



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*Agriculture
Economic
Aspects
(Pt)*

6-7
Staff Contribution

GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY
WITHDRAWN

Miscellaneous Staff Contribution
of the
Department of Agricultural Economics

Purdue University
Lafayette, Indiana

**For information concerning additional available publica-
tions write: Librarian, Department of Agricultural Economics**

Can I Afford to Purchase a Bulk Tank?

Charles E. French
Agricultural Economics Department
Purdue University

My title mandates that I put myself in the farmer's shoes. Obviously, he is the one that must answer this question, be he co-op member or not.

The farmer's cow-barn economics, it seems to me, go something like this:

1. Man, that's a lot of money!
2. Can I ever pay for it?
3. Is it worth my bother?

In his first statement he is thinking that this is a lot of money relative to past investments. And it is. It may easily represent up to 10 per cent of the capital investment of some of our dairy farmers. But a good farmer today recovers quickly. He realizes that it is not so much the amount of money that he invests as how much he will get in return for it. Not all farmers think this way but a growing number of them do.

His next question, "Can I ever pay for it?", is a logical one. A farmer is a skeptic. Whatsmore he likes to pay his bills.

His last question, "Is it worth my bother?", really comes from three deeper questions in the back of his mind. First, "Will these dribbling savings be enough to pay for the tank?" Second, "Will I get anything for sending my good money after these promises?" Here, of course, he is touching on the whole problem of risk and uncertainty and what his discounted future earnings are worth to him. Third, "Will my money net me more here than elsewhere?" Here he has ahold of a good one. This

involves the fundamental concepts of marginal productivity of different uses for capital and his opportunity costs. Here his intuition is his main guide. All we can do is to give him our best data to weigh in his final management decision. Let us consider seriously his problem.

A Lot of Money!

First, I think we should be fair with the farmer that the cost is not for a tank, but for a system. More often than not there are expenses other than the tank. Electrical wiring, lane repairs, milk house remodeling and this type of thing seem to show up. The surveys on this often surprise me with the size of these additional costs. More than this, a bulk tank may penetrate deeply into an established system of management. In the farmer's mind, it may call for a pipe line, more cows, more building, more acres, or more of this or that. Show him the total cost.

Secondly, we were once satisfied if our good farmers would put capital expenditures in terms of depreciation. This was a big step in their economic education. Good farmers today think farther than just depreciation. They think in terms of annual use cost of capital equipment. Costs of ownership of bulk facilities, or any other capital expenditure, are more than just depreciation alone. The so-called "hidden costs" of interest, insurance, taxes and repairs must be anticipated whenever a capital outlay is made. For each year of use, about 5 percent of the initial investment must be added to cover these costs. This would mean that if a tank will last ten years, the annual use cost of that tank will not be 10 percent of the initial cost, but 15 percent. You are not far off in figuring the actual cost per year if you calculate the depreciation and then add about 5 percent of the initial investment. Twenty year tank life would mean an annual use cost of 10 percent; fifteen year tank life, 12 percent; 10 year tank life, 15 percent, etc.

Can I ever pay for it?

The first thing that strikes you about this question is that the answer must be found in many parts. Many savings are possible, but we cannot tell any one farmer precisely what his savings will be. The best that we can do is to delineate the areas in which he may get savings, check research and experiences, and let him push his own pencil.

It helps to divide the savings into two types - direct savings associated almost entirely with the farm and indirect savings some associated with the farm, some with the hauler, and some with the dealer.

Direct savings may be found in milk, labor, operating costs, can costs, and fat tests. Few farmers will save on all of them. Elimination of two sets of cans will save a little over a cent and a half per hundredweight. Some is saved on milk since the dealer must stand the stickage. This may mean two or three cents per hundredweight. Operating costs may be slightly lower, but you have to push your pencil pretty hard here. Some labor may be saved. But it won't be much. Tests may be up, but all of the claims here can't be backed up. As I study the research and talk with farmers, an average direct savings figure of 10 cents per hundredweight seems like the outside.

Indirect savings on the farm are hard to put in dollars. It is worth something to make the work easier. Farmers take pride in improved quality. However, I'm afraid that many times this is more aesthetic than economic. Herd sizes increase with bulk systems. For example, Ohio reported this week that in two of their markets, producers that have been shipping bulk at least two years or more have increased production by one-third over their last year of can production. This is probably typical. This should pay off. This may also bring with it certain improvements in management. However, in other cases management may break down as you put these additional responsibilities on it. The farmer will gain improved bargaining strength

if his co-op gets his milk on wheels. One manager tells me that this meant three cents per hundredweight to him last year. In fact, many small coops may find a bulk program the most effective means of prolonging existence.

Indirect farm savings can come in lower hauling rates. These savings will depend on the system followed in the particular market. Our research shows that a market that stays on daily pickup can actually expect hauling rates to go up (Table 1).

Table 1. Hauling Rate Increases for Daily Pick-up of Bulk Milk Instead of Cans, Evansville, Indiana.

Percentage of All Producers Using Bulk % Tanks	Percentage Increase in Bulk Hauling Rates Over Present Average Can Hauling Rates If:	
	All Producers Were Routed Together	Each Dairy Developed Its Own Program
5	207	394
25	40	77
75	17	34
100	24	34

Our research and observation of market operations lead us to believe that hauling reductions can be made with a well-planned program. However, again it is difficult to see more than 10 cents per hundredweight under most conditions. (Table 2). Individual hauling reductions will depend on how often the milk is picked up, whether the routes are developed by individual dairies or marketwide, and whether producers put in tanks at random or market segment by segment.

Savings discussed above in many cases will not pay for a tank. Thus, farmers look to dealer premiums. Dealer premiums are being paid rather widely and are quite variable. Here again we cannot make a blanket rule on how much a dealer can afford to pay. This will vary with the dealers and

the market. Our research shows that receiving costs of small dealers are much higher than many people realize. Such small individual dealers will continue to pay sizeable premiums to get one hundred percent bulk. The small dealer in a market with several larger ones has even more incentive to go one hundred percent bulk. He can skim off some good producers and improve his producer relationships in the process. Where there is a large dealer

Table 2. Hauling Rate Changes for Every-Other-Day Bulk Pick-Up Instead of Can Pick-Up, Evansville, Indiana

Percentage of Producers Using Bulk Tanks	Percentage Change in Bulk Hauling Rates Over Present	
	Average Can Hauling Rates If:	
	All Producers Were Routed Together	Each Dairy Developed Its Own Program
5	56 Increase	147 Increase
10	19 Increase	57 Increase
25	2 Decrease	10 Increase
50	7 Decrease	No Change
75	13 Decrease	6 Decrease
100	10 Decrease	5 Decrease

with no small ones around, the big dealer will resist conversion, and so would I in his case. A small coop must consider conversion seriously. Outside competition will usually force it. Bargaining position will usually depend on who gets the milk on wheels first. The particular producer pattern so far as size of producer will be to some extent a determinant, but in most cases the small coop has little alternative except to push. The large coop will usually have to move piecemeal. Producer relations will dictate this. The amount of fixed investment in surplus disposal and country receiving plant facilities will be a factor. I doubt that any large coop can continue to stay out much longer. The dealer premiums which result in all these cases will be determined primarily by the relative bargaining strengths of the groups that sit at the table. I doubt that we can give a more definitive answer than this.

Is it worth my bother?

I have developed a gadget which I think helps put the pieces together. Using the attached chart, let us assume that a farmer decides that his likely savings will add up to 25 cents per hundredweight. We locate this on the bottom of the chart. Now we look directly above this to the diagonal line which approximates this farmer's average daily production; for example, assume that he averages 325 pounds per day. Then by looking across on the side of the chart we see that these savings will support an initial investment of about \$2,000 for this producer. That's all there is to it.

Some producers may want to work the other way. For example if this producer knew his bulk system would cost him \$2400, he might like to know what savings per hundredweight would be necessary for him to break even. In this case he locates the \$2400 on the side, looks directly across to the diagonal representing his production (325 lbs.), and then looks directly below this point to find that this would take a savings of 30 cents per hundredweight.

The chart which I am using is based on a tank life of ten years. Some producers buying tanks on intermediate credit loans may want to write off the investment in three years. Such a chart can easily be constructed. Others may want to assume their tanks will last 15 or 20 years and want breakeven points for these periods. Such charts can also be devised.

Also I think you can do a service with this type of chart by showing your individual producers what it would mean to get their volume up so that they get a high percentage utilization of any particular tank. In our research we find that on every-other-day pickup, the average farmer is doing well to get more than 25 percent daily utilization of his tank. On daily pickup average utilization is less than 50 percent. By this chart you can show a man what different production levels will do to his possible investment within a certain tank size. The leverage on such an investment as this is more than realized.

This particular chart shed light on the farmer's question posed earlier, "Will these dribbling savings be enough to pay for the tank?"

The other question, "Will I get anything for sending my good money after these promises", is not so easy. The farmer has a real risk here. He knows that the first man in on a new innovation usually gains the most. He skims off excess profits before his neighbors come in to help drop the relative price of the good. The chart goes a long way in answering this. However, he must also evaluate his bargaining strength with his dealer and his hauler. Herein lies his real guarantee that the savings will hold up. To hold up over the life of one particular tank is not necessarily the whole answer either. Some of these days, this tank is going to have to be replaced. Incidentally, what this time is going to be is a question which is in dire need of an answer.

Another important point here hinges around the fact that the farmer must evaluate his bulk costs over the life of his bulk system against the can costs which he would have with his can system during this same time. Our research shows that can rates can be expected to go up rather rapidly after a market is as much as 20 or 25 percent bulk. (Table 3).

Table 3. Can-Hauling Rate Increases as Bulk Program Develops With Random Producer Adoption, Evansville, Indiana

Percentage of Producers Using Bulk Tanks	Percentage Increase in Can Hauling Rates	
	With Can Routes Consolidated As Rapidly As Possible	With No Consolidation Of Can Routes
5	4	5
10	11	12
25	22	35
50	56	114
75	177	252

Many of our Midwest markets are just now hitting this point. The real squeeze is going to be in the next two years. In other words, figure against where you are going to be not where you are.

One final question puzzles this farmer, "Will my money net me more here than elsewhere?" This is the most fundamental of farm management decisions. Many farmers, like the rest of us, tend to be a little short on dollars. Obviously, some farmers will be ahead to put bulk system dollars in more fertilizer, more cows, better feed, more land, or maybe more vacations. We have a responsibility to point out such alternatives.

\$7000

BREAK-EVEN POINTS BETWEEN VARIOUS INITIAL INVESTMENTS AND SAVINGS PER CWT. BETWEEN BULK AND CAN COOLING SYSTEMS, 10 YEAR TANK LIFE.

6000

How to Use: Select line with label approximating average daily production. At any point on this line the total savings on the horizontal axis will just pay for the annual use cost of the initial investment on the vertical axis.

5000

(Heavy dark lines represent the approximate daily production of the average Evansville, Indiana producer needing the tank size shown in parenthesis.)

4000

(Not for publication)

3000

2000

1000

Additional Investment Possible for Bulk

10

20

30

40

Total Savings Per Cwt. Between Bulk and Cans (Cents)

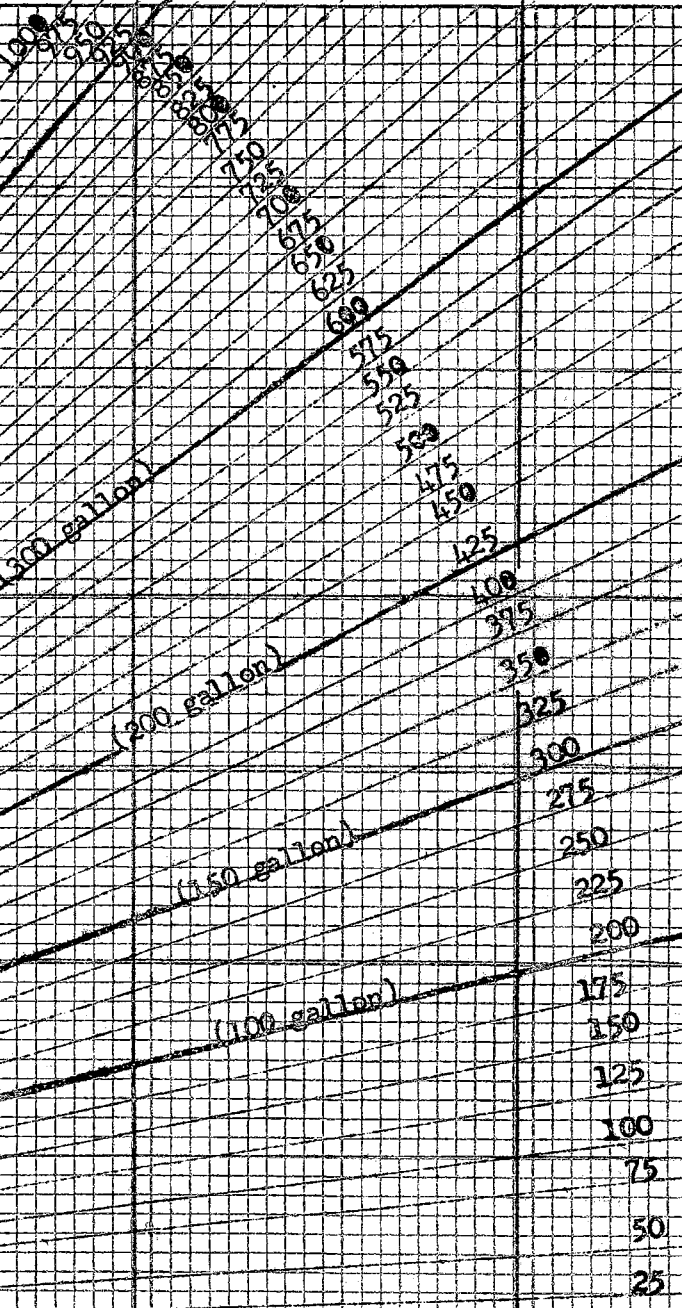
(400 gallon)

(300 gallon)

(200 gallon)

(150 gallon)

(100 gallon)



PURDUE UNIVERSITY

APPROVED FOR USE IN

FORM E