The grain-livestock economy is faced with two general problems: an aggregate supply-demand problem and a structural problem. These problems are interrelated. Some producers are in economic difficulties because of the changing structure, but the situation appears to them as an aggregate supply and price problem. This paper will be divided into three parts: the first dealing with the supply-demand problem, the second with the structural problem, and the third with proposals for meeting the problems in the two areas.

**Aggregate Supply-Demand Problem**

Little space in this paper will be devoted to analyzing the basic supply-demand problem in the feed grain area. The basic situation has been well presented in numerous papers including those presented by Kaldor¹/ and by Kendrick and Ottoson²/ to the National Agricultural Advisory Commission. Suffice to say, we have produced enough food and fiber to meet our domestic and foreign needs with a total of 50 to 60 million acres of cropland retired from 1961 to 1966 at prices that prevailed during this period. True, we reduced our stocks during this period but only a little less retired land would have allowed them to be maintained.

During this same six-year period, 1961 to 1966, we have retired annually 30 million acres of feed grain land. Then with 20 million acres retired in 1967, stocks began to build up again. It is obvious that with the prices that have been maintained, we have a feed grain plant around 25 million acres larger than necessary to meet our domestic and foreign needs.

This year, 1967, is demonstrating the problem of maintaining a reasonably stable grain-livestock economy when one is faced, in addition to the normal cycles in livestock production, with unpredictable yields, an

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unpredictable foreign grain market and a less than clearly defined grain storage policy. As a continuing residual supplier of the world's grain needs and with the present stage of technological development in weather forecasting, this is not likely to be the end of such problems. The less than normal accuracy in forecasting market supplies of livestock during the past two years has not improved the situation in the eyes of producers.

With between 24 and 34 million acres of feed grain land retired each year between 1961 and 1966 and a growing foreign grain market, we reduced our grain storage supplies. The carry-over of the four feed grains on October 1, 1966 had fallen to 37 million tons as compared to around 80 million tons during the 1960-61 marketing year.

Exports of feed grains during this period rose from 12.3 million tons in the 1960-61 marketing year to 29.1 million tons for the 1965-66 marketing year. They then fell to 22.0 million tons for 1966-67 marketing year. These exports of feed grains were largely cash sales.

Acreages of feed grains retired annually during the 1961 to 1966 period varied from 24 to 35 million acres and averaged 30 million acres per year. The reduction in terms of bushels of corn was probably around one billion bushels per year.

In a research study conducted by Richard J. Edwards and the author of this paper at Purdue University, an attempt was made to measure the average effective reduction brought about by the feed grain program during its first four years of operation, 1961-1964. An average of $27\frac{1}{2}$ million acres was

Table 1. Acreages of land retired in United States, 1961-67.
(Million Acres)

<table>
<thead>
<tr>
<th>Year</th>
<th>Feed Grains</th>
<th>Wheat</th>
<th>Cotton Conservation Reserve and Crop Adjustment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>25.2</td>
<td>--</td>
<td>28.5</td>
<td>53.7</td>
</tr>
<tr>
<td>1962</td>
<td>28.2</td>
<td>10.7</td>
<td>25.8</td>
<td>64.7</td>
</tr>
<tr>
<td>1963</td>
<td>24.5</td>
<td>7.2</td>
<td>24.3</td>
<td>56.0</td>
</tr>
<tr>
<td>1964</td>
<td>32.4</td>
<td>5.1</td>
<td>17.5</td>
<td>55.0</td>
</tr>
<tr>
<td>1965</td>
<td>34.7</td>
<td>7.2</td>
<td>14.0</td>
<td>55.9</td>
</tr>
<tr>
<td>1966</td>
<td>34.7</td>
<td>8.3</td>
<td>12.9</td>
<td>63.3</td>
</tr>
<tr>
<td>1967</td>
<td>20.6</td>
<td>--</td>
<td>10.9</td>
<td>41.1</td>
</tr>
</tbody>
</table>
shifted out of feed production for this four-year period. Because of the voluntary nature of the program, farmers not participating could increase their acreage without publicly imposed limits. They did increase their acreage more each succeeding year. By 1964, farmers not in the program planted 9 million acres more than the 1959-60 average, as indicated by the base acreage at that time. This planting was partly offset by participants cutting back even more than the limit for which they could receive payments. Much of this underplanting resulted from odd-sized fields and the risks attached to exceeding their acreage limit. In 1964, participants planted 5.9 million acres or 14 percent less than they were allowed.

Compensations were made for the adjustments farmers were allowed in their base acreage and for the land released from the conservation reserve program. It was eligible for entry in the feed grain program. After these adjustments were made, it was judged that the effective decline in acreage averaged 23.7 million acres in this four-year period.

The effective decline in planted acreage of each crop was multiplied by 80 percent of the average yield in that state. Eighty percent was judged as sufficient to compensate for the average land selection, although independent studies have shown that participating farms have yields equal to the average of the state. There is selection within each farm. Yield per planted acre was used, in part, to reflect crop failures and difficulty with harvest. On this basis the decline in feed production on a corn equivalent basis averaged 987 million bushels per year for the 1961-64 period, Table 2, or a decrease of approximately 17 percent in feed grain production. If we are willing to pay the price, our past voluntary land retirement programs have demonstrated that we can reduce production.

Table 2. Effective decreased production compared with anticipated decline from diverted acreage, U.S., by years 1961-64.

<table>
<thead>
<tr>
<th>Year</th>
<th>Diverted Acreage Decline Mil. Bu.</th>
<th>Effective Decreased Production Mil. Bu.</th>
<th>Efficiency of Program %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>1153.7</td>
<td>975.3</td>
<td>84.5</td>
</tr>
<tr>
<td>1962</td>
<td>1248.0</td>
<td>1075.0</td>
<td>86.1</td>
</tr>
<tr>
<td>1963</td>
<td>1091.8</td>
<td>824.2</td>
<td>75.5</td>
</tr>
<tr>
<td>1964</td>
<td>1327.6</td>
<td>1073.5</td>
<td>80.9</td>
</tr>
<tr>
<td>Total</td>
<td>4821.2</td>
<td>3947.9</td>
<td>81.9</td>
</tr>
</tbody>
</table>
Some would argue that without the program participants would have increased their planted acreage. If this assumption were made, it would have shown a greater reduction because of the program. Others claim that some marginal areas would have gone out of production without the program and that fertilizer was substituted for land which increased the amount of corn produced. While these other assumptions could be made, this study rests on the assumptions stated. On the basis of the stated assumptions, the production of grains on a corn-equivalent basis would have been nearly a billion bushels higher if the same grain prices had prevailed throughout the period.

By October, 1966, the feed grain carry-over had fallen to 37 million tons; the corn price received by United States farmers was $1.29 per bushel and many people were expounding the position that United States farmers would have an unlimited world outlet for grains. With this backdrop, plans had to be started on the 1967 feed grain program. As a result of this situation, the 1967 program was modified and, along with a bullish attitude on the part of farmers, it resulted in the retirement of only 20 million feed grain acres in 1967. This was 10 million acres less than were retired in 1966; 10 million acres less are proposed again for 1968.

With this situation, what happened to feed grains in 1967? Acreage planted went up 5 percent. Yields went up 7 percent (assuming we are able to harvest the crop). Output went up 12 percent. The foreign market for the 1966-67 marketing year declined 7.1 million tons or 24 percent. Exports will likely remain near this level for the 1967-68 marketing year. Feed grain prices this fall fell to and below loan levels.

If exports had increased as much as they declined and yields had been as much below average as they were above, we would have needed more corn than we produced in 1967. It would have moved at a price above the 1967 levels. With two such large unpredictable variables now in the feed grain picture, a realistic storage program to balance out supply and demand on an annual basis at reasonable prices becomes a more evident need.

If the 30-million-acre goal proposed for 1968 should be reached, as it appears it might well be, prices of corn could be considerably higher during the 1968-69 marketing year. If foreign demand should increase or unfavorable weather develop, it could be even higher. Variable factors often develop as they did this year to compound the situation instead of offset it.

Grain prices and livestock prices are closely related over time. When grain prices decline livestock prices eventually decline and, conversely when grain prices rise, livestock prices eventually rise. These relationships vary over time and are obscured at times because of the lead and lag factor, but they are persistent. Anyone familiar with the livestock industry
is familiar with either the hog-corn ratios, the beef cattle feeding ratios, 
the dairy-feed ratios or the egg-feed ratios.

This is not to say that these ratios remain constant over time. They 
are modified by other cost and price factors. However, grain costs make 
up such a high share of the cost of producing most classes of livestock 
that grain and livestock prices tend to move together over longer periods 
of time.

If the livestock enterprises expand on the basis of corn prices the 
first half of the 1967-68 marketing season, unfavorable feeding situations 
could develop in the winter of 1969. This might be particularly true in the 
case of hogs. There is considerable evidence that hog farrowings may be 
further expanded during 1968 and unfavorable feeding relationships develop 
during the first part of 1969. The increased feed grain acreage retired in 
1968 could then be blamed for developing this unfavorable feeding situation. 
This points up the desirability of a commodity loan program to meet pre­
sent conditions.

Livestock Structure Problem

The rapidly developing technology in farming has put and is continuing 
to put extreme economic pressure on what has been thought of as the tradi­
tional family-sized farm. Larger power plants accompanied by larger field 
machines, mechanized and automated livestock equipment and changes in 
marketing and production according to specification have all increased the 
need for volume on the production unit. Larger farm businesses have 
sprung up to take advantage of size. Large regional shifts in production 
and distribution of livestock have taken place. Integration has developed 
in varying degrees throughout the livestock industry. These larger efficient 
operations have reduced the unit cost of production, changed the marketing 
procedure, and placed the smaller traditional producer at an economic dis­
advantage which is often interpreted as an aggregate supply-demand problem 
by him.

A government supply-demand program which holds prices high enough 
for the larger farm units to operate successfully leaves the traditional family 
farm unit in economic difficulty. Prices held at a level high enough to pro­
vide adequate income for the traditional family farm result in returns on 
the larger units so high that they bring additional resources into agriculture. 
This under a voluntary land retirement program further aggravates the supply 
problem.

Some producers, to avoid making the necessary adjustments, have rented 
or sold their farms to larger operators and retired or obtained employment 
in other business. Others increased their crop operations and decreased
their livestock and poultry operations which have been taken up by the larger specialized producers, particularly in poultry and cattle feeding. There is now a tendency for livestock production to concentrate on owned or partially owned farms. Landlords are hesitant to invest large amounts in mechanized and automated equipment for livestock production where they know high levels of management and volume are necessary for success. Tenants hesitate to go into livestock production without adequate and modern livestock facilities. As a result more tenants have turned to grain farming and to off-farm employment to supplement their income.

However, a large group of dedicated, capable farmers, who have adopted the best crop and livestock technology, have not been able, for various reasons, to increase their scale of operations or adjust their livestock production and marketing programs to market demands. They find themselves in economic difficulty. They find their returns squeezed by the competition from the large units that are developing. They are in difficulty because of the changing internal structure of agriculture.

At the other end of the scale the American consumers have come to want and to demand a continuous flow of high quality standardized food products which have now been made possible by technology. The supermarket and food chain efforts to meet consumer demands and to maintain their competitive position have put pressure on the processors to supply them with a steady supply of uniform high quality products. The processors caught between these specific demand requirements, on the one hand, and the varying supply and quality of products offered, on the other hand, have attempted to find some means of coordinating livestock production and consumption.

Many livestock producers, seeing various groups attempting to bring about coordination through greater integration and the transfer of the decision-making power to groups outside of agriculture, are attempting to find ways of becoming more competitive and of maintaining the independence of the traditional livestock farm.

Proposals for Consideration

With current technology, markets and prices, we appear to have around 25 million acres (land of present productivity) excess capacity in the feed grain plant. Whether one subscribes to continued government programs or the withdrawal of government programs from agriculture, some program of land diversion in the immediate period ahead appears desirable. If the present land retirement program in the feed grain area were abruptly withdrawn, unjustifiable economic hardships would occur in agriculture.
A less costly, more nationally efficient, program could be developed if we were willing to: (1) shift towards a grain-to-grass diversion program and use the grass, and (2) move more in the direction of doing this on marginal whole farms. If the grass were used, about 50 percent more acres would need to be shifted out of feed grains. The cost would be correspondingly less and we could more nearly meet the domestic demand for lean beef. Such a program would tend to shift the acres into grass that would occur under a free agriculture. It also avoids forcing overadjustment in the more marginal cropland areas. If it is anticipated that the government should or will withdraw from the land retirement program, then the adjustments that would take place under free prices should be encouraged before the withdrawal of the program instead of after withdrawal, to avoid the most hardship for agriculture.

As suggested by the National Advisory Commission on Food and Fiber we need to modify our grain storage programs. The Commission makes the following statement: "The Commission recommends establishment of a national security of strategic reserve, including emergency stock for food aid. The reserve should be isolated from the market except as offsetting sales and purchases are required to maintain the quality of the reserve stocks."

If reserve stocks are depleted and the government wishes to build up stocks, it would appear desirable that the government should announce at the beginning of the crop year what it will purchase if production reaches certain levels. They then should purchase this in the open market and not make the producers pay the cost of building up strategic reserves in the form of lower market prices. Complete information concerning carryover stocks and the terms under which stocks are acquired or disposed of should be made known to all as early in the season as possible. Definite rules for the management of the stocks should be established.

In order for the traditional grain and livestock producer to better compete with the large specialized livestock producing units and the nonproducer controlled integrated livestock organizations, he needs modifications in certain services.

1. He needs an improved pricing system. This is especially important in the case of cattle and to a lesser degree in hogs. The ultimate efficiency of the entire production marketing system depends largely on how rapidly and accurately price


data can be collected and analyzed with respect to desired grades, quality, and volume, and how rapidly and accurately producers, processors and others can evaluate and act upon this information. Some people believe we should have an enlarged and more effective price system based on the carcass and by-product market, and interpreted at various points on a liveweight basis so that producers and buyers have a more adequate basis for their transactions as the number of live animals sold on the central market declines.

2. The small livestock producer needs a stronger educational program in product identification. He needs to know the grade and quality of the livestock he has to sell so that he can correctly relate them to the pricing system and know what his product is really worth in the market. He needs to better know what the market is demanding so he can better produce for the market.

3. He needs better market supply and outlook information. Such information is particularly important to the traditional producer who markets his livestock only a few times a year.

4. He needs cooperatives or other institutions to represent him. Much effort over the years has been devoted to developing cooperatives and private institutions to assist the producer with his supply and marketing problems. They have not always been fully successful in meeting the livestock producer's need for localized opportunities to do forward selling. New approaches are needed and offer opportunities in today's changing environment. Many of the economies of the large units -- in comparison with the smaller producer -- arise from savings in feeding practices, purchase of feeds and livestock, and the marketing of livestock. To be more competitive the traditional commercial family farmer needs some organization to assist him with these functions.

Summary

If our goal is to maintain a reasonably stable, commercial family-farm oriented grain-livestock economy, the previously mentioned programs need to be given consideration and modified. The supply-demand situation and the structure of agriculture will continue to change and our institutions serving the grain-livestock economy must also be modified.