Economics of Synchronization

Marginality, Profit, and Decisions

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Topics for this talk

- Marginality: what is it and how does it apply to decision making
- Profit defined
- Stringing effect on lactation curves
- Economics of reproduction for grazing
- Potential solutions
Scenario: you operate a pig farm and sell feeder pigs

- current average costs/pig are $40
- current average price/pig sold is $35
  - You lose $5 per pig sold
- During the monthly herd visit, your veterinarian notices a newborn baby pig with a hernia.
- You normally euthanize these pigs at birth, since they do poorly and most die anyway.
- Your veterinarian says she’ll fix the pig (guaranteed!) for $10.

Should you let the vet do the surgery?
The Tale of Two Pigs

- EUTHANIZE THE PIG
- $0 revenue
- $0 expense
- $0 profit

Courtesy of Dr. John Fetrow, U Mn
### The Tale of Two Pigs

- **DO SURGERY**
- $10 for surgery
- $10 for starter feed
- $2 for labor
- $1 for vaccine
- **$23 total costs**
- **$35 revenue**
- **$12 profit**

Courtesy of Dr. John Fetrow, U Mn
The Tale of Two Pigs

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Courtesy of Dr. John Fetrow, U Mn
WAIT A MINUTE!!?

• The farm loses $5 on average on every pig in the operation, and you’re saying that by spending $10 extra on one extra pig the farm make more profit??

• YES!, because this is not an average pig, it is a MARGINAL pig!!!

• It doesn’t have to pay the mortgage, utilities, insurance, manure disposal, etc.
  - (its profit actually does help pay those costs)

Courtesy of Dr. John Fetrow, U Mn
This is the message:

• The highest rate of profit is made at the margin, at the last bit of production, the last animal tended to, the final productive input.

• A farm's financial averages are made up of the outcome of a series of marginal decisions.

• The **aggregate** is the sum of a series of **increments**.

*Previous average profitability is irrelevant to the decision being made.*

Courtesy of Dr. John Fetrow, U Mn
Marginal Analysis / Partial Budgeting

- project the expense of the next increment of input
- project the revenue that input will generate
- marginal profit = marginal revenue - marginal expense
Marginal Analysis: how real decisions should be made

For each decision, the average performance up to that point is not relevant. What matters is the incremental cost and income that results from the decision.

Courtesy of Dr. John Fetrow, U Mn
Marginality and decisions

• Decisions are made for lots of reasons
  - perceived need and urgency
  - ease of implementation
  - cash flow
  - personal preference, habit, tradition, anecdote
  - relationships
  - reliability
  - other “intangible” value (e.g. consulting inputs, access to other products, etc.)
  - etc.

• The purpose of an economic evaluation is to inform the decision maker, not to make the decision.
How do we grow economically?

Price × Quantity - Cost = Profits

- Milk Quality
- Locked Milk Price
- Cost Efficiency
- Cows
- Yield/Cow

Buy Cows And/OR Growth Them

Direct - Change Shape of Lactation
And/or
Indirect - Reproduction, Culling

Marginal Analysis
Reproduction is the key to seasonal calving systems
Calving Dates

Herd 1
Milk Solids, lbs/day
(assumes 5% lactose + ash)
A Simple System

Forage Yield

CS Perennial

Clover

WS Annual

CS Annual

Feb Apr Jun Aug Oct Dec

Courtesy of Dr. Scott Poock, U Mo
Lactation Curve by DIM

cows calving in Feb, March and April

Courtesy of Dr. Scott Poock, U Mo
Lactation Curve by month
cows calving in Feb, March and April

Courtesy of Dr. Scott Poock, U Mo
Overlay Lactation and Pasture

Courtesy of Dr. Scott Poock, U Mo
Is reproduction worth improving?

How do you get from the biological program to economics?

What is the value of a pregnancy, the cost of missing grazing days, or the payback from an improved pregnancy rate?
First 3 Weeks Rates

Consortium of doctors

Submission Rate
Conception Rate
Pregnancy Rate

Courtesy of Dr. Scott Poock, U Mo
Synchronization Program

• Late April, set up 100% of the cows with a program that provides highest conception (eg. Show-Me Synch)
• Tail paint and breed on standing heat for next 28-30 days (thru late May)
• Pregnancy check cows at 28-30 days
• Resynchronize open cows with a high conception protocol (eg. CIDR Synch)
Cumulative Percent Pregnant

- Heat Herd
- Synch Herd
- Simulation

Dates:
- 1/31/2014
- 2/10/2014
- 2/20/2014
- 3/12/2014
- 3/22/2014
- 4/1/2014
- 4/11/2014
- 4/21/2014
Reproduction is the key to seasonal calving systems

Consider the Art of the Possible