Economic value of a dairy cow and optimal replacement policies: Part 2

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Rationale
A cow represents the whole herd dynamics

Cabrera (2012)
Basic principals of calculation
Aggregated herd economics

Herd net return ($)
Aggregation of individual cow’s net return

Cabrera (2012)
Herd value calculation
Online decision support tool

$1,969/cow per year
Average net return of a cow in the herd according to herd production, reproduction, and economic variables

Cabrera (2012)
Herd value
Practical decision-making

Calculate the value of improved reproductive performance
Herd value difference of reproductive efficiency

E.g., value of improving 21-d pregnancy rate from 15 to 20% is $50/cow per year
Herd value
Practical decision-making

Calculate the value of decreased culling rate
Herd value difference of changed culling rate

E.g., value of decreasing culling rate from 40 to 35% is $19/cow per year
Herd value
Practical decision-making

Calculate the value of increased productivity
Herd value difference of changed rolling herd average (cow average production in a year)

E.g., value of improving RHA from 10,900 to 12,300 kg/cow per yr is $295/cow per year
Herd value
Practical decision-making

Cost of culling and mortality, $/cow per yr

Culling rate, %

$42/cow-year
Herd value
Practical decision-making

![Graph showing the relationship between Culling rate (%) and Average DIM. The graph indicates a decrease in Average DIM with an increase in the culling rate.]
Herd value
Practical decision-making

![Graph showing relationship between Days to conception and 21-d PR, %]

- Days to conception vs. 21-d PR, %
- 14 days

Days to conception

21-d PR, %
Herd value
Practical decision-making

![Graph showing the relationship between 21-d PR and pregnant cows percentage.](image-url)
Herd value
Practical decision-making

![Graph showing the relationship between 21-d PR and reproductive cull percentage. The graph indicates a downward trend, with a point at (25, 5%) highlighting a specific value.]
Herd value
Practical decision-making
Herd value
Practical decision-making

Net return, $/cow per yr

Milk price, $/kg

- $881
- $1,316
- $1,751
- $2,185
- $2,620
- $3,055

- 0.25
- 0.3
- 0.35
- 0.4
- 0.45

$1,086/cow-year
Herd value
Some questions

Reproduction vs. culling
Economically, how much increase in 21-d PR equals to 5% increase in culling rate:

Threshold increase to 30 kg/d
What happen with herd net return?
Increase or decrease?
How much?
Thanks