UNIVERSITY OF CALIFORNIA
AGRICULTURE & NATURAL RESOURCES

SIERRA FOOTHILL RESEARCH & EXTENSION CENTER

Beef & Range Field Day

APRIL 20, 2006

Browns Valley, California

UNIVERSITY OF CALIFORNIA
AGRICULTURE & NATURAL RESOURCES

SIERRA FOOTHILL RESEARCH & EXTENSION CENTER

Presents:

Annual Beef & Range Field Day

APRIL 20, 2006

Cosponsored By:

University of California Cooperative Extension
Dept. of Animal Science, UC Davis
School of Veterinary Medicine, UC Davis

The future beckons

Charlie Raguse[1], Paul Raguse[2]

As Garrison Keilor might say, "I'm happy to be here." And honored to be accorded the opening presentation on this anniversary of the Station's Annual Field Day Celebration.

I wish first to pay my respects to six individuals, all of whom deservedly have a place in the annals of this Station's history. I knew all except one on a personal level. Four have "gone on to their rewards". In a very real sense, this tribute is symbolic, because there are many others who could be named and honored as well.

Beginning with the Station itself, they are Gary Childers, who has been with "SFS" almost as long as it has existed. He understands the meta-environment within which the Station functions and I count him as a friend; Burgess L. "Bud" Kay, who had the first Project of record at the Station, and, in my view, compiled a legendary history of research and good will, almost the full length and breadth of California; Paul L. Rowell, Superintendent at Sierra during times when the Station experienced most of its physical growth and development, and was beset with a number of difficult external issues; James L. "Lowell" Myler, Director of Agricultural Field Stations, a "transplant" from the Middle West, who, to borrow Irving Stone's analogy, was truly "a man to match California's mountains"; James B. "Jim" Kendrick; It was my good fortune to have worked with, and sincerely respected, Vice President Kendrick during the years that I chaired the Research Advisory Committee (now fondly referred to as "The RAC") for the Sierra Station, and, for a time, the combined RAC for both Hopland[3] and Sierra. Jim Kendrick was, in the best sense of the word, a leader. Finally, Paul F. Sharp, the most distant in time, but arguably the most important in the Station's history – and in a sense, its founder – the University's Vice President for Agriculture, who served during the years 1949 to 1962[4] as Agricultural Experiment Station Director, between Claude B. Hutchison and Maurice L. Peterson[5]

I think of this Station's history in two ways: First, as "A History of 'Development of the Physical Plant'". Present-day visitors can little imagine the quarter-century spent in building fences, roads and plot sites, water development and livestock handling facilities. Add buildings to operate from, as well as four residences (Joe Guild, the first formally-appointed Superintendent, lived out his Station career in one of them). Add also a modern dormitory, situated along the creek in an environment any intern would be quite pleased to spend a summer in. The planning, support funding, labor, and equipment operations sum to a staggering total. But they also provided a research, extension, and teaching facility that cannot be matched, or even equaled, anywhere.

Second, this Station has "A History of Issues". Partly this is a result of its location on the Yuba River, and partly because of the times it was born into and grew up with. Begun in the late 1950's, with UC's separation from cooperative research with the U.S. Forest Service at its San Joaquin Experimental Range[6] at O'Neals, near Coarsegold in Madera County; to the battles with the U.S. Army Corps of Engineers plans for construction of a dam to form "Marysville Lake", first at Browns Valley Ridge, then at Parks Bar on the Yuba; to failing water supplies from "The Upper Main"; to the issues of labor recharges and RAC discontinuance; to consideration of recreation research; to who should own the cattle herds, the Animal Science Department or the Station; to, in present time, a bid to permit unrestricted public access, across Station land, to upper reaches of the river.

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[1] Professor emeritus, Department of Agronomy & Range Science; Author, *Diamond in the Rough, a history of the Sierra Field Station.* Email: caraguse@ucdavis.edu; Website: www.plywoodpress.net

[2] Technical assistance, computer-system competence and development of the Power Point presentation

[3] In 1951 the Rangeland Utilization Committee recommended to the Board of Regents that the University purchase land for the Hopland Field Station, with the further recommendation that "...its use be for range research with emphases on sheep."

[4] Ref.: *The Centennial Record of the University of California*, 1967. (UC-Davis Library LD 758.)

[5] I have in my collection a copy of a letter by Maurice L. Peterson, writing as Chairman, Department of Agronomy, to Dean Fred N. Briggs of the UC-Davis College of Agriculture wherein Professor Peterson presents six "...rather clear and logical reasons for opposing the establishment of a Range Research Center." The letter is dated January 7, 1958. Land for the Sierra Field Station was purchased June 1960.

[6] "The US Forest Service established the San Joaquin Experimental Range in 1934, and invited the University of California to cooperate in this endeavor." Source: *Origin and History of the Station* – Remarks of W.C. Weir at the Field Day celebrating the 30th Anniversary of the founding of the Sierra Foothill Range Field Station.

The role(s) of the University in service to Agriculture (in the broadest sense of the word) are in a state of flux, and vary widely. It is my perception that:

1) The kinds of Campus-based research being done and the technology required for it have markedly changed, in the direction of reductionist focus and short turnaround-time required to do publishable studies.

2) There is a generally diminishing familiarity with, and support of, the roles and functions of Cooperative Extension and Agricultural Field Stations.

3) There is diminishing evidence of concerned and effective leadership, at all levels of the UC System.

4) After attending two public presentations by the sole applicant for the position of Center Director for the Sierra Foothill Research & Extension Center, I came away appalled at having witnessed an almost complete absence of understanding of what, historically, has been provided as services and accomplished research since the Station's beginnings. At these two meetings there prevailed litany of things that "could be done" and "should be done", with nods of agreement and "Uh Huhs!!" from the audience. Yet most of these "bulleted" suggestions (proudly supported by Power Point, this is the Age of the List-Maker) *have* been done at the Station, *plus more that were never mentioned*.

The hard questions that should be asked are: "What are the reasons that these desirable avenues of inquiry and service no longer exist?", and "What is the hard, incontrovertible evidence that they can be done now?", and "By whom?", and last (but certainly the clincher) "Who will pay for it?"

5) At this writing (3 Apr 2006, because the Field Day brochure entries are due today!), I am whole-heartedly in support of the present candidate for "Center Director" to fill, as I understand it, an 18-month appointment. He has clearly stated his conviction that the Station should broadly support, in addition to beef cattle research, the questions and needs of the influx of naively-new landowner residents of the foothill area in which the Station is embedded. This is sound thinking, and, in fact, is exactly what Agricultural Field Stations were intended to do.

6) The position of Director of Research and Extension Centers (an ANR post) will, I am told, come open within the current year. The Position Description for this position should be very carefully reviewed and suitably crafted before it is released to access by potential candidates.

7) W. R. ("Reg") Gomes is UC Vice President of Agriculture and Natural Resources, and Director of the California Agricultural Experiment Station and Cooperative Extension. His online ADEC[7] biography states: "He is responsible for the Natural Reserve System and for research and extension efforts in agricultural, human and natural resources on three campuses (Berkeley, Davis, Riverside), at nine field stations, and in extension offices serving California's 58 counties." *His* date of retirement is not known, although one person commented to me that "We're all wondering". Perhaps the best we can do in present time is to hold *Associate Director and Vice President* Richard B. ("Rick") Standiford's toes to the fire as much as we can; he might pass some of the heat up the line.

8) Does anyone know what the four CE "Regional Directors" do? Or, for that matter, what the CE "Program Directors" do? Or, if what they *do* do is of relevance? Or, if they did nothing (i.e., didn't exist) whether any of the state's "Stakeholders" would be inconvenienced?

9) Or that the local-area "Cowbelles" have done a super job in feeding this Field Day mob, year by year by year, and get very little thanks for that?

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[7] ADEC = American Distance Education Consortium, the URL for which is http://www.adec.edu/admin/bios/gomes His baccalaureate is from California Polytechnic State University at San Luis Obispo. Another useful URL, for the Natural Resources Coordinating Conference, is http://danr.ucop.edu/wrc/nrcc.html.

the future beckons
Question No. 1: Is the SFREC on this radar screen?
Not that I could observe!

UC**DAVIS**
College of Agricultural & Environmental Sciences

FACULTY POSITION ANNOUNCEMENT

Professor and Director of Agricultural Sustainability
University of California, Davis

Position Description: The UC Davis College of Agricultural and Environmental Sciences (CA&ES) and the UC Division of Agriculture and Natural Resources (ANR) seek an internationally recognized leader to serve as Director of the CA&ES Agricultural Sustainability Institute (ASI) and the systemwide ANR Sustainable Agriculture Research and Education Program (SAREP). In addition, the selected candidate will be appointed as a full professor and the first holder of the UC Davis W.K. Kellogg Endowed Chair in Sustainable Food Systems. As Director of the ASI, responsibilities include (1) providing leadership and organizational support to the research, outreach and extension efforts in agricultural sustainability on the Davis campus; (2) interfacing with faculty offering undergraduate and graduate curricula related to agricultural sustainability; (3) establishing and maintaining contact with scientists working in agricultural sustainability at other institutions, and (4) *leading efforts to obtain extramural funds to support research and outreach activities in agricultural sustainability.* (emphasis mine) As Director of SAREP, responsibilities include: (1) developing and implementing short and long-term plans for integration of innovative research in agricultural sustainability on the ANR campuses (Davis, Berkeley and Riverside) and into Cooperative Extension programs throughout the state; (2) providing leadership and prioritization of, and expanding funding for, the SAREP competitive grants program; (3) providing statewide leadership for the distribution of information related to sustainability through conferences, short-courses, workshops, publications and on-farm demonstrations; and (4) providing leadership in communicating with stakeholders about sustainable systems. As Professor and Kellogg Endowed Chair in Sustainable Food Systems, the incumbent is expected to conduct teaching, research and outreach in the area of sustainable food systems.

Qualifications: The Director must hold a Ph.D. in a field relevant to sustainability, have outstanding leadership and administrative experience, an excellent record in teaching, research and extension/outreach activities, and a broad, general knowledge of sustainable principles and practices pertaining to agricultural and natural environments. The successful candidate will be expected to initiate, coordinate, conduct, and/or participate in research and educational programs promoting ASI and SAREP initiatives. The candidate will be expected to develop a research and outreach program consistent with an appointment in the California Agricultural Experiment Station. The Director position requires demonstrated exceptional interpersonal and networking skills and the ability to work effectively with individuals representing a diversity of academic backgrounds, interests and positions both within and external to the University of California. Demonstrated skill in obtaining extramural funds is expected.

Interview Seminar Series for the faculty position as described above:

Ariena van Brugen, **Department of Plant Sciences, Wageningen University, The Netherlands. "Towards Sustainability of Food Systems: California Taking the Lead"**

John Antle, **Department of Agricultural Economics and Economics, Montana State University. "Tradeoffs, Synergies and Win-Wins: Science and Policy for Sustainable Agriculture"**

Hans Herren, **Millennium Institute, Arlington, Virginia "Knowledge, Science and Technology for Sustainable Agriculture: Looking ahead with the experience of the past"**

Kenneth Cassman, **Department of Agronomy and Horticulture, University of Nebraska. "Strength Through Diversity in Sustainable Agriculture Programs"**

David Midmore, **Biological and Environmental Sciences, Central Queensland University, Australia. "Degrees of Sustainability – Visions for ASI and SAREP"**

Thomas Tomich, **International Center for Research in Agroforestry, Nairobi, Kenya"Integrative Science for Agricultural Sustainability: What? How? Why?**

The future beckons:
Question No. 2. What is the most popular mode of research on Campus?
Sophisticated, high-tech lab studies at the molecular level.
Work on simple systems of current popularity, (e.g., *Arabidopsis thaliana*), where experiments can be turned over rapidly and published in peer-reviewed journals.
To look first for secure and long-term sources of funding. As would be expected, the funding source can influence the nature of research done.
Research is done by Post-doctoral students, Ph.D.-level graduate students, and new Faculty hires who bring with them Post-docs, grad students, and sustainable sources of funding

The future beckons:

Question No. 3: "What do the results of a typical Plant Sciences Department high-tech laboratory study read like?"

"Plant Sciences Winter Quarter Seminar Series

__ __ __ will present:

High-density haplotyping with microarray-based single feature polymorphism markers in *Arabidopsis*

Abstract:

High-density haplotypes and dense linkage maps for a segregating population can be obtained from gene expression microarrays. RNA samples from 148 *Arabidopsis thaliana* recombinant inbred lines (RILs) derived from accessions Bayreuth-O and Shahdara grown in a replicated experiment were hybridized to Affymetrix ATH1 GeneChips, each representing 22,810 genes. The ATH1 GeneChip contains 11 perfect match (PM) oligonucleotides per gene. The PM oligonucleotides were used to detect single feature polymorphisms (SFPs) that rely on differences in hybridization to individual oligonucleotides. We developed a statistic to describe each probe in relation to the other 10 probes within the probe set, which minimizes variation due to differential gene expression that impacts the probe set as a whole. We used two novel approaches to identify SFPs and assign thealleles in the RILs. Capitalizing on the microarray data obtained from biological replicates of inbred parental lines and their respective RILs, our approach identified robust SFP markers in hundreds of genes dispersed throughout the genome. These markers exhibited a low percentage of missing genotype scores and a high concordance between genetic linkage and physical position in the genomic sequence of Col-O. The number of markers that can be identified by this technology allowed identification of the majority of recombination breakpoints in the 148 RILs. The resulting dense haplotypes and high-density linkage map demonstrate that gene expression microarrays on a segregating population can be used to obtain both phenotypic and genotypic information simultaneously."

The future beckons:

Question No. 4: "Isn't there anything else?"

UCDavis News & Information headline, 16 Feb 2006: "$5 Million USDA Grant Awarded for Wheat Genome Research"

"A national consortium of wheat breeders and scientists, led by Jorge Dubcovsky at the University of California, Davis, today was awarded a $5 million grant by the U.S. Department of Agriculture to implement modern technologies that will equip breeders to produce higher quality, disease-resistant wheat, one of the world's oldest and most widely-used crops.
"The technology, known as marker-assisted selection, allows the researchers to use the genetic information found in the plant's DNA to select those plants that carry desirable traits, such as disease resistance and improved quality. "...
" 'This grant will enable us to expand our research effort, provide training for graduate and undergraduate students, and share practical information about the technology with growers across the country', said Dubcovsky, project leader for the Marker Assisted Selection program for wheat. The program includes breeders and researchers at universities in 17 states and at four U.S. D. A. laboratories. "...
"U. S. wheat researchers already have developed protocols for more than 50 molecular markers for genes that confer disease resistance and certain quality traits. They have used these markers in a previous project, also led by UC Davis, to incorporate valuable genes into the best breeding lines for 10 different market classes of wheat."

The future beckons:

Question No. 5: But what about our Field Station???"

Sierra Foothill Research and Extension Center Agriculture and Natural Resources University of California (Position #AP 05-04)

NATURE AND PURPOSE: Provide leadership, direction and management oversight of the Center to provide University of California researchers and educators with managed and sustainable resources to conduct quality research and extension programs on high-priority statewide and regional issues. Provide and promote coordination and collaboration with campus-based and county-based researchers to facilitate the successful delivery of research and educational programs at the Center. Maintain a strong Center-based local community educational outreach program. Center management duties involve forty percent (40%) of the selected candidate's time. The Center has an annual budget of approximately $500,000, encompasses 5,700 acres, and maintains 50,000 square feet of buildings. There are currently nine career staff employees with additional one to two FTE in seasonal labor. The Center supports a wide range of research and extension activities conducted by academic researchers from the local Cooperative Extension County offices as well as from the Davis and Berkeley campuses. It is preferred that this position has a current education/extension/research program that is consistent with the Center's research emphasis. It is also preferred that the Center Director appointment would not require a change in location of the incumbent's current appointment.

MAJOR RESPONSIBILITIES:

1. Provide leadership and direction for the management of the Center including prioritization and allocation of financial and human resources, long-range facility planning and development, and space planning and allocation;
2. Manage the Center project proposal, review, and resource allocation process;
3. Coordinate and assist researchers at the Center to conduct applied/adaptive research to resolve significant issues and to test systems of selected technologies and practices;
4. Encourage collaboration with Agriculture and Natural Resources (ANR) personnel, other public sector agencies, and industry;
5. Plan, coordinate, assist and host field days, tours, meetings and other Center-based education and extension activities. Host and assist in Center programs for national and international visitors.
6. Supervise and insure the efficient and sustainable operation and maintenance of Center buildings, grounds, agricultural land, equipment, and infrastructure including development, implementation and monitoring of internal policies and procedures.
7. Insure the efficient and effective farming, greenhouse and other research support activities including the rotation and uniform cropping systems required to provide and maintain land suitable for research.
8. Provide leadership for the long-range planning and development of facilities, equipment and infrastructure improvements and acquisition.
9. Supervise the management of business and financial activities of the Center including accounting, payroll, purchasing, inventory, business contracts and agreements, and sale of farm commodities.
10. Provide leadership in the management of human resources and labor relations activities including development of long-term staffing needs, and organizational planning. Be knowledgeable of and work to develop, implement, and further the Division's affirmative action goals in employment.
11. Responsible for implementation of the Center's environmental health and safety programs, as required by University policy and procedures, and federal, state, regional, local laws and regulations. Responsible for insuring a safe working environment
12. Leaps tall buildings with a single bound.
13. Faster than a speeding bullet when carrying out above-stated responsibilities.
14. Recognizes this is a 24/7 position. Sleep is taken only by prior arrangement.

"Bottom Line" Summary:

- **The times, they are a'changin – Pay attention!**
- **The Foothills, as a major California ecosystem, deserve a place on the UC Administration "radar screen".**
- **All of what I have placed in these pages should be taken to support two things:**
  - **I whole-heartedly support Cooperative Extension.**
  - **I whole-heartedly support Agricultural Field Stations ("Centers"!).**

A few references of note (all three are copyrighted by the UC Regents):

- **Scheuring, Ann Foley. 1988. A Sustaining Comradeship – The story of University of California Cooperative Extension, 1913 – 1988. Commissioned by Vice President Kenneth R. Farrell for UCCE's 75th Anniversary.** Soft bound book, well-illustrated, 63 pages.
- **Scheuring, Ann Foley (with Chester O. McCorkle and James Lyons). 1995. Science & Service – A history of the Land-Grant University and agriculture in California.** A hard bound book, well-illustrated, 260 pages.
- Scheuring, Ann F. 2001. Abundant Harvest – The history of the University of California, Davis. Hard bound, well-illustrated, 364 pages.

Effect of an immunostimulant administered at weaning on weight gain and health of calves.

Bruce R. Hoar
University of California, Davis
School of Veterinary Medicine
Dept. of Medicine and Epidemiology

Introduction: Keeping calves healthy at or near weaning can be challenging. The first 30 days after weaning is typically regarded as a period when calves are most susceptible to disease and poor performance. Some management tools available to minimize the impact of weaning include fence-line weaning and feeding or injection of prophylactic doses of antibiotic. With ever growing concern over the incidence of antibiotic resistance in animal and human health industries, cattle producers should look for means other than antibiotics for prevention of infectious disease. Stimulation of the calf's immune system is an obvious alternative that can be used to ones advantage. This can be achieved by various specific and nonspecific means. Specific immunostimulation through vaccination provides stimulation of the immune system to produce antibodies against specific antigens like IBR, BVD, and BRSV. Nonspecific immunostimulation arises from the sum of immune responses not necessarily including specific antibody formation. It includes such things as lysozyme activity, interferon activity, phagocytosis and initiation of the immune cascade. Mycobacterium Cell Wall (MCW) is a nonspecific immune stimulant that activates cell mediated immune responses. Immunoboost® (Bioniche Animal Health USA, Inc.) is a MCW fraction product licensed by the USDA to reduce death loss and clinical signs associated with E. coli (K99) in calves.

While very little data on use of this product is present in peer reviewed publications the company that produces Immunoboost® has made available results of some in-house trials. In newborn calves, treatment resulted in significantly greater numbers of MHC Class II CD-4 T-lymphocytes compared to controls. In an E. coli (K99) challenge study, 90% of treated calves survived, compared to 42% of controls. Over a 75-day feeding period, day-old calves that were treated with MCW had a 15% greater average daily gain, compared to control calves. In a trial using 500-600 pound calves over a 38-day feeding period, those treated with MCW gained 0.25 pounds/day more than untreated controls. Morbidity was reduced by 62% and treatment cost by 54% in animals receiving a 3 ml subcutaneous dose of MCW in a study using 250 pound Holstein calves arriving at a feedlot.

The specific objectives of this study are to determine whether a single administration of a MCW can reduce the incidence of morbidity and associated treatment costs and increase average daily gain of recently weaned beef calves.

Materials and Methods: According to ranch protocol, all calves are vaccinated with a 4-way modified live virus vaccine containing Infectious Bovine Rhinotracheitis, Parainfluenza-3 virus, Bovine Respiratory Syncitial virus, and Bovine Virus Diarrhea virus at approximately 3 months of age and again 2 weeks prior to weaning at approximately 7 months of age. Calves are also vaccinated against clostridial diseases at 3 months of age and on the day of weaning. A pour-on endectocide is also applied the day of weaning.

One hundred thirty-eight heifer calves were randomly assigned to receive either 3 ml of MCW subcutaneously or 3 ml saline subcutaneously administered at the same time as the 4-way viral vaccine, 14 days prior to separation from their dams. Calves were weighed at this time, at weaning, and approximately every month for 4 months. During the trial period, animals were monitored and treated for any disease events that occurred. Treatments and responses were recorded. Heifer calves were pastured on native rangelands throughout the trial.

Sixty steer calves were similarly allocated to receive either 3 ml MCW subcutaneously or 3 ml saline subcutaneously. Unlike the heifers, this was administered on the day the steers were weaned. Animal weight and disease events were monitored as for the heifer calves. Steer calves were pastured on native range for 60 days, then moved to a feedlot for the final 60 days.

Results: Treatment with MCW did not have statistically significant effects on weight gain in either steers or heifers. Over the 130 days of the trial, heifers gained an average of 0.82 lbs/day, while steer calves gained an average of 2.25 lbs/day.

No differences between groups were observed in the proportion of calves that required treatment for any illness. Fifteen of 95 (16%) control animals required at least one treatment, while 21 of 103 (20%) treatment animals required at least one treatment. All but two of the treatments were for pinkeye. Average daily gain for those treated for any illness was significantly less than for those not treated. For heifers, untreated animals gained 0.88 lbs/day during the trial, while treated animals gained 0.61 lbs/day. For steers, the differences were not statistically significant, although there was a tendency for untreated animals to gain more than treated animals (2.25 lb/day compared to 2.10 lb/day).

We did not find significant differences in weight gain or morbidity rates between animals treated with MCW and those not treated. The rate of gain of calves at the start of the study was minimal, and perhaps better nutrition may have resulted in greater differences between the groups. It is possible that the disease exposure was not sufficient in this group of animals for a beneficial response to treatment to be detected. A trial involving calves weaned directly into a feedlot where nutrition and disease exposure are both greater may prove more interesting.

Breeding efficiency in pre-pubertal beef heifers treated with an intra-vaginal progesterone releasing device (controlled internal drug release).

P.H. Favetto, D.M. Myers, and B.R. Hoar
University of California, Davis

The primary economic goal of the cow-calf operator is to produce as many calves per year as possible. To accomplish this, many heifers are bred at their pubertal, or first, estrus. Unfortunately, this may result in low pregnancy rates because the first estrus following the pre-pubertal stage may lead to the ovulation of sub-fertile ova. Important data could be obtained by observing the breeding efficiency (breeding age, interval to conception and pregnancy rate) in heifers treated with controlled internal drug release (CIDR) and bred on the second estrus following the onset of puberty and determine the reliability of reproductive tract scoring as a measure of pubertal status.

A clinical trial was designed using 84 Black-Angus and Hereford crossbred yearling heifers from an experimental station located in the foothills of Northern California. Heifers were trans-rectally palpated to determine their reproductive tract score (RTS), and blood samples were collected to evaluate serum progesterone concentrations to evaluate cyclicity. The ultrasound data and the RTS were analyzed and used to assign the heifers to one of two groups (pre-pubertal and pubertal), and randomly allocating them into a CIDR-treated group and a control group. CIDR implants were placed in the treatment group (day 0), and eight days later an intra-muscular dose of 25 mg of prostaglandin F2α was given to this group, removing the inserts the next day (day 9). At day 17, a simple synchronization protocol, with 2 injections of PGF2α (25mg) 12 days apart, followed by a single injection of gonadotrophin releasing hormone (GnRH) (12μg) 48hr after the last PGF2α, was implemented in both groups. All heifers were then artificially inseminated (AI) at a fixed-time (20 hours after the GnRH injection). Three weeks after AI, bulls were turned in with both groups of heifers and left for 2 months.

The heifers were an average of 13.9 months old, weighed 281.5 kg and had a BCS of 5.0 at first evaluation, and their average weight at first breeding was 276.2 kg. There was no significant difference in any of these parameters between groups. After the CIDR inserts were removed, estrus was observed in 21% (9/42) of the CIDR-treated heifers and 7% (3/42) of the controls heifers ($P = 0.06$). Using ultrasound to determine pregnancy, the overall conception proportion at first breeding was 23.8% (20/84); 21.4% for the CIDR group and 26.2% in the controls group ($P = 0.61$). For the final pregnancy diagnosis, (after both groups were exposed to the bulls), the overall pregnancy proportion was 75.0%; 69.1% in the CIDR group, and 81.0% in the control group ($P = 0.21$). The results obtained reflect no improvement with use of CIDR inserts on breeding efficiency. There were a greater number of heifers that showed estrus a week after treatment than the heifers that were not treated, but this difference was not statistically significant. The average breeding age of the heifers was lower than usually seen as accepted in beef operations.

Weight loss was a major problem during the study period. From the time of first evaluation to first breeding the study animals lost significant amount of weight, when the goal is to maintain a continuous growth rate in heifers to facilitate their breeding and so they reach a normal adult frame size, reducing the risk of problems at parturition. Even though nutritional problems affected the results of our study, this provides further proof that good nutrition is a key element for all areas in animal husbandry.

Electronic Identification and National Animal Identification System Updates

John Evans and Victor Velez
California Department of Food and Agriculture, Sacramento, CA

Introduction

Animal identification is a familiar concept for many beef cattle producers. Producers use identification to designate ownership and to comply with animal health programs; however, electronic identification technology, such as radio frequency identification, is still new to many producers. Therefore, the goal of this paper is to provide the basic information on electronic identification, to discuss the advantages and challenges of the technology, and to provide an update on the status of the National Animal Identification System (NAIS).

Why is NAIS important? NAIS provides animal health officials with a comprehensive and efficient method to protect animal agriculture from contagious disease outbreaks. In the event of a disease outbreak (i.e., foot and mouth disease, tuberculosis, etc.), federal and state animal health officials would use NAIS to identify all animals and premises that came in contact with the suspect animal during its lifetime within a 48 hour period. NAIS provides animal health officials with the tools to quickly contain the disease outbreak and to take proper action to resolve it. Historically, disease outbreaks can take weeks to months to determine all animals involved at a great expense to the industry in resources and lost market revenue. Currently, the information sources used to track the animal and all affiliate animals is not standardized among states. A recent tuberculosis trace back in California required animal health officials to test over 850,000 animals over two-year period (Velez, 2006). The most recent 2006 incident of a BSE infected cow in Alabama revealed that the current system is not adequate for complete disease tracking.

Electronic Identification Technology

The first question on the minds of many beef producers is "Why electronic identification?" The USDA NAIS species working group for cattle recommended the use of radio frequency identification (RFID) ear tags for cattle. This committee is made up of representatives from all segments of the cattle industry.

Does this exclude other technologies? According to USDA, other identification technologies, such as biometrics (e.g., retinal images) and DNA are considered supplemental forms of identification. Furthermore, USDA maintains a technology neutral status, which means that a tamper-proof plastic tag that meets all the requirements for USDA as an official device would be an accepted form of identification.

Technology basics. Electronic identification and RFID technology is a new concept for many beef cattle producers, but several non-agriculture industries currently use RFID technology. For example, WalMart announced to its suppliers that they would need to start using RFID technology for inventory management (Smith and Saunders, 2005). Internationally, Australia and Canada use electronic identification technology to track livestock. For this overview of electronic identification technology, it is not our intention to provide you with an exhaustive review of the technology. A detailed review of electronic identification technology is available

through the UC Cooperative Extension fact sheets about electronic identification technology, record keeping, and new identification technology (See reference section).

Inside information about electronic identification. The results of animal identification pilot projects in California provided some interesting information about electronic identification technology. Our goal is to share some of these experiences with you. Hopefully this will provide you with the additional details to make you a more informed consumer of the technology.

There are advantages to using electronic identification technology to enhance management and potentially satisfy requirements for marketing programs. In combination with a herd management software program, electronic identification technology can be used to collect herd performance information for regular management decisions. In these situations, the primary task of the technology is management and NAIS compliance becomes a secondary function for the technology. The decision to purchase an electronic identification system should evaluate the benefits of improved management against the cost of its implementation.

The introduction of new technology historically brings new challenges and many frustrations. Electronic identification technology has several issues that still need to be addressed by vendors. Our current experiences and evidence from animal ID pilot projects revealed several problems with the technology. Here is a partial list of the most common problems in animal agriculture:

1. Many producers would like to use a simple "out of the box" solution that does not seem to be available through most vendors.
2. The durability of the technology needs improvement by some vendors.
3. Some wireless technologies are still experiencing problems of dropped connections.
4. Feedback from reading devices such as the audible signals for "beeps" that signal a tag read need to be louder.
5. Radio frequency interference due to high metal environments, fluorescent lighting, and electric motors reduces the performance of RFID technology. These problems need to be documented.
6. Software systems need to be more intuitive and user friendly. Many systems require the user to master many features of the program. This is problematic when the program is used once or twice per year.
7. There is a need to conduct training on proper placement of RFID ear tags. Several producers reported higher than normal rates of infection associated with tag placement.

The previously described problems represent some of the observed challenges from the California Pilot projects; however, it is important to remember that electronic identification is an evolving area. Fortunately, many of the reputable companies respond to producer input with product enhancements. For example, one company responded to the need for a louder signal on their readers and now all their readers are easier to hear compared to older versions. Furthermore, software companies have responded with improvements to their programs.

Should a producer invest in the technology? Currently, USDA does not require you to purchase any type of electronic identification technology. The current NAIS plan calls for mandatory premises registration and animal identification in January, 2008 with mandatory tracking in

January, 2009. USDA has not announced any plans to deviate from these current goals. If the program were mandatory today, a producer would not be required to purchase any software or hardware other than an official identification device (e.g., ear tag).

Should you invest in the technology? Prior to purchasing any form of electronic identification technology, you should determine your needs and study the factual information about the technology. The decision to purchase and use electronic identification technology should be made with the best information available. At this stage of NAIS, you can capitalize on the technology for management and marketing benefits. If this is not your primary goal with the technology, you may want to postpone the purchase of new technology until more develops with respect to NAIS.

Current News for National Animal Identification System and USDA

National

840 USDA tag numbers. In early March, the USDA officially released the guidelines for production of the USA coded 840 tags. Each tag will have a 15 digit number with the first 3 digits assigned as a country code. The 840 prefix is assigned to the U.S. Previously, tag manufacturers were assigned a 3 digit code, such as 982 for Allflex. After a manufacturer is approved they can start the process of printing tags with the 840 number prefix. If a producer invested in EID tags before the release of 840 coded tags, these tags with the manufacturer code are still eligible for use with NAIS.

National tracking database. This issue is a current source of debate among different species working groups, state animal health officials, and livestock associations. The recent announcement by Secretary of Agriculture, Mike Johanns indicated that a multiple database system with one central portal for animal health officials to access will be the system of choice. This will allow for the existence of multiple databases that can be searched simultaneously by animal health officials in the event of a disease outbreak. The previous goal of a completely private database held by one group was met with resistance because several states and organizations did not reach a consensus on the previous private database model.

States

Michigan currently has legislation in place to mandate animal identification by March 1, 2007. Wisconsin has mandatory premises registration effective November 1, 2005.

California

Premises ID-California continues to provide livestock producers with premises numbers on a voluntary basis.

Pilot Projects—California Department of Food and Agriculture continues to investigate implementation of NAIS in California. Several pilot projects are in progress and many involve both beef and dairy cattle. These projects evaluate the three components of NAIS (premises identification, animal identification, and animal tracking).

Outreach and education-In conjunction with UC Cooperative Extension, state universities (i.e., Chico State University and Cal Poly), and the CDFA Bureau of Livestock Identification,

Niche Marketing of Beef in California Update

Roger Ingram
Farm Advisor – Placer/Nevada Counties

A total of four niche meat marketing conferences have been held since 2003 with an average attendance of 80 people. There is continued and sustained interest among several California producers in marketing product direct to consumers, restaurants, and retail stores. Most people are doing their own individual effort. A few are participating by providing cattle to existing niche marketing companies such as Western Grasslands Beef and Niman Ranch. The purpose of this paper is to describe current issues facing niche beef marketers and discuss potential alternatives.

Whether you are doing everything yourself or contracting with an existing company, there are six main components to any niche beef marketing effort:

Genetics	Production	Finishing	Processing	Marketing and Sales	Business

As a niche beef marketer, you need to decide whether you want to do it all or focus on a subset of the six components. Many people are trying to do all six with varying levels of success.

Genetics

The two main genetic issues are the ability to marble (deposit intramuscular fat) on grass-finishing diets and frame size. While most genetics will tend to be geared towards a traditional grain finishing system, there still remains breeding stock out there that can finish on grass. If an animal can finish easily on grass, it more than likely will do the same with grain finishing. Switching to genetics that can finish on grass will not preclude you from selling to traditional markets if you can not market all your animals as grass-finished.

Bloodlines from 50-60 years ago were well suited to grass-finishing. Finding breeding stock with the potential to pass on grass-finishing (marbling) can cause you to become a breeding detective. There are software programs associated with ultrasound that can help you identify breeding stock. Genetic stock and semen imported from New Zealand for the Red Devon breed is being touted for its ability to marble on grass. The downside is the high expense of buying a breeding animal. A more economical solution might be to purchase semen.

Two and Half Years

Whether you are using visual appraisal, ultrasound, or trying out new genetic lines, the downside is that you will not know the results of your choice for almost three years. Thing about it:

- You breed the cow or heifer
- Gestation is nine months
- It will probably take 18-22 months for the offspring to be ready harvest
- Harvest the animal and get the carcass data

Only then will you know the results of your choices. Hopefully the choices will be successful.

Frame Size
The larger the frame size of your animal, the more difficult it is to finish on grass. The reason is that rumen size is fixed at around 65% of the mature body weight of the steer or heifer you are trying to finish. Once rumen size is fixed, you are limited by that size as to the amount an animal can consume. The rumen has to empty for more consumption to occur. As an animal gets older and bigger, its maintenance requirement increases. More of the forage in the rumen goes for maintenance and less for growth and finishing. In other words, the finishing phase is inefficient for getting the needed gain on grass.

The solution is to breed smaller frame animals that will finish between 1000 and 1200 pounds. Any animal greater than a frame score of four will take a longer time to finish on grass. Smaller is better.

Open replacement heifers can provide a good starting point for getting into grass finishing if you have some access to irrigated pasture. One grass-finishing group took five open heifers and finished them for 60-70 days on irrigated pasture. These average carcass results from the heifers were as follows:

- Live Weight = 937 lbs
- Hot Carcass Weight = 546 lbs
- Dressing Percentage = 58.6%
- Maturity = A
- Quality Grade = Choice-
- Yield Grade = 1.8
- Ribeye Area = 11.6 sq in
- KPH % = 1.3
- Retail Yield = 343 lbs of which 126 lbs were trim

While you may want to be a bit heavier animal to achieve a higher carcass weight, the average finishing grade of Choice- for these small framed heifers illustrates of what can happen on grass with small framed animals. You can get to a choice grade on grass and/or forage

Production
Production takes into account the cow-calf and stocker phases. Most people have experience with these two phases. It is relatively easy to find custom graziers who will take animals in on the stocker phase and be paid either on the gain per pound or per head per month charge. The key point in both these phases is keeping the animal healthy so that it continues to grow throughout these phases. Any type of forage strategy that can minimize periods of no gain or loss is very beneficial. By the end of the stocker phase, you will most likely have an animal that weighs between 750-850 pounds.

Finishing
Finishing is the period of time the animal puts on the last 200-300 pounds after the stocker phase. This is assuming a finish weight between 1000-1200 pounds. Ideally, you would like to maintain a average daily gain of 1.75 lbs. You definitely need to have animals consistently gaining weight at that rate or higher the last sixty days prior to harvest. Remember, marbling is the last fat deposition by the animal and the first that will be lost if it starts to lose weight in that period.

outreach programs are being conducted in all regions of California. These programs will continue as long as funding is available from USDA to support these efforts.

Future projects-There is a plan for an economic analysis of NAIS. USDA recently awarded a cooperative agreement to conduct an economic analysis of animal identification in California. Additionally, this project will evaluate the use of the brand inspectors to support the efforts of NAIS in California.

Summary

Electronic Identification is a developing field. If you decide to purchase electronic ID technology, it is important to be realistic with your expectations and realize that the technology will evolve over time. Therefore, it is important to take the opportunity to study the technology and understand how it can benefit your operation.

Information Resources

Web pages:

California Department of Food and Agriculture http://www.cdfa.ca.gov/pais/
UC Davis Animal Identification http://animalscience.ucdavis.edu/animalID/
U.S. Department of Agriculture http://animalid.aphis.usda.gov/nais/

Fact Sheets:

UC Cooperative Extension-Available online at http://animalscience.ucdavis.edu/animalID/
Printed copies can be obtained from your local Farm or Livestock Advisor

Fact Sheet 1-Cattle Identification and National Animal Identification
Fact Sheet 2- Obtaining a Premises Identification Number in California
Fact Sheet 3-An Introduction to Electronic Animal Identification Systems and Comparison of Technologies
Fact Sheet 4-Value of Individual Record Keeping to Commercial Livestock Operators
Fact Sheet 5-Emerging Management Systems in Animal Identification

Information Sources

Velez, V. 2006. Personal communication. California Department of Food and Agriculture.

Evans, John, Josh Davy, and Theresa Ward. 2005. An introduction to electronic animal identification systems and comparison of technologies. UC Cooperative Extension. November. Retrieved from http://animalscience.ucdavis.edu/animalID/

Smith, Gary C., and Leann Saunders. 2005. International Identification, Traceability, and Verification: The Key Drivers and the impact on the Global Food Industry. 2005 International Livestock Congress. Retrieved from http://www.livestockcongress.com/.

There is not a custom finish grazier network in California. This puts people in the position of having to do it themselves. This means you are limited by the forage resources you have on hand or you need to find additional sources.

Another challenge is the spring flush of growth that occurs in roughly from mid-March to mid-May. If the grass gets ahead of the animals, it loses quality. It is important to keep finishing stock on vegetative grasses and forage to keep weight gains high. Shorter graze periods will also encourage higher consumption as animals will tend to eat more when exposed to fresh feed.

Annual Range
Thousands of acres in California make up annual range. A lot of it can be used for most of the year as cow feed. Out of 365 days in a year, annual range will only provide 60-75 days of feed that is of sufficient quality and quantity to use for grass-finishing.

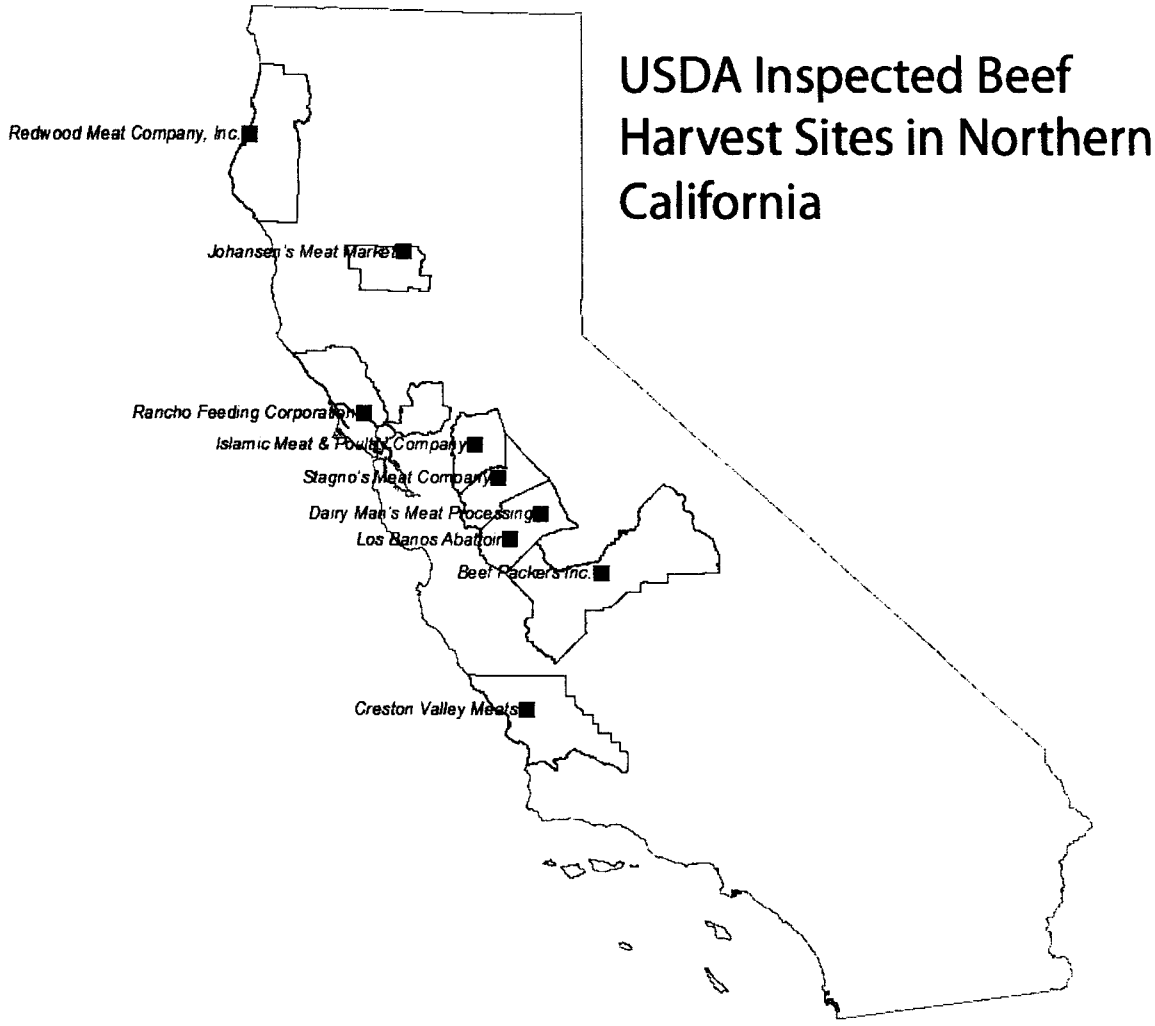
Irrigated Pasture
The use of irrigated pasture can extend your grass-finishing ability at least through June. July and August can be problematic due to the annual summer slump that occurs with orchardgrass and tall fescue pastures. These are cool season grasses that grow faster in the spring and fall while slowing down in the summer. One way to deal with the summer slump would be to finish more of your animals in late spring and early summer. This would allow you to reduce stocking rate of finishing animals to match the lower supply of forage in the late summer.

Fall and Winter
The challenge for grass-finishing is during this time frame. We do not have enough supply of grass on either irrigated pasture or annual range to achieve needed weight gains. Here are some potential solutions:

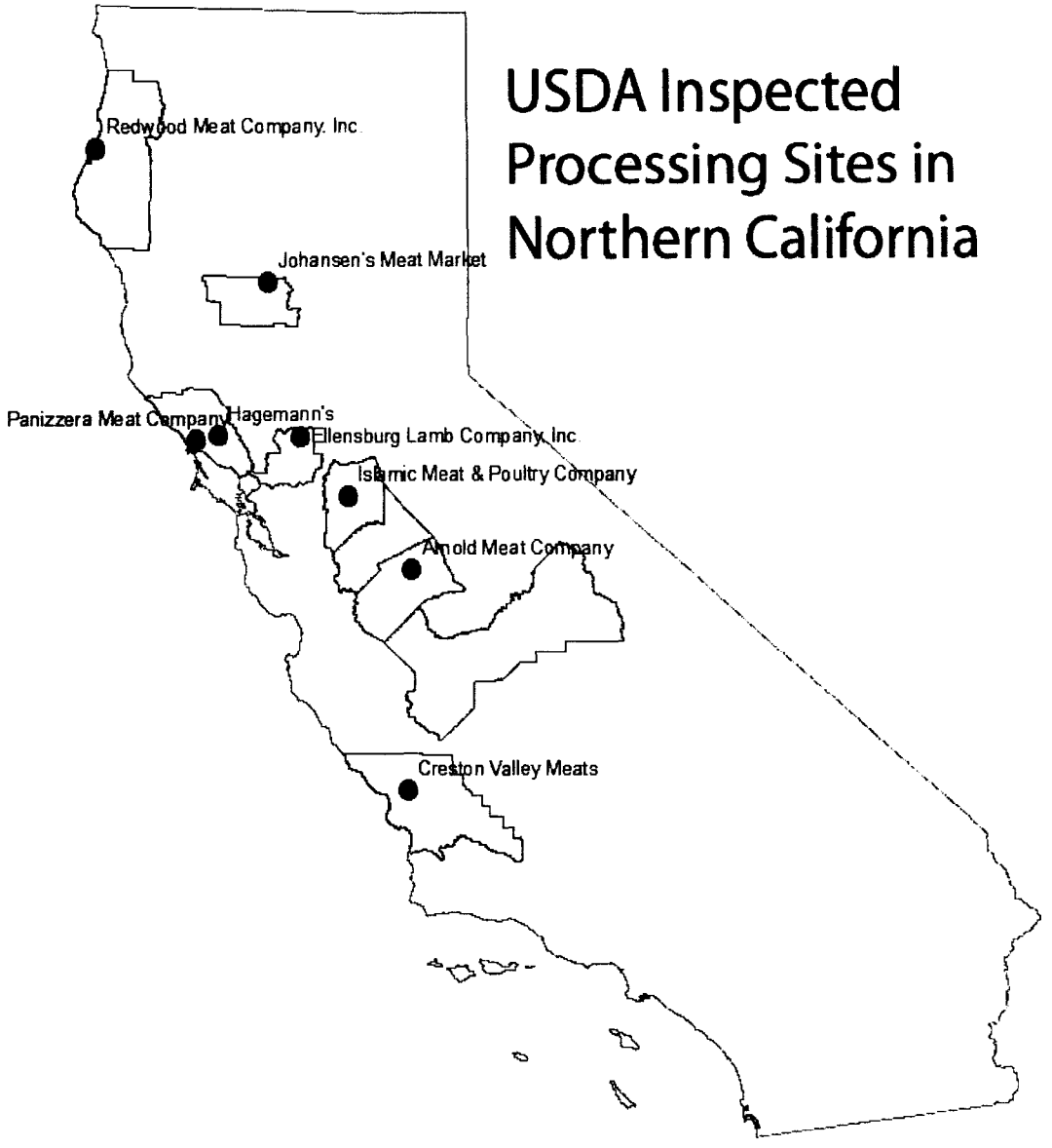
- Stockpile some feed from irrigated pasture that could be harvested later in the fall. This would help maintain supply, but quality will drop
- Plant winter annuals in August or September and irrigate and these would be available to grazer by November. You would need land, equipment, and irrigation. They have had good success up Siskiyou and Modoc Counties growing planted winter annuals and many dairies in California use them effectively.
- Use by-product feeds to supplement the existing forage supply. California grows approximately 250 crops. This gives grass-finishers option for additional feed choices. It is important to only select those by-products that do not alter the typical fatty acid profiles of grass-fed beef. Baublits, et al (2004) utilized pelleted soybean hulls fed at 1% body weight to finish steers to a choice quality grade on orchardgrass and tall fescue pasture in Tennessee. Baublits, et al (2004) found that feeding of the soybean hulls did not impact the fatty acid profiles typically associated with grass-finished beef.
- Being willing to ship animals to other parts of the state that have grass when you do not.
- Silage and haylage would be of sufficient quality for grass-finishing
- Hay could be another source for forage provided it was of sufficient quality

Processing

Another big challenge for grass-finishing beef is the lack of USDA inspected harvest and processing sites in California that are open to the public. Here is a map of USDA inspected beef harvest facilities (there may be more, but these are the ones I am aware of).



On the following page is a map of USDA inspected processors (there may be more, but these are the ones I am aware of).



The big issues are as follows:

- Those who are currently in existence can get overwhelmed with demand at certain times of the year which can delay animals get processed
- Transportation to USDA harvest and processing sites can end up being very far. The combination of high mileage for the round trip along with few animals going in the trailer can result in profit being eaten up by this direct cost
- Processors need a consistent supply coming in to keep labor permanent. Processors need cutting instructions that fall in line with Institutional Meat Purchase Specifications (IMPS).

Marketing and Sales
Marketing is how you generate the interest in your product. Sales means taking the order, fulfilling the order, providing customer service, and getting paid. Marketing can be accomplished in a variety of ways:

- Tasting of product
- Providing meat for a community event
- Cooking at local food events
- Providing samples to potential marketing outlets such as consumer groups, retail stores, and restaurants
- Advertising in a cost-effective manner
- Presentations to help educate clientele about your grass-finished product
- Recipes and cooking instructions

Sales means getting the product the customer desires in their hand at the time they need it. Consumers will more easily adapt to a seasonal frozen product. Most stores and restaurants desire a year round fresh product.

Since only 14% of the carcass consists of desirable high priced cuts, marketing and sales must work together in order to balance orders. If a restaurant needs a certain quantity of desirable cuts, this must be balanced with other marketing venues which will take less desirable cuts from the shoulder and rump. The failure to achieve balance with these carcass cuts can result in meat piling up in a cooler and profits disappearing.

Distribution can be another challenge. Will you run enough volume of product to interest a distributor or will you do it yourself?

Business
After all of the above is done, you still have to manage the business. Why are you in business? What is your product? Do you have a mission statement and vision? What is the motivation that keeps you in this business?

Many people assume that higher prices associated with a niche product will mean higher profits. This is not necessarily true as you incur extra direct costs associated with finishing, processing, and marketing. You will also have extra overhead marketing and sales labor costs. Do you have to price a product so high that only a small percentage of the population can afford to buy it? If you get into a store that markets a lot of product, they will push you to price points more in line with other beef products they carry. Can you accept a lower margin per animal? Can you increase turnover to overcome the lowered margin?

Conclusion
In the end – what do you want? If you can answer this question along with doing an economic analysis, it will help you pinpoint which components you want your business to be doing. You can do it all as long as volume stays relatively low. The more volume increases, the harder it will be to do it all. Collaboration and partnership will become more important to meeting the increased demand for grass-finished beef. Be sure to conduct an economic analysis to make sure it makes sense for you to be doing niche beef marketing.

Literature Cited

Baublits, et al, 2004. Carcass and color characteristics of beef from three biological types of cattle grazing cool season forages supplemented with soyhulls. Ark. Anim. Sci Rep. 509:9-11.

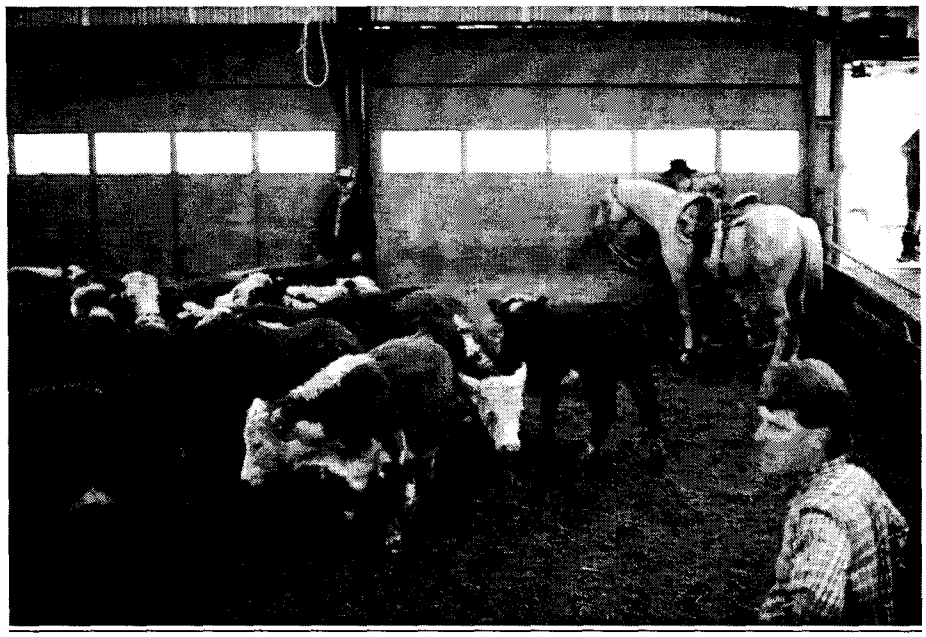
Baublits, et al, 2004. Chemical, fatty acid, and tenderness characteristics of three biological types of cattle grazing cool season forages supplemented with soyhulls. Meat Sci. 68:297-303.

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2005

SAMPLE COSTS FOR BEEF CATTLE YEARLING/STOCKER PRODUCTION

300 Head



SACRAMENTO VALLEY

(Northern Sacramento Valley)

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UC COOPERATIVE EXTENSION
SAMPLE COSTS FOR BEEF CATTLE YEARLING/STOCKER PRODUCTION
300 Head
Sacramento Valley – 2005

INTRODUCTION

The cattle industry in California has undergone dramatic changes in the last few decades. Ranchers have experienced increasing costs of production with a lack of corresponding increase in income. Issues such as international competition, new regulatory requirements, changing consumer demand, economies of scale, and competing land uses affect the economics of ranching. Rangeland makes up the largest percentage of acreage in the state. Cattle operations play an important part on California's environment and landscape. They need to be economically viable to maintain the current landscape.

Sample costs to raise beef cattle are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production practices considered typical for a beef cattle yearling/stocker operation, but will not apply to every situation. Sample costs for materials, equipment and custom services are based on current figures.

The hypothetical cattle operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

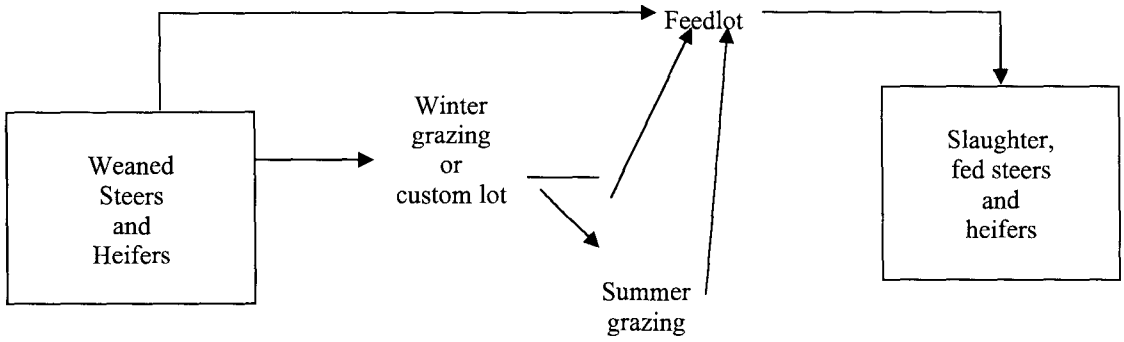
Sample Cost of Production Studies for many commodities can be downloaded at http://coststudies.ucdavis.edu, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

ASSUMPTIONS

The assumptions refer to Tables 1 to 6 and pertain to sample costs to operate a beef cattle yearling/stocker operation. Practices described represent production practices and materials considered typical of a well-managed ranch in the northern Sacramento Valley. The costs, materials, and practices shown in this study will not apply to all situations. Production practices vary by grower and the differences can be significant. **The use of trade names and ranching practices in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products or cultural practices.**

Cattle Operation. In California, cattle will typically pass through three phases while reaching market weight. These include the cow-calf operation, yearling/stocker phase and finishing or feedlot phase.

Figure 1.



- This cow-calf phase is from birth to weaning (cattle are typically weaned at 8 to 9 months weighing around 600 pounds.
- The yearling/stocker phase will take these weaned cattle and grow them out on grass to about 800 to 900 pounds (14 to 20 months).
- The feeding phase takes these yearlings off grass and places them in a feedlot for 90 to120 days (or until they reach a desired finish weight).

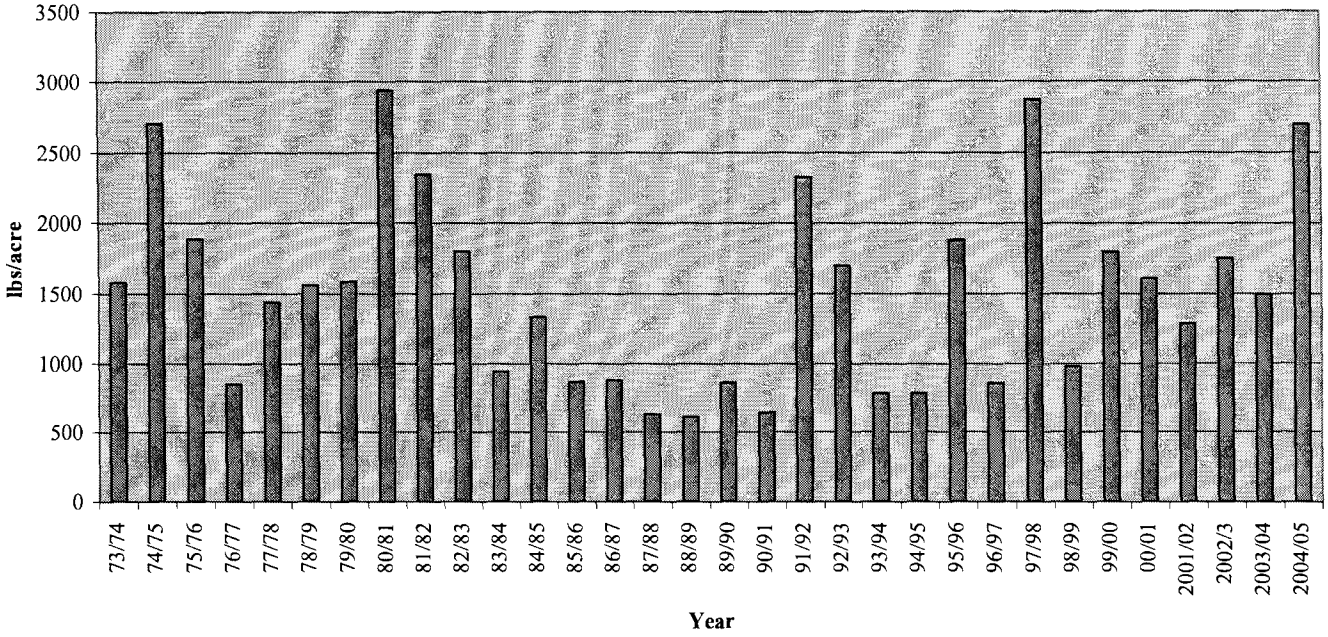
This study will focus on the yearling/stocker operation. For the purposes of this study, 530 pound steer calves will be discussed. Across California, cattle production techniques and management vary.

Yearling/stocker cattle can come from several sources. A cattle producer can keep the weaned calves or they can be purchased. Different time periods through out the calendar year can affect the availability of stocker cattle and may change the cost of purchase or income from sales.

This study focuses on yearling/stocker cattle that are retained or bought at weaning. It assumes that pasture is leased. The grazing lease is based on a $120 per cow price for a six month season. A cow is calculated as one Animal Unit (AU). Stockers weighing 530 pounds are calculated as 0.5 AU and cost $60 per animal for a six month contract. It also assumes cattle will be sold or moved into a feedlot once they reach 800 pounds. The herd size is 300. The fixed costs will vary with the number of head involved or size of the operation.

Yearling/stocker operations are typically seasonal in California and primarily occur on rangeland where forage production is solely dependant upon seasonal rainfall. Figure 2 outlines the annual variability in forage production at a site in the northern Sacramento Valley - Shasta County. Producers must cope with stocking the ranches appropriately to manage this variation in forage production.

Figure 2. Average Forage Production on Annual Range Near Redding, CA across 31 Years



In the Central and Sacramento Valleys, and the Coast Range of California, cattle are typically grazed from late autumn through late spring. Irrigated pasture and mountain ranges are generally grazed from late spring through mid autumn.

The goal of yearling/stocker cattle operations is to reduce the cost per pound of gain on heifers and steers. Average daily gain varies across the state. Depending upon location, producers might expect gains from 250 to 325 pounds per head for the season. Forage quality and quantity are the primary drivers in seasonal cattle gain. Secondarily, rate of gain may also be affected by health, body condition, mineral nutrition and the quality of the cattle.

Production Options

Producer Purchases Yearling/Stockers or Retains Owned Yearling/Stockers

(Table 1)

These two options can be treated the same in this cost study. If producers retain their own calves after weaning, they have forgone the opportunity to market them as calves and have effectively transferred them to a yearling/stocker enterprise. The fair market value of those calves must be assigned to the yearling/stocker enterprise to evaluate the profitability of the enterprise.

Most yearling/stocker operations turn out purchased weaned cattle on grass at the onset of the grazing season.

The market fluctuation during the grazing season represents significant risk for producers purchasing or retaining calves. Risk management may be facilitated through the use of options and futures. Consult qualified professionals when considering which risk management technique is the most appropriate for you. Many operations have done a great job on calf performance only to have the market move against them during the period that they own the calves. The feeder margin is the price per pound difference between the lighter weight calves at purchase and the heavier weight calves at sale time. Receiving 15 cents less per pound is expected,

based upon Western Video Auction sale averages from 1997 to 2003; if the market drops during the ownership period, all or any profit is quickly lost. Table A shows the price spread for six years on the Western Video Market price average for 500 to 600 pound steers compared to the price average of 800 pound steers during a six month ownership for both a winter rangeland and summer irrigated pasture operation. Winter (October to May) operations had an average feeder margin of minus 17 cents per pound, while cattle pastured over the summer (May to October), averaged a minus 12 cents.

Table A. Price Spread for Winter & Summer Operation

YEAR Winter Oct to May	FEEDER MARGIN cents/lb	YEAR Summer May to Oct	FEEDER MARGIN cents/lb
1997-1998	-24.80	1997	-15.30
1998-1999	-9.80	1998	-14.52
1999-2000	-8.48	1999	-7.02
2000-2001	-17.15	2000	-10.46
2001-2002	-35.30	2001	-18.82
2002-2003	-8.75	2002	-8.31
Average	-17.38	Average	-12.41

One third of the time the market moved down below the normal feeder margins (resulting in margins of more than 15 cents) and price insurance would have been helpful. For example, the winter feeder margin in 2001-02 (Table 6) grew to 35.30 cents, resulting in an operating loss of $45,615 for the year. Table 6 illustrates the impact of market price shifts for winter grazing of purchased yearlings over the same period on the operation profitability.

Feeder options can be used as a method to provide price insurance. Purchase of an option can be secured though a commodities broker and producers can choose the level of risk that they want to insure against. Some choose to buy the lowest cost option to provide cheap insurance against a large price swing. Others determine their breakeven costs and insure a price at or above that amount. Option prices generally cost from 1 to 5 cents per pound. Contracts are sold on a truckload or 44,000 pound lot. Larger operations use multiple purchases of calves over time (similar to dollar cost averaging in stocks) as a strategy to limit risk. Using a video auction to forward contract calves can also be used to reduce price risk. The fact that using yearly market price averages from 1997 to 2003, the budget estimated a cash loss in four of the six years for the operation (Table 6), which clearly points out that this, is an important management area that should not be overlooked to assure profitability or at least avert a financial disaster. The option of $0.02 per pound purchased based on the out weight of the 300 head purchased is a minimal price protection used only to insure against extreme price swings.

Producer Custom Grazes Yearling/Stockers for Payment on Gain or Per Head
(Table 2)

In this scenario, a ranch lease holder grazes non-owned yearling/stockers and is paid on the body weight gain. Stockers usually will weigh between 500 to 600 pounds upon arrival.

In most contracts a 2% death loss is acceptable to the cattle owner. Missing cattle, not verified as dead, may be the responsibility of the lease holder. Any amount above that is the responsibility of the lease holder providing the pasture. Payment is based on a per pound of gain basis. Generally, the owner of the cattle provides medication and processing vaccine, and the lease holder provides the labor. The value for medication and vaccine ranges from 30 to 34 cents per pound of gain. This study assumes the producer will receive 30 cents per pound of gain. The shrink weight can be an important item of consideration. In most gain payment contracts, calves' weights are determined at the time of purchase and are generally shrunk. Cattle are gathered, weighed and shipped at the end of the grazing season. Shrink is generally figured at 3%. Net gain is calculated by subtracting the shrunk weight from the in weight. The quality of calves that are received can greatly vary the pounds of gain. Some producers have a contract clause allowing loads to be rejected on quality or health. We assume that the cattle will gain 270 pounds (or 1.5 pounds per day) during the grazing period. In this cost study, it was found that the net returns above operating costs for gain cattle (at 30 cents per pound) was $0.73 less than straight cash pasture rent.

Natural Production Costs
(Table 3)

There has been much interest to determine if there is a financial advantage to natural production (no implants, hormones, or antibiotics used in production) of stocker or yearling cattle. Previous studies showed that from 1997 to 2003, the average premium for natural calves weighing 500 to 625 pounds was 1.6 cents. We assumed that the 764 pound natural steers would sell at a two cent premium (Blank et. al 2006). Additional costs of operation are identifying any sick animals that require antibiotic treatment and selling them separately at an auction yard in a smaller lot that will bring a nine cent reduction in price per pound (Western Video Auction). It is estimated that not using implants and ionophores will reduce the animal gain by 0.084 to 0.30 and 0.11 to 0.18 pound of gain per day respectively (Fields and Taylor). Because the "natural" calves gained 36 pounds less than the conventional cattle, a three cent price differential was used. This price differential (generated by the lighter sale weight) coupled with the premium paid resulted in a five cent higher price per pound for the natural cattle (Western Video Auction 2000 data). Using these data inputs, this study found yearling/stocker cattle pastured under a "natural" regime had per calf net income of $12.44 less than the standard operation that used conventional production tools (implants, antibiotics, ionophores, etc.). If you presently do not use implants or ionophores, your income may be greater with natural production.

Production Operating Costs

Operations. The Operations Calendar for a yearling/stocker operation is shown in Table B. The operations are affected by several factors such as weather and available feed. Therefore, depending upon the season, the operations will vary each year.

Pasture, Hay and Supplements. This includes the market value of all feed (purchased or raised) that was used in the stocker operation. The assumption used in this study is that pasture is rented for $20/AUM (an AUM [animal unit month] is the equivalent to 1,000 pounds of forage on an air dry basis) over a six-month period. Some operations feed small amounts of hay when they receive or ship cattle. Hay may also be fed when weather conditions are not conducive to production of forage.

Some areas of California are deficient in micro and macro-nutrients. Consult your local veterinarian to learn about what might be deficient in your area. For Se, Cu, Zn and P a good reference by county is the UC Website http://animalscience.ucdavis.edu/Projects/Mineral Project/.

Table B. *Operations Calendar for Beef Weaned calves - Based on range & pasture (300 head, 2% calf mortality)

Month			Operation
November 1	to	May 30	Winter Range
November	to	December	Vaccination/Deworming
March			Deworming
May			Calves Sold

*Calendar will vary each year according to the season

Health, Veterinary, Medicine. Since the cattle have been in different environments, they potentially have been exposed to a variety of diseases. Because of the higher risk of stress occurring, the most critical period of managing yearling/stockers is when the producer receives a new shipment of cattle at a new location. Good health and nutrition management during this critical period can greatly impact profitability. Cattle being received should be treated to reduce risk from parasites (external and internal) and disease. Consult your local veterinarian on the best program for your cattle. Cattle should be appropriately identified. Cattle will be gathered and processed again mid season. This study assumes a death loss of 2%.

Vehicle/Freight. Pickup business vehicle mileage is estimated at 3,000 miles per year and includes mileage while pulling the stock trailer. Estimated mileage for the stock trailer is 350 miles and the All Terrain Vehicle (ATV) 4-wheeler is 1,530 miles per year. Freight or trucking costs are commercial costs for hauling the cattle. The purchase of the calves requires transportation to the ranch, which costs $500 per load or $5 per head. The 800 pound stockers are sold by video auction and the terms require no transportation costs at the time of sale.

Repairs. Vehicle and equipment repairs are accounted for in the mileage rate allocated to each vehicle.

Labor. Most ranchers can no longer afford hired labor, but may use volunteer weekend help. Owner labor for hauling, turnout, gathering, feeding, fence repair, irrigation (when applicable), salting, checking calves, and moving pastures is also not included as a cost.

Marketing/Returns. The animals are marketed through a video market auction. This study uses the average price received from a six year (1997 to 2003) study of prices (Blank et. al 2006) to place a value at the beginning and end of the six month grazing season. To arrive at the feeder margin (difference in price of the calves at purchase and then at sale), the averages of 500 to 600 pound calves were subtracted from the following year's 800 pound steers to determine the average feeder margin during the period. Table 5 (Ranging Analysis) shows a range of returns for each of the operations – Purchased Yearlings, Gain, Natural - using a range of prices.

Interest on Operating Costs. Interest on operating costs is calculated on cash costs (calves purchased and operating costs) and is calculated at 2% annual interest (savings account rate) over a 6-month period.

Risk. Production risks should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial and market risks, which affect profitability and economic viability.

Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, equipment repairs, and management.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage.

Office Expense. Office and business expenses are estimated at $1,000 per year or $3.33 per head. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, utilities, and miscellaneous administrative charges.

Non-Cash Overhead
(Table 4)

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Values in the table are for information only. The equipment capital recovery costs are included in the mileage costs shown in Tables 1 to 3.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The purchase price and salvage value for equipment and investments are shown in the tables.

Interest Rate. The interest rate of 6.01% used to calculate capital recovery cost is the USDA-ERSs ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources.

Tack. Includes two saddles and related equipment (blanket, headgear, etc.).

Portable Cattle Working Facilities. Consists of portable loading chutes and portable corral panels. Depending upon the type and number of squeeze chutes and corral panels, the price will vary. An estimated price for livestock handling equipment required by a typical 300-stocker operation is used in this study.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. Annual ownership costs for equipment and other investments are shown in the Equipment, Investment, and Business Overhead Costs table.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

REFERENCES

Blank, Steven C., Hayley Boriss, Larry Forero and Glenn Nader. *Cattle Prices in Western Video Markets.* California Agriculture. March 2006.

Boehlje, Michael D. and Vernon R. Eidman. 1984. *Farm Management.* John Wiley and Sons. New York, NY

Fields, Thomas G., Robert W. Taylor. *Beef Production and Management Decisions.* 4th Edition. 2003. ISBN: 0130888796.

USDA-ERS. 2004. *Farm Sector: Farm Financial Ratios.* Agriculture and Rural Economics Division, ERS. USDA. Washington, DC http://www.ers.usda.gov/data/farmbalancesheet/fbsdmu.htm; Internet; accessed January 5, 2005.

Western Video Auction. Weekly Price Report for Shasta Livestock Auction September 2, 2005. www.wvmcattle.com/shastamr.htm

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Table 1. 300 HEAD OF PURCHASED YEARLING/STOCKERS

Sacramento Valley - 2005

Gross Income	**Number**	**Weight**	**Dollar Value**	**Gross Value**	**[1]Per Calf**
Calves Purchased	300	530	1.23	195,570	651.90
Calves Sold[2]	294	800	1.08	254,016	846.72
Gross Income (Calves Sold less Calves Purchased)				**58,446**	**194.82**
Operating Costs					
Pasture (leased-based upon seasonal $120/cow or 1AU)[3]				18,000.00	60.00
Purchased Feed :	**Tons**	**Cost/unit**			
Salt	3.00	230.00		690.00	2.30
Supplement	3.00	550.00		1,650.00	5.50
Hay	13.00	120.00		1,560.00	5.20
Veterinary/Medical			5,100.00	5,100.00	17.00
Transportation of cattle			1,500.00	1,500.00	5.00
Truck Mileage	3000.00	0.49	1,455.00	1,455.00	4.85
Stock trailer mileage	350.00	0.18	63.00	63.00	0.21
4 Wheeler mileage	1530.00	0.20	306.00	306.00	1.02
Brand inspection			300.00	300.00	1.00
Checkoff (Marketing Order Promotion)			300.00	300.00	1.00
Marketing Costs Video or Auction fees			1,461.15	1,461.15	4.87
Horse costs - shoes, vet, & feed			309.00	309.00	1.03
Options (based on out weight of 800 lbs.)[4]		0.02	4,800.00	4,800.00	16.00
Total Cash Operating Costs				**37,494.15**	**124.98**
Income Above Cash Operating Costs				**20,951.85**	**69.84**
Ownership Costs					
Interest on Operating Costs (calves + operating cash)				2,330.64	7.77
Insurance (Vehicle, liability, etc.)			1,500.00	1,500.00	5.00
Overhead (utilities, office costs, legal and accounting)			1,000.00	1,000.00	3.33
Total Overhead (Cash & Non-Cash Overhead)				**4,830.64**	**16.10**
Total Costs				**42,324.79**	**141.08**
Net Returns Above Total Costs (Returns to Land and Management)				**16,121.21**	**53.74**

[1] Per Calf based on 300 head purchased

[2] Assumes a 2% death loss or 6 had of 300 calves = 294 calves

[3] Assumes calves at 0.5 AU for the 300 head purchased and does not account for death loss

[4] Based on 300 head purchased

Note: The cost of labor and health insurance is not included

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Table 2. 300 HEAD OF YEARLINGS/STOCKERS ON THE GAIN

Sacramento Valley - 2005

Gross Income	Number	Weight Gain	Dollar Value	Gross Value	[2]Per Calf
Calf gain/pound[1]	294.00	270.00	0.30	**23,814.00**	**79.38**
Operating Costs					
Pasture (leased-based upon seasonal $120/cow or 1 AU)[3]				18,000.00	60.00
Purchased Feed :	**Tons**	**Cost/unit**			
Salt	3.00	230.00		690.00	2.30
Supplement	3.00	550.00		1,650.00	5.50
Hay	13.00	120.00		1,560.00	5.20
Veterinary/Medical (provided by owner)		0.00		0.00	0.00
Transportation of cattle		0.00		0.00	0.00
Truck Mileage	3,000.00	0.49	1,455.00	1,455.00	4.85
Stock trailer mileage	350.00	0.18	63.00	63.00	0.21
4 Wheeler	1,530.00	0.20	306.00	306.00	1.02
Horse costs - shoes, vet, & feed			309.00	309.00	1.03
Total Cash Operating Costs				**$24,033.00**	**$80.11**
Income Above Operating Costs				**-$219.00**	**-$0.73**
Ownership Costs					
Insurance (Vehicle, liability, etc.)				1,500.00	5.00
Overhead (utilities, office costs, legal and accounting)				1,000.00	3.33
Total Overhead (Cash & Non-Cash Overhead)				**2,500.00**	**8.33**
Total Costs				**26,533.00**	**88.44**
Net Returns Above Total Costs (Returns to Land and Management)				**-2,719.00**	**-9.06**

[1] Assumes a 2% death loss or 6 head of 300 calves = 294 calves

[2] Based on the 300 head received

[3] Assumes calves at 0.5 AU for the 300 head received and does not account for death loss

Note: The cost of labor and health insurance is not included.

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Table 3. 300 HEAD OF PURCHASED YEARLINGS/STOCKERS - NATURAL

Sacramento Valley 2005

Gross Income	**Number**	**Weight**	**Dollar Value**	**Gross Value**	**[1]Per Calf**
Calves Purchased	300.00	530.00	1.25	198,750.00	662.50
Natural Calves Sold[2]	289.00	764.00	1.13	249,499.48	831.66
Non Program Calves[3]	5.00	764.00	0.99	3,781.80	12.61
Gross Income (Natural + Non Program less Purchased)				**54,531.28**	**181.77**
Operating Costs					
Pasture (leased-based upon seasonal $120/cow)[4]				18,000.00	60.00
Purchased Feed :	**Tons**	**Cost/unit**			
Salt	3.00	230.00		690.00	2.30
Supplement	3.00	550.00		1,650.00	5.50
Hay	13.00	120.00		1,560.00	5.20
Veterinary/Medical			5,200.00	5,200.00	17.33
Transportation of cattle			1,500.00	1,500.00	5.00
Truck Mileage	3,000.00	0.49	1,455.00	1,455.00	4.85
Stock trailer mileage	350.00	0.18	63.00	63.00	0.21
4 Wheeler	1,530.00	0.20	306.00	306.00	1.02
Brand inspection			300.00	300.00	1.00
Checkoff (Marketing Order Promotion)			300.00	300.00	1.00
Marketing Costs Video or Auction fees			1,364.24	1,364.24	4.55
Horse costs - shoes, vet, & feed			309.00	309.00	1.03
Options (based on out weight of 764 lbs.)[5]		0.02	4,584.00	4,584.00	15.28
Total Cash Operating Costs				**37,280.28**	**124.27**
Income Above Cash Operating Costs				**17,251.00**	**57.50**
Ownership Costs					
Interest on Operating Costs (calves + operating cash)				2,360.30	7.87
Insurance (Vehicle, liability, etc.)			1,500	1,500.00	5.00
Overhead (utilities, office costs, legal and accounting)			1,000	1,000.00	3.33
Total Ownership Costs (Cash & Non-Cash Overhead)				**4,860.30**	**16.20**
Total Costs				**42,140.58**	**140.47**
Net Returns Above Total Costs (Net Returns to Land & Management				**12,390.70**	**41.30**

[1] Based on 300 head purchased

[2] Assumes price for calves sold on Table 1 ($1.08) plus Natural premium ($0.02) and higher price due to lighter weight ($0.03) = $1.13

[3] Assumes a 2% death loss or 6 head of 300 calves = (289 + 5) or 296 calves

[4] Assumes calves at 0.5 AU for the 300 head purchased and does not account for death loss

[5] Based on 300 head purchased

Note: The cost of labor and health insurance is not included.

UC COOPERATIVE EXTENSION

***Table 4. EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD**

300 Head, Yearling/Stocker Operation

Sacramento Valley – 2005

	Purchase Price	Salvage/Cull Value	Livestock Share (%)	Useful Life (yr)	Annual Taxes and Insurance	Annual Capital Recovery
BUILDINGS, IMPROVEMENTS AND EQUIPMENT						
Gooseneck trailer	10,000.00	1,000.00	100	20	51.70	845.40
Saddles/Tack (2)	3,800.00	0.00	100	10	17.86	516.54
Portable Corals, Chutes, Panels	15,000.00	0.00	100	20	70.50	1,308.83
Total BUILDINGS, IMPROVEMENTS AND EQUIPMENT	**28,800.00**				**140.06**	**2,670.77**
PURCHASED LIVESTOCK						
Horses (2)	3400.00	1200.00	100	10		414.51
Total PURCHASED LIVESTOCK	**3400.00**					**414.51**
MACHINERY AND VEHICLES						
ATV	6,000.00	600.00	76.5	12	114.37	520.59
Pickup 4x4 3/4 ton	36,000.00	3,600.00	15	6	434.13	1,021.11
Total MACHINERY AND VEHICLES	**42,001.00**				**548.49**	**1,541.70**

*Information Only –Costs show in Tables 1-3 as cash costs

UC COOPERATIVE EXTENSION

Table 5. RETURNS ANALYSIS FOR 300 HEAD YEARLING/STOCKER PRODUCTION

Sacramento Valley - 2005

PURCHASED YEARLINGS/STOCKERS

Operation	Number	Pounds	$/lb						
CALVES SOLD	294	800	0.78	0.88	0.98	1.08	1.18	1.28	1.38
Less Calves Purchased	300	530	0.93	1.03	1.13	1.23	1.33	1.43	1.53
GROSS INCOME (Sold minus Purchased)			35,586	43,206	50,826	58,446	66,066	73,686	81,306
Total Cash Operating Costs (Table 1)			37,494	37,494	37,494	37,494	37,494	37,494	37,494
Total Cash Operating Costs/Calf	300		125	125	125	125	125	125	125
Total Income Above Cash Costs			-1,908	5,712	13,332	20,952	28,572	36,192	43,812
Total Income Above Cash Costs/Calf	300		-6	19	44	70	95	121	146
Total Overhead Costs (Table 1)			4,831	4,831	4,831	4,831	4,831	4,831	4,831
Total Overhead Costs/Calf	300		16	16	16	16	16	16	16
Total Costs			42,325	42,325	42,325	42,325	42,325	42,325	42,325
Total Costs/Calf	300		141	141	141	141	141	141	141
Total Net Income			-6,739	881	8,501	16,121	23,741	31,361	38,981
Total Net Income/Calf	300		-22	3	28	54	79	105	130

YEARLINGS/STOCKERS ON THE GAIN

CALF Gain/Pound	294	270	0.15	0.20	0.25	0.30	0.35	0.40	0.45
GROSS INCOME			11,907	15,876	19,845	23,814	27,783	31,752	35,721
Total Cash Operating Costs (Table 2)			24,033	24,033	24,033	24,033	24,033	24,033	24,033
Total Cash Operating Costs/Calf	300		80	80	80	80	80	80	80
Total Income Above Cash Costs			-12,126	-8,157	-4,188	-219	3,750	7,719	11,688
Total Income Above Cash Costs/Calf	300		-40	-27	-14	-1	13	26	39
Total Overhead Costs (Table 2)			2,500	2,500	2,500	2,500	2,500	2,500	2,500
Total Overhead Costs/Calf	300		8	8	8	8	8	8	8
Total Costs			26,533	26,533	26,533	26,533	26,533	26,533	26,533
Total Costs/Calf	300		88	88	88	88	88	88	88
Total Net Income			-14,626	-10,657	-6,688	-2,719	1,250	5,219	9,188
Total Net Income/Calf	300		-49	-36	-22	-9	4	17	31

PURCHASED YEARLINGS/STOCKERS - NATURAL

NATURAL CALVES SOLD	289	764	0.83	0.93	1.03	1.13	1.23	1.33	1.43
NON PROGRAM CALVES SOLD	5	764	0.69	0.79	0.89	0.99	1.09	1.19	1.29
Less Calves Purchased	300	530	1.00	1.05	1.15	1.25	1.35	1.45	1.55
GROSS INCOME (Sold minus Purchased)			26,896	41,408	47,970	54,531	61,093	67,654	74,216
Total Cash Operating Costs (Table 3)			37,280	37,280	37,280	37,280	37,280	37,280	37,280
Total Cash Operating Costs/Calf	300		124	124	124	124	124	124	124
Total Income Above Cash Costs			-10,384	4,128	10,689	17,251	23,813	30,374	36,936
Total Income Above Cash Costs/Calf	300		-35	14	36	58	79	101	123
Total Overhead Costs (Table 3)			4,860	4,860	4,860	4,860	4,860	4,860	4,860
Total Overhead Costs/Calf	300		16	16	16	16	16	16	16
Total Costs			42,141	42,141	42,141	42,141	42,141	42,141	42,141
Total Costs/Calf	300		140	140	140	140	140	140	140
Total Net Income			-15,244	-733	5,829	12,391	18,952	25,514	32,075
Total Net Income/Calf	300		-51	-2	19	41	63	85	107

UC COOPERATIVE EXTENSION

Table 6. IMPACT OF FEEDER MARGIN ON PROFITABILITY

SIX YEAR PRICE SPREAD COMPARISON 1997-98 THROUGH 2002-03 SEASONS

300 Head Operation

Sacramento Valley - 2005

PURCHASED YEARLINGS – WINTER RANGELAND STOCKERS

Operation	Number	Pounds	1998	1999	2000	2001	2002	2003
					$/Unit			
CALVES SOLD[1]	294	800	0.7019	0.6721	0.8201	0.8222	0.6934	0.7723
Less Calves Purchased	300	530	0.9499	0.7701	0.9049	0.9937	1.0464	0.8595
GROSS INCOME (Sold-Purchased)			14,053	35,632	49,008	35,383	-3,290	44,984
Total Cash Operating Costs (Table 1)			37,494	37,494	37,494	37,494	37,494	37,494
Total Cash Operating Costs/Calf	300		125	125	125	125	125	125
Total Income Above Cash Costs			-23,441	-1,862	11,514	-2,111	-40,784	7,490
Total Income Above Cash Costs/Calf	300		-78	-6	38	-7	-136	25
Total Overhead Costs (Table 1)			4,831	4,831	4,831	4,831	4,831	4,831
Total Overhead Costs/Calf	300		16	16	16	16	16	16
Total Costs			42,325	42,325	42,325	42,325	42,325	42,325
Total Costs/Calf	300		141	141	141	141	141	141
Total Net Income (loss)			-28,272	-6,693	6,684	-6,942	-45,615	2,660
Total Net Income (loss)/Calf	300		-94	-22	22	-23	-152	9

[1] Assumes a 2% death loss or 6 head of 300 calves = 294

Niche Marketing of Beef in California Update

Roger Ingram
Farm Advisor – Placer/Nevada Counties

A total of four niche meat marketing conferences have been held since 2003 with an average attendance of 80 people. There is continued and sustained interest among several California producers in marketing product direct to consumers, restaurants, and retail stores. Most people are doing their own individual effort. A few are participating by providing cattle to existing niche marketing companies such as Western Grasslands Beef and Niman Ranch. The purpose of this paper is to describe current issues facing niche beef marketers and discuss potential alternatives.

Whether you are doing everything yourself or contracting with an existing company, there are six main components to any niche beef marketing effort:

Genetics	Production	Finishing	Processing	Marketing and Sales	Business

As a niche beef marketer, you need to decide whether you want to do it all or focus on a subset of the six components. Many people are trying to do all six with varying levels of success.

Genetics

The two main genetic issues are the ability to marble (deposit intramuscular fat) on grass-finishing diets and frame size. While most genetics will tend to be geared towards a traditional grain finishing system, there still remains breeding stock out there that can finish on grass. If an animal can finish easily on grass, it more than likely will do the same with grain finishing. Switching to genetics that can finish on grass will not preclude you from selling to traditional markets if you can not market all your animals as grass-finished.

Bloodlines from 50-60 years ago were well suited to grass-finishing. Finding breeding stock with the potential to pass on grass-finishing (marbling) can cause you to become a breeding detective. There are software programs associated with ultrasound that can help you identify breeding stock. Genetic stock and semen imported from New Zealand for the Red Devon breed is being touted for its ability to marble on grass. The downside is the high expense of buying a breeding animal. A more economical solution might be to purchase semen.

Two and Half Years

Whether you are using visual appraisal, ultrasound, or trying out new genetic lines, the downside is that you will not know the results of your choice for almost three years. Thing about it:

- You breed the cow or heifer
- Gestation is nine months
- It will probably take 18-22 months for the offspring to be ready harvest
- Harvest the animal and get the carcass data

Only then will you know the results of your choices. Hopefully the choices will be successful.

Frame Size
The larger the frame size of your animal, the more difficult it is to finish on grass. The reason is that rumen size is fixed at around 65% of the mature body weight of the steer or heifer you are trying to finish. Once rumen size is fixed, you are limited by that size as to the amount an animal can consume. The rumen has to empty for more consumption to occur. As an animal gets older and bigger, its maintenance requirement increases. More of the forage in the rumen goes for maintenance and less for growth and finishing. In other words, the finishing phase is inefficient for getting the needed gain on grass.

The solution is to breed smaller frame animals that will finish between 1000 and 1200 pounds. Any animal greater than a frame score of four will take a longer time to finish on grass. Smaller is better.

Open replacement heifers can provide a good starting point for getting into grass finishing if you have some access to irrigated pasture. One grass-finishing group took five open heifers and finished them for 60-70 days on irrigated pasture. These average carcass results from the heifers were as follows:

- Live Weight = 937 lbs
- Hot Carcass Weight = 546 lbs
- Dressing Percentage = 58.6%
- Maturity = A
- Quality Grade = Choice-
- Yield Grade = 1.8
- Ribeye Area = 11.6 sq in
- KPH % = 1.3
- Retail Yield = 343 lbs of which 126 lbs were trim

While you may want to be a bit heavier animal to achieve a higher carcass weight, the average finishing grade of Choice- for these small framed heifers illustrates of what can happen on grass with small framed animals. You can get to a choice grade on grass and/or forage

Production
Production takes into account the cow-calf and stocker phases. Most people have experience with these two phases. It is relatively easy to find custom graziers who will take animals in on the stocker phase and be paid either on the gain per pound or per head per month charge. The key point in both these phases is keeping the animal healthy so that it continues to grow throughout these phases. Any type of forage strategy that can minimize periods of no gain or loss is very beneficial. By the end of the stocker phase, you will most likely have an animal that weighs between 750-850 pounds.

Finishing
Finishing is the period of time the animal puts on the last 200-300 pounds after the stocker phase. This is assuming a finish weight between 1000-1200 pounds. Ideally, you would like to maintain a average daily gain of 1.75 lbs. You definitely need to have animals consistently gaining weight at that rate or higher the last sixty days prior to harvest. Remember, marbling is the last fat deposition by the animal and the first that will be lost if it starts to lose weight in that period.

There is not a custom finish grazier network in California. This puts people in the position of having to do it themselves. This means you are limited by the forage resources you have on hand or you need to find additional sources.

Another challenge is the spring flush of growth that occurs in roughly from mid-March to mid-May. If the grass gets ahead of the animals, it loses quality. It is important to keep finishing stock on vegetative grasses and forage to keep weight gains high. Shorter graze periods will also encourage higher consumption as animals will tend to eat more when exposed to fresh feed.

Annual Range
Thousands of acres in California make up annual range. A lot of it can be used for most of the year as cow feed. Out of 365 days in a year, annual range will only provide 60-75 days of feed that is of sufficient quality and quantity to use for grass-finishing.

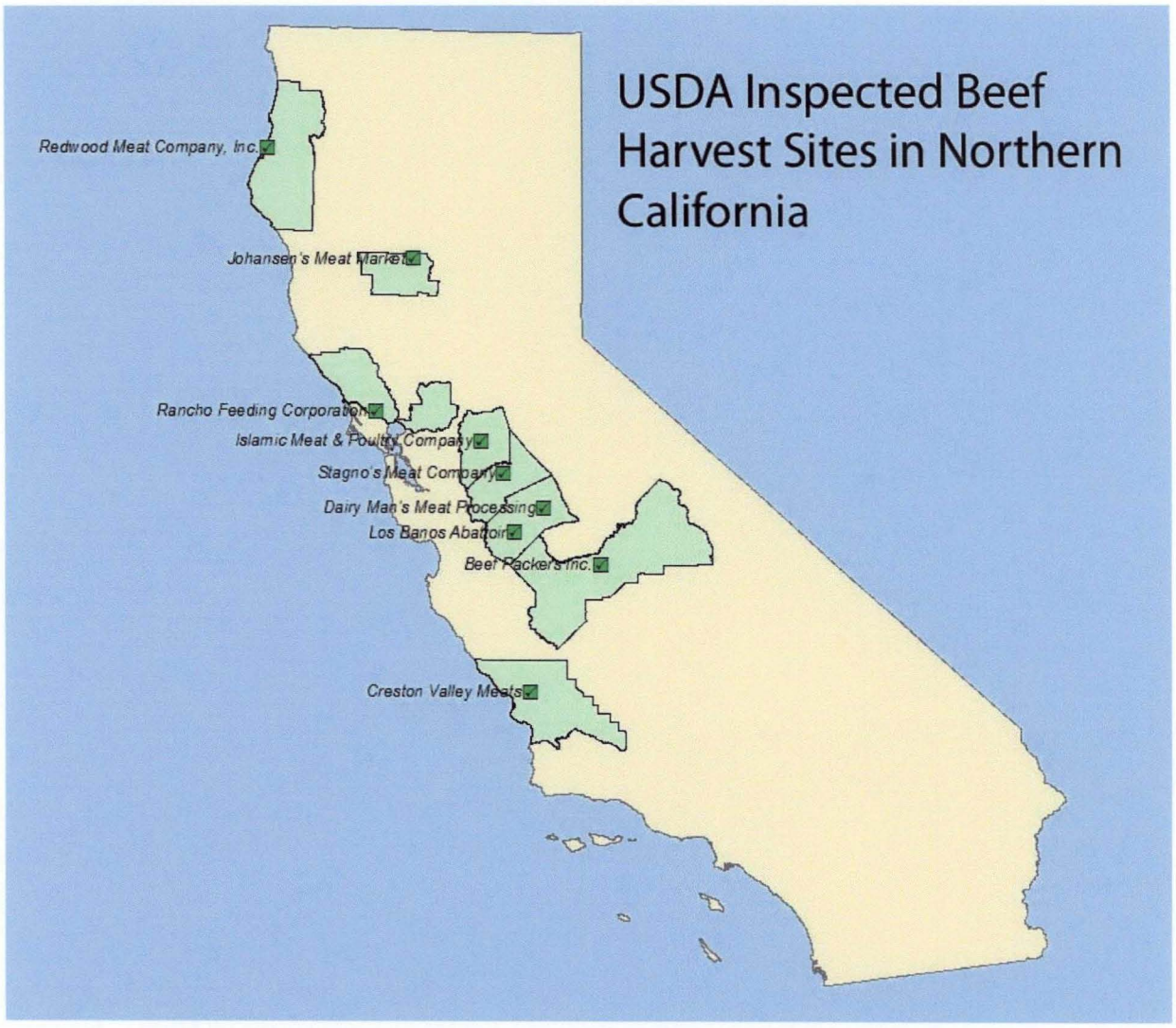
Irrigated Pasture
The use of irrigated pasture can extend your grass-finishing ability at least through June. July and August can be problematic due to the annual summer slump that occurs with orchardgrass and tall fescue pastures. These are cool season grasses that grow faster in the spring and fall while slowing down in the summer. One way to deal with the summer slump would be to finish more of your animals in late spring and early summer. This would allow you to reduce stocking rate of finishing animals to match the lower supply of forage in the late summer.

Fall and Winter
The challenge for grass-finishing is during this time frame. We do not have enough supply of grass on either irrigated pasture or annual range to achieve needed weight gains. Here are some potential solutions:

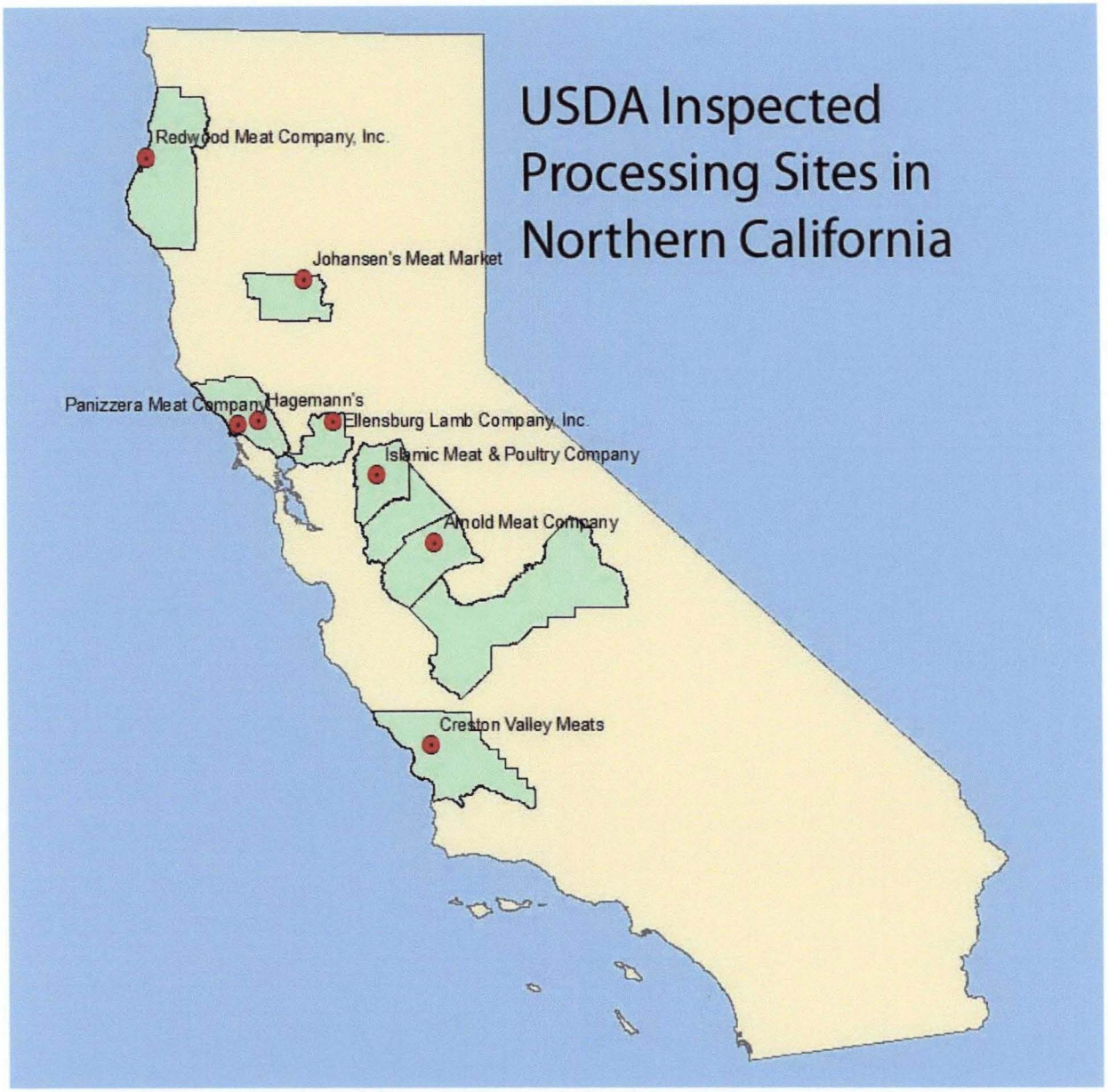
- Stockpile some feed from irrigated pasture that could be harvested later in the fall. This would help maintain supply, but quality will drop
- Plant winter annuals in August or September and irrigate and these would be available to grazer by November. You would need land, equipment, and irrigation. They have had good success up Siskiyou and Modoc Counties growing planted winter annuals and many dairies in California use them effectively.
- Use by-product feeds to supplement the existing forage supply. California grows approximately 250 crops. This gives grass-finishers option for additional feed choices. It is important to only select those by-products that do not alter the typical fatty acid profiles of grass-fed beef. Baublits, et al (2004) utilized pelleted soybean hulls fed at 1% body weight to finish steers to a choice quality grade on orchardgrass and tall fescue pasture in Tennessee. Baublits, et al (2004) found that feeding of the soybean hulls did not impact the fatty acid profiles typically associated with grass-finished beef.
- Being willing to ship animals to other parts of the state that have grass when you do not.
- Silage and haylage would be of sufficient quality for grass-finishing
- Hay could be another source for forage provided it was of sufficient quality

Processing

Another big challenge for grass-finishing beef is the lack of USDA inspected harvest and processing sites in California that are open to the public. Here is a map of USDA inspected beef harvest facilities (there may be more, but these are the ones I am aware of).



On the following page is a map of USDA inspected processors (there may be more, but these are the ones I am aware of).



The big issues are as follows:

- Those who are currently in existence can get overwhelmed with demand at certain times of the year which can delay animals get processed
- Transportation to USDA harvest and processing sites can end up being very far. The combination of high mileage for the round trip along with few animals going in the trailer can result in profit being eaten up by this direct cost
- Processors need a consistent supply coming in to keep labor permanent. Processors need cutting instructions that fall in line with Institutional Meat Purchase Specifications (IMPS).

Marketing and Sales
Marketing is how you generate the interest in your product. Sales means taking the order, fulfilling the order, providing customer service, and getting paid. Marketing can be accomplished in a variety of ways:

- Tasting of product
- Providing meat for a community event
- Cooking at local food events
- Providing samples to potential marketing outlets such as consumer groups, retail stores, and restaurants
- Advertising in a cost-effective manner
- Presentations to help educate clientele about your grass-finished product
- Recipes and cooking instructions

Sales means getting the product the customer desires in their hand at the time they need it. Consumers will more easily adapt to a seasonal frozen product. Most stores and restaurants desire a year round fresh product.

Since only 14% of the carcass consists of desirable high priced cuts, marketing and sales must work together in order to balance orders. If a restaurant needs a certain quantity of desirable cuts, this must be balanced with other marketing venues which will take less desirable cuts from the shoulder and rump. The failure to achieve balance with these carcass cuts can result in meat piling up in a cooler and profits disappearing.

Distribution can be another challenge. Will you run enough volume of product to interest a distributor or will you do it yourself?

Business
After all of the above is done, you still have to manage the business. Why are you in business? What is your product? Do you have a mission statement and vision? What is the motivation that keeps you in this business?

Many people assume that higher prices associated with a niche product will mean higher profits. This is not necessarily true as you incur extra direct costs associated with finishing, processing, and marketing. You will also have extra overhead marketing and sales labor costs. Do you have to price a product so high that only a small percentage of the population can afford to buy it? If you get into a store that markets a lot of product, they will push you to price points more in line with other beef products they carry. Can you accept a lower margin per animal? Can you increase turnover to overcome the lowered margin?

Conclusion
In the end – what do you want? If you can answer this question along with doing an economic analysis, it will help you pinpoint which components you want your business to be doing. You can do it all as long as volume stays relatively low. The more volume increases, the harder it will be to do it all. Collaboration and partnership will become more important to meeting the increased demand for grass-finished beef. Be sure to conduct an economic analysis to make sure it makes sense for you to be doing niche beef marketing.

Literature Cited

Baublits, et al, 2004. Carcass and color characteristics of beef from three biological types of cattle grazing cool season forages supplemented with soyhulls. Ark. Anim. Sci Rep. 509:9-11.

Baublits, et al, 2004. Chemical, fatty acid, and tenderness characteristics of three biological types of cattle grazing cool season forages supplemented with soyhulls. Meat Sci. 68:297-303.