# Preconditioning Weaned Calves on Cover Crops

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By definition, calf preconditioning is a vaccination, nutritional, and management program designed to prepare young cattle to best withstand the stresses of adjustment when weaned off the cow and entering the growing phase. Advantages of preconditioning weaned calves right off the cow has long been shown to reduce incidence of sickness and improve transition to higher concentrate diets. Often the preconditioning process stimulates compensatory gain in calves. Compensatory gain is a faster than normal rate of gain after a period of nutritional restriction. In preconditioning programs, calves are generally fed high roughage diets with energy levels well below what a fast growing calf requires. This avoids nutritionally stressing the calf as it adjusts to being away from the cow and as its immunological response to vaccinations has subsided.

Previous research on compensatory gain has shown the level of compensation by calves following nutritional restriction is highly variable. The amount of compensation by calves is affected by the length of the nutritional restriction, where shorter restriction periods may result in more compensation. Another factor is the size of the calves when they are restricted; younger, smaller calves may compensate more than older, larger calves.

Many cow-calf producers precondition their calves following weaning in a quasi-preconditioning/backgrounding program for 45-90 days on a high roughage, low energy diet before sending calves to the sale barn. The question becomes, are producers giving away a profitable portion of the calves' growth by stimulating compensatory gain through the low-energy preconditioning diet and then selling the calf with the buyer receiving all of the compensatory gain potential?

The University of Minnesota conducted an experiment in the fall of 2013 to address these questions: 1) what level of compensatory gain is stimulated in calves following a short preconditioning period, 2) can a similar level of compensation be stimulated in a drylot, 3) how long does the compensation period last, 4) what are the economic relationships of preconditioning and backgrounding calves for short periods?

The experiment objectives included: 1) comparing a 45-day calf preconditioning period grazing cover crops vs. a 45-day calf preconditioning period in a dry lot, 2) backgrounding calves on the same diet another 45 days following the preconditioning period, and 3) comparing economics of these two systems.

Table 1. Calf preconditioning diet for 45-days in the drylot.

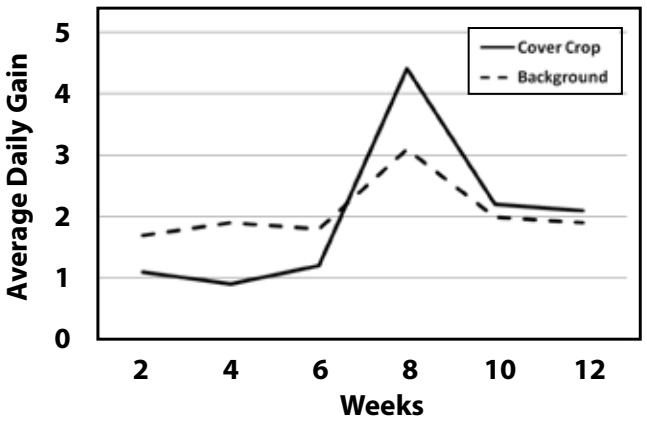
| Ingredient | % of Diet |
|---|---|
| Haylage | 88 |
| Dried Distillers Grains | 12 |

Table 2. Calf growing diet for 45-days in the drylot.

| Ingredient | % of Diet |
|---|---|
| Haylage | 36 |
| Dried Distillers Grains | 20 |
| Rolled Corn | 44 |

Sixty Angus heifers weighing 475 lbs were weaned on September 15 and divided into two groups. The first group was placed in an 8 acre field of cover crops consisting of oats, annual ryegrass, and purple top turnips for 45 days (Phase 1). The second group was placed directly into a drylot and fed a high roughage diet for 45 days (Table 1). After the 45-day preconditioning period, calves grazing the cover crop were moved to the drylot and both groups were fed a growing diet for another 45 days (Phase 2)(Table 2). At the conclusion of the trial, average daily gain (ADG), feed conversion, and cost of gain were calculated.

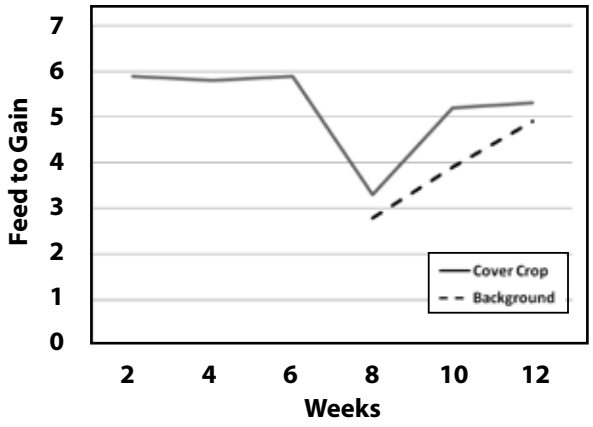
Figure 1. Average daily gain (lbs/day) of calves grazing cover crop and being fed in the backgrounding yard in Phases 1 and 2.




Results demonstrated average daily gain for calves grazing the cover crop was about 1.1 lbs/day during Phase 1 (weeks 1-6) preconditioning period while calves in the drylot gained 1.7 lbs/day (Figure 1). Feed conversion was not measured in the cover

crop grazing treatments during Phase 1. Feed conversion during Phase 1 preconditioning period in the drylot was 5.9:1 and feed consumption was 2.45% of body weight (Figure 2).

Figure 2. Feed conversion (lbs of feed fed per lb of gain) of calves grazing cover crop and being fed in the backgrounding yard in Phases 1 and 2.




Average daily gain for calves grazing the cover crop in Phase 1, jumped to 4.4 lbs/day in Phase 2 at week 8, and declined to 2.1 lbs/day by week 10 (Figure 1). Average daily gain for calves in the drylot in Phase 1 jumped to 3.1 lbs/day in Phase 2 at week 8 and declined to 1.9 lbs/day by week 10. Feed conversion for cover crop calves in Phase 2 was 3.9:1 at week 8 and increased to 4.9:1 by week 12 (Figure 2). Feed conversion for drylot calves in Phase 2 was 3.3:1 at week 8, increasing to 5.3:1 by week 10 before leveling off.

Compensatory gain was stimulated in both groups of calves in this experiment, although response was much greater in calves grazing the cover crop than calves that went directly to the drylot. The length of the compensation period was about 60% of the time calves were nutritionally restricted. Overall, calves grazed on cover crops during the preconditioning period gained a $30 feed cost advantage from lower cost roughage and compensatory gain through increased feed conversion even though consumption was higher (Table 3).

Table 3. Cost of gain (COG), total cost, and bodyweight (WT) of calves grazing cover crops and being fed in the backgrounding yard in Phases 1, 2, and 3.

| | Phase 1 | | | Phase 2 | | | Phase 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | COG *($/lb)* | Total Cost *($/head)* | WT *(lbs)* | COG *($/lb)* | Total Cost *($/head)* | WT *(lbs)* | COG *($/lb)* | Total Cost *($/head)* | WT *(lbs)* |
| Cover Crop | $0.16 | $8.00 | 524 | $0.51 | $64.26 | 650 | $0.41 | $72.26 | 650 |
| Drylot | $0.49 | $37.60 | 551 | $0.58 | $64.96 | 663 | $0.54 | $102.56 | 663 |

Results indicate cow calf producers who precondition calves may have an opportunity to take advantage of compensatory gain they are already stimulating during the preconditioning period by backgrounding calves on a higher energy diet for a short period before sending them to the sale barn.