



LIBRARY

MAR 16 1993

UNIVERSITY OF IDAHO

A primer on costs

J. F. Guenther and B. B. Davis

Agricultural production costs include costs for items such as seed, fuel, machinery, land, and labor. Understanding costs can help you increase profits, and recognizing differences between types of costs is important.

Types of costs

Four cost categories are discussed in this publication: (1) costs based on their cash or noncash characteristics, (2) costs in relation to units of comparison, (3) costs based on degree of fixity, and (4) costs in relation to the function performed.

Costs based on cash or noncash characteristics

A cost is defined as a charge that should be made for something used to produce a product. It may or may not involve an out-of-pocket payment. Costs based on their cash or noncash characteristics include:

Cash costs — Cash payments for fuel, fertilizer, seed, repairs, and similar items are easily recognized as costs of production. These costs are paid either with cash or borrowed money.

Noncash costs — Other cost items such as unpaid family labor and equipment depreciation do not involve actual cash payments. It is easy to overlook noncash items, but they are real costs of production and should be included in a farm business analysis.

Depreciation — A grower who constructs a \$50,000 storage and handling facility and pays cash at the time of construction is making an investment. The structure will deteriorate and eventually be torn down with little or no salvage value. The building will be used for years, so it would not make sense to charge the entire \$50,000 against the business during the year it was built. The bookkeeping method used to charge this cost over time is known as "depreciation."

Opportunity cost — Opportunity cost is another important cost that is often misunderstood. There are opportunities to use labor, land, and capital (money) in a number of ways to earn a profit. Suppose you have a \$10,000 savings account that is earning 5 percent annual interest. The "opportunity cost" for using this money for another use is the \$500 of interest ($\$10,000 \times 5\%$) you would not receive. The enterprise being considered should return at least the \$500 or you would have been better off leaving the money in the bank.

Of course, other things such as crop rotation, management ability, and experience should be considered when selecting enterprises, but opportunity cost is important in many decisions. You should not only ask, "Will this expenditure of money, labor, or land be profitable?" but also, "Would I make a larger profit if I used these resources some other way?"

Costs in relation to units of comparison

It is important to compare the same units when analyzing costs. Five different measures are discussed below.

Total cost per farm — Total cost per farm is easily understood. Total fuel cost, total fertilizer cost, and total feed cost are examples, but by themselves are not very useful. The fact that a grower spends \$20,000 on fertilizer in a year is interesting, but unless we know the kinds and acreages of crops grown, yields, and a number of other things we can't say whether it was enough, too little, or too much. Even if total farm costs can be identified for a specific enterprise their use is limited unless tied to the size of business.

Average cost per acre — Costs per acre may be useful when making management decisions. Per-acre costs of labor, machinery, seedbed preparation, weed control, and harvesting are all important. Growers can compare the costs of doing something themselves



University of Idaho

College of Agriculture

with the cost of hiring someone else to do it. For example, it may be cheaper to hire someone to harvest your hay than to own and operate your own hay harvesting equipment.

Average cost per unit of production — Costs per unit of production show costs in relation to results. They are useful in business analysis because prices can easily be compared to costs of production. For example, the costs per pound of producing raspberries can easily be compared to the price per pound.

Marginal cost — This is the added cost from an increase in production. An example is the increase in total costs when a grower increases blueberry production by an additional 1,000 pounds. The key to analysis is the word "added." If the added costs are less than the added returns, profits can be increased by expanding production. You should also look at opportunity costs before making the decision. Can this marginal cost be used somewhere else in the business to increase net income even more?

Marginal cost per unit of input — This cost term is a slightly different concept. It refers to the added cost for using an additional unit of an input. An example is the added cost of cultivating sweet corn an additional time. As with the marginal cost concept above, the key word is "added." You should compare added returns with added costs when deciding how to use scarce resources.

Costs based on the degree of fixity

Fixed costs — Fixed costs occur no matter how much is produced. They include taxes on land and buildings; interest on the investment in land, buildings, and machinery; insurance and depreciation on buildings and machinery. The total cost of these items would be the same even if production doubled. The fixed costs per unit, however, would be reduced because they would be spread over more production.

Understanding the relationship between fixed costs and size of business can help you make profitable decisions. Determining per-unit fixed costs is an essential part of making decisions involving the purchase of machinery, equipment, and buildings.

Variable costs — These costs vary with the amount produced. The costs of seed, fuel, machine repairs, fertilizer, and weed chemicals are examples of variable costs in crop production, while hired labor, feed costs, veterinary expenses, and marketing expenses are examples of variable costs of livestock production.

Several lessons can be learned by understanding the difference between fixed and variable costs. First, expanding production while keeping the size of farm and size of equipment the same can increase profits by spreading fixed costs over more output (making more efficient use of fixed resources).

Second, many growers try to cut their per-unit costs of production by substituting larger equipment and machinery for labor. They are substituting higher fixed costs (depreciation, interest, and property taxes on machinery) for lower variable costs (wages and repairs). You should be careful that additional fixed costs do not exceed savings in variable costs.

Third, you should never incur variable costs unless you can generate enough income to cover them. Consider an apple grower who has a small amount of poor quality fruit that has not been picked. The picking and marketing costs will be \$50 per bin and the current market is \$40 per bin. Should the grower pick the fruit and incur the picking cost? Obviously not; the grower would lose an additional \$10 per bin by picking the poor quality fruit. Losses are cut by not picking it.

Costs in relation to the function performed

Growers can be confused by constantly hearing they should cut costs of production, yet also spend more for fertilizers, pest control, and greater mechanization. The following discussion of costs should shed some light on this apparent contradiction.

Costs of performing necessary functions — Some costs are for items required in the production process: seedbed preparation, weed control, and harvesting, for example, in crop production; and feeding, sanitation, livestock handling, and manure handling in livestock production.

We usually think of these functions as not influencing the quantity of production if they are done right. You should select methods that will perform these functions at the lowest cost per unit of production. For example, the livestock producer should select the feed handling method that will get the job done at the lowest cost per animal.

Income-stimulating costs — Other costs are for items used to increase the quantity, improve the quality, or increase the market price of the product. Pest control, storage facilities, and irrigation are examples of these costs. Growers should approach these costs differently and not try to minimize them, but look at them in terms of added returns versus added costs. For example, growers considering irrigation should estimate added yields, better quality, and increased income in relation to added costs.

Some of these items, such as construction of storage, are all-or-nothing propositions, while others, such as irrigation water, can be used in varying amounts. The same principle should be used in both cases. Items that can be used in varying amounts should be analyzed at different levels. For example, how much would be added to costs and returns by increasing the

irrigation application from 9 to 10 inches per year, from 12 to 13 inches, from 15 to 16 inches, etc.? Irrigation should be increased until the point is reached where the money used for additional water application would earn more somewhere else in the business.

Income-associated costs — Still other costs are directly associated with the volume of production. The larger the size of business or the higher the yields, the higher these costs will be. Income-associated costs are different from income-stimulating costs in that they are the *result* of the level of production, whereas income-stimulating costs *influence* the level of production. For example, the total amount spent by a farmer for marketing raspberries (transportation, commission fees, etc.) is directly associated with the amount sold.

Sometimes production costs are directly influenced by yields or level of production. For example, if a custom grain harvester charges a per-bushel fee rather than a per-acre fee, harvest costs are determined by yields.

Summary

In farm business analysis and decision making, all costs should not be examined the same way. Growers who understand cost structure and how to analyze costs and returns are likely to make higher profits than those who don't.

For further reading

To order copies of this or other University of Idaho College of Agriculture publications, contact the University of Idaho Cooperative Extension System office in your county or write to Agricultural Publications, Idaho Street, University of Idaho, Moscow, Idaho 83843-4196 or call (208) 885-7982. Idaho residents add 5 percent sales tax.

The authors — **Joseph F. Guenther**, Extension agricultural economist, and **Bruce B. Davis**, former research associate, University of Idaho Department of Agricultural Economics and Rural Sociology, Moscow. The authors gratefully acknowledge Fred E. Justus and Charles L. Beer for permission to adapt *A Primer on Costs*, University of Missouri Extension C788, August 1963.

*The Alternative Agricultural Enterprises publication series was supported
by a grant from the Northwest Area Foundation, St. Paul, Minnesota.*

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914,
in cooperation with the U.S. Department of Agriculture, LeRoy D. Luft, Director of Cooperative Extension System,
University of Idaho, Moscow, Idaho 83843. We offer educational programs, activities, and materials without regard to race, color,
religion, national origin, sex, age, or disability, in accordance with state and federal laws.

