
**Agricultural Research Initiative
Final Report
October 31, 2005**

- A. Date: October 25, 2005
- B. Reporting Period: July 1, 2002 to August 31, 2005
- C. Project Number: 59070 (03-5-045)
- D. Project Title: *“Effect of feeding practices on Phytoestrogen, Omega 3, Conjugated Linoleic Acid (CLA) and total fatty acid composition in red meat.”*
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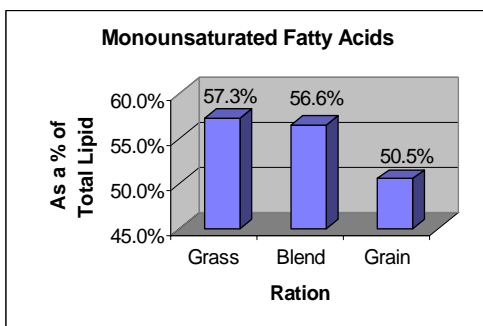
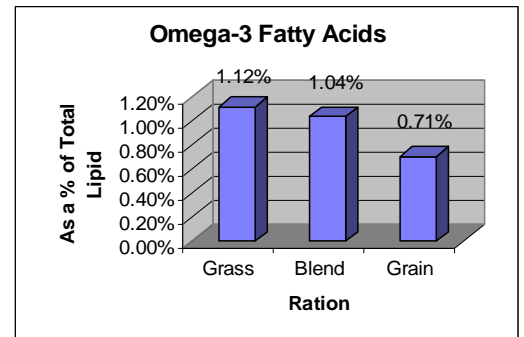
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I. Executive Summary:

- Summarize the details of the research project.
- Established grass fed beef is higher in Omega-3 fatty acids
- Established grass fed beef is lower in saturated fatty acids
- Finished cattle on varying diets
- Grass fed beef is higher in Beta-carotene
- Grass fed beef is higher in vitamin E



J. Major Accomplishments:

- Compared lipid profiles on cattle fed varying diets (grain, brewer's grain, grass-fed)
- Continued development of grass-fed beef website
- Niche Meat Marketing Conference
- Taste panel of cattle fed varying diets
- Warner-Bratzler shear force determination for tenderness.

K. Impact Statements:

1. The significant accomplishments of your research and how they are likely to impact the agriculture industry.

- Currently the industry standards for grass fed beef are being revised. The research that has been conducted is being used to formulate the new standards for grass fed beef. Cooperators in the beef industry are using the data collected during this project to support label claims for grass fed beef and to re-define the standards and labels of grass fed beef. The data collected is being used as justification in a USDA petition for health claims of higher CLA and Omega 3 fatty acids on the package labels of grass fed beef. These label claims will be used as a marketing tool and advantage for grass fed beef producers. The health claims also provide a benefit to those consumers who are health conscious and interested in the healthful aspects of grass fed beef. This research is cited on numerous nutrition websites and articles setting the parameters for the nutrient content of grass fed beef.

2. Presentation or results at industry and/or professional meetings:

- Niche Meat Marketing Conference at University California Davis, 2004 and California State University, Chico 2005
- U.C. Cooperative Extension Sonoma County
- Sustainable Food San Francisco, CA
- Beef Day California State University, Chico 2005
- Missouri Livestock Symposium December 2005

3. Articles that appeared in consumer/industry-oriented publications:

- Manuscript has been submitted to the Journal of Nutrition
- Manuscripts are being prepared for California Agriculture and Journal of Animal Science.
- Articles are in progress to Beef Magazine and Capital Press.

4-6. News articles, other news venues, such as radio and television and refereed journal publications that reported on research results:

- Stacy Ross - *Ozark Magazine*
- Center for Urban Education – Sustainable Agriculture, San Francisco, CA: presentation to the public – general consumer interest about grass-fed beef products
- News Release for U.C. Cooperative Extension: distributed to a wide variety of newspapers
- Melanie Acostavalle - *Everyday with Rachael Ray* ; Popular Press
- Will Harris - *Atlanta Journal Constitution* ; Popular Press

7. Titles of graduate these or senior projects:

- *The Concentration of CLA Isomers in Lipid Pools of Steers Treated with Growth Promotant.*- Chu-Chun Hsueh Master of Science in Nutritional Science, California State University, Chico Spring 2004
- Katie McCormick : Effect of feeding practices on Phytoestrogen, omega 3, conjugated linoleic acid and total fatty acid composition in red meat.

8. Number of graduate students and undergraduate students employed:

- Three Graduate Students: Chu-Chun Hsueh, Amber Abbott, and Katy Harrison
- Four undergraduate students: Katie McCormick, Cat Berard, Darby Holmes and Margertte Basurto

9. Student research assistant quotations about the impact on their learning and career opportunities:

- Katie McCormick gained laboratory experience which allowed her to obtain a job working in a nutrition lab.
- Chu-Chun Hsueh was able to obtain a job in Taiwan working with gas chromatography.
- Margaret Basurto and Amber Abbott gained experience designing and gathering information to build the grass fed beef website at Chico State.
- Katy Harrison, Cat Berard and Darby Holmes gained experience in lipid extraction, methylation and gas chromatography.
- Katy Harrison has taken a job as a research associate at CSU, Chico; Cat Berard has gone on to graduate school at Cal Poly Pomona.

10. Equipment Purchased or donated:

- HPLC
- Vortex
- Large sample shaker
- Sp 2560 Column for G.C.
- Nitrogen Bath was donated.

L. Dissemination, publications and presentations of research:

1. List all activities in chronological order by category and date (most recent first) including any planned activities:

- Submitted manuscript to Journal of Nutrition
- Niche meat marketing conference, California State University, Chico
- Manuscript preparation for Journal of Animal Science and California Agriculture
- Beef Day presentation CSU, Chico
- Sustainable Food Conference, San Francisco, CA
- UC Cooperative Sonoma State
- Missouri Livestock Symposium
- Niche Meat Marketing Davis, CA

2. Include all names of those presenting and/or coauthoring material:

- Cynthia A. Daley
- Amber Abbott
- Katy Harrison
- Patrick Doyle
- Glenn Nader
- Stephanie Larson

4. State name of publication and identify as refereed journal/paper or trade publication:

- “Added Nutritional Value of Grass-fed Meat Products“ Nutrition Journal, Submitted October 2005 – Peer Reviewed
- “Effect of Ration on Lipid Composition in Beef” California Agriculture, manuscript in progress, Peer-Reviewed
- “Effect of Grass-only rations on lipid composition of cattle fed to a constant degree of fatness” Journal of Animal Science, manuscript in progress, Peer Reviewed.
- “Niche Marketing Beef under the Grass-fed label claim” Beef Magazine, article in progress: Popular Press. Capital Press, article in progress: Popular Press

5. State names and places where presentation(s) were or will be made:

- Niche Meat Marketing Conference at University California Davis, 2004 and California State University, Chico 2005
- U.C. Cooperative Extension Sonoma County - 2004
- Sustainable Food San Francisco, CA - 2004
- Beef Day California State University, Chico 2005
- Missouri Livestock Symposium December 2005
- American Society for Animal Science, July 2006