While more than 90 percent of all beef consumed in the United States has been finished in a feedlot, a small and growing segment of the industry is producing grass-fed beef. These producers are promoting grass-fed beef as being both nutritionally superior and less wasteful of grain and water resources, as well as reducing pollution from feedlots (http://www.csuchico.edu/agr/grassfedbeef). In the past, grass-fed beef has had limited consumer acceptance due to a (often well-founded) belief that grass-fed beef is tougher than grain-fed beef and that yellow fat is a reliable indicator of toughness. In recent years, however, as consumer tastes have moved toward leaner beef, grass-based production systems have come back into popularity. Concurrently, technology involved in pasture-based production systems has advanced to the extent that animal performance can exceed 2.5 lb/d and gains per acre can exceed 800 lb/acre. Elements important in this system include animal genetics, improved forage varieties, and improved animal supplementation. In addition, the trend among consumers toward purchasing beef that is leaner has put a premium on beef that is also tender, juicy, and flavorful.

In response to this perceived demand many individual cattle producers have begun to market (primarily through internet-based mail-order) combinations of organic and/or grass-fed (natural) beef. These producers are promoting a number of factors that they claim make their products superior to conventionally (grain) fattened beef. Among the most common claims are that grass fed beef contains higher concentrations of conjugated linoleic acid (CLA), higher concentrations of Vitamin A and beta-carotene, and a more favorable omega 6:omega 3 fatty acid ratio than conventionally fattened animals and that the concentrations consumed are sufficiently large as to be of significant benefit to human consumers. There is some evidence that grass-fed cattle do have higher concentrations of CLA.

Process
- Animals will be grazed on a range of forage types to determine the influence of forage type on carcass quality and flavor.
- Animals will be provided a range of supplement types and levels at different stages to determine the effect of supplement type and level of supplementation on animal performance and carcass quality.

Objective
Determine the extent that forage type, beef breed, and type and extent of supplementation influences leanness, tenderness, juiciness, flavor, fatty acid ratios, CLA, and beta-carotene concentrations of grass-finished beef.

Outcomes
- Objective data relating to the nutritional value of grass-finished beef
- Methods of supplementation that result in the highest value product
- Identification of forages and supplement combinations that provide the highest quality and most economical product