Cost of Production

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In our Agribusiness Incubator Program, we have provided a variety of business consulting services to over 300 client agribusinesses over the past eight years. One of the most common services we find ourselves providing is helping clients determine their Cost of Production (CoP). This is due to the fact that knowing your CoP is important for a variety of reasons I'll discuss below, combined with the fact that the vast majority of our clients do not know what their CoP is – in fact, most who have taken the time to calculate what their CoP is are off by a wide margin!

What is Cost of Production?

Simply stated, it is the cost of providing one unit of whatever you are selling. It is expressed in dollars per selling unit such as $3.57 per pound or $5.03 per bunch, depending on how you sell your product (by pound or by bunch).

Why is it so important to know your CoP? Calculating your CoP can help you:

- Forecast profits and cash flow - Estimate annual revenues and expenses.
- Know your Breakeven Price - How much you need to sell your product for at a certain quantity in order to cover costs.
- Know your Breakeven Volume - How many products you need to sell at specific price to cover costs.
- Focus cost reduction efforts - Identify items where reducing their cost will have the biggest impact on the CoP.
- Determine product mix – Compare the profitability of a product against others.
- Easily see the impact of changes – See how changes in input costs or selling price affect profitability or breakeven levels.
- Determine pricing – Know the minimum you can sell your product for, affecting pricing, volume breaks / buyer negotiations, and sales promotions.

In our experience, finding out their CoP is an eye-opening exercise for our clients that often provides them with the confidence to raise prices and adjust their product mix, and is a key contributor to our record of almost tripling our clients' average profitability.

Calculating your Cost of Production

Super Simple Just-to-open-your-eyes Method:

Divide your total business expenses from last year by the total quantity you sold (example: $42,000 / 30,000 pounds = $1.40 per pound). This is much less useful when you sell more than one type of crop, but this simple calculation can result in a "wow" moment for our clients.

Simple Cost of Production Method:

This may not seem simple, but it is actually quite workable if you know how much you pay for things and how much goes into your production. Clients of our Agribusiness Incubator Program receive assistance with a more complicated version of what I'll describe below.

Your CoP includes both the Direct Costs associated with producing the product (seed, fertilizer, water, field labor, machinery time, etc.), as well as an allocation of the Indirect Costs (office, advertising, insurance expenses, etc.). It also includes the cost of capital expenses for which you aren't currently making payments on but need to include in the cost of production.

The first thing to understand is the difference between Direct Costs, Indirect Costs, and Capital Costs and record the expenses.

DIRECT COSTS - Costs directly associated with the production of a specific crop and varies proportionally with the amount planted. Includes expenses such as: Field labor, seed, packaging, fertilizer, water, pesticides, etc.

INDIRECT COSTS - Expenses required for the business to operate but not associated with a specific crop and typically do not vary greatly by volume of crops planted. Examples include: Utilities, insurance, advertising and marketing, bank fees, office supplies, etc.

CAPITAL COSTS - Capital Investment "Costs" are similar to annual depreciation, and reflect those items that are used beyond one year and cost more than $500. Although we may not buy a capital item in a particular year, we account for the fact that it is a cost of doing business (we bought it in the past and we will likely have to replace it in the future) by simply dividing the original cost by the number of years of expected use.

Allocating Non-Direct Costs: With multiple crops, allocate a percentage of Indirect Costs to each crop. The allocation percentages in %E and %F will total 100% and usually represent relative acreage for the crops. For example, if Crop takes up three acres and Crop 2 takes up one acre, then Crop 1 would be allocated 75% of the indirect costs and Crop 2 would be allocated 25%.

Add the Direct Cost and the allocated other costs and divide that by the number of units you expect to sell (not just grow) for a crop, and that is your COP for one selling unit for that crop.

Sales Price per unit is the *average* sales price for one unit of that crop. So if 70% of the bunches of watercress are sold wholesale at $1/bunch, and 30% is sold at the farmers' market at $2/bunch, then the average sales price is $1.30/bunch ($1 x 70% + $2 x 30%).

Determine your Contribution Margin by subtracting Direct Cost Per Unit from the Average Sales Price.

Determine Breakeven Volume by dividing the Total Non-Direct by the Contribution Margin. This is the number of units you need to sell in order to break even.

Direct Costs per Year	Crop 1	Crop 2
Labor (plant, spray, irrigate, harvest, pack, etc.)		
Materials (fertilizer, water, seeds, pesticide)		
Total	$A	$B

Indirect Costs per Year

Machinery and equipment	
Utilities	
Insurance	
Rent	
Administrative labor	
Other Business Expenses	
Total	$C

Capital Investment "Costs" per Year

Tractor	
Vehicle	
Total	$D
Total Non-Direct ($C+$D)	$N

Allocation percentage by share of acreage (totals 100%)	%E	%F
Total Allocation of Non-Direct ($N x %E or %F)	$G	$H
Total Crop Cost per Year (Direct Cost + Total Allocation) (e.g., $A+$G)	$I	$J
Crop Sales per Year (in selling units, e.g., pounds, bunches, cases)	K	L
Cost of Production (Total Crop Cost / Crop Yield) ($I/K or $J/L)	$P	$Q
Sales Price per unit (average selling price)	$R	$S
Direct Cost Per Unit ($A/K or $B/L)	$T	$U
Contribution Margin ($R-$T or $S-$U)	$V	$W
Breakeven Volume (K/$V or L/$W)	X	Y

For additional information

CTAHR Cost of Production publications: Many worksheets have been developed by CTAHR. Go to Publications and Information Central and search "cost of production."

http://www.ctahr.hawaii.edu/site/Info.aspx

Hawaii Agribusiness Guidebook

http://www.oahurcd.org/hawaii-agribusiness-guidebook/

Hawaiian Agricultural Products: Economic Analysis

http://hawaiianagriculturalproducts.com/

Rutgers Methodology for Calculation of Costs and Returns of Production

http://aesop.rutgers.edu/~farmmgmt/ne-budgets/methodology.html

Manitoba Budget Guidelines and Guidelines for Estimating Costs of Production

http://www.gov.mb.ca/agriculture/financial/farm/caf00s03.html

Saskatchewan Production Economics

http://www.agriculture.gov.sk.ca/production_economics

My Agriculture Information Bank

http://www.agriinfo.in/?page=topic&superid=10&topicid=234

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Agribusiness Incubator Program

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