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# Evaluating the economical return of health program

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More and more veterinarians are involved in production and economic decisions (choice of genetics, modification of building or production flow, marketing decisions, etc.). Unfortunately, veterinarians often lack proper understanding of production microeconomics and don't use adequate economical tools to evaluate different options. We often make decisions based on incorrect economic assumptions. Those decisions, at best, may endanger our credibility and, at worst, cause our other producers to make flawed economic decisions. That is what we call economic malpractice.

As production evolves into a more integrated system and, increasingly, focuses on consumer needs and preoccupations, a veterinarian needs to integrate economical and political aspects with medical and technical evaluations into his or her decisionmaking processes when making a recommendation regarding a preventive and/or therapeutic program. Not only do we need to understand the impact of our recommendations on performance costs, and—ultimately—the profitability of the enterprise, but also on food safety, the environment, and animal welfare.

## Understanding the microeconomics of pig production

Although we have been discussing production economics in meetings for a number of years, only a fraction of veterinarians really understand the microeconomics of production. Before going to an MBA class to increase your knowledge on macroeconomics and marketing strategy, you must first understand a farm budget. Being able to put the numbers your producer gives you into an economical model is not enough. You need to understand enough of the farm budget to be able to recreate it starting from scratch or to create your own economical model. A good starting point is to read the Howard Dunne Memorial lectures of AASP 1992 (Joe Connor) and AASP 1993 (Camille Moore).

There are a lot of good commercial software programs (Biofin, Porkplan, and others) available on the market and, through swine meetings like this one, we have many opportunities to learn how to use them effectively. But, like anything else, you need to practice to become comfortable with an application. You need to “play” with that

program as often as you can, making sensitivity analyses by changing feed cost, building cost, interest rate, and market price to see the influence of different parameters on the overall profitability of the enterprise, etc. Go to the extreme with your evaluations, so that you will better understand the effect(s) of each factor.

## Understanding the production system

Understanding the production system goes far beyond the physical evaluation of the production scheme. Of course, knowing the design of a production system and how it flows is an important factor in determining its potentials and limitations. You also need to understand the philosophy and mission that drives a company:

- Are they pig, pork, or food producers?
- Are they producing seedstock animals?
- What are the economic parameters used by the company?
- What are their views on food safety? The environment? Animal welfare?

Try to understand the reasons behind those positions.

## Determine the cost of production of the enterprise

### Determine capacity and performance

- building capacity
- inventory
- pigs sold/sow inventory/year
- average daily gain (zootechnical)
- turn per year or lb. meat sold year (economic)
- feed conversion

### Determine their costs

- animal (sow, weaner, feeder pig)
- feed facilities/utilities
- labor

- nutrients
- management
- taxes
- interest
- depreciation

## Determine the revenue

### Throughput

- production bottleneck
- weight (weight in, weight out, and ADG)
- space utilization

### Carcass price

- base price
- weight
- lean
- condemnation/trimming
- quality and safety criteria
- niche market

## Create the starting hypothesis

Use the preceding steps to create the base hypothesis of the production system in an economical model. You must use a program that allows you to make a partial budget or sensitivity analysis for your different options. A partial budgeting technique calculates the value of an intervention as a change in net income

$$\text{Net income} = (\text{additional income} - \text{reduced expenses}) - (\text{reduced income} - \text{increased expenses})$$

A sensitivity analysis allows you to change different variable inputs to be weighed against the starting hypothesis. Using a sensitivity analysis allows you to determine the effect(s) a certain controllable and uncontrollable variable has on the profitability of the intervention. I use a sensitivity analysis principally to determine the limit value of a specific variable (market price, feed price, fixed cost price, etc.) that gives an acceptable return on the intervention.

If you don't find a spreadsheet that suits you, you can create your own in Microsoft Excel, Lotus 1-2-3, or Corel Quattro Pro. This is a good exercise for developing an understanding of production economics. You probably want to show it to a person skilled in production economics for a "test drive" before using it in the real world. Ingredient and market price need to be forecast for the period covered by your health program.

## Assumptions

This is one of the strategic steps in successfully planning a health program. The challenge is to determine as closely as possible

- what is the cost of the disease?
- what is the cost of the intervention?
- what will be the effect of the treatment?
- what are the other factors to consider?
- what are the risks associated with the treatment?

It is important to determine what is the cost of the disease in mortality and reduction of performance. Whether you apply a curative treatment, a preventive treatment or simply a growth promotant program, you also need to estimate, as precisely as possible, the expected outcomes of that intervention on performance, cost and profitability. To do so, you need to do:

### a literature review

Be careful when gathering information to select papers that fit as closely as possible the situation you are dealing with (geographic location, production system, and genetic factors, etc.).

### evaluate KPI (key performance indicators)

I consider it very important to use production data before and after the appearance of a problem, ideally that information should be incorporated into a statistical process control chart to determine the effect of the disease on

- throughput (ADG, weight spread, lb. sold per year)
- expenses (feed, pig, labor, mortality)
- revenues (weight, condemnation, premium, others)

Direct costs are usually easy to determine when we allocate a cost for a treatment and a direct labor to administer it. Unfortunately, intervention often has indirect costs and confounding factors that make it very difficult to evaluate the true cost of an intervention.

The other factors to consider are the one that we traditionally don't put in the equation for the evaluation of an intervention. The importance of those factors will vary greatly from one system to another.

### Compliance

The program could be the most cost effective; however, if the application is too difficult then the level of conformity to the program will be low and it will fail. The ease of application and the willingness of producer/employee/

contractor to comply with the program are as important as the efficiency of the program itself. This is more of a challenge when you work with employees or in segmented production systems where interventions are done at one level but the benefits are seen at another.

### **Food safety, animal welfare, and environment**

The absence of drug residue and food-borne pathogens is important for all producers, but especially for the integrated producer up to retail seller. Many of those producers sell a label product at an added value or to export market. Those producers always search for ways to differentiate their product and food safety assurance is a good way of gaining market. Often medication intervention in those systems will have a potentially negative side effect associated with the risk of drug residue in the meat that can impair the penetration of a lucrative market. We use risk analysis, or the probability of occurrence times the potential losses compared to the potential benefit of the treatment, to determine if the treatment is justifiable or not.

Environmental and animal welfare effects are increasingly considered when responding to the consumers' growing concerns; these concerns are also used by some as a marketing tool to penetrate a specific market. In that regard, if a product can be seen as beneficial by improving growth and feed efficiency, it reduces the amount of waste produced and a preventive treatment will reduce potential suffering of the animal. This, in general, is considered as an added value to a program but is not economically weighed in the production equation. We need to be careful not to over emphasize the benefit of those points, because it could be a double-edged sword.

Often, decisions on large-scale medication programs are taken by committees, where production and financial aspects are evaluated very closely. Considering the critical importance of that step, it is often wise to consult a specialist from a university or pharmaceutical company to give you more information and audit your performance assumptions and expected outcomes.

### **Determine an acceptable return on investment**

An intervention is like an investment and the decision to apply it or not is not only based on the return that that intervention will garner for us, but also on quantitative (performance, cost of production, profitability) and qualitative (worker safety, welfare, environment) measures. All of the previous steps need to be integrated in that process. A general rule is that low-cost, low-risk interventions need a lower return (25–50%) than a high-cost, high-risk solution (150–300%). Those levels are variable and arguable depending on the system you are working with.

The acceptable level needs to be set with that company's decisionmakers.

In that same step, we usually use a sensitivity analysis to determine the limit value of an uncontrollable variable (market price and feed cost) that allows an acceptable return on treatment. In a positive market, increasing livability has two positive impacts, one is reducing the cost of production (true feeder pig cost=feeder pig cost at entry/livability), the second is on throughput (selling more pig with a profit). In a negative market, the pigs saved will be sold at a loss and that loss will reduce the advantage of reducing the cost of production. In general, a program that improves feed efficiency and ADG will present a higher return when the market is high, feed cost is high, and space is limited. As feed costs and market hog prices go down, those improvements will have a much lower impact on profitability.

### **Use a standard format**

"Sometimes it's not necessarily what you say, but how you say it that matters." That statement can be true to a certain extent when you present health program recommendations. An unprepared presentation; the lack of written material to support your presentation, or the underlying assumptions and benefits; and the lack of a standard format, will confuse people and will make you look unprofessional and diminish your credibility. Take the time to prepare a clear and professional presentation, and use a format known and understood by everyone in the company.

### **Conclusion**

Veterinarians must play a strategic role in health program decisionmaking and implementation. To do so, they must use their diagnostic, scientific, and production skills. They also need to develop and use economic communication and leadership skills. All of the above are necessary to develop the program that best fits the production system and to 'sell' it to that system's decisionmakers and implementers.

No longer can veterinarians hide behind their diplomas to decide by themselves which medication program to use. If they do so, they will isolate themselves and be used only as a health technician and regulatory officer. Preventative medication program decisions need to be made as a team, where all decisionmakers and implementers are involved in the process. A team decision will increase the ownership investment and compliance with the program. If a veterinarian is not able to sell the program to the team, she or he is usually at fault. If he or she wants to be successful, he or she needs to apply all the steps to all aspects of production in the cost:benefit evaluation

By doing so, veterinarians will be consulted for other decisions because their approach is logical and fits the realities of the production system. They will earn respect. They will earn credibility and their circle of influence will grow.

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