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James M. Gibbons
Iowa State University

Earl O. Heady
Iowa State University

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More About Choosing a Hog System

by James Gibbons and Earl O. Heady

THE COMING of vertical integration and multiple farrowing has led to a lot of speculation on the future of the hog business in Iowa. Some folks feel that all pork will eventually be produced on highly specialized farms — that contract farming with large swine operations and multiple farrowing systems will be the order of the day.

Will these things happen? The answer depends a lot on how different pork production methods fit best for most farms, we could individual Iowa farm. (See "What Hog System for You?" in the November issue, or reprint FS-835.)

If multiple farrowing—with up to six litters per year—were to fit best for most farms, we could have a rapid trend toward more specialization. The same might be true for contract arrangements. The extent, again, depends very much on how these systems will fit into the operations and plans of individual farms.

The "Secret" . . .

The "secret" in getting the best hog system for your farm is to

JAMES GIBBONS is instructor in agricultural economics, and EARL O. HEADY is distinguished professor of agricultural economics. A contribution from the Center for Agricultural and Economic Adjustment.

find the system that uses resources which won't give a higher return in any other part of your farm business. Your management skills and ability—as well as the money you have available—are important in deciding which hog system this will be. Corn production still is generally the top dog in Iowa farming, and it offers the most profitable use of resources on good Iowa cropland. Taking capital and labor out of corn and investing them in a different farm enterprise usually lowers income.

Results in Brief . . .

Here, in general, is what our latest study on hog production systems shows:

Average costs of production alone are a poor guide in deciding what to add to your farm operation—whether it's hogs or some other operation. So long as you have other operations to consider, too, you must divide limited funds, labor, land and other resources among them. And your management ability and skill can greatly influence your returns from any operation. That's why operators of different abilities don't organize their farms in the same way.

We've found that, within a wide range of conditions, fertilizing good cropland according to soil test recommendations should have a high priority for operating

funds. This practice gives some of the highest returns on farm-invested funds. It's generally more profitable and less risky to invest funds here than in nearly any other place in the farm business.

Once this is done, a high-volume one- or two-litter hog system (or the five-litter modification of the two-litter system) is about next in line so far as high returns go. You can also improve your use of roughage and pasture with these systems. Steer feeding gives a moderately high return.

Multiple-farrowing systems, such as the six-litter program, are next in line *if*—(1) after considering the first alternatives, you still have or can borrow more capital on a long-term arrangement and (2) you're certain you have the know-how and skill to carry out the details necessary to raise hogs with a multiple-farrow-



ing system. Many farm operators have found themselves short on the skills after they've already committed their capital.

Be sure, too, that labor needed for hogs in the spring and early summer won't interfere with your field work—confinement hog production isn't as profitable a use of capital and labor as is crop production on most Iowa farms.

A one-litter system gives relatively high returns to capital invested and, up to a certain volume, doesn't compete heavily for resources used in crop production. Hogs produced with this system usually sell at a lower price than hogs sold in July or August. But the one-litter system gives low-cost production—especially if you make top use of pasture and corn in the cornfield.

If your hog volume gets too large to use the cornstalks and available buildings, then consider a two-litter system or the five-litter modification. Also, the one- and two-litter systems can be combined to form a three-litter system which makes good use of resources. And if you have good buildings already available and still have some surplus labor time in the spring, you might find it profitable to concentrate on producing hogs for the late-summer market.

The Details . . .

Which hog system would be most profitable at different levels of capital and management under typical Iowa farm situations? Which hog system gives top returns for the farm as a whole—not just for the hog operation? The hog operation has to fit in with crop production, cattle feeding, calf raising and any of the other possible enterprises on Iowa farms. All these enterprises "compete" for limited funds, land, labor, feed, buildings, machinery and equipment, etc.

We tried to find the answers to these questions by a technique known as linear programming.

This technique can point up "benchmarks" or guides in finding the most profitable combinations of resources for typical farm situations. And such an analysis points up the changes possible when the amount of capital available is increased bit by bit or when the operator has below-average, average or above-average management ability.

The results can't be applied word for word or point by point to your farm or your neighbor's—even though the study is based on "typical" farms. There are bound to be some differences in the physical situation and facilities, managerial skills and preferences, etc. That's why the results are merely benchmarks or guides. The principles will still apply, but the exact breaking points will vary among farms.

Also, operator preferences—say, for hog production rather than cattle or calf feeding—weren't considered. The study does only what it was intended to do: to find the most profitable resource combinations at different levels of capital and management.

In setting up the programming, it was necessary to define carefully the "typical" farms and set up certain assumptions. We won't go into all the details here, but most of them will become clear as you study the farm plans.

Here, now, are the results as they worked out for three typical Iowa farm situations.

160-Acre Farm in north-central Iowa: This farm is considered to have an *average* manager and is located on the Clarion-Webster soil association. The farm has 150 acres of cropland; 10 acres in farmstead, lots, etc.; building space for 15 sows and litters and for 18 beef cows; and equipment enough to crop 150 acres. The building space can be used either for cattle or hogs.

When there's very little operating capital (less than \$2,600), the most profitable plan worked out to be a straight corn-corn-

soybean cropping plan without fertilization. When the operator has more capital to use, the plan becomes more profitable by fertilizing at fairly high rates according to soil test recommendations and by adding a one-litter hog system to raise as many hogs as the operator's May-June labor or capital will allow.

As operating capital increases past \$6,000, a change to a two-litter system becomes most profitable—along with a shift of some land to a corn-corn-oats-meadow rotation. It also becomes profitable at this point to hire some labor in May and June.

At the \$8,000 capital level, the most profitable combination calls for a shift back to a one-litter system. More forage is needed through a corn-corn-oats-meadow rotation on part of the land. Building space should be added so that hog production can be increased until all grain and forage produced can be fed.

240-Acre Farm in north-central Iowa (Clarion-Webster soil association): Here we considered that we have an *above-average* manager and one additional worker. Except for a larger acreage of cropland, the situation is the same as for the 160-acre farm.

At low capital levels, the cropping plan worked out the same as for the 160-acre farm. When a shortage of pasture limits the amount of hog production and when more capital is available, it becomes profitable to put part of the land in a corn-soybean-corn-oats-meadow rotation. This proves more profitable than investing in buildings and equipment for confinement hog production.

When pasture and buildings are used to capacity and when enough labor is available, it becomes profitable for the above-average manager to adopt a two-litter system, since less pasture and building space is needed.

160-Acre Farm in southern Iowa: The situation here is a farm on the Shelby-Grundy-Haig soil

association with 86 acres suitable for heavy cropping; 26 acres suitable for light cropping; 48 acres of permanent pasture and timber; and some buildings which could be used for housing hogs.

Yield increases from fertilizer in southern Iowa are smaller than from comparable applications in northern Iowa. So it becomes profitable in this situation to fertilize only at relatively low rates before starting to raise hogs. Then, with more capital, it is most profitable to add fertilizer to the good land and to raise enough hogs with the one-litter system to use the land and buildings available. This proves more profitable than cropping the poorer land.

Further changes, as still more capital becomes available, depend mainly on the ability of the operator. The above-average operator would come out best by feeding "short-fed" yearling steers and putting high-meadow rotations on the poorer soils before buying buildings to produce more pork. A below-average operator, on the other hand, would find it more profitable to keep a beef herd and to market the calves as feeders.

At high levels of capital, however, both the above-average and below-average operators would have similar plans for the most profitable combination. They'd both buy enough corn, hog buildings and equipment to raise as many hogs as they could handle with available labor — using a combination of the one- and two-litter systems.

The May-June period would be busy and would likely call for added labor. A skillful manager, who could obtain both the capital and labor needed, would find it profitable to increase the one- and two-litter systems enough to use all of the pasture available for hogs.

Why No Specialized System?

The results for the 160-acre farms in the two areas showed no advantage for the highly specialized hog systems with multiple far-

rowings. In both situations—and at different levels of operating capital and management — the one- and two-litter systems fitted in best for the general farm where gaining top returns for the farm as a whole was the goal. Crop production still gives the largest returns in Iowa on the basis of fairly limited capital and labor. The results were essentially the same for the 240-acre farm.

The highly specialized multiple-farrowing systems just didn't turn out to be most profitable for the farms as a whole—wherever crops represented an important source of income and when livestock production needed to be arranged so that labor and other resources could be used to best advantage.

Specialized Farm . . .

So far we've been dealing with general farms where cropland and crops are an important part of the resources and income. We have not considered the highly specialized hog farm where crops are a minor element of income and land represents only a small part of total resources. In this case, it's possible that "assembly line" production or multiple farrowing throughout the year would be the most profitable and best way to use labor, buildings and other capital equipment on hand.

Suppose the operator uses average management practices and is limited on funds. Suppose also that, providing he can obtain the know-how and capital for superior management systems, he adopts a specialized multiple-farrowing system. This might be the situation of some farm operators faced with the possibility of going ahead as they are (with average practices and limited capital) or of moving toward vertical integration.

Under these conditions, we found that specialized multiple-farrowing systems were the better alternative. But remember that the alternatives here are lim-

ited—(1) to go on farming with average practices and limited capital or (2) to use the specialized system as a means of getting more funds and the know-how for better practices from an integrator.

When we considered the case where an operator could switch to above-average practices and get more capital without having to go into specialized multiple-farrowing, we found the same answer as before: A combination of one- and two-litter systems for hogs, coordinated with crop production and cattle feeding, was still the most profitable.

In Total . . .

In total, it looks like the highly specialized multiple-farrowing systems don't fit into the most profitable plans for most Iowa farms. The secret in getting a hog system or combination of systems to contribute the most to net income on a Corn Belt farm is to fit the system so that it uses resources that won't give a higher return elsewhere in the farm business.

Your management ability and the funds you have available are important factors in determining which system this will be. Management ability is particularly important in deciding between steer feeding, calf production or hog production on a farm with a high proportion of rolling land. On good cropland, on the other hand, corn production is the most profitable use of resources. At the same time, a rotation of corn-soybeans-corn-oats-soybeans on part of a farm doesn't greatly reduce crop returns and does provide pasture and space for hog production.

It appears from our studies that the highly specialized multiple-farrowing systems will be used, if at all, (1) on specialized hog farms where cropland and the income from it is a minor element and (2) by operators using such systems as a means to acquire more know-how and capital from an integrator.