

Department of Agriculture, Trade and Consumer Protection
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Agricultural Development & Diversification Program (ADD)

Grant Project Final Report

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Grant Project Title: Dairy Grazed Veal Development Project (Phase 1)

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Name of Principal Contact Person: Tera Johnson

Submitted by: Tera Johnson Date: 4/29/04

Department Contact: DATCP – Agricultural Development - ADD Grants
PO Box 8911
Madison, WI 53708-8911
Tel: (608)224-5136
Fax: (608)224-5110

Final Report

Project Title: Dairy Grazed Veal Development Project (Phase 1)

Full Legal Name of Applicant: White Clover Dairy, Inc.

Original Intent and Perceived Benefits of the Project

The objective of this project was to conduct clinical trials in dairy grazing operations to determine how breed, husbandry practices, and nutritional regimes impact the production of high quality veal. The data collected addressed the following research question, “What is the optimal combination of husbandry practices and nutritional regime for producing veal in dairy grazing operations that meets customer palatability and humane practices requirements?”

Many parties throughout the state stand to benefit from this project. Dairy grazed veal would create a new value-added product for dairy grazing operations, some of the most environmentally sensitive and economically sustainable family farms in the state. Veal processors, marketers, feed companies, and mainstream dairy producers will all benefit as the image of veal improves in the minds of the American consumer.

Summary of Tangible Accomplishments

As a result of this project, many things were accomplished:

- Two test farms were set up, each with one experimental and one control group.
- Four feed regimes were established, two on each farm. Farm one had unlimited access to pasture with a cow-calf group and a barrel-fed milk replacer group. Farm two had restricted access to pasture with nipple fed milk in one group and milk replacer in a second group.
- Husbandry practices were established with the assistance of the dairy grazing farmers who participated in the study.
- The Animal Welfare Institute performed site visits to each of the farms to view the husbandry practices from their perspective.
- A USDA certified custom slaughter facility capable of handling groups of up to 25 calves was located. Tracking procedures by animal were established.
- A panel of chefs throughout the country was established and meat from each of the test feed/husbandry systems was sent to them for review.
- Omega 3, 6 and CLA testing was performed on randomly selected animals from each feed/husbandry regime.
- Carcass utilization and feed conversion data was obtained and analyzed.

Data Analysis

Taste Testing with Chefs

Meat from the slaughtered animals circulated across the country through Niman Ranch and to 5 chefs in Wisconsin and Iowa. The flavor of the meat was consistently sweet and creamy. There was remarkable consistency in their responses to the meat in terms of color, taste, and a priori concept preference. Rankings, while not entirely consistent, on average were as follows.

| | Controlled Grazing Milk | Controlled Grazing Milk Replacer | Unlimited Pasture Milk Replacer | Unlimited Pasture Milk |
|------------------|--------------------------------|---|--|-------------------------------|
| Color | 2 | 1 | 3 | 4 |
| Taste | 2 | 1 | 3 | 4 |
| Concept a Priori | 2 | 4 | 3 | 1 |

- Chefs want pink veal to be pink if possible, not red. This target market has been educated regarding pink versus white veal and views the pinker color as a sign of animal health rather than a problem.
- Animals with unlimited access to pasture developed the “twang” of grass-fed beef, something chefs did not particularly value. The meat lost some of its milk-fed creamy sweetness in the process. That meat could be raised a lot cheaper if fed milk then weaned to grain at 6 weeks.
- Chefs in this target market don’t like the concept of milk replacer, but picked the replacer feed regime meat over cow’s milk fed in blind trials.

Amino Acids and CLA’s

Double composite sampling was used to test the amino acid and fat profiles of the mean obtained from the four trials. Each animal had 6 samples taken, one from each major eating region of the carcass. These were composited for each trial. The results from the double trials were consistent.

Specific findings:

- Both milk trials had significantly higher levels of Omega 3’s, lower levels of Omega 6’s, and close to the optimal ratio for each of 3:1. The best trial from this perspective was in the Controlled Grazing Milk trial. Milk in a calf’s diet results in a statistically significant increase in the level of Omega 3’s and decrease in Omega 6’s. This results in a nearly optimal balance of Omega 3’s and Omega 6’s in the resulting meat. These results far exceed those measured in conventional grain-fed meats
- CLA levels were significantly higher in the Unlimited Pasture Milk trial than any of the other trials. The lower levels in the other trials are at the low end of the range for typical grain-fed beef. This could be true because CLAs reside in interstitial fat. The age of the calves at slaughter means that little fat has developed in the carcass.

| | Controlled Grazing Milk | Controlled Grazing Milk Replacer | Unlimited Pasture Milk Replacer | Unlimited Pasture Milk |
|--|------------------------------------|---|--|-----------------------------------|
| Omega 3 % | .050 | .029 | .019 | .047 |
| Omega 6 % | .153 | .329 | .354 | .197 |
| Ratio Omega 6:3 (Optimal 3:1; conventional American diet 15>:1) | 3:1 | 11:1 | 19:1 | 4:1 |
| CLA (Conventional beef range: 1.2 – 6.2 mg/g fat) | 1.2 | 1.2 | 1.0 | 2.5 |

Weight Gains

The weight gains under the four trials were as follows. In each case, the calves were an average of 16 weeks old at slaughter.

| | Controlled Grazing Milk | Controlled Grazing Milk Replacer | Unlimited Pasture Milk Replacer | Unlimited Pasture Milk |
|-----------------------------------|------------------------------------|---|--|-----------------------------------|
| Average Carcass Weight | 175 | 177.5 | 183 | 236 |
| Average Weight Gain per Day | 1.7 | 1.7 | 1.8 | 2.6 |

The difference between the controlled grazing trials and the unlimited pasture with milk replacer trial is not statistically significant. The unlimited pasture trial showed significantly higher weight gains. While it is impossible to know precisely how much milk suckling calves drink, it was estimated by the milk availability after the cows shipped that the calves were drinking between 3 and 4 gallons of milk per day, more than is typically fed calves that are separated from their mothers.

Additionally, the dairy herd experienced some disruption as a result of having the calves in the herd. Initially, not all cows knew instinctively how to take care of their calves. A number of calves were lost because of this. Secondly, it took a while to get the calves used to going to a lot at the side of the milking parlor while the cows were milking. Some of the cows refused to be milked by the end of the 16 weeks. Many needed to be treated for mastitis. Finally, after the calves shipped, the cows experienced significant separation problems. Some required oxytocin to resume milking.

In sum, keeping the calves in a milking herd represents significant difficulties for a dairy farmer, but there is otherwise virtually no labor associated with this method – the herd takes care of the calves. A better model might therefore be dedicating a small group of relatively low-volume cows to raising a group of calves without milking. This could avoid many of the problems that arose as part of this trial.

Information and/or Educational Materials

As a result of this project, the Animal Welfare Institute is currently developing its standard for humane treatment of veal calves based on the protocols established on the dairy grazing test farms. This standard will be published by AWI and farmers will be able to receive their certification for following the standard.

AWI is simultaneously developing its dairy standards, and will be incorporating many of the methods used on dairy grazing farms in their standards.

Future Plans

White Clover has continued its research on one of the test farms since the close of this study. A winter trial was undertaken to test the economic viability of winter veal calf raising using the protocol. This summer a follow-up trial will be conducted that is comparing the performance of liquid versus dried milk replacer. More research is also underway refine the feed regime and to learn more about adopting MIRG techniques to raising veal calves. Finally, some of the techniques we learned in this trial are being implemented in an enclosed, group – housed trial barn at White Clover.

Currently two major marketers are working on developing a humanely – raised veal product line and are interested in implementing either part or all of the standard practices. In addition, the group housed trials currently underway at White Clover’s research facility are receiving industry-wide attention.

Recommendations

Recent experience with the USDA’s public crackdown on the illegal use of growth hormones in veal calves has had the following effects on the traditional veal industry:

- Calves have been held; growers have been financially harmed.
- Consumer demand has slackened. The major marketers have lost large customers because of the presence of hormones in veal.
- Veal growers will experience lower feed conversion and therefore profitability as a result of eliminating the use of hormones. This will leave most veal production in a state of marginal profitability at best.

The results from this trial indicate that there are alternatives to traditional methods for raising veal in this country that are economically viable. They also indicate that consumers who have given up eating veal because of their concern for how the animals are raised welcome the opportunity to cook with veal that is raised differently. It is time for the veal industry to embrace changing consumer preferences and create alternative products that meet the needs of a different consumer.