

Age at First Calving: The Dollars and Sense

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Reducing age at first calving (AFC) is better, right? Or is it? The dairy industry understands calving heifers in after 24 months costs producers money; however the national average is 26.7 months. It has been well examined and clearly exhibited that when heifers AFC is greater than 24 months, it costs the herd owner a significant amount of money. It is estimated each month after 24 costs the farm between \$50 and \$75 per heifer.

Therefore, a 100-cow dairy with 35 heifers calving per year at 25 months instead of 24 months loses over \$2000 in out-of-pocket dollars. That figure does not account for problems associated with overweight heifers and the increasing need for heifers as herd replacements. However, a debate exists about reducing AFC and its economic advantage.

To reduce AFC does not mean simply breeding one month earlier. Heifers must have the physical ability to conceive earlier. Failure to achieve adequate body size before breeding can result in decreased milk production and increased dystocia. Table 1 describes optimal body size for Holstein heifers.*

Breeding efficiency plays an important role as well. If heifers are large enough to breed at 12 months of age but do not conceive until 16 months, the accelerated growth becomes a disadvantage as heifers have tendency to become obese. Obese heifers create endless problems in a freshening program. They are more prone to ketosis, displaced abomasums and poor feed intake during the transition.

Table 1

Optimal Body Size for Holstein Heifers at First Calving			
	Average	Low	High
Body weight (lb.)	1366	1312	1422
Wither Height (in.)	54.9	54.2	55.5

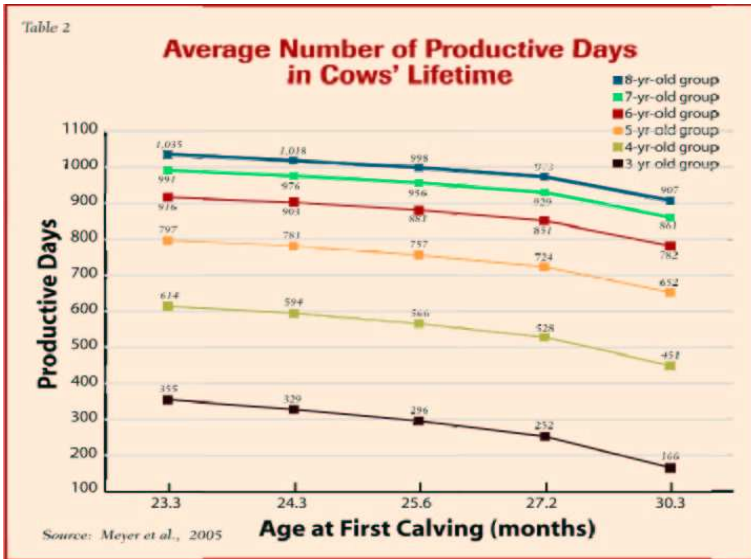
Source: Hoffman, P.C., 1997

Economics of Calving Age

The economics of AFC are very challenging to quantify. We all know there are many factors that affect a cow's productive life and lactations. Simply stated, there is not a linear relationship between AFC and profitability.

In 2002, St. Pierre analyzed data from three studies to determine economically optimal AFC. His work considered net present value over time; for example, \$1 today is worth less than \$1 five years ago. His summary concluded the economically optimal range for AFC was 20.6 to 22.4 months.

Ettema and Santos (2004) analyzed AFC on 1,993 heifers. They created three AFC groups - a low group (22.3 months AFC), a medium group (23.7 months AFC) and a high group (25.9 months AFC). The high and medium groups produced significantly more milk in the first lactation. In examining number of days open, it was found the low group spent significantly more days open than the medium group. Interestingly, Ettema and Santos observed no



differences in calving difficulty scores between the three groups. Health and death events were similar across the three groups as well.

When Ettema and Santos conducted the economic analysis, no significant differences were found, which implies no single AFC has a distinct economic advantage over the other. They did not consider net present value over time, as St. Pierre had. If it would have been considered, Ettema and

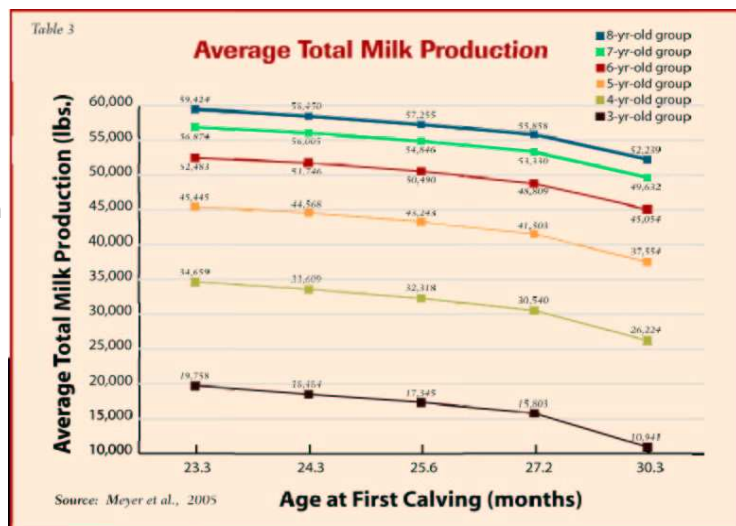
Santos' outcome would have shifted the economic advantage to the low AFC group (average 22.3 AFC).

Recently Meyer et al (2005) looked at over 2.5 million cows from 937 herds. Of these cows they created six age groups, each with five different AFC groups. They found the most obvious benefit of reducing AFC is its effect on the number of productive days in a cow's lifetime. Total productive days of cows in each AFC group can be found in Table 2.

In Conclusion

Meyer et al combined productive days with the cow's lifetime milk production. Table 3 illustrates this benefit. Heifers in the three-year-old group that freshened at 23.3 months produced nearly twice the amount of milk as compared to those who freshened at 30.3 months. This increase shows a distinct advantage, which is difficult to ignore and appears to be consistent in other studies.

Reducing AFC seems to have an advantage over extended AFC. The main disadvantage is a reduction in first lactation milk yield, in younger-calving heifers. Despite the lower first lactation, overall lifetime production is greater in animals with earlier AFC. Also any loss in first-year milk production can be offset by a reduction in replacement feed, housing and veterinarian costs, as well as less total animals needed for replacements.



A goal to reduce AFC to 22 to 23 months appears to be a fiscally sound decision. To achieve this goal, however, proper heifer management is a must. Extended AFC (> 24 months) is an economically unwise decision and biologically unjustified.

Reducing age at first calving is better, right?

RIGHT...profitability can be maximized by lowering your herd's age at first calving.

Author Bio: Roy Wilson has established experience in dairy genetics and reproduction. After undergraduate work at University of Wisconsin-River Falls, Wilson completed dual master's at UW-Madison in animal breeding and reproductive physiology.