Acknowledgments

The Department of Animal Sciences acknowledges and thanks the following organizations for their support of the beef cattle program:

- Roche Vitamins Inc.  
  *Parsippany, New Jersey*

- Alltech Inc.  
  *Nicholasville, Kentucky*

- IMC-Agrico Company  
  *Bannockburn, Illinois*

- Onset Computer Corporation  
  *Pocasset Massachusetts*

- Russell Sandberg and Dr. Don Adams  
  *University of Nebraska*

- Griffin Industries Inc.  
  *Cold Spring, Kentucky*

- Grand Laboratories Inc.  
  *Larchwood, Iowa*

- Merck and Co.  
  *Rahway, New Jersey*

- Elanco Animal Health  
  *Indianapolis, Indiana*

- Fort Dodge/Syntex  
  *Fort Dodge, Iowa*

- Rose Acres Farms  
  *Seymour, Indiana*

- Lotek Engineering Inc.  
  *Newmarket, Ontario, Canada*

- Cooperative Research Farms/Southern States Cooperative  
  *Richmond, Virginia*

- Kentucky Corn Promotion Council  
  *Louisville, Kentucky*
Contents

Grazing Management
The Effect of Implanting Synovex-C Once or Twice during Nursing on Calf Gain and Weaning Weight ........................................... 6
The Effect of Revalor-G, Synovex-S, or Ralgro on Gain of Grazing Steers ..................................................................................... 7
A Molasses-Based Liquid Supplementation Program for Beef Cows Grazing Endophyte-Infected Tall Fescue ................................. 8
Supplementing Steers Grazing Stockpiled Tall Fescue with Cracked Corn or Soyhulls ................................................................. 11
Beef Cattle Grazing Endophyte-Infected Tall Fescue Pastures Interseeded with Alfalfa ............................................................... 13
Nutrient Ecosystem in Grazing Management Systems ................................................................................................................... 20
Effects of Shade on Body Temperatures and Production of Grazing Beef Cows ........................................................................... 24

Research Techniques
Evaluation of Four Internal Markers and an Intra-Ruminal Chromium-Releasing Device for Use in Predicting Diet Digestibility and Intake by Beef Steers ....................................................................................................................... 29
Molecular Identification of Glutamate Transporters in Ruminant Foreestomach, Intestine, Liver, and Kidney Tissues ................. 30
GPS Tracking of Cattle on Pasture ................................................................................................................................................. 33

Environmental Studies
Runoff Nutrient and Fecal Coliform Content from Cattle Manure Application to Fescue Plots .................................................... 38
Vegetated Filter Strip Removal of Cattle Manure Constituents in Runoff ...................................................................................... 44

Reproductive Management
Effects of Supplementation on Performance of Lactating First-Calf Beef Heifers ................................................................. 49
Reproductive Performance of Beef Females in Which Estrus and Ovulation Were Synchronized for Fixed-Time Insemination Using a Controlled Internal Drug Releasing Device, Estradiol Benzoate, and Prostaglandin F2α .......... 50
Effect of Energy and Rumensin Supplementation before and during the Breeding Season to Spring-Calving Beef Cows Grazing High- and Low-Endophyte Tall Fescue .............................................................................................. 52

Nutrition
Nutritional Evaluation of Poultry By-Product Meal as a Protein Source for Ruminants: Effects on Performance and Nutrient Flow and Disappearance in Steers ................................................................................................................. 55
Nutritional Evaluation of Poultry By-Product Meal as a Protein Source for Ruminants: Small Intestinal Amino Acid Flow and Disappearance in Steers .............................................................................................. 59
Net Nutrient Flux by Visceral Tissues of Lambs Fed Diets Differing in Supplemental Nitrogen Source ...................................................................................................................................... 64
Effect of Poultry By-Product Meal on Growth, Carcass Traits, and Muscle Accretion of Finishing Lambs ...................................................................................................................................................... 68
Evaluation of Bakery Waste Meal and Caged Layer Waste Pellets as Supplements for Steer Calves Consuming a Corn Silage-Based Diet ...................................................................................................................................................... 70
Efficacy of Chromium Yeast Supplementation for Growing Beef Steers .............................................................................................. 72
Backgrounding Calves on Broiler Litter with Varying Levels of Corn and Soyhulls ...................................................................................... 75
Influence of Abomasal Infusion of Glucose or Starch Hydrolysate on Pancreatic Exocrine Secretion in Beef Steers ............................. 76
Influence of Dietary Carbohydrate Source and Energy Intake on Pancreatic α-Amylase Expression in Lambs ...................................................................................................................................................... 77
Ruminant Serum Response to Coconut Oil-Protected Vitamin A ...................................................................................................................................................... 81
Efficacy of Laidlomycin Propionate in Low-Protein Diets Fed to Growing Beef Steers: Effects on Steer Performance and Ruminal Nitrogen Metabolism ...................................................................................................................................................... 82
By-Product Feeds for Postweaning Feeding of Calves ...................................................................................................................................................................................... 86
Dear Friends of the Kentucky Beef Industry:

Our Beef Research Group is working hard to expand our information base for the beef producers of Kentucky. We have been hampered in the past by lack of pastures designed for grazing studies and lack of facilities for feeding, reproduction, and breeding research. Nevertheless, we feel we have maintained a strong program that is nationally recognized. Recently, we have been able to develop some of the needed infrastructure and have hired a critical mass of faculty that gives us a much more balanced research group that can address the beef research area from the most fundamental discovery to the most applied aspects.

We are in the final construction phase of our new beef unit. An intensive research building, four feeding barns, a feed center, and a composting center give us some research options we have not had in the past. We still have a lot of equipment to acquire, but we plan to be operational in the year 2000. We invite you to visit.

We hope our report provides new information for the scientific advancement of the beef industry and information that enhances the efficiency of beef production. Our research, Extension, and teaching faculty and staff intends to provide information and education to sustain beef production in an efficient and environmentally friendly manner and to provide consumers a healthy, safe product.

Sincerely,

Guy Kiracofe
Chair, Department of Animal Sciences