

SQUARELY TOWARD THE FUTURE

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Where is your company headed with respect to profits, costs, and prices? Can you plan for a given profit? Yes, you can!! Planning is a never-ending responsibility and opportunity: determining the company's goals and the organization and people required to attain them. Planning faces you squarely toward the future.

Planning cannot be done in a vacuum. Facts must be available for plans to be made, facts about your business and about the business world that affects your business. Among these facts must be what you expect to be spending for the goods you produce and sell.

Do we want to consider procedures to determine costs? Do we want to consider what 1-gallon plants, peat, containers, etc. cost me and you and you? Do we want to consider standardized costs for the industry? Do we want to consider what to do with the data we have? Many other questions can be raised — but enough!!

For this discussion I intend to cover, first, a general procedure for looking at costs; second, some procedures for estimating costs; and last, some aspects of the use of cost data in pricing decisions.

The Data System. Before going on to a discussion of costs, let's take a look at data. You and I are aware that it costs money to obtain data. *It matters not whether the data are costs of production, inventory, or accounts receivable over 30 days.* Therefore, we must decide whether collecting the data is financially worthwhile. Why collect the data? Is it because it's important to be able to pull out and display this information? Is it because we will use it for making decisions? These are two valid reasons, and there are others. We should recognize that the first reason costs us money without financial return.

How do we decide how much data to collect? This problem can be approached from the viewpoint of refinement of data and focusing upon where cost decisions can be made.

Systematically, in any data collection system we start with rather gross data. Then we refine the data to suit our needs. For example, first estimate of the cost of production is to take the yearly profit and loss statement and allocate costs to the total number of items sold. Certainly this estimate of cost is gross

and inadequate, but it is a method. Then we can break down to species, block or any other desired unit. In this way we are refining our estimate of true cost of production for a given item.

Next, we must determine what meaningful decisions can be made. A decision whether to substitute machines for labor in some operations, for example, requires collection and analysis of data. This would be true when considering replacing people with machines for hauling plants. On the other hand, because a machine cannot replace people for plant pruning, data collection would not be considered for this operation. This does not mean, of course, that we cannot look at the tools used in pruning, the influence of size of planting, various ways to pay labor for the operation, etc.

You and I are aware of the term GIGO: "Garbage in, garbage out." Too often, because of a system's complexity or because of disinterest on the part of those supplying the input numbers, a lot of useless data gets into our system and comes out of it to garble the decision-making process. The simpler the system of getting and properly recording data, the more likely the numbers will be at least precise enough for our purpose. For example, keeping records by blocks may be meaningful, while keeping records by individual beds results in garbled data.

A data system requires collection and computation. First, someone must observe and then record the information — I have six workers, and we each spent 3½ hours pruning junipers. Second, all of the different pieces of information or bits of data must be compiled. During the month of May, 86 hours were spent making 2150 cuttings at a total direct labor cost of \$30.10. How often the observations are made, the forms used to record the data, the business machines to be used to compile the data, the persons responsible for recording the data, the persons responsible for compiling the data and the manner in which the data are displayed to you — these are the parts of the system you develop for your own needs. Obviously the more detailed and complex the system, the more people will be involved — and the more people involved, the more likelihood of GIGO. Obviously too, the more complex the data system, the more alarms you install in the system to make certain the output is within tolerance limits.

The Nature of Costs. At the end of each month, or at least at the end of the fiscal year, you receive a profit and loss statement from your accountant. The various expenditures are grouped into three categories: cost of goods sold, cost of selling, and administrative costs or overhead. As we look at each line item, direct production labor, taxes, telephone, etc. we realize

that each item has a relation to level of production. Some items — direct production labor — vary directly with the amount of production. The more we produce, the more we must spend on this item. Some items would remain the same even if we did not produce and sell a single plant — taxes and administrative salaries, for example. Also, some items vary partially with the level of production and selling: we pay a basic charge for telephone and electricity but the more we produce, the more we use we make of these; thus, the more we must pay for them. We categorize these items of costs as being *variable* (those that vary directly with the amount of production or sales), *fixed* (those that are essential to “keep the doors open” even without sales), or *semi-variable* (those that are partially influenced by amount of production and sales but also are partially essential to keep the doors open).

There is another way of looking at these same financial data. Bergfeld, Earley and Knoblock (1) emphasize planning for profit and separate costs items as *constant*, *programmed* and *variable* costs. *Constant* costs are the basic business expenditures necessary to do business. Taxes, top management’s salaries, and insurance are examples. *Programmed* costs, although appearing to be fixed in connection with current operation, are those incurred because management has made a deliberate decision to attain a goal. Examples are costs of developing new product lines and the equipment required to produce them. These costs can be raised or lowered at the discretion of management from one budget period to the next. *Programmed* costs can be further subdivided into *specific* (cost associated with one sector or product) and *general* (cost to improve the entire business such as research departments). *Variable* costs vary directly with volume of production and include materials, direct labor and labor expenses and selling commissions.

The costs of running your modern nursery are complex and varied. Some costs are incurred to increase sales volume. Some costs are incurred to reduce other costs. We realize that profit is not realized until all costs are covered by sales revenue. How available cost data are used in the decisions on pricing and expenditures depends on our approach and appreciation of costs in relation to output.

Methods of Determining Costs. Each of you has had many opportunities to hear and read how others are determining costs. For example, there are the reports by Thomas Pinney, Jr. (2), Earl Robinson, Jr. (3), and Ralph Shugert (4) in Volume 24 of the Proceedings of our Society. Special manuals on specific crops (5, 7) and reference books (6) also have sections on determining costs.

The first approximation of cost of production is to take the yearly P&L statement and determine the cost of the units sold by dividing total cost by total units. Even with factoring to give different size containers their proportionate cost, this estimate is very gross and not very useful.

A refinement of this approximation is for management to allocate cost by some common unit such as fields, blocks, species or container size. The layout of the nursery and the organization will be considerations. If the nursery is laid out in blocks with a manager for each block, then this becomes a reasonable basis because the manager of the block can be charged with the responsibility of data collection. Records can be kept on the use of resources by blocks, and the costs of the units produced in the block can be determined. Managers can expect costs to vary between blocks depending on size, species, form of plant, etc.

Unit costs have been a concern of nursery managers. Many items of cost are dependent on size of the blocks, number of units produced or some other variable. For example, the efficiency of labor in pruning plants, as measured by the number of plants pruned per man hour is dependent upon, among other factors, the shape of the plant, the plant species, the size of the plant, the number of plants in a bed, and the arrangement of the plants in the bed as well as the tools used and the ability of the laborer. Unit costs must reflect these factors, and they become complex to determine. The question to raise is how meaningful the knowledge of unit cost is to management decisions.

In determining production and marketing costs, nursery managers are allocating all of the cost items to the various sizes and types of products produced and sold. The method of allocating constant costs must be determined. And the procedures for determining variable costs must be established and followed. These are the two most worrisome aspects of determining costs, because we often feel uncomfortable with our procedure — we feel we should be able to do it better, simpler and more accurately.

At this point let me interject the thought that if we concentrate more attention on profit, then many of our hangups will disappear. We will look at cost in relation to profit later.

Constant costs are generally allocated to individual products on a space and time basis. The justification behind this is that these costs continue at the same level whatever the size or product and that many of these costs are charged to the business on a space basis — the real estate taxes we pay are on the basis of the size of the area, for example. The size aspect — 1 gallon vs. egg container size for example — is usually factored

or converted to a "common size." One gallon equivalent is a useful concept, where on a space-occupied basis an egg container has 2½ one-gallon equivalents. Thus, each egg container would accumulate 2½ units of constant cost for the same time that a 1-gallon container accumulates 1 unit of constant cost.

Direct variable costs of labor, materials and sales commissions are often computed by taking necessary data off of sales slips, invoices, etc. Total direct labor can be computed from time cards.

Many problems arise when management wants to determine where labor was spent among the numerous jobs needed for the production of plants. Among the alternative procedures for determining this information are: (1) keeping a continuous and detailed time chart on each individual, and (2) using industrial engineering and time and motion procedures to estimate the true time spent at various tasks.

Both procedures are used, depending on the situation. Even when continuous records are kept, management often wants to analyze certain operations in detail, using time and motion techniques, with the objective of eliminating inefficiencies. This holds for production labor, office work, management duties and all aspects of a company's operations.

Cost in Relation to Price. You generally use one of two approaches for pricing products:

(1) You consider that the marketplace establishes the price and go along, even when certain companies are considered to be price leaders.

(2) You price on the basis of "cost-plus," that is, you calculate the cost of production, add on selling and administrative costs, and then add on a profit percentage to establish the selling price.

Market reaction to price is important; you don't have to passively and slavishly accept this price. Within the latitude allowed by market reaction to price you can actively establish price for profit and growth.

The "cost-plus" approach assumes that each unit sold would be contributing a percentage of the sale price as profit (Table 1). Only if the predicted volume is sold will the profit be the same as planned. The income above direct variable costs for the first units sold would contribute towards covering constant and programmed costs (Table 2). Only after the break even point is reached will profit begin to accrue from each unit sold. The percentage of profit will vary with the number of units sold (Figure 1).

Table 1. Cost-plus methods using assumed data to price nursery stock.

	per 1-gallon container
Materials costs	\$0.258
Direct labor and expenses	.226
Production overhead	.070
Total production cost (cost of goods sold)	0.554
Selling costs	.129
Administrative costs	.066
Total cost	\$0.749
Profit @ 15% of total cost	.112
Selling price	\$0.861

Table 2. Cost analysis for the procedure of pricing for profit.

		Percent of Sales
Selling price	\$0.861	100
Direct Variable Costs (Vary with volume)		
Material	.258	
Labor	.226	
Selling commission	.083	
Total	\$0.567	66
Margin contributed to cover constant and programmed costs and contribute toward profit	\$0.294	34

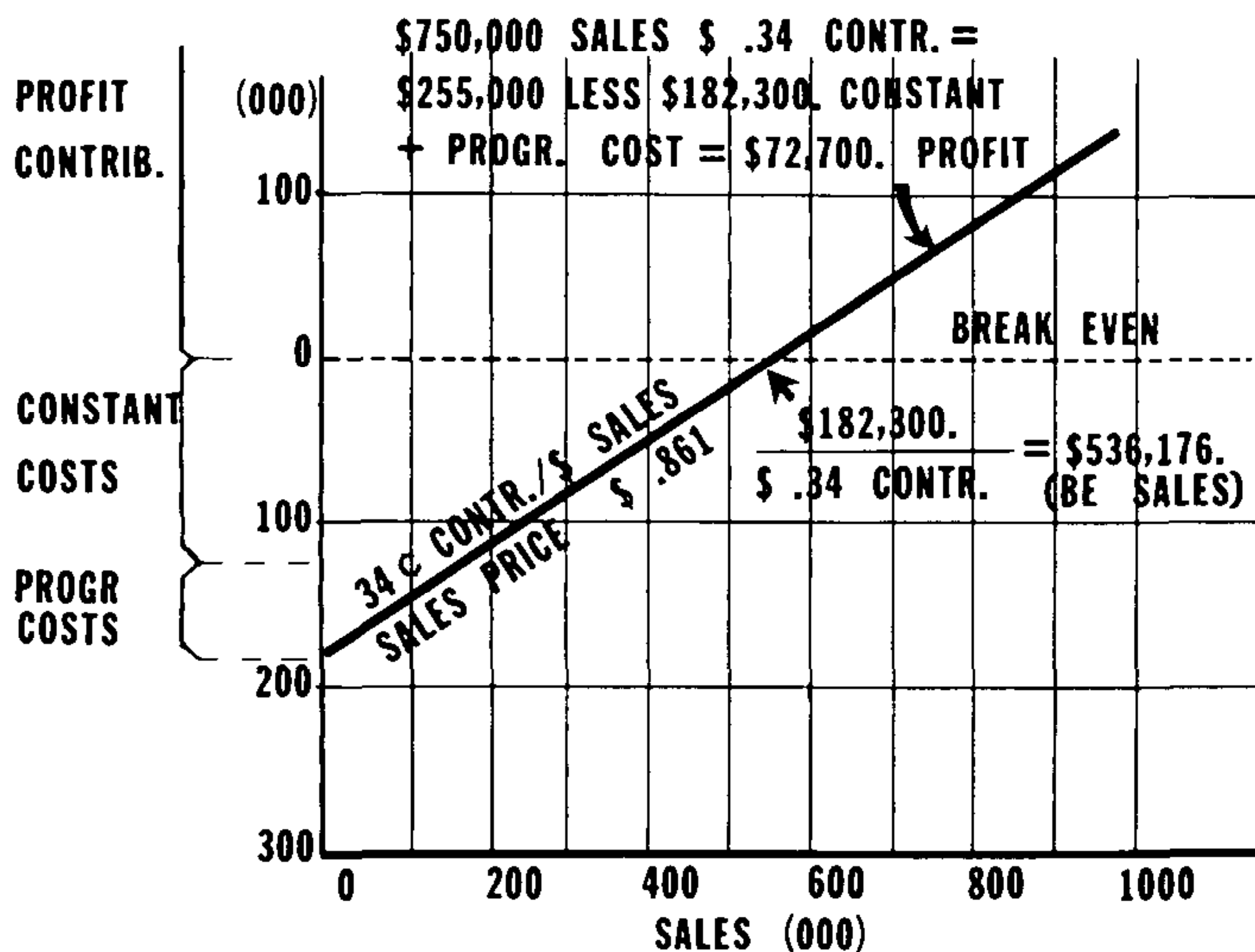


Figure 1. Interrelation of cost, price, volume and profit using data shown in Table 2.

This assumed nursery will require a sales of \$536,176 to break even. If its sales totaled \$750,000, profit will be \$72,700 for a profit of 10.7%.

From this chart (Figure 1), it is evident that the first units sold do not contribute profit to the nursery. Only after 622,532 one-gallon containers are sold at \$0.861 each will each additional sale of a one-gallon container contribute profit.

Likewise, it is possible to see that changing the sales price changes the contribution rate (Figure 2). The slope of the revenue line and the break even point change. The number of plants the nursery must sell to gain \$72,700 in profit, or 15% profit, changes as well.

By predetermining the dollar profit desired and knowing costs, you can calculate how various prices will influence the total volume of sales needed to reach the profit goal. Then you can examine the marketplace and determine the price most likely to allow you to reach your profit goal.

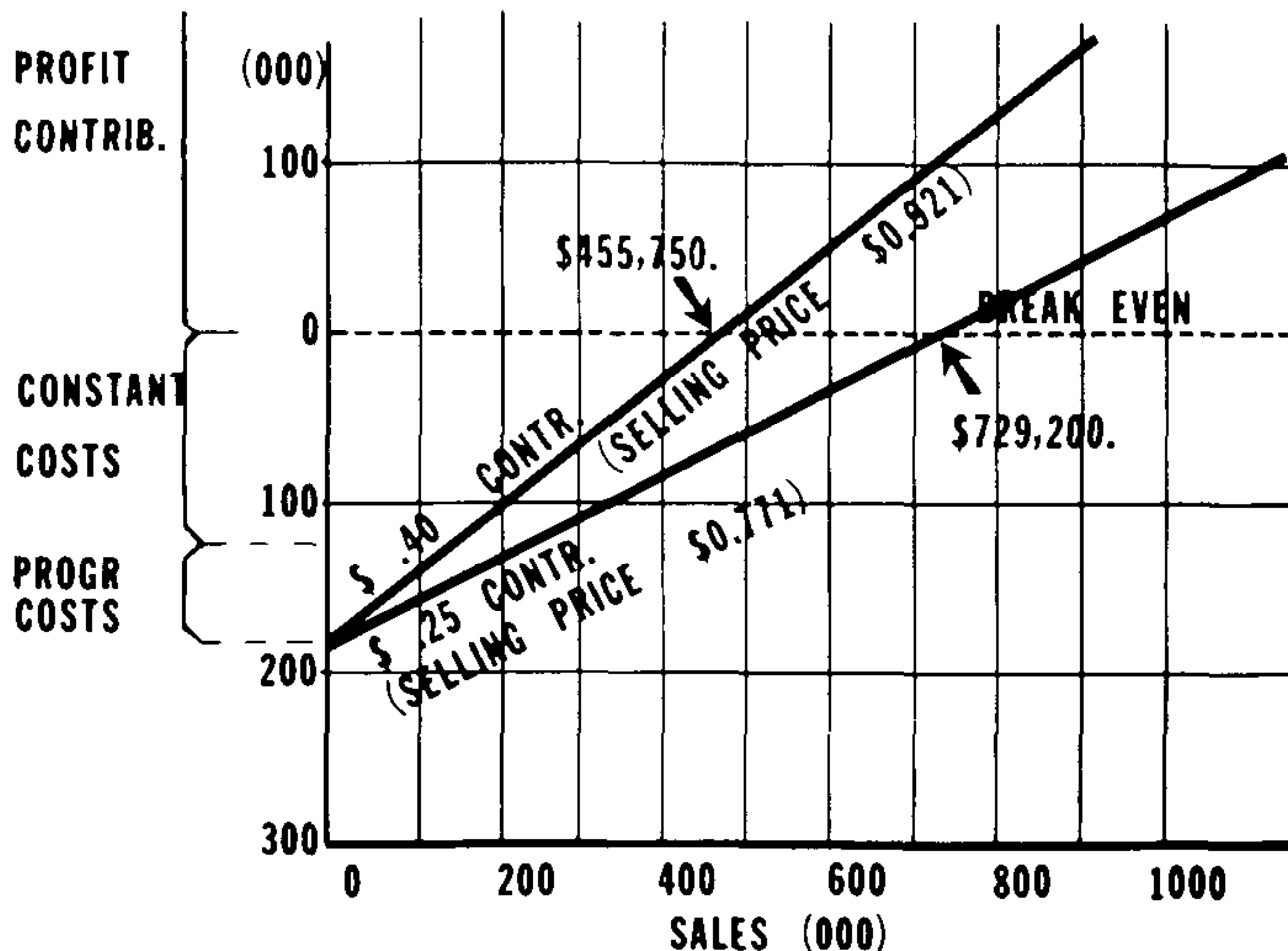


Figure 2. Influence on profit of changing sales price.

This concept of pricing on the basis of direct cost and planned profit is described more fully by Bergfeld, et al. (1), and Lennon (8).

You are Unique. Obviously we want to make our nursery more profitable, and we want to use data to make better decisions. In this regard, we should select the key indicators of performance (KIP) that would immediately tell us when things begin to go bad. We should watch these KIP constantly and

closely. Margin contributed could well be a KIP of value.

In this paper, I have not attempted to give you specific procedures to determine costs. Each of you is unique, and you manage a unique nursery. Thus, you must develop your own procedure to meet your requirements.

Costs and data system you use to determine costs must be related to other activities. Often these other activities — pricing for profit for example — can have a more profound influence than simply knowing costs.

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