MANAGEMENT STRATEGIES FOR POSILAC® USE FOR DAIRY HERDS

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Introduction

POSILAC, bovine somatotropin has passed the first phase of its introduction and we can now look back on 23 months of continuous use in the U.S. dairy industry and make some definite conclusions. First, consumers increased their consumption of dairy products. In fact, as shown in Figure 1, dairy product consumption in the U.S. increased. Second, widespread use of POSILAC in the dairy industry did not result in catastrophic health effects on cattle as assessed by the Center for Veterinary Medicine in its annual reports. Furthermore, there were no health effects reported to the Center that were unexpected. Third, the milk yield increase reported by producers approximated what was found in clinical trials and the average producer saw a 9-10 lb response with some reporting more and some less. Finally, some producers started cows in late lactation rather than in the 9th week of lactation due to several factors. Producers unfamiliar with the product were concerned about effects on reproduction and calving interval. Cull cow prices were extremely low and encouraged producers to keep cows in production as long as possible. Producers saw POSILAC as a way to take fat off low-producing overweight, late lactation cattle. Objective of this presentation will be to examine some of the strategies employed relative to POSILAC use including the decision of whether or not to use it in a given dairy herd. Also, we plan to demonstrate that using the product according to label is the best strategy.

To Adopt or Not to Adopt

The first strategy producers had to assess was the most difficult for many. Should I try POSILAC in my dairy herd? Politics aside, many producers were concerned about the economics of use in their herd and recapturing their investments. After all, dairy producers are in business to make money and cash flow is always tight in a dairy operation. Two studies have now been published which evaluated this question. The first, published by Galligan, Chalupa and Ramberg (1991) in the Journal of Dairy Science prior to approval used the economic costs of Type I and Type II errors, Figure 2, associated with decisions regarding use of sodium bicarbonate and bST on dairy farms. They concluded that the economics of response favored both for use in dairy herds. A second study, published by Knoblauch, Smith and Putnam (1995) of Cornell was based on data from participating dairy herds in the Cornell University Dairy Farm Business Summary (DFBS). Approximately 400 New York dairy farms participate in the DFBS and were utilized as a random sampling of various adoption rates of POSILAC use including the decision not to adopt. Data on farm financial performance for 1993 and 1994 were included. Financial information from 1993 would have been prior to any POSILAC use in a dairy herd. This data is summarized in Table 1. Adoption of POSILAC use in dairy herds was associated with increased production, increased labor efficiency and reduced feed costs per cwt/milk. Interestingly,

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although veterinary costs were increased in 1994 relative to 1993 the biggest increase occurred in herds deciding not to adopt POSILAC use. Most importantly, profit in these operations increased with POSILAC use and this was increased substantially above 25% in-herd use rates. Clearly, there was no evidence that adopting POSILAC in New York dairy herds was associated with increased veterinary costs.

How Many Cows Should be Treated in a Herd at Any Given Time

In-herd use rates vary substantially due to different strategies regarding start times, selecting cows to be treated and views on returns at different feed and milk prices. Table 2 evaluates profit at different Florida milk prices, feed costs, in-herd use rates of 30, 40 and 70% and responses of 6, 9 and 12 lbs per day. Clearly, all of these factors affect cash flow and profit. However, cash flow and profit are maximized at 70% in-herd use rate. Furthermore, milk response and in-herd use rate have larger impacts on cash flow and profit than do milk price and feed costs. This is demonstrated in Figure 3 which is a diagram of the sensitivity analysis for POSILAC use in Florida dairy herds. Note the range in profit per cwt of milk that is produced when response ranges from 6 to 12 lbs, in-herd use varies from 30% to 70%, milk price varies from $12.50 to $15.00 and feed costs vary from $0.12/lb to $0.08/lb. Given an average response, it is clear that if management in a given herd is sufficient to use POSILAC it should be used on every available cow to maximize profit. We adopt the same strategy with 3x milking. If a herd adopts 3x milking they generally milk every cow three times a day for the same reason, to maximize the return on the investment. If producers follow the label and start cows in the 9th week of lactation, they will reach a maximum in-herd use of 85%. The main factors which appear to be reducing this level of in-herd use are concerns about reproduction and cow body condition. However, in both cases the concerns are over estimated. In fact, in the case of body condition, starting cows later in lactation is potentially creating the very problem a producer is trying to avoid.

Body Condition Management

Good nutritional management is key to maximizing milk yield, body condition and reproduction in a dairy herd and POSILAC use does not change that relationship. Many producers are concerned about using POSILAC beginning in the 9th week just after peak milk when body condition is low. Part of their concern is that cows will take longer to restore their body condition. This is a fact since milk yield will initially be increased without concomitant changes in feed intake. However, starting in the 9th week of lactation gives a producer and the dairy cow maximum time to restore body condition before dryoff. Some producers began POSILAC use by treating only their late lactation cows. These cows may have been in good body condition but they had been put on late lactation rations and in some cases had insufficient time to restore body condition used the first eight weeks of milk response to POSILAC before dryoff. In addition, in many cases the ration density of the cows was not changed even though their milk yield increased. The end results were cows drying off at higher than desired production levels and with half a body condition score less than the producer wanted. These cows will eat more in their next lactation and likely produce less milk as they work to get back to optimum body condition. The perception of the producer might be that he lost his POSILAC response in the second lactation or that his cows are producing less than expected at peak. The best strategy for managing body

condition is to start cows in the 9th week of lactation and continue until dryoff. This permits the producer and the cow to maximize their opportunities to dry cows off at desired levels of production and desired body condition.

Reproductive Management

The other primary reason for starting cows later than the 9th week are concerns about reproductive performance of the dairy herd. For many years, the dairy industry has targeted a 12 month calving interval as optimum to maintain individual and herd performance. The optimum period between successive calvings (calving interval, CI) is a function of the shape of the lactation curve, replacement calf value and future potential survival in the herd, Ferguson, 1995. This assumes that the dry periods are identical. However, in many cases a major cost in addition to the CI is the number of days dry. Extended dry periods are costly since the cow is nonproductive and requires maintenance, feed and health costs. Key issues then are days dry, calving interval, slope of the lactation curve and survival rate. In studies where all cows started in the 9th week of lactation there was no effect on days dry, a 10 day increase in CI and the slope of the lactation curve was altered in a positive direction. Survival rate in dairy herds is generally improved initially as cows remain at higher levels of production. However, for purposes of this presentation we will assume no effect on survival or calf value. Figure 3 demonstrates that at an average milk yield response of 9 lbs per day and a 9th week start that CI could be increased by 30 days without affecting average production per day. This is three times longer than the average CI for cows starting in the 9th week and clearly indicates that too much emphasis is being placed on CI concerns in POSILAC-treated dairy cows.

This does not mean that reproductive management is not important in dairy herds. If a dairy herd has reproduction issues that are impacting performance, they should be solved prior to starting the herd on POSILAC. However, if a dairy herd has an average conception rate and CI then every eligible healthy cow in the 9th week will maximize profit.

Summary

If a dairy herd has a rolling herd average above 10,000 lbs, a 13.5 month CI, an average bulk tank somatic cell count below 400,000 and no outstanding disease issues, then every available cow should begin treatment in the 9th week. Estimation of response should be made on a group basis with at least 25 cows per group. If the estimated response falls below 6 lbs/day, the herdsman and/or herd owner should work with their nutritional consultant and the POSILAC Technical Service Field Team to determine what is limiting the response.

References

Ferguson, J. D. 1995. Bovine Somatotropin: Effect on Reproduction. In: Proc. 2nd Western Large Herd Dairy Management Conf. M. Gamroth (Ed.). Las Vegas, NV.

Galligan, D. T., W. Chalupa and C. F. Ramberg, Jr. 1991. Application of Type I and II Errors in Dairy Farm Management Decision Making. J. Dairy Sci. 74:902-910.

Knoblauch, W. A., S. F. Smith and L. D. Putnam. 1995. Dairy Farm Performance with bST Supplementation. Cornell University Dairy Farm Business Summary. p.4.

Table 1. Performance of Farms Not Adopting and Adopting bST, New York, 1993 and 1994

	Level of bST Usage					
	Did not use bST 137 Farms		≤25% of Herd 24 Farms		>25% of Her 85 Farms	
Selected Factors	1993	1994	1993	1994	1993	19
Size of Business						
Avg. # of cows	89	93	100	104	237	
Avg. # of heifers	69	70	76	81	178	
Milk sold, lbs.	1,600,654	1,658,515	1,963,535	2,102,733	4,676,475	5,
Worker equiv.	2.77	2.76	3.51	3.63	5.94	
Total tillable acres	276	280	321	327	558	
Rates of Production						
Milk sold per cow, lbs.	17,926	17,918	19,570	20,259	19,716	
Hay DM per acre, tons	2.34	2.62	2.70	2.97	3.14	
Corn silage per acre, tons	14	16	15	16	16	
Labor Efficiency						
Cows per worker	32	33	29	29	40	
Milk sold per worker, lbs.	578,626	599,933	559,810	578,787	787,789	
Cost Control						
Grain & conc. pur. as % mlk. sls.	29%	28%	28%	26%	29%	
Dairy feed & crop exp./cwt. milk	$ 4.58	$ 4.65	$ 4.69	$ 4.47	$ 4.68	$
Labor & mach. costs per cow	$ 1,004	$ 1,015	$ 1,096	$ 1,132	$ 962	$
Oper. cost of prod. milk per cwt.	$ 10.07	$ 10.24	$ 9.78	$ 10.20	$ 10.42	$
Vet. & med. exp. per cow	$ 52.63	$ 57.86	$ 96.43	$ 99.37	$ 84.19	$
Cap. Effic. (avg. per cow)						
Farm capital per cow	$ 6,763	$ 6,670	$ 7,092	$ 7,401	$ 6,108	$
Mach. & equip. per cow	$ 1,343	$ 1,330	$ 1,335	$ 1,356	$ 1,003	$
Asset turnover ratio	.41	.43	.45	.46	.52	
Profitability						
Net farm inc. w/o appr.	$ 29,836	$ 32,627	$ 43,955	$ 44,495	$ 79,528	$
Net farm inc. w/ appr.	$ 37,946	$ 39,600	$ 55,353	$ 57,952	$ 97,884	$
Labor & mgmt. inc. per op/mgr.	$ 3,899	$ 5,675	$ 8,594	$ 6,637	$ 20,604	$
Rate return on equ. cap. w/appr.	1.52%	1.96%	2.19%	2.31%	5.99%	
Rate return on all cap. w/appr.	3.14%	3.48%	3.43%	3.73%	6.21%	

From: Knoblauch, Wayne A., Stuart F. Smith and Linda D. Putnam. 1995. Dairy Farm Performance with bST Supplem Cornell University Dairy Farm Business Summary. p4. Cornell University

Table 2. What is POSILAC Impact on Profit on This Farm?

		Per Cow/ per Month	Extra Margin per CWT	Cash Flow per Month	Profit per Year	$ Back per $1/w POSILAC
	This Farm As Is*	8.27	+.17	+3309	39,702	
If...	20% Higher Feed Costs	6.17	+.13	+2464	29,623	1.48
	20% Lower Feed Costs	10.67	+.22	+4269	51,223	1.84
If...	Lower Overbase Milk Price (9.50 net)	5.27	+.11	+2109	25,303	1.41
	Higher Overbase Milk Price (11.50 net)	11.27	+.23	+4509	54,103	1.89
If...	Using POSILAC on 30% of Herd	7.58	+.12	+2273	27,278	1.56
	Using POSILAC on 65% of Herd	8.85	+.29	+5752	69,030	1.73
If...	Response at 8 lbs.	4.07	+.09	+1629	19,543	1.32
	Response at 12 lbs.	12.47	+.25	+4989	59,863	1.98
If...	All Worst Case	1.19	+.02	+357	4,289	1.00
	All Best Case	16.68	+.53	+10,841	130,089	2.38

*This Farm As Is: POSILAC at 40% of milking herd, @ 5.50/dose + tax, 10 lbs. response. Incremental milk at 10.50 net, feed TMR @ 08/lbs. DM.

U.S. Per Capita Consumption Of Dairy Products Is Growing

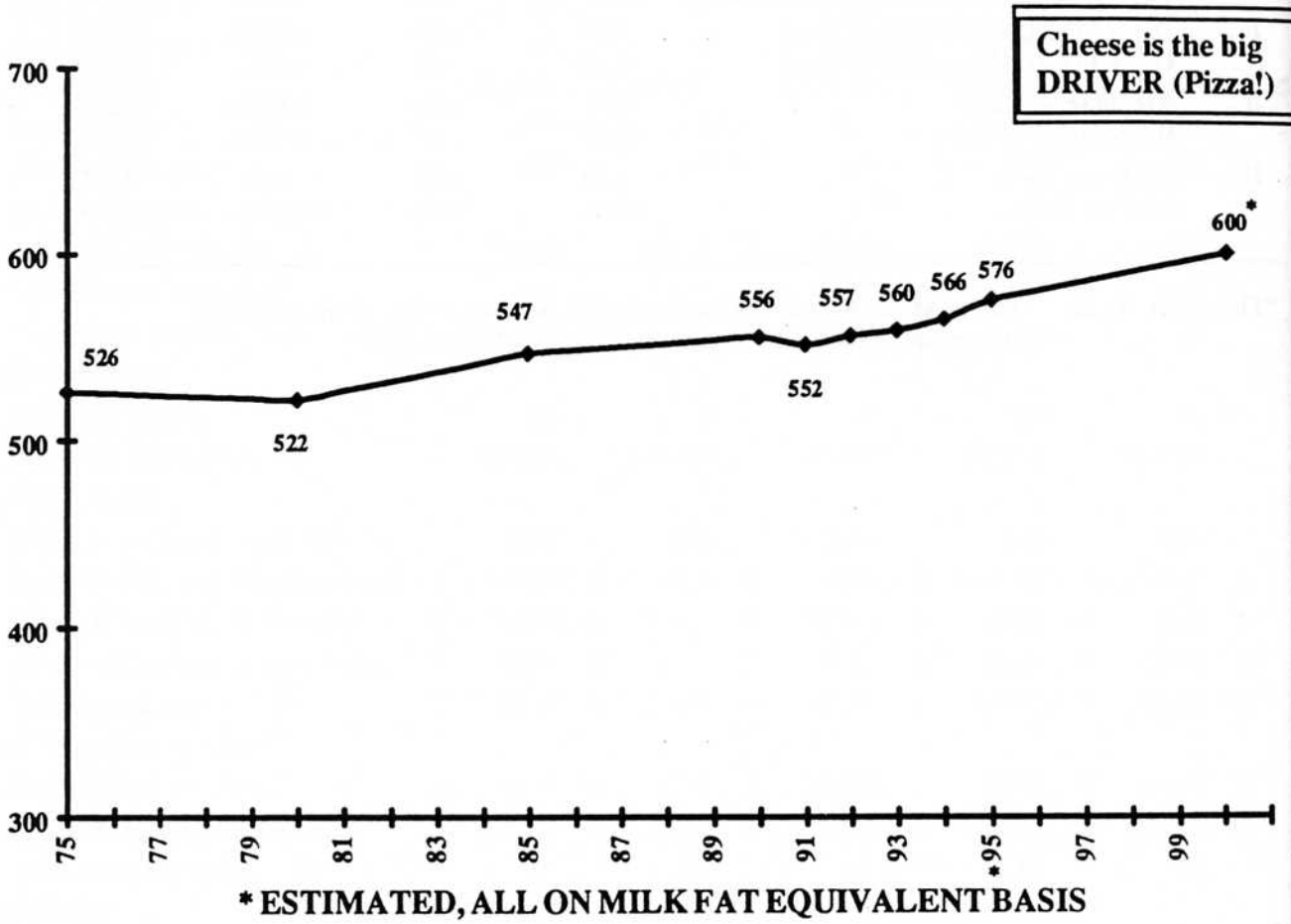
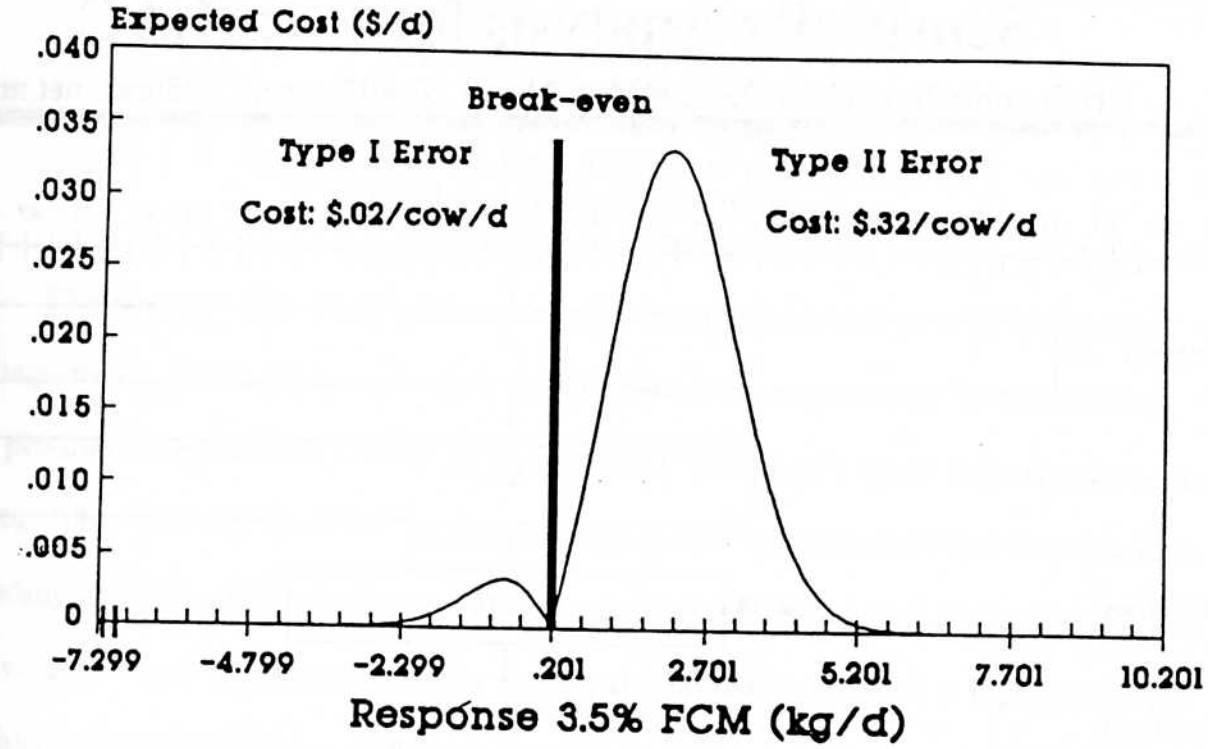


Figure 1. Created from USDA reports



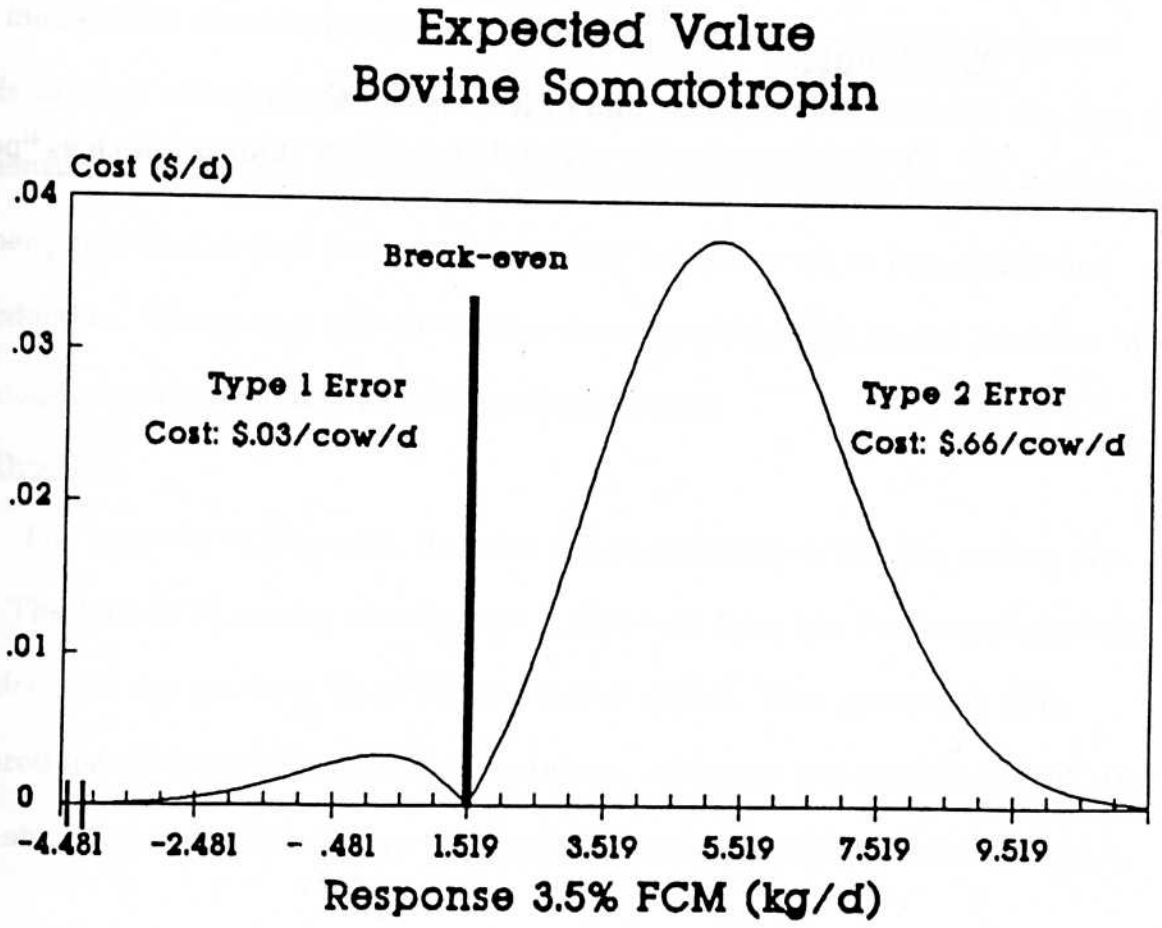
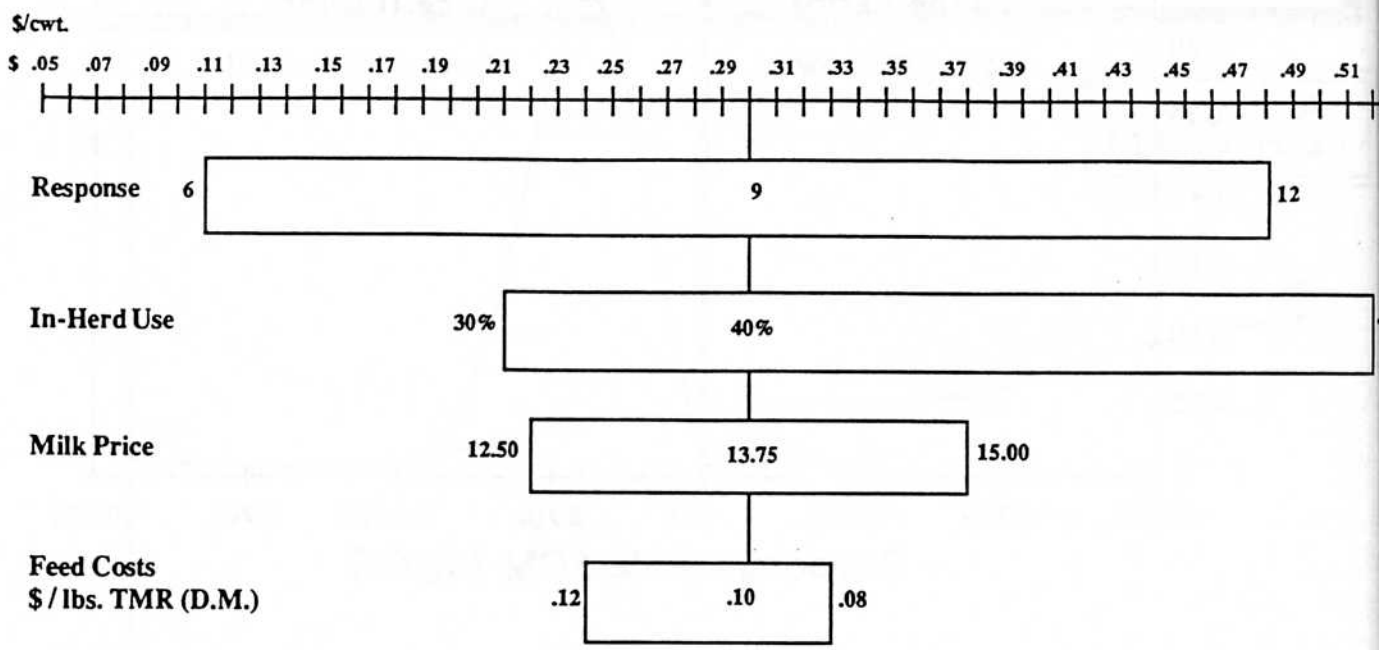


Figure 2. Types I and II expected monetary error value for bST and sodium bicarbonate.

Sensitivity Analysis for POSILAC

Profit contributed by POSILAC is $.31/cwt. @ 40% use, 13.75/cwt. net milk



Key Points:

- **Focus on response and in-herd use (selection)**
- **Feed costs and milk prices do not affect value as much as "perceived**

Florida

Figure 3.