.52	0.59	0.51	1.15
<b>Total .....</b>	<b>1.19</b>	<b>0.39</b>	<b>1.33</b>	<b>1.34</b>
<b>Total income .....</b>	<b>4.68</b>	<b>4.42</b>	<b>8.10</b>	<b>4.57</b>

<sup>1</sup>Figures in parentheses are negative values, or losses.

grams in table 2 and for the four types of livestock in table 3. For the 48 programs, the total added income averaged \$5.94 per ton; of this \$3.59 came from charges on the feed, \$1.15 came from charges on production items tied in with the programs and \$1.20 per ton came through indirect savings to the manufacturers as a result of the programs.<sup>12</sup> The most important single source of income was the interest charge on feed, which averaged \$2.90 per ton for all 48 programs.

Table 2 shows that the total added income received under the programs was smallest for the informal programs (classes I and II) and highest for the risk-sharing programs (Class V).

Table 3 shows that total added income was substantially higher for the turkey programs than for the programs covering the other types of livestock. The difference is explained chiefly by the higher interest income, both for feed financing and for financing of production supplies, under the turkey programs. Relatively little difference was found in the average added per-ton income among the hog, cattle and pullet programs.

The added income to feed manufacturers by source is shown by class of program for each type of livestock in tables A-1 through A-4 of the Appendix. Ranges as well

<sup>12</sup>Here and consistently throughout this report, average means the average of all programs in the group weighted by the tonnage under each program in this group. Any discrepancies between averages for subgroups and those for groups as a whole are due to rounding.



as averages are shown for all the programs for each type of livestock. Of the hog programs, total added income averaged lowest under those in Class III and highest under those in Class V. Very little difference in total added income was found among the cattle programs in the two classes reported. The added income under the turkey programs averaged highest for those in Class V and lowest for those in Class IV. The average added income under the pullet programs was comparable for the two classes (Class III and Class IV) reported. The range in added income was relatively wide among the individual programs for all four types of livestock covered by the study.

### ADDED COSTS UNDER THE PROGRAMS

All of the costs obtained in the study and reported in this section are above and beyond the total manufacturing and distributing costs incurred by feed manufacturers on feed sales made in the usual manner. The total costs incurred by feed manufacturers under either normal sales or financing and contract programs are a subject beyond the scope of this study. Focus here is on the specific expense incurred by manufacturers under financing and contract programs which is not incurred on sales made outside of the programs.

#### The Sources of Added Costs

The sources of added costs to the manufacturers under the programs studied include:

- A. *Added costs for contract financing of feed:*
  1. Added field and office employees for the programs,
  2. Printing costs, legal fees, registration fees and other similar costs for the contracts,
  3. Added travel expenses,
  4. Interest on the capital tied up in feed financing,
  5. Bad debts and collection costs on the feed financed,
  6. Added administrative and overhead expenses,
- B. *Added costs for financing and handling other items under the programs:*
  1. Interest on the capital tied up in financing production supplies,
  2. Bad debts on supplies financed and
  3. Costs of handling production supplies, breeder and feeder stock, insurance and related items furnished under the programs.

The *added labor cost* is an important expense to manufacturers for their financing and contract programs. To determine this cost, the manufacturers first were asked to list the number of employees by position (general field sales and servicemen, territory and district fieldmen, field specialists, supervisory staff and other personnel) assigned to financing and contract programs, together with the average annual salary of those in each class. The manufacturers then were asked to classify these employees by the different specific financing and contract programs. Finally, to get the net additional personnel because of the programs, the manufacturers were asked to identify the number of employees in each class for each program that would not have been needed had the

same volume of feed been sold outside of the programs. The number of employees included in this last listing varied among the individual programs from none to about 20.

The cost of the additional employees of each type needed for each program was worked out on a per-ton basis. This was done by first multiplying the number of employees by the average annual wage or salary listed for that type of employee. By doing this for each specific program studied, the resultant salary costs for the different employees could be added for a total added salary cost for the program. Then by dividing by the tonnage under each program, the total added salary cost was converted to a per-ton basis.

The average total cost per farmer agreement for *printing, legal fees and registration charges* were listed by the manufacturers for each program. This figure was converted to a per-ton basis by dividing by the average tonnage per agreement (which the manufacturer also was asked to give for each of the specific financing and contract programs studied).

The *added travel and meeting cost* for each program was listed by the manufacturer as an annual cost per field employee. Consequently this figure was multiplied by the total number of added field employees listed for the program and then divided by the annual tonnage sold under that program.

The *cost of capital* to finance the programs was the largest single source of specific expense for the programs studied. The annual percentage charge for capital reported by the feed manufacturers was converted to dollars for each program by multiplying it by the average dollar value of the feed financed. This result was then multiplied by a turnover factor to reflect the production cycle of the livestock under the program.<sup>13</sup> The per-ton conversion was made by dividing by the annual tonnage under each program.

The costs of *bad debts and court proceedings for collection* under the financing programs were obtained from manufacturers as an annual percentage of total dollar sales under each program. No such costs were listed for 19 of the programs. Ten others reported less than 0.01 percent, while others reported bad debt losses and collection costs ranging up to 0.9 percent of annual sales under the programs. These figures were converted to a per-ton basis by multiplying them by the annual dollar sales and dividing by the annual tonnage under each program.

Most of the manufacturers find that it costs them more per ton for *administrative and overhead expenses* under their financing and contract programs than is true for their other sales. Manufacturers interviewed were asked to compare, on an annual per-ton basis, each specific contract program with their other sales with respect to (1) administrative salaries, (2) office workers' wages, (3) office buildings and equipment depreciation, (4) office supplies, (5) telephone charges, (6) administrative travel expenses and (7) other office and administrative expenses. The total of these added overhead expenses for the programs studied varied considerably among the programs studied.

<sup>13</sup>The turnover factors used were the same as those used to compute the interest income to manufacturers. Except for certain special programs where the financing extended for an unusually long or an unusually short period, the turnover factors used were 0.45 for hog programs, 0.60 for cattle programs, 0.70 for turkey programs and 0.55 for pullet programs.



For those programs under which production items are financed or supplied by the manufacturers, the companies visited in the study also supplied cost figures for operating this part of the program. They were asked to list the average total amount of *financing beyond the feed* that is extended per livestock unit under the program. By multiplying the response given to this question by the total number of livestock units under the program, the total amount of financing beyond the feed was obtained for each program. Then by multiplying this result by the interest cost of capital and weighting by a turnover factor to reflect the production cycle of livestock, an annual dollar cost was obtained for the financing. Conversion was made to a per-ton basis by dividing by the annual feed sales under each program.

The annual cost for *bad debt losses and court collection costs on the production items* financed was obtained by multiplying the total amount of financing beyond the feed by the percentage of loss listed by the manufacturer for each program. When converted to a per-ton basis on the feed sales, this cost was included among the total added costs of conducting financing and contract programs.

For those programs where the manufacturer furnished production supplies, services, or breeder or feeder stock (classes IV and V), the companies listed their specific *costs of handling* these items. These costs were reported either as a lump sum amount or as a percentage of the total dollar amount of production items furnished, so that the lump sum amount was obtained by multiplication. The total of such costs was converted to a per-ton basis on the feed sales for each of the programs under which these costs were incurred.

#### The Amount of Added Cost to Manufacturers

The average added costs to manufacturers of the financing and contract programs studied are reported by class of program in table 4 and by type of livestock in table 5.

For all 48 programs, the total cost of feed financing averaged \$5.29 per ton, and the total cost of financing and handling related supplies averaged \$1.52 per ton, for an average grand total added cost for the programs of \$6.81 per ton. The most important individual items of cost for the 48 programs were interest on the feed financed (\$2.75 per ton), added labor costs (\$1.05 per ton), interest on supplies financed (\$0.83 per ton) and added overhead (\$0.74 per ton).

Table 4 shows the specific costs to manufacturers for

Table 5. Average per-ton added costs to feed manufacturers of financing and contract programs by type of livestock (all figures in dollars).

Source of cost	Type of livestock			
	Hogs	Cattle	Turkeys	Pullets
<b>Feed:</b>				
Added labor .....	1.25	1.03	0.69	1.51
Printing .....	1.04	0.16	0.12	0.14
Travel .....	0.07	0.03	0.06	0.03
Interest .....	2.37	2.37	3.47	2.06
Bad debt .....	0.12	0.03	0.18	0.20
Added overhead .....	0.92	0.31	0.46	1.19
<b>Total .....</b>	<b>5.77</b>	<b>3.93</b>	<b>4.98</b>	<b>5.14</b>
<b>Supplies:</b>				
Interest .....	0.15	0.06	1.90	0.36
Bad debt .....	0.01	0.00	0.38	0.01
Handling cost .....	0.00	0.08	1.42	0.00
<b>Total .....</b>	<b>0.16</b>	<b>0.14</b>	<b>3.70</b>	<b>0.37</b>
<b>Total added cost .....</b>	<b>5.93</b>	<b>4.07</b>	<b>8.68</b>	<b>5.51</b>

their financing and contract programs separately for each of the five different program classes. Although more variation is evident in the individual cost items, the general relationship is one of increasing average costs as the programs become more formal. The total direct expenses on feed for the Class IV programs fall substantially below this line of relationship, chiefly because all 10 of the programs in this class reported lower costs than one would expect both for added labor costs and added overhead costs. This probably is partly because the average tonnage is greater for the programs in this class than for any other class.

Table 5 shows the specific costs to manufacturers for their financing and contract programs for the different types of livestock. The cattle programs were the cheapest and the turkey programs were the most expensive for the manufacturers to operate. This difference is largely explained by the fact that the turkey programs were more complete than most of those for the other types of livestock.

The specific added costs to feed manufacturers of the financing and contract programs studied both by type of livestock and class of program are shown in tables A-5 through A-8 in the Appendix. The average costs to the manufacturers for operating the hog programs increased steadily as the programs became more complete and formalized. Except for the programs in Class V, over 90 percent of the total added cost for the hog programs came from the added expenses associated directly with the feed. About 80 percent of the total for the Class V hog programs was feed-oriented expense.

The average total added cost to the manufacturer for the cattle programs stood at \$2.77 per ton for the Class I programs and \$4.08 per ton for the Class II programs.

Table 4. Average per-ton added costs to feed manufacturers of financing and contract programs by class of program (all figures in dollars).

Source of cost	Type of program					All programs
	Class I	Class II	Class III	Class IV	Class V	
<b>Feed:</b>						
Added labor .....	0.39	0.90	1.70	0.41	1.76	1.05
Printing .....	0.18	1.02	0.66	0.05	0.20	0.54
Travel .....	0.00	0.01	0.07	0.03	0.58	0.06
Interest .....	2.47	2.40	2.62	3.30	2.80	2.75
Bad debt .....	0.13	0.15	0.21	0.07	0.13	0.15
Added overhead .....	0.41	0.62	0.87	0.66	1.24	0.74
<b>Total .....</b>	<b>3.58</b>	<b>5.10</b>	<b>6.13</b>	<b>4.52</b>	<b>6.71</b>	<b>5.29</b>
<b>Supplies:</b>						
Interest .....	0.20	0.04	1.02	0.83	5.26	0.83
Bad debt .....	0.00	0.00	0.34	0.08	0.12	0.15
Handling cost .....	0.00	0.02	0.00	1.91	0.00	0.55
<b>Total .....</b>	<b>0.20</b>	<b>0.06</b>	<b>1.36</b>	<b>2.82</b>	<b>5.38</b>	<b>1.52</b>
<b>Total added cost .....</b>	<b>3.78</b>	<b>5.16</b>	<b>7.49</b>	<b>7.34</b>	<b>12.09</b>	<b>6.81</b>



These figures compare with the total added cost for the one cattle program in Class V of \$11.50 per ton. As for the other programs, the major single specific cost for the cattle programs in both classes is the cost of the money to finance the feed. This item alone accounted for almost 90 percent of the average total cost for the programs in Class I and nearly 60 percent of it for those programs in Class II.

The highest average total cost per ton to manufacturers for any group of programs in the study occurred for the turkey programs in Class V at \$14.06 per ton. The manufacturers' costs for the production items above and beyond the feed represented a substantial proportion of the total for all three classes of turkey programs — over 35 percent for those in Class III, slightly under 45 percent for those in Class IV and nearly 70 percent for those in Class V. But except for the Class V programs, the largest single item of expense for the turkey programs was the interest on the money tied up on financing the feed. The interest for financing nonfeed items was the most expensive item for the Class V turkey programs.

While the average total cost on the feed itself was \$0.64 per ton higher for the pullet programs in Class III than for those in Class IV, the additional costs of financing the related production supplies under those in Class IV brought the Class IV total to \$0.02 per ton higher than for the Class III programs. This detailed comparison of specific costs between classes for the pullet programs is less valid than for the other types of livestock, however, since there were only two pullet programs in Class III and only three in Class IV. These small numbers of programs also contribute to the relatively narrow ranges as compared with those in the other tables of specific costs.

### NET EFFECTS OF THE PROGRAMS TO MANUFACTURERS

The net financial impact of the 48 financing and contract programs to the sponsoring feed manufacturers was determined by comparing the added receipts and savings under the programs with the added costs of operating the programs. No attempt was made to determine the total income, total costs and total profit of the feed manufacturers in the study. Rather the profitability of the specific financing and contract programs was measured in relation to each manufacturer's feed sales which were not under financing contracts.

Measured in this way, the total added net income of the programs was determined at two levels. First, the manufacturer's direct "in-pocket" receipts were compared with his added costs to obtain the *net direct income* of the program. By this measure, the majority of the programs resulted in a net loss for the feed manufacturers.

Secondly, a measure of the *net total income* of the program to the manufacturer was obtained by adding to the net direct income, the net per-ton value of any manufacturing and distributing savings resulting from the program — such as reduced ingredient costs, lowered production costs or savings in delivery. By this measure, just over half of the programs resulted in a profit rather than a loss to the manufacturer.

The percentage of the programs studied which showed a profit rather than a loss to the manufacturer is shown by class of program and type of livestock in fig. 1. The

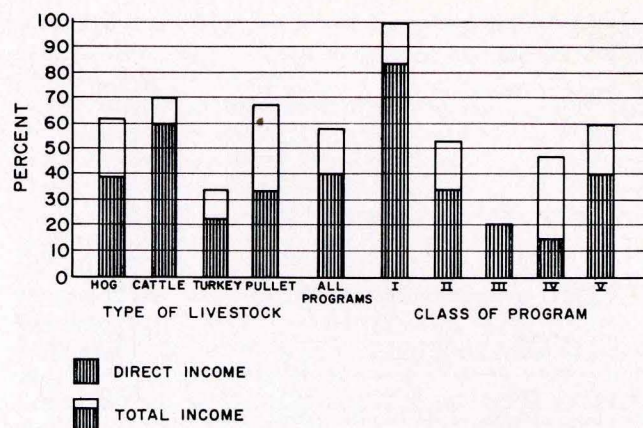


Fig. 1. Percent of contract programs studied which added to feed manufacturers' net incomes.

height of the shaded portion of each bar represents the percentage of the programs showing a profit when only direct income is considered. The total height of the bar represents the percentage of the programs showing a profit when total added income is considered.

Considering direct income only, 40 percent of all programs resulted in some profit, while the remaining 60 percent showed a loss to the manufacturer. By type of livestock, the largest fraction of programs was profitable on cattle, while the smallest percentage showing a profit occurred among the turkey programs. By class of program, the percentage of programs showing a profit for the manufacturer continually declined as the programs became more formalized and complete. However, the fraction of the risk-sharing programs (Class V) showing some profit was higher than for any of the other programs except those in Class I.

When total added income from the programs is considered, the fraction of all programs showing some profit increases to 58 percent. The comparison among programs by type of livestock follows the same pattern as in the case of direct income only. But when other income is included, the fraction of the Class IV programs showing a profit increased considerably, while the fraction of those in Class III showing a profit did not increase. When all added income is considered, the least profitable programs are those in Class III.

The over-all impression one gets from fig. 1 is that a large fraction of the programs studied is not paying its way for the feed manufacturer. Even when the "fringe benefits" of the programs are considered, about half of the programs are resulting in a net loss to the manufacturer. The percentage showing a loss runs as high as 67 in the case of the turkey programs in all classes and as high as 80 for all of the Class III programs taken together. This general impression is borne out by the dollar net gains and losses from the programs.

The average per-ton net gains or losses to the feed manufacturers from the financing and contract programs are shown by class of program in table 6 and by type of livestock in table 7. On the average, manufacturers are not coming out well financially on their financing and contract programs in the Midwest. For the 48 programs of 24 different feed manufacturers, the direct out-of-pocket loss amounts to over \$683,000 per year, or \$2.07



Table 6. Average per-ton net gain or loss to feed manufacturers from financing and contract programs by class of program (all figures in dollars).

Source of income and cost	Type of program					All programs
	Class I	Class II	Class III	Class IV	Class V	
Feed:						
Receipts	4.50	3.56	3.26	4.06	2.18	3.59
Costs	3.58	5.10	6.13	4.52	6.71	5.29
Net income	0.92	(1.54) <sup>1</sup>	(2.86)	(0.46)	(4.53)	(1.70)
Supplies:						
Receipts	0.26	0.04	1.19	1.84	4.52	1.15
Costs	0.20	0.06	1.36	2.82	5.38	1.52
Net income	0.06	(0.02)	(0.17)	(0.98)	(0.86)	(0.37)
Feed and supplies:						
Receipts	4.75	3.60	4.45	5.90	6.70	4.74
Costs	3.78	5.16	7.49	7.34	12.09	6.81
Net income	0.97	(1.56)	(3.03)	(1.44)	(5.39)	(2.07)
Savings in production	0.54	1.52	1.22	0.85	2.17	1.20
Total income	5.29	5.12	5.68	6.75	8.87	5.94
Net gain or loss	1.51	(0.04)	(1.81)	(0.59)	(3.22)	(0.87)

<sup>1</sup>Figures in parentheses are negative values, or losses.

Table 7. Average per-ton net gain or loss to feed manufacturers from financing and contract programs by type of livestock (all figures in dollars).

Source of income and cost	Type of livestock			
	Hogs	Cattle	Turkeys	Pullets
Feed:				
Receipts	3.33	3.77	4.10	2.80
Costs	5.77	3.93	4.97	5.14
Net income	(2.44) <sup>1</sup>	(0.16)	(0.87)	(2.34)
Supplies:				
Receipts	0.16	0.26	2.67	0.43
Costs	0.16	0.14	3.70	0.37
Net income	0.00	0.12	(1.03)	0.06
Feed and supplies:				
Receipts	3.49	4.03	6.77	3.23
Costs	5.93	4.07	8.68	5.51
Net income	(2.44)	(0.04)	(1.91)	(2.28)
Savings in production	1.19	0.39	1.33	1.34
Total income	4.68	4.42	8.10	4.57
Net gain or loss	(1.25)	0.35	(0.58)	(0.94)

<sup>1</sup>Figures in parentheses are negative values, or losses.

per ton on the 330,000 tons represented by the programs. Even considering the total indirect dollar benefits to the manufacturers of \$467,000, the absolute annual loss from these programs amounts to \$287,000 or \$0.87 per ton of feed. These average losses were definitely more severe on the more formalized and complete contract programs offered the farmer.

The highest average net losses came in the Class III and Class V programs (table 6). The only programs which showed an average gain in all categories were those in Class I. The sponsoring feed manufacturers on the average, came out about even on the programs in Class II.

Turning to the programs by type of livestock, the hog programs were the biggest losers for the manufacturers, but the pullet programs were not far behind (table 7). On the average, the hog programs lost \$2.44 per ton on feed, just broke even on the supplies and came out \$1.25 per ton in the red when the production savings are included. The pullet programs suffered an average loss of \$2.34 per ton on feed, and a total net loss of \$0.94 per ton. The cattle programs just about broke even — averaging a small loss on the feed, a small gain on the supplies and a total gain of \$0.35 per ton when the production savings are included. The turkey programs showed a total direct loss of \$1.91 per ton, but much of this was offset by the indirect benefits of \$1.33 per ton.

The per-ton gains or losses are shown by class of program for each type of livestock in tables A-9 through A-12 of the Appendix. The hog programs clearly are less and less profitable to the feed manufacturers as the pro-

grams become more formalized and complete. The net direct income from the hog programs averaged plus \$1.01 per ton for those in Class I, minus \$1.91 per ton for those in Class II, minus \$3.50 per ton for those in Class III and minus \$5.93 per ton for those in Class V. The average net total income to feed manufacturers from their hog programs follows the same pattern. Most of the direct income (and the direct cost) comes through the feed on the first three program classes but is about equally divided between feed and production supplies for the Class V hog programs.

The cattle programs are shown separately for Class I and Class II. Since only one Class V cattle program was included in the study, this class is not shown so as to avoid the possibility of releasing confidential information. This program is included in the columns for all cattle programs, however. The Class I cattle programs were more profitable for the feed manufacturers than were the Class II cattle programs.

All of the turkey programs included in the study were in classes III, IV and V. On the basis of the comparison between direct added income and direct added costs, the turkey programs resulted in a net loss in all three of these classes. The losses were highest for the programs under Class V and smallest for those under Class IV. Even when production savings are included, the turkey programs in Class V showed an average net loss of \$3.08 per ton as compared with a loss of \$0.51 per ton for those in Class IV and a loss of \$0.39 per ton for those in Class III.

The average per-ton net losses for the pullet programs in Class III were greater than for those in Class IV. The one pullet program in Class I is not shown separately but is included in the columns for all pullet programs. This Class I pullet program showed a small positive net direct income and net total income for the manufacturer. Those in classes III and IV showed an average loss in both categories — \$3.06 per ton and \$1.45 per ton, respectively, for those in Class III and \$1.99 per ton and \$0.87 per ton, respectively, for those in Class IV.

#### COMPARISON BETWEEN PROFITABLE AND UNPROFITABLE PROGRAMS

The losses and gains to manufacturers from the financing and contract programs, when compared with their regular feed merchandising programs, are by no means shared uniformly among the individual programs



studied. In spite of the losses as indicated by the class averages, some individual programs under every class of program and for every type of livestock showed good added profits for the manufacturers sponsoring them. Three of the 48 programs showed direct in-pocket gains from the programs of over \$5.00 per ton, and 10 of the programs showed such gains of over \$2.00 per ton. Of the latter group, five were in Class I, two were in Class II, one was in Class III and two were in Class V. When the indirect benefits are considered, 18 of the programs resulted in net gains of \$2.00 or more per ton to the sponsoring feed manufacturer, six being in Class I, four in Class II, two in Class III, three in Class IV and three in Class V.

The profitability of some of the programs means that others are losing money much more heavily than the averages would indicate. Three of the programs resulted in a net loss to the manufacturer of over \$5.00 per ton, even after all indirect benefits are taken into account. Eleven of the programs used the manufacturer's equity capital at rate of over \$2.00 per ton, even after the indirect benefits are included. None of this group is in Class I, but three are in Class II, five are in Class III, one is in Class IV and two are in Class V. Some of the programs resulting in high per-ton losses are among those involving the largest tonnage. The average volume of the 11 programs losing over \$2.00 per ton is 9,260 tons, which compares with the average volume of all 48 programs of 6,870 tons.

Some insight as to why certain programs are losing money while others are profitable ventures for the feed manufacturers can be gained from the comparisons shown in tables 8, 9 and 10. These tables sort the 48 programs into three groups — (1) those that added \$2.00 per ton or more to manufacturers' net incomes, (2) those that just about broke even for the manufacturers and (3) those that reduced the sponsoring manufacturers' net incomes by \$2.00 per ton or more. Eighteen of the programs sponsored by 11 different manufacturers make up the first group. Nineteen programs sponsored by 13 different manufacturers constitute the second group. Eleven programs sponsored by seven different manufacturers make up the third group. In many cases, different programs sponsored by the same manufacturer came under two or more of the above groups. In most such instances, the groups were adjacent (one program in the first group and one in the second, or one program in the second group and one in the third). But in at least one case, the same manufacturer sponsored one program which resulted in a loss of over \$2.00 per ton and another program which resulted in a gain of over \$2.00 per ton.

The type of livestock for which the programs were conducted had little to do with the relative profitability of the programs. Of the 18 relatively profitable programs, eight were for hogs, four were for cattle, two were for pullets and two were for turkeys. Of the 11 money-losing programs for the sponsoring manufacturer, five were for hogs, two were for cattle, two were for pullets and two were for turkeys.

The relative profitability of the feed financing and contract programs to the sponsoring manufacturer must be explained by the organization and operation of the program. The difference is not explained by the class of program (based on degree of integration). It is not ex-

plained by the manufacturer who sponsors the program. And it is not explained by the type of livestock for which the program is conducted.

An interesting relationship between sales *volume* and the relative profitability of the program to the feed manufacturer is shown on the last line of table 8. The average annual tonnage sold under the profitable programs was 2,484. This is in marked contrast to the average volume per program for the average group of 9,644 tons and for the unprofitable group of 9,259 tons. The more profitable programs are evidently the smaller programs. This relationship apparently is the result of two kinds of factors, both of which are borne out by further comparison of the three groups of programs. First of all, the smaller programs can be conducted with a minimum of added staff, so that the added labor cost is at a minimum. When sufficient contract tonnage is reached, the additional number of employees per 1,000 tons of sales becomes greater than at the smaller volumes of sales. Second, it appears that farmers are price responsive to financing and contract programs. Those programs that are priced below cost when the charges to farmers are established evidently have attracted a larger response in sales volume than those which are priced above the manufacturer's costs. This is understandable in view of the sharp bidding for additional contract tonnage in many of the areas encompassed by the study.

The comparisons in tables 8 and 9 indicate significant differences between the profitable and the unprofitable programs for manufacturers, in terms of both the charge made under the programs and the costs of conducting the programs. Compared with the unprofitable programs, the profitable programs are producing substantially more direct and indirect revenue for the manufacturer. Furthermore, when compared with the unprofitable programs, the profitable programs are costing substantially less in added costs to the manufacturer. In other words, these programs are profitable for two reasons. In the first place, the charges made to farmers under the programs are high

Table 8. Comparison of average income under three groups of programs (all figures in dollars).

Source of income	Profitable group of programs	Average group of programs	Unprofitable group of programs
<b>Feed:</b>			
Interest .....	3.46	3.24	2.05
Service charge .....	0.41	0.38	0.53
Cash discount saved ..	1.02	0.16	0.11
<b>Supplies:</b>			
Interest .....	1.45	1.12	0.46
Margin on supplies ..	0.07	0.19	0.00
Margin on stock .....	0.12	0.00	0.16
Other .....	0.01	0.00	0.00
<b>Plant savings:</b>			
Ingredients .....	0.07	0.03	0.00
Delivery .....	0.62	0.73	0.22
Increased volume .....	1.24	0.52	0.42
Tonnage under programs	2,484	9,644	9,259

Table 9. Comparison of average costs under three groups of programs (all figures in dollars).

Source of cost	Profitable group of programs	Average group of programs	Unprofitable group of programs
<b>Feed:</b>			
Added labor .....	0.51	0.76	1.82
Printing .....	0.30	0.31	1.06
Travel .....	0.00	0.02	0.16
Interest .....	2.46	2.98	2.47
Bad debt .....	0.21	0.16	1.00
Added overhead .....	1.33	0.25	1.36
<b>Supplies:</b>			
Interest .....	0.45	0.94	0.80
Bad debt .....	0.17	0.22	0.02
Handling cost .....	0.00	0.98	0.00



enough to reimburse the manufacturer for his costs. And secondly, the profitable programs are conducted with greater efficiency so far as added costs to the manufacturer are concerned.

A closer examination of table 8 shows that the *higher income to manufacturers* under the profitable programs comes from several different sources. The average income from interest charged on the feed under the profitable programs was \$0.22 higher than under the average programs and \$1.41 higher than under the unprofitable programs. Income from interest charges on supplies financed for these programs was higher than the average programs by \$0.33 per ton and the unprofitable programs by \$0.99 per ton. The savings of cash discounts under the profitable programs was higher than under the average programs by \$0.86 per ton and under the unprofitable programs by \$0.91 per ton. All of these gains in income under the profitable programs come from the way the contract package is priced to the livestock feeder.

The profitable programs also show greater income through savings in the manufacture and distribution of feed. These programs added significantly more to the manufacturer's total sales volume of feed than either the average programs or the unprofitable programs. In dollars and cents, this benefit amounted to \$0.72 per ton more than under the average programs and \$0.82 per ton more than under the unprofitable programs.

Table 9 shows that the *lower costs to the manufacturers* under the profitable financing and contract programs comes from several sources. In added salaries alone, these programs cost the manufacturers \$0.25 per ton less than the average programs and \$1.31 per ton less than the unprofitable programs. The savings through lower costs for printing, legal, registration and other contract fees amounted to only \$0.01 per ton compared with the average programs but to \$0.76 per ton compared with the unprofitable programs. Travel costs in operating the programs also were lower under the profitable programs than under the average and the unprofitable programs. Neither the interest on the capital tied up in the feed financed nor the added overhead cost was significantly different between the profitable programs and the unprofitable programs. However, at about the same average tonnage per program, the added overhead costs averaged substantially higher for the unprofitable programs than for the average programs. Because of the much smaller average volume for the profitable programs, the added overhead costs logically could be expected to be higher on a per-ton basis under these programs. The average costs resulting from bad debts on the feed financed were reasonable for both the profitable and the average programs, but quite high for the unprofitable programs.

## SUMMARY AND CONCLUSIONS

Because feed manufacturers are important potential innovators of contract farming in the Midwest, the profit motive to these manufacturers to introduce additional feeder contracts is of direct concern to producers, agricultural leaders and other businesses serving agriculture, as well as to the feed industry. Knowledge of the magnitude of this profit motive under alternative types of financing and contract programs can assist in predicting

Table 10. Comparison of average net gain or loss among three groups of programs (all figures in dollars).

Source of income and cost	Profitable group of programs	Average group of programs	Unprofitable group of programs
<b>Feed:</b>			
Receipts .....	4.89	3.78	2.69
Costs .....	4.81	4.48	7.87
Net income .....	0.08	(0.70) <sup>1</sup>	(5.18)
<b>Supplies:</b>			
Receipts .....	1.65	1.31	0.62
Costs .....	0.62	2.14	0.82
Net income .....	1.03	(0.83)	(0.20)
<b>Feed and supplies:</b>			
Receipts .....	6.54	5.09	3.31
Costs .....	5.43	6.62	8.69
Net income .....	1.11	(1.53)	(5.38)
Savings in production .....	1.93	1.28	0.74
Total income .....	8.47	6.37	4.05
Net gain or loss .....	3.04	(0.25)	(4.64)
Total number of programs	18	19	11

<sup>1</sup>Figures in parentheses are negative value, or losses.

The differences among the three groups of programs in the costs related to the financing of production supplies are much less significant.

Table 10 shows a final comparison in the net gain or loss among the three groups of programs. The contrasts in this table are striking. The total added income for the 18 profitable programs averaged \$2.10 per ton more than that for the 19 average programs and \$4.42 more than that for the 11 unprofitable programs. The total added costs for these profitable programs averaged \$1.19 per ton less than for the average programs and \$3.26 per ton less than for the unprofitable programs. The profitable programs resulted in an average gain to the feed manufacturer over normal feed sales of \$3.04 per ton, or \$7,500 per program. The middle or average group of programs resulted in an average loss of \$0.25 per ton or \$2,300 per program compared with normal feed sales. The unprofitable programs resulted in an average loss of \$4.64 per ton or \$43,000 per program when compared with feed sales not made under financing and contract programs. These figures take into account all indirect benefits of the programs as well as the added direct income to the manufacturer.

In total, the profitable programs returned an average of \$3.29 per ton more to the manufacturers than did the average programs and an average of \$7.68 per ton more than did the unprofitable programs. Over 40 percent of this difference resulted directly from the level of charges for the services provided farmers under the three groups of programs. About 40 percent of the difference resulted from greater efficiency in providing the service under the contracts. And between 15 and 20 percent comes through greater reported savings in manufacturing and distribution costs because of the programs.

the direction as well as the extent of future developments in contract farming.

Detailed cost and income figures were obtained for 48 different financing and contract programs conducted by 24 feed manufacturers operating in Iowa and surrounding states. The figures obtained cover the manufacturers' fiscal years during 1959 and 1960. The programs studied fall into five classes with respect to the



degree of integration involved, ranging from loose arrangements under Class I to complete programs in Class V. They relate to four types of livestock — hogs, cattle, turkeys and pullets. The 48 programs are well distributed over the different classes and types of livestock. The programs studied represented 330,000 tons of feed sales, for an average of 6,900 tons per program.

On the whole, feed manufacturers have little profit motive for innovating the feeder contracts studied. Feed manufacturers sustained an over-all average loss of \$0.87 per ton under the 48 programs as compared with their normal feed sales. Not all programs studied lost money for the sponsoring feed manufacturer, however. Considering only the added income and the added costs, 60 percent of the programs detracted from manufacturers' profits, while 40 percent added to them. When all indirect benefits are included, 58 percent of the programs indicated at least a small profit motive to the manufacturer.

Significant differences in the net effects of the programs to the sponsoring manufacturer were found by class of program. Those programs representing the most complete and formalized contractual arrangements are more costly to the manufacturers than those which represent little more than loose financial arrangements for the feed over the livestock production cycle. The Class I programs showed an average gain of \$1.51 per ton to the manufacturer, while, at the other extreme, the Class V programs showed an average loss of \$3.22 per ton. The average differences among the programs for the different types of livestock were less striking. The cattle program resulted in a small gain for the sponsoring manufacturers (\$0.35 per ton), while the other livestock programs all showed an average loss — varying from a loss of \$0.58 per ton under the turkey programs to \$1.25 per ton under the hog programs.

Although, on the average, the programs are losing money, some in every class are profitable, while others are losing substantial sums for the manufacturer. Considering the indirect as well as the direct benefits, 18 of the 48 programs added \$2.00 or more per ton to the manufacturers' net incomes. Eleven of these programs subtracted \$2.00 or more from manufacturers' net earnings. Both the profitable programs and the unprofitable ones were spread over the different classes by level of integration as well as by the different types of livestock.

Comparison of the 18 most profitable programs with the 11 that were most unprofitable reveals an average

difference to the manufacturer of over \$7.50 for every ton of feed sold under feeder contract. About 40 percent of this difference came from the higher charges made under the profitable programs. Another 40 percent of the difference resulted from greater efficiency as evidenced by lower costs for providing the contract services offered under the profitable programs. Something less than 20 percent of the difference came through the greater savings in the usual manufacturing and distributing costs reported under the profitable programs.

Comparison of the individual sources of added income and cost under the 18 most profitable and the 11 most unprofitable programs indicates that no single source of income or of cost accounts for the difference. The greatest difference from a single source of income — interest charges on the feed financed — accounted for \$1.40 per ton of the total difference. The greatest difference from a single source of cost — added labor costs — explained \$1.30 per ton of the total difference of over \$7.50 per ton.

The findings of this study indicate that unless conditions change to make livestock producers willing to pay a larger part of the cost of contract programs, feed manufacturers are not likely to push such programs aggressively in the Midwest. This is particularly true of the more formalized and risk-sharing programs. Because they have little or no profit motive for doing so under present conditions, feed manufacturers are not likely to innovate feeder contracts in the Midwest to the extent that they have in commercial broiler production areas, for example. In the case of turkeys, for which feeder contracts are widely used by feed manufacturers in the Midwest, this study indicates little or no profit incentive for the feed manufacturer to expand the scope of the total livestock production and marketing process which is brought under the contract programs.

From the standpoint of the feed industry, the study clearly indicates that managerial direction and cost control over the financing and contract programs are extremely important. Programs with the same general provisions, with differences only in detail, vary widely in profitability to the feed manufacturer. Manufacturers operating such programs might be able to improve the net effects of their programs by examining them carefully to see where the specific added costs for the programs can be brought under control and where prices and charges made for the programs can be adjusted so that they cover the actual costs of operating the programs.

## APPENDIX

Table A-1. Per-ton added income to feed manufacturers from hog financing and contract programs (all figures in dollars).

Source of income	All programs		Class I programs	Class II programs	Class III programs	Class V programs
	average	range	average	average	average	average
<b>Feed:</b>						
Interest .....	2.16	0.00 to 5.40	1.49	2.07	2.41	2.27
Service charge .....	0.87	0.00 to 3.20	2.29	1.01	0.44	0.00
Cash discount saved .....	0.30	0.00 to 3.00	0.62	0.40	0.14	0.00
Total: .....	3.33	0.00 to 7.30	4.40	3.49	2.99	2.27
<b>Supplies:</b>						
Interest .....	0.05	0.00 to 3.00	0.25	0.04	0.01	0.00
Margin on supplies .....	0.01	0.00 to 1.00	0.07	0.00	0.00	0.00
Margin on stock .....	0.11	0.00 to 9.70	0.00	0.00	0.00	2.32
Other .....	0.00	.....	0.00	0.00	0.00	0.00
Total: .....	0.16	0.00 to 9.70	0.32	0.04	0.01	2.32
Total direct income: .....	3.49	2.00 to 9.70	4.73	3.53	3.00	4.59
<b>Plant savings:</b>						
Ingredients .....	0.05	0.00 to 2.00	0.00	0.10	0.00	0.01
Delivery .....	0.62	0.00 to 2.00	0.00	0.91	0.29	1.50
Increased volume .....	0.52	0.00 to 2.60	0.38	0.83	0.17	0.45
Total: .....	1.19	0.00 to 5.27	0.38	1.84	0.46	1.96
Total income per ton .....	4.68	2.58 to 14.97	5.11	5.37	3.47	6.55
Tonnage under programs .....	6,444	22 to 36,486	2,285	7,075	11,326	3,573



Table A-2. Per-ton added income to feed manufacturers from cattle financing and contract programs (all figures in dollars).<sup>1</sup>

Source of income	All programs		Class I programs	Class II programs
	average	range	average	average
<b>Feed:</b>				
Interest .....	2.34	0.00 to 5.12	2.45	2.38
Service charge .....	0.61	0.00 to 3.00	0.78	0.60
Cash discount saved .....	0.82	0.00 to 3.00	0.28	0.87
Total: .....	3.77	0.00 to 8.52	3.51	3.85
<b>Supplies:</b>				
Interest .....	0.00	-----	0.00	0.00
Margin on supplies .....	0.00	-----	0.00	0.00
Margin on stock .....	0.24	0.00 to 16.67	0.00	0.00
Other .....	0.02	0.00 to 1.47	0.00	0.00
Total: .....	0.26	0.00 to 18.14	0.00	0.00
Total direct income .....	4.03	2.00 to 18.14	3.51	3.85
<b>Plant savings:</b>				
Ingredients .....	0.04	0.00 to 2.00	0.00	0.04
Delivery .....	(0.24) <sup>2</sup>	(1.00) to 2.00	0.00	(0.28)
Increased volume .....	0.59	0.00 to 3.84	0.68	0.53
Total: .....	0.39	(0.49) to 4.84	0.68	0.29
Total income per ton .....	4.42	3.20 to 15.71	4.19	4.14
Tonnage under programs .....	2,070	41 to 12,000	474	3,700

<sup>1</sup>Separate figures are not shown in the table for the Class V programs because only one cattle program was included in this class.

<sup>2</sup>Figures in parentheses are negative values, or losses.

Table A-3. Per-ton added income to feed manufacturers from turkey financing and contract programs (all figures in dollars).

Source of income	All programs		Class III programs	Class IV programs	Class V programs
	average	range	average	average	average
<b>Feed:</b>					
Interest .....	3.93	0.00 to 5.04	3.85	4.29	0.19
Service charge .....	0.00	-----	0.00	0.00	0.00
Cash discount saved .....	0.17	0.00 to 2.00	0.00	0.13	2.00
Total: .....	4.10	2.00 to 6.41	3.85	4.42	2.19
<b>Supplies:</b>					
Interest .....	2.36	0.93 to 6.21	3.02	1.65	6.11
Margin on supplies .....	0.31	0.00 to 9.20	0.00	0.49	0.39
Margin on stock .....	0.00	-----	0.00	0.00	0.00
Other .....	0.00	-----	0.00	0.00	0.00
Total: .....	2.67	1.26 to 13.06	3.02	2.14	6.50
Total direct income: .....	6.77	4.41 to 19.47	6.87	6.56	8.69
<b>Plant savings:</b>					
Ingredients .....	0.00	-----	0.00	0.00	0.00
Delivery .....	0.82	(1.00) <sup>1</sup> to 2.00	1.77	0.20	0.96
Increased volume .....	0.51	0.00 to 1.80	0.28	0.58	1.33
Total: .....	1.33	0.00 to 2.91	2.05	0.78	2.29
Total income per ton .....	8.10	4.41 to 20.89	8.91	7.34	10.98
Tonnage under programs .....	13,850	250 to 47,500	15,333	18,200	2,925

<sup>1</sup>Figures in parentheses are negative values, or losses.

Table A-4. Per-ton added income to feed manufacturers from pullet financing and contract programs (all figures in dollars).<sup>1</sup>

Source of income	All programs		Class III programs	Class IV programs
	average	range	average	average
<b>Feed:</b>				
Interest .....	2.73	1.58 to 4.88	2.44	2.76
Service charge .....	0.00	-----	0.00	0.00
Cash discount saved .....	0.07	0.00 to 1.70	0.00	0.00
Total: .....	2.80	1.58 to 6.58	2.44	2.76
<b>Supplies:</b>				
Interest .....	0.43	0.00 to 1.10	0.00	0.77
Margin on supplies .....	0.00	-----	0.00	0.00
Margin on stock .....	0.00	-----	0.00	0.00
Other .....	0.00	-----	0.00	0.00
Total: .....	0.43	0.00 to 1.10	0.00	0.77
Total direct income .....	3.23	1.58 to 6.58	2.44	3.53
<b>Plant savings:</b>				
Ingredients .....	0.00	-----	0.00	0.00
Delivery .....	0.19	0.00 to 1.25	0.35	0.00
Increased volume .....	1.15	0.00 to 3.92	1.26	1.11
Total: .....	1.34	0.00 to 3.92	1.61	1.11
Total income per ton .....	4.57	2.88 to 8.48	4.05	4.65
Tonnage under programs .....	6,036	1,500 to 14,510	7,100	6,837

<sup>1</sup>Separate figures are not shown in the table for the Class I programs because only one pullet program was included in this class.

Table A-5. Per-ton added costs to feed manufacturers of hog financing and contract programs (all figures in dollars).

Source of cost	All programs		Class I programs	Class II programs	Class III programs	Class V programs
	average	range	average	average	average	average
<b>Feed:</b>						
Added labor .....	1.25	0.00 to 5.45	0.41	0.83	1.73	3.25
Printing .....	1.04	0.01 to 8.33	0.17	1.25	1.09	0.36
Travel .....	0.07	0.00 to 2.62	0.00	0.00	0.05	1.09
Interest .....	2.37	0.00 to 3.71	2.49	2.41	2.37	1.78
Bad debt .....	0.12	0.00 to 0.75	0.16	0.18	0.01	0.25
Added overhead .....	0.92	0.00 to 2.10	0.24	0.72	1.20	1.89
Total: .....	5.77	1.26 to 12.16	3.47	5.39	6.45	8.62
<b>Supplies:</b>						
Interest .....	0.15	0.00 to 5.24	0.24	0.05	0.05	1.67
Bad debt .....	0.01	0.00 to 0.23	0.01	0.00	0.01	0.23
Handling cost .....	0.00	-----	0.00	0.00	0.00	0.00
Total: .....	0.16	0.00 to 5.24	0.25	0.05	0.06	1.90
Total added cost per ton .....	5.93	1.26 to 12.16	3.72	5.44	6.51	10.52
Tonnage under programs .....	6,444	22 to 36,486	2,285	7,075	11,326	3,574



Table A-6. Per-ton added costs to feed manufacturers of cattle financing and contract programs (all figures in dollars).

Source of cost	All programs		Class I programs	Class II programs
	average	range	average	average
<b>Feed:</b>				
Added labor	1.03	0.00 to 4.01	0.00	1.16
Printing	0.16	0.01 to 1.89	0.13	0.17
Travel	0.03	0.00 to 0.19	0.00	0.04
Interest	2.37	0.00 to 2.88	2.38	2.37
Bad debt	0.03	0.00 to 0.16	0.00	0.03
Added overhead	0.31	0.00 to 5.06	0.26	0.23
Total	3.93	1.30 to 8.54	2.77	3.99
<b>Supplies:</b>				
Interest	0.06	0.00 to 4.00	0.00	0.00
Bad debt	0.00	-----	0.00	0.00
Handling cost	0.08	0.00 to 0.14	0.00	0.09
Total	0.14	0.00 to 4.00	0.00	0.09
Total added costs per ton	4.07	1.30 to 11.50	2.77	4.08
Tonnage under programs	2,070	41 to 12,000	474	3,700

Table A-7. Per-ton added costs to feed manufacturers of turkey financing and contract programs (all figures in dollars).

Source of cost	All programs		Class III programs	Class IV programs	Class V programs
	average	range	average	average	average
<b>Feed:</b>					
Added labor	0.69	0.00 to 12.63	1.46	0.25	0.03
Printing	0.12	0.01 to 0.81	0.28	0.03	0.01
Travel	0.06	0.00 to 3.74	0.08	0.04	0.00
Interest	3.47	2.89 to 4.41	3.22	3.58	4.06
Bad debt	0.18	0.00 to 0.95	0.38	0.07	0.00
Added overhead	0.46	0.00 to 2.93	0.51	0.48	0.25
Total	4.98	3.41 to 23.07	5.93	4.43	4.35
<b>Supplies:</b>					
Interest	1.90	0.77 to 9.97	2.51	0.88	9.71
Bad debt	0.38	0.00 to 0.89	0.86	0.10	0.00
Handling cost	1.42	0.00 to 3.75	0.00	2.45	0.00
Total	3.70	1.12 to 9.97	3.38	3.43	9.71
Total added cost per ton	8.68	4.59 to 25.03	9.30	7.86	14.06
Tonnage under programs	13,850	250 to 47,500	15,333	18,200	2,925

Table A-8. Per-ton added costs to feed manufacturers of pullet financing and contract programs (all figures in dollars).

Source of cost	All programs		Class III programs	Class IV programs
	average	range	average	average
<b>Feed:</b>				
Added labor	1.51	0.33 to 2.60	2.37	0.98
Printing	0.14	0.00 to 0.50	0.15	0.11
Travel	0.03	0.00 to 0.12	0.09	0.00
Interest	2.06	1.58 to 2.89	1.69	2.30
Bad debt	0.20	0.00 to 0.56	0.40	0.08
Added overhead	1.19	0.25 to 2.10	0.79	1.40
Total	5.14	4.05 to 6.07	5.50	4.86
<b>Supplies:</b>				
Interest	0.36	0.00 to 0.92	0.00	0.63
Bad debt	0.01	0.00 to 0.17	0.00	0.02
Handling cost	0.00	-----	0.00	0.00
Total	0.37	0.00 to 1.09	0.00	0.66
Total added cost per ton	5.51	4.05 to 6.07	5.50	5.52
Tonnage under programs	6,035	1,500 to 14,510	7,100	6,837

Table A-9. Per-ton net gain or loss to feed manufacturers from hog financing and contract programs (all figures in dollars).

Source of income and cost	All programs		Class I programs	Class II programs	Class III programs	Class V programs
	average	range	average	average	average	average
<b>Feed:</b>						
Receipts	3.33	2.00 to 7.30	4.40	3.49	3.00	2.27
Costs	5.77	1.26 to 12.16	3.46	5.39	6.45	8.62
Net income	(2.44) <sup>1</sup>	(8.31) to 4.77	0.94	(1.90)	(3.45)	(6.35)
<b>Supplies:</b>						
Receipts	0.16	0.00 to 9.70	0.32	0.04	0.01	2.32
Costs	0.16	0.00 to 5.24	0.25	0.05	0.06	1.90
Net income	0.00	(0.90) to 4.46	0.07	(0.01)	(0.05)	0.42
<b>Feed and supplies:</b>						
Receipts	3.49	2.00 to 9.70	4.73	3.53	3.01	4.59
Costs	5.93	1.26 to 12.16	3.72	5.44	6.51	10.52
Net income	(2.44)	(8.31) to 4.92	1.01	(1.91)	(3.50)	(5.93)
Savings in production	1.19	0.00 to 5.27	0.38	1.84	0.46	1.96
Total income	4.68	2.58 to 14.97	5.11	5.37	3.47	6.55
Net gain or loss per ton	(1.25)	(6.22) to 7.52	1.39	(0.07)	(3.04)	(3.97)
Total number of programs	23		6	10	5	2

<sup>1</sup>Figures in parentheses are negative values, or losses.





Table A-10. Per-ton net gain or loss to feed manufacturers from cattle financing and contract programs (all figures in dollars).

Source of income and cost	All programs		Class I programs	Class II programs
	average	range	average	average
Feed:				
Receipts .....	3.77	0.00 to 11.52	3.51	3.85
Costs .....	3.93	1.30 to 8.54	2.77	3.99
Net income .....	(0.16) <sup>1</sup>	(7.50) to 7.63	0.74	(0.14)
Supplies:				
Receipts .....	0.26	0.00 to 18.14	.....	.....
Costs .....	0.14	0.00 to 4.00	.....	0.09
Net income .....	0.12	(0.14) to 14.14	.....	(0.09)
Feed and supplies:				
Receipts .....	4.03	2.00 to 18.14	3.51	3.85
Costs .....	4.07	1.30 to 11.50	2.77	4.08
Net income .....	(0.04)	(5.12) to 7.63	0.74	(0.23)
Savings in production .....	0.39	(0.49) to 4.84	0.68	0.29
Total income .....	4.42	3.20 to 22.98	4.19	4.14
Net gain or loss per ton .....	0.35	(3.24) to 11.82	1.42	0.06
Total number of programs .....	10		4	5

<sup>1</sup>Figures in parentheses are negative values, or losses.

Table A-11. Per-ton net gain or loss to feed manufacturers from turkey financing and contract programs (all figures in dollars).

Source of income and cost	All programs		Class III programs	Class IV programs	Class V programs
	average	range	average	average	average
Feed:					
Receipts .....	4.10	2.00 to 6.41	3.85	4.42	2.19
Costs .....	4.97	3.41 to 23.07	5.93	4.43	4.35
Net income .....	(0.87) <sup>1</sup>	(18.66) to 1.69	(2.08)	(0.01)	(2.16)
Supplies:					
Receipts .....	2.67	1.26 to 13.06	3.02	2.14	6.50
Costs .....	3.70	1.12 to 9.97	3.38	3.43	9.71
Net income .....	(1.03)	(3.76) to 9.20	(0.36)	(1.29)	(3.21)
Feed and supplies:					
Receipts .....	6.77	4.41 to 19.47	6.86	6.56	8.69
Costs .....	8.68	4.59 to 25.03	9.30	7.85	14.06
Net income .....	(1.91)	(18.41) to 10.89	(2.44)	(1.29)	(5.37)
Savings in production .....	1.33	0.00 to 2.91	2.05	0.78	2.29
Total income .....	8.10	4.41 to 20.89	8.91	7.34	10.98
Net gain or loss per ton .....	(0.58)	(15.50) to 12.31	(0.39)	(0.51)	(3.08)
Total number of programs .....	9		3	4	2

<sup>1</sup>Figures in parentheses are negative values, or losses.

Table A-12. Per-ton net gain or loss to feed manufacturers from pullet financing and contract programs (all figures in dollars).

Source of income and cost	All programs		Class III programs	Class IV programs
	average	range	average	average
Feed:				
Receipts .....	2.80	1.58 to 6.58	2.44	2.76
Costs .....	5.14	4.05 to 6.07	5.50	4.86
Net income .....	(2.34) <sup>1</sup>	(4.47) to 0.97	(3.06)	(2.10)
Supplies:				
Receipts .....	0.43	0.00 to 1.10	.....	0.77
Costs .....	0.37	0.00 to 1.09	.....	0.66
Net income .....	0.06	0.00 to 0.37	.....	0.11
Feed and supplies:				
Receipts .....	3.23	1.58 to 6.58	2.44	3.53
Costs .....	5.51	4.05 to 6.07	5.50	5.52
Net income .....	(2.28)	(4.49) to 0.97	(3.06)	(1.99)
Savings in production .....	1.34	0.00 to 3.92	1.61	1.11
Total income .....	4.57	2.88 to 8.48	4.05	4.65
Net gain or loss per ton .....	(0.94)	(3.19) to 3.07	(1.45)	(0.87)
Total number of programs .....	6		2	3

<sup>1</sup>Figures in parentheses are negative values, or losses.