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Case Study of Beef Sector in California"

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"Industry Response to Beef Sector Policy and Regulation: Case Study of Beef Sector in California"

by

James Ahern, Robert Delmore, and Andy Thulin¹

INTRODUCTION

The beef industry, beef producers or ranchers and beef harvest processors², nationwide has confronted an increasing myriad of problems related to food safety and health issues, which seemingly began with the incidents in the 1980's of fast food restaurant use of pathogen contaminated ground beef. There were some *E. coli* contamination situations in the 1980's, but the big wake up call was in 1993. The problems escalated with the onset of Europe's bovine spongiform encephalopathy (BSE)³ or "mad cow disease" dilemma and foot and mouth disease (FMD) in 2001, and continued with the more recent US and Canadian BSE border closures to international trade in beef. Those events were capped by the potential terrorist threats to US food supplies of the "post 9-11 era." Further, border trade closures have followed BSE confirmations in the western hemisphere. The US Food and Drug Administration (FDA) and the US Department of Agriculture (USDA) have increased regulations and oversight in order to contain these problems.

The California Animal Products Industry

The animal products industries in California are substantial, especially in the areas of dairy, beef, eggs, and turkey production. California's animal slaughtering sector (excluding poultry) was the eleventh largest in the US in 2002, with 90 processing establishments that produced \$1.3 billion in sales, while employing nearly 5,600 persons (USDOC 2004). On the livestock production side,

¹ The authors appreciate the helpful comments of Norm Luba, Richard Thompson, and B. Wiegand; and project assistance from students G. Van Dyke, J. Duran, S. Lujan, J. Mieglitz, and D. Van Liew.

² Beef slaughter is the same as beef harvest.

³ BSE resulted in and human cases of new variant Crutchfeld-Jacob disease resulting from consumption of BSE pathogen carrying beef.

again numbers are large with 5.25 million head of cattle and calves on 20,000 operations in California in 2003. Further, there were 490,000 cattle on-feed⁴ in the state (USDA-NASS 2004). All California livestock was valued at \$4.9 billion and was second only to Texas' industry.

Table 1. California Animal Products by Sector, Number, Value, and US Comparisons 2004*.

Animal Products Sector	California (in millions)				US (in millions)			
	Animals Produced	Value \$	Harvest Number	Harvest Value**	Animals Produced	Value \$	Harvest Number	Harvest Value**
Beef	1.886	1267	1.362	561	44.8	34,887	32.6	31254
Hogs	0.140	18	2.580	253	60.9	6,211	86.1	12175
Lamb	0.445	38			4.2	412	1.8	281
Turkey	15.7	169	26.3	126	264.2	3,065	254	3629
Broilers	829	1969		489	8740	20,448		29021

Source: *Agricultural Statistics 2005 & 2006*, NASS-USDA; *California Poultry Report*, May 30, 2007.
Notes: * 2004 data volumes and value, inventory data 2005. Excludes dairy products.
**from US Census Bureau, "2002 Economic Census," 2004.

Beef and broilers are the most important meat animals raised in California, with broiler value half again larger than beef (see Table 1), while harvest activities for California raised cattle often go out of state, there is substantial import of hogs for harvest in California. California also had 445,000 head of market sheep and lambs (small ruminants) that generated \$38 million in income in 2004 for some 2600 sheep ranching operations, yet this was only 3% of beef activity. The 140,000 hogs raised or finished on 750 operations generated a value of \$18 million, which was 1.4% of beef value; however, a substantially larger numbers of hogs were harvested or processed in California, from other states (see Table 1).

Bigli (2002) reported that in 1996 there were 459 US poultry processing plants that produced over 40 billion pounds of poultry, while California's egg producers' 22 million laying birds produced over 5 million dozen eggs, worth \$288 million. Lastly, the state's turkey production was over 15 million head worth nearly \$170 million in 2004, which has over 7% of US production (USDA-NASS 2004). Thus other animal products industries in California, except broilers, were substantially smaller than the beef sector, but they could confront many similar regulatory issues.

Increasing Regulation in Meat Industry

The policy changes include the restrictions on BSE and "downer" cattle (beef and dairy sectors)⁵, the implications for individual animal testing and tracking, animal welfare, and "country

⁴ Cattle on feed are confined and fed high concentrate (grains, minerals, supplements) with the intention of developing a high rate of finish, Choice grade.

of origin labeling” (COOL⁶). Such legislation implies there will be more changes in the beef industry. This study explores the implications of increasing regulatory policy for the California beef industry, including appropriate management practices, cost, and market implications for the beef industry related to increased regulation.

The regulatory effects for California beef production and processing are important, as beef or cattle and calves were the fifth most important crop (\$1.7 b) in the largest agricultural state in the US in 2005. Cattle operations are found in most counties. Further, cattle and calves were in the top three revenue crops in four of the ten leading California agricultural counties in 2005 (CDFA 2007). The regulatory code that is intended to achieve the purpose of the law likely will create new burdens for management, with numerous product tracking problems (traceability)? Once established, these codes become integrated into business practice, creating new firm or corporate responsibilities, and seldom have been rescinded.

Food security and BSE issues are driving these potentially severe and permanent policy changes. These topics were areas of substantial discussion at both the 2004 National Meat Association and the 2004 National Cattleman’s Beef Association annual meeting (Dolezal and Bamford 2004). One result of such discussion has been an extended USDA public comment period on the proposed rules, as required by federal law.

Beef industry policy has changed substantially since the advent of 1921’s Packers and Stockyards Act (USDA 2007). Mandatory poultry plant inspection has been around since 1957 with the passage of the Poultry Plant Inspection Act. In 1978, Congress passed the Human Methods Slaughter Act, imposed on all meat processing plants except poultry. The Food Safety Inspection Service-United States Department of Agriculture (FSIS-USDA) was established in 1981, including the meat, poultry, and egg sectors. In 1986 FSIS was allowed by Congress to vary the type and nature of its meat processing plant inspections according to plant compliance history. Most recent policy influences have been the Hazard Analysis and Critical Control Point (HACCP) systems final rules, which were approved in July 1999, but initiated in July 1996 at the recommendation of the

⁵ Downer cattle are animals that have lost mobility and are non-ambulatory for whatever reasons, a condition possibly associated with BSE complications. Grandin speculates that much of the downer problem derives from poor breeding practices, which result in lameness. Whatever the reason, the downer cow should be euthanized prior to transport (Nolen 2001).

⁶ Originally COOL was part of the 2002 Farm Bill, whose first AMS-USDA proposed rules appeared in Fall 2003 and were to be required for Fall 2004, but subsequent delays put implementation off until 2006, and then later moved implementation back to September 2008 (Smith 2007).

National Research Council (NRC), and phased in between 1997 and 2000 (Bigili; Jensen, Unnevehr, and Gomez).

Problem

The California beef industry faces increasing regulation as a result of both past and recent food safety events, and the problems associated with securing the food supply in the post 9-11 era. What will be the extent and impact of such regulation on the beef industry? What are the economic and business practice implications for the California beef industry from recent changes livestock marketing and processing policies?

Hypotheses

Recently increased emphasis on beef regulatory policy will have important negative impacts on beef industry organization, cost structure, and revenue flows, depending on size. Changes in cattle production and beef processing policy/regulation will have unintended consequences of potential industry structural changes, entry and exit of firms, and reduced profitability for California firms. Cattlemen will see such regulation as resulting in lower prices for producers, tighter margins for beef processors, and higher prices for consumers, as these costs of regulation must be paid.

Research Objectives

- 1) To establish the extent of post 1998 perceived regulatory changes across the California beef industry.
- 2) To determine the economic consequences industry costs from structural changes to meet policy requirements and revenue altering changes to the sector.

Previous Studies

Federal packers and stockyards regulations affect animal handling requirements and recently the Grain Inspection Packers and Stockyards Administration (GIPSA-USDA) have begun prosecuting monopsony-pricing behavior of livestock processors (Kilman 2004). Andersen, *et al.* (2002) reported there were 10 beef harvest processors in California in 1997, with three larger firms,

but the number had declined to 9 by 2004 even after the opening of a new large facility, Brawley Beef, in Brawley.

Antle (2000) found the FSIS “Regulatory Impact Assessments” (RIA) were capital cost oriented and had failed to include increases in plant operating costs or productivity losses when implementing suggested interventions. The costs of implementing HACCP systems for large midwestern harvest processors were estimated to be as high as \$1.7 million in capital costs, given the interventions made. This translates to \$0.17 to \$1.56 per head in variable costs, depending on the types of interventions selected (Jensen, Unnevehr, and Gomez 1998).

Increased regulatory requirements will have some substantial lagged effects on market returns at all levels, some passed back to producers and some carried forward to consumers of livestock products. This raises the issue of whether net social benefits will accrue from increased regulation in the livestock and meats, as pointed out by Gardner (2003). Post 9/11 perceived food terrorism threats, *E. coli* H157:O7 contamination, and BSE concerns, suggest the industry will likely face increased government scrutiny related to food recalls (Piggott and Marsh 2004).

The rest of the paper is organized as follows: first the methods section presents the sampling approaches and then discusses the survey instrument for each beef industry group, first the beef ranchers or producers, and then the beef harvest operators. Then the survey analyses of each group’s cumulative responses are presented. The beef producer demographic results are presented first, to set the stage. Then the producer response evaluation is presented in the same order as the survey, while the beef processor survey evaluation first addresses the many positions found to be held in common, consensus items, across the group. This is followed by the conclusion section.

METHODS

Primary data were gathered by personal interview methods from two industry groups, beef harvest (slaughter) operations and beef producers (mostly cow-calf operators or ranchers). Two survey instruments (see Appendices 2 and 3) were developed through several iterations and Cal Poly Human Subjects Protocol reviews (Davis). These used a personal interview approach with on-site interviews; however, due to interviewee convenience some telephone and mail follow-up was necessary.

The Samples

The sampling procedure identified county beef cow populations for California from *2002 Census of Agriculture*. With that data five important cow-calf multi-county areas of the state were defined and interviewers (Cal Poly seniors) were assigned randomly drawn lists of ten cattle operations from each area with two replacements for refusals. The lists were provided by the California Cattleman's Association (CCA) in Sacramento. County areas were selected to reflect important beef areas, as well as a broad representation of state beef producers. Once the counties were defined, a random sample of ten producers plus two replacements was taken. Beef producers were selected from three central coastal counties, two San Joaquin Valley counties, and one county from the Sacramento Valley.

For California beef harvest facilities a census was attempted for all processors handling 100 head or more per day. The list was defined by Cal Poly meats specialists, that list included three large plants, handling over 900 head per day and six medium plants, handling 100-700 head per day (see Appendix Table 1). The potential processor interviewee list was developed of important beef slaughter operations. Nine were identified and seven of nine firms completed usable surveys. One firm gave a partial response and promised completion that failed to materialize, while the other was not cooperative. Additionally, a large Northern California ovine (lamb-sheep) meats harvest operation was also interviewed to provide contrast and comparison with the beef harvest operations experience, resulting in a processor count of eight. California is not a primary producer of live hogs or pork; therefore those were not included in this research effort.

Consultation and support were received on producer survey content and provided the producer lists for selected counties from Ben Higgins, Executive Vice President of CCA. Additional producer survey review was received from Steven Arnold, a beef producer from San

Luis Obispo County. Rosemary Mucklow, the National Meat Association in Oakland, provided critical review and comments on the beef harvest operation survey. Mucklow is an eminent authority on meats industry policy and operations.

During the Spring of 2004, individual personal interviews for both survey groups were scheduled, unless the interviewee preferred to execute the interview by telephone or by mail. Ultimately, thirty-six usable beef producer surveys and eight meat harvest processor surveys were completed. Copies of the survey instruments with enumerated distribution of cumulative responses appear as Appendices 2 and 3.

Survey Content

Beef Cow-Calf Operations Survey

Beef cow-calf operations (beef producers) were surveyed examining the beef sector regulatory issues of food safety, and their management of additional risk of fourteen existing or pending regulatory areas for beef producers for the period 1998 through mid-year 2004. Attention was directed toward current and likely future public health and consumer safety issues, the apparent drivers of such policy changes. Three key pathogens (*E. coli*, *Salmonella*, and *Listeria*) were emphasized with questions (see Appendix 3, QuestionQ3c)⁷ relating to food pathogen or organism control in the meats sector,⁸ especially ultimate pathogen effects in harvest plants.

Insight was sought on producer views of their operation's benefits and costs associated with the policy changes. Question groupings Q3.1 and Q4 sought ranch operator views of regulatory effects on input use, performance, and price effects. Economic consequences on the California industry viability vis-à-vis other states and foreign competition were addressed, which are secondary to public health issues, but are important to the viability of firms participating and persons employed by those firms. Question group Q5 requested the extent of likely operational changes, while Q11-Q14 and Q16-Q18 covered California beef's domestic and international competitive situation, as affected by the regulatory environment. Q24-Q31 covered rancher demographics. We sought insight as to whether demands for public health risk reduction were disproportionately driving small firm or large producers or processors out of business in California.

⁷ Hereafter questions will be indicated by Q and a number, e.g. Q3 for Question 3.

⁸ Romans, *et al.* suggest these pathogens or unwanted organisms are often caused by food users themselves, but they can be present from mishandling in processing and marketing. The primary organism or pathogen controls are avoidance of contamination, and then product process stage heating, cooling, or chemical treatments.

The remaining questions (Q6-Q10, Q11-Q15, and Q19-Q23) sought rancher cost and input use level estimates for regulatory issues.

Beef Harvest Operations Survey

Two components of this analysis are: 1) management practices (the physical production and resource management) and 2) economic effects from regulation of the California beef industry. The method used was an exploratory framework of seeking expert opinion (*i.e.*, subjective, or qualitative, as the sample too small for statistical inferences) of the beef industry, by a survey research approach of the leading beef processors, to define, describe, and qualify federal and state regulatory efforts (question group Q1) to improve food safety in the USA.⁹ In the second group of questions, Q2, we look at firms' views of how their competitive situation and labor requirements were affected by the regulatory environment, while question grouping Q3 sought ongoing related management changes, and budget-cost implications. The fourth area, Q4, sought their estimates of product loss¹⁰ and increased cost categories. Lastly, Q5 grouping sought to define the downstream market demands of client retailers and meat reprocessors for sector impacts¹¹, as likely or actual responses to policy mandated changes. Even though California meat processing capacity is controlled by just a few larger firms, the competitive fringe and next stage processors are numerous. The effect of regulatory changes on non-harvest meat processors (reprocessors or further meat processors) was not undertaken.

⁹ Antle defines food safety in the meat industry as the use of safety quality control factors, which include product inspection, process controls, product testing, identity preservation, and HACCP systems.

¹⁰ Specified risk materials or SRM definitions seek to limit risk of BSE containing tissues for human consumption and require eliminating formerly saleable product.

¹¹ Impact analysis here identifies the consequences of the policy changes made without conversion to pecuniary or quantitative measures (see Tietenberg, p.95).

ANALYSIS

Beef Producer Regulatory Responses

Beef Producer Characteristics

From the sample of 36 beef producers, 25 ran commercial cow-calf enterprises, 7 were purebred operators, another 7 also had stocker operations, and 4 ran feedlots, which were either finishing or grow out lots (Q1, multiple responses were permitted). One participant ran all four types of beef operations (*i.e.* cow-calf, purebred, stocker, and feedlot).

One-third of producers interviewed had over 30 years experience in their beef operations (see Table 2 below - Q24 response). The median experience level was 21-30 years. The most common size operation (mode) produced 200-500 head annually, but another group of over 16% produced 1000-5000 head a year. The average number of animals purchased annually was nearly 1750 head, while the median was 40 head purchased, of those (a subset of 27) that reported buying cattle. Over one-half purchased fewer than 40 animals a year and over 70% bought fewer than 100 head each year. Feedlot “alliances” were reported by 27% of producers, while 45% had no regular feedlot arrangements for their cattle, and the remaining producers were spread evenly over feedlots ranging in size from less than 1000 head to over 30,000 head capacity (Q25). Only one producer

Table 2. California Beef Regulatory Survey Respondent Producer Characteristics Frequencies, n = 36.

<u>Cattle Production Years Experience – Q24</u>	<u>Cattle Produced* Annually – Q31</u>	<u>Cattle Purchased* Annually – Q25</u>	<u>Size of Feedlot** Used – Q30</u>
1 - 5 years - 3	1 – 99 hd - 7	0 – 10 hd - 17	< 1000 hd - 4
6 - 10 years - 7	100 – 199 hd - 4	11 – 20 hd - 2	1000 – 3999 hd - 3
11 – 20 years - 5	200 – 499 hd - 12	21 – 40 hd - 3	4000 – 9999 hd - 3
21 – 30 years - 5	500 – 999 hd - 4	41 – 100 hd - 4	10,000-19,999 hd - 3
30 plus years – 15	1000 – 4999 hd - 6	101 – 500 hd - 4	20,000-30,000 hd - 2
<u>No Response - 1</u>	<u>5000 plus hd - 2</u>	<u>1000 – 30000 hd - 5</u>	<u>30,000 plus hd - 4</u>
Median: 21 – 30 years	Median: 200 - 499 hd	Median: 11-20 hd	Median: 5000 hd
Mode: 30 plus years	Mode: 200 - 499 hd	Mode: 0 -10 hd	Mode: 30,000 + hd

Notes: *One NA- not available response, the symbol “hd” refers to animal numbers or head of livestock.

**Many (17) were unaware of the capacity of feedlot used or did not use one.

claimed he always retained ownership, while 8 producers retained ownership sometimes, and the majority never retained ownership through the feedlot. Most beef producers (74%) reported selling all, or the majority of their cattle, at the stocker stage, or before the feedlot (Q26). As a group these operators generally marketed 68% of their cattle, placed another 11% in feedlots, and retained 21%

of heifers for herd replacement (Q26). The retained ownership in feedlots and alliances with feedlots are a basis for “tracing” cattle origins. Other arrangements might tend to make tracing origin more difficult.

Pathogen and Production Problems

The first major area of inquiry was on the perceived pathogen and general producer problem areas affecting beef operations. Table 3 presents the cumulative scores for both the beef producers (labeled “Cow-Calf”) and beef processors (labeled “Harv”) on seventeen regulatory issue areas. The contrast in industry sector issue views is substantial between ranchers and harvest operators. Producers did not share the view of the beef regulatory situation issues held by processors as important. Beef producers cumulatively saw only BSE and environmental issues brought by EPA or CalEPA as major regulatory problems that affected them, as evidenced by a majority of “Very Important” plus “Somewhat Important” relative to “Slight” plus “Not an Issue” responses. Other issues that some beef producers saw as having regulatory effects on them were animal welfare, workmen’s compensation, and HACCP for food safety, which had higher issue frequency scores. One could conclude that the beef producer group focuses on the things that affect them directly, and while product tracing or traceback for bacterial food recalls, is not confronting them yet, but may do so in the future from pressures further up the marketing channel.

Bio-security, the threat of enemy alien contamination of beef supplies, was viewed collectively as perhaps a slight or even a non-issue for our sample of beef producers, including only a few who suggested it was “somewhat” of a regulatory issue. HACCP issues were of greater concern for over one-half the respondents, reflecting some level of concern, while only one in six producers was very concerned with HACCP (Q3a-3e).

HACCP is used to control biological food contamination of post ranch/producer meat supplies. Contaminated meat supplies occur sporadically, and by nature are localized in production, but the up market channel fear becomes crippling, even pandemic crisis, in avoidance behavior.¹² Given the periodic and time limited occurrence of food safety events, it is not surprising a majority of beef producers saw such bacterial pathogens as non-issues. However, the nature of FMD and viral contaminations should be considered major threats to their businesses and lifestyles. Table 3

¹² Often entire nationwide supplies of a food are halted regardless of source and even when the source is located the negative market effect may linger.

Table 3. Selected Beef Regulatory Issue Importance California Harvest Firms (n=8) and Cow-Calf (n=36) Operations Response Frequencies, California 2004 .

Intensity	Issue	Bio-Security		HACCP-Gen'l Fd Sty		BacTFdRecalls		<i>E.coli</i> O157:H7	
		Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf
Very Important		2	0	4	6	3	0	6	2
Somewhat Important		2	7	1	8	2	6	1	5
Less Problem/Slight		1	12	0	6	1	5	0	6
Not an Issue		3	17	1	16	2	24	1	23
No Response				2			1		

Intensity	Issue	<i>Salmonella</i>		<i>Listeria</i>		BSE		Downers w/o BSE	
		Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf
Very Important		4	0	2	0	7	14	3	5
Somewhat Important		1	3	1	3	1	7	2	6
Less Problem/Slight		2	9	2	7	0	8	1	10
Not an Issue		1	24	3	26	0	6	2	14
No Response							1		1

Intensity	Issue	SpecRiskMaterial		AdvMeatRecov		Environ'l Issues		Animal Welfare	
		Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf
Very Important		7	4	2	2	3	8	6	4
Somewhat Important		0	5	2	2	1	13	1	11
Less Problem/Slight		0	9	0	5	1	8	0	4
Not an Issue		0	18	4	23	2	7	1	17
No Response		1			4	1			

Level Change	Issue	Labs & Testing		Incr Labor Req		Workmen's Comp		Client Dem Fd Safety	
		Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf	Harv	Cow-Calf
Many		3	1	3	6	8	12		
Some		0	8	2	7	0	6	8 Yes	12 Yes
Few		3	4	1	7	0	6	0 No	19 No
Non Issue		1	22	1	15	2	12	4 N Sure	4 N Sure
No Response		1	1	1	1				

Intensity	Issue	Hor-AntbioFree-Org	
		Harv	Cow-Calf
Yes		5	13
No		3	18
Not Sure			4
NR			1

(above) reveals the relatively large differences in the level of concern or anxiety over important pathogens between the harvest processors and the beef producers. This could mean developing an industry wide pathogen control program may present difficulties and suggest a lack of preparedness for such problems in our food system (see Halweil, Worldwatch Institute). Only one beef producer mentioned property limiting access as a pathogen control approach, which has been a standard in the poultry industry for years and much more advanced in pork production as well. Beef pathogen

controls, or systems, were widely used and acknowledged by processors as being in place, and yet far less concern was reported with 22 of 36 (61%) beef producers responding that “General Food Safety-HACCP” was a “slight issue” or a “non-problem” at their level (see Table 3). Halweil cites activities and statements by the Department of Health and Human Services, Department of Defense, and USDA as areas of identified American security vulnerability, which are facilitated by long distances in an internationally sourced food supply.

HACCP has been mandated since January 1998, but new problems such as BSE, European FMD reoccurrence, and anxiety over downer cattle slaughter (thus avoiding potential BSE organism harbors) were all creating greater consumer, processor, and producer concerns. While producers responded “very much” or “somewhat” in higher ratio than in other problem areas, this still represents far too low a cumulative producer group response. This means that some producers are aware, but that a large majority was not aware of the relative importance of pathogen controls and the potential for disruption of business. The ongoing issue of dealing with environmental requirements found a good majority ranking that area as a concern, that is “very much or somewhat an issue.”

Non-Disease Policy Problems

The next set of problem areas addressed were non-disease, or established BSE related controls (Q3f-Q3m, see Table 3 above third and fourth rows). A good number of respondents selected the lower “Not an Issue” response for confined animal feeding operations (CAFO) regulations, which is a key issue in European agriculture. Animal welfare, particulate matter, non-point source pollution, and workmen’s compensation were all problems driven by policy decisions. Once producers found themselves embracing accepted control measures many deemed the problems as “dealt with” and were ready to move on to more recent issues.

Producer Reduced Value Areas

Even though for the packer/harvesters “advanced meat recovery” (AMR) and “specified risk materials” (SRM)¹³ remained high priorities, but for the producers the interest level dropped. Of course, advanced meat recovery is related to physical techniques of efficient ground beef

¹³ SRM or “specified risk materials” are beef animal tissues that are designated as potentially higher BSE risk tissues, considered more likely to carry the agent believed responsible for BSE (Informa Economics).

processing, but it is not a rancher/producer problem except that it reduces cuttable meat per head, which can have negative revenue consequences for producers.

The second area of inquiry was sources of ranchers “value” losses¹⁴ from regulatory impacts (Q3.1). Of the seven areas (prices, equipment needs, employee training, operation maintenance, grazing opportunities, input costs, and effects on property values) that might reflect reduced beef producer net revenues, most producers were split nearly evenly on the positive or negative net revenue effects (Q3.1a - Q3.1 h). A majority of ranchers saw the effect as notable only in the area of “increasing input costs.” The next highest “reduced value” effect was in “reduced grazing opportunity”, which tallied 39% of producers. Property values and prices had reached peaks during the survey period, driven by a short run scarcity of beef driving up prices. Many respondents suggested or volunteered that non-regulatory factors had driven prices up, but beef market conditions were good at the time.

Regulatory Control Cost Impressions

Producers were asked for their views of deleterious market price effects from six major beef policy regulatory issues. Those major issues and response frequency appear below (see Table 4).

Table 4. Producer Views of Negative Cattle Price Response to Regulatory Control Issues (Q4).

<u>Regulatory Problem Area</u>	<u>Producer Frequency</u>					
	<u>SA</u>	<u>Agree</u>	<u>Neu</u>	<u>Disagr</u>	<u>SD</u>	<u>NR</u>
1. Post 9/11 bio-security in food	5	12	12	3	3	1
2. Bacterial food recalls (<i>E.coli</i> O157-H7, <i>Listeria</i> , <i>Salmonella</i> , etc.)	5	15	9	3	3	1
3. BSE and food safety	12	16	2	2	3	1
4. Downer cattle	4	14	7	3	6	2
5. Country of origin labeling (COOL)	6	17	8	0	4	1
6. Foreign origin- especially Mexican import or aged cattle	4	16	10	2	3	1

Cumulatively, ranchers found all these issues (Q4a-Q4f) were important and likely to have negative price consequences. The agreement side (*i.e.*, Strongly Agree and Agree) of the Likert Scale heavily outweighed those disagreeing (*i.e.*, Disagree and Strongly Disagree) scores, by a ratio of nearly 2:1 for “Downer cattle” at the low end, up to 5:1 on “BSE and food safety.” The latter was acknowledged by 80% of producers as an important market issue.

¹⁴ As discussed by Michael Porter these effect inbound and outbound logistics and operations.

While they saw price issue problems with BSE controls as being the most pressing, the post 9-11 security, food recalls, downer disposition, COOL, and aged Mexican cattle were seen by at least half the respondents as also having deleterious price effects. BSE was easily the most feared event or issue, especially when one considers the downer problem policy solution is tied to BSE control policy concerns.

Producer Operational Changes

Three-quarters of the producers reported making three or more cattle handling changes (Q5a-Q5f) in their operations to deal with the increased regulation. However, 14% of producers reported doing nothing, no changes were made or deemed necessary. Overall, 31 of 36 (86%) reported making at least one change in their cattle handling procedures.

A majority of 61% reported altering cattle shipping procedures in response to post 1997 regulatory changes. In preparation for sales and shipping, 52% modified their animal health procedures. Most producers reported better management of vaccination programs or schedules and not attempting to send “down cattle” to harvest. Over 40% reported improving shipping sanitation to reduce the pathogen loads in marketed cattle. Over one-third (36%) contended they had increased laboratory testing, so most (61%) reported this as “Not an Issue.” Lastly, 55% reported they needed increased labor effort to meet the changing regulations.

Additional Producer Cost Areas

In the labor area a simple majority responded that they had increased the labor used to meet regulatory requirements with at least one operational change. At the same time one-in-four reported increasing their part-time labor, while over half had not used any additional part-time labor. 38% reported a higher or increased use of part-time labor an average of 18% more part-time labor used. The same number of responses cited part time labor use as unchanged and reported no change in such labor, so the responses were consistent (Q6).

Regulatory compliance labor was needed by just over one-third of the producers responding and averaged 15%. The responses ranged from 5% to 30% (Q7). That labor was estimated to cost them an average of \$1271, while the range of responses was highly variable, half those reporting such costs claimed under \$1000, while the upside was 100 times that number. This was claimed to be 15% of labor costs and the range of estimates was 0-30% increased labor cost for compliance (Q8).

Capital goods costs (Q9) related to compliance were positive for 52% of producers (19 of 36), whose claimed capital costs rose an average of 14%, the median was 15%, and the range was 2% to 30%.

Next, the effects (Q10 in five parts) on revenue flows were queried, but only seven producers reported losses in cattle over 30 months of age, with those producers reporting losses of 5 to 80%. The perceived losses in younger cattle were nil for this sample of producers. Seven reported losses from downer cattle, with four claiming 100% losses in downers. Three firms reported substantial losses from lost offal and beef byproducts sales.

When asked about inequity between state regulations (Q11), nearly two-thirds of the producers claimed California requirements that embodied environmental and water quality constraints did place them at a disadvantage vis-à-vis other states. One-fifth of respondents were “Not Sure” whether such differences existed.

Producer Perception Market Demand for Food Safety

Fully one-third (36%) of respondents concurred that “end users” (consumers through restaurant chains or meat final processors) were increasing demand for safe/secure food items (Q12) and the same number of respondents reported specific requests relative to hormone use in beef, other growth promotants, and natural and organic beef products (Q13). The majority had seen no such demands from buyers, but, as will be seen in the processor section, where those demands were more prevalent, a higher proportion of harvest operations had encountered such requirements.

Further specifying a McDonalds’™ Restaurant type demand for producers’ cessation of daily or continuous feeding antibiotics for growth promotant effects (Q14) only four beef producers (11%) reported confronting such demands, while another fourteen (38%) were Not Sure. However, time lags between rule changes and implementation rules or deadlines (Q15) were specified by only 3 producers (8%), ranging from one to 12 months lag. Thirty-one respondents saw no rule implementation time lag problems.

International Trade Effects

Over one-third recognized the possibility of greater threats from their foreign competitors (Q16) inferred from the increased US beef producer regulation. The leading countries that emerged as competitors (Q17) in the producers’ views were Australia (75%), Argentina (58%), Mexico

(58%), Canada (53%), Brazil (50%), and Chile-Venezuela (11%). Producers saw the growth of regulatory requirements as a barrier to entering other markets as well (Q18), but the results were mixed, as nearly as many were unsure. Very few producers thought the regulations were export neutral.

Nearly one-half the producers (47%) said the regulations, either state or federal, had no effect on their net returns or profitability (Q19); however, one-fifth (23%) of the respondents felt the regulations had decreased their net returns and claimed those losses were between 2 and 25%, averaging 5.6% (Q20). Two producers thought the regulations had increased their net returns, but were not sure of the level of improvement. Only 3 of 29 operators claimed there were charge backs from processors (*i.e.*, sharing the regulatory cost burden with the basic beef input suppliers), which related to the regulatory restrictions.

Beef Harvest Operations

Processor Regulatory Problem Consensus Areas

In many areas the harvest processors held a strong consensus in their responses (see “Harv” columns in Table 3, p.12). This section details those issues of widespread harvest operator agreement or uniform response areas. BSE, SRM, and workmen’s compensation¹⁵ were ranked as “very important” issues by all beef harvesters. BSE concerns at harvest have been as high as 2% of animals harvested (the median response to two related questions). Of the issues unrelated to food safety or food security, only workers’ compensation remained a major issue across most of the California beef industry. This is important in agriculturally related industries with competitive market prices and relatively high-risk and high cost workers’ compensation classifications. The meats contamination problems of *E.coli* O157:H7 and Zero Tolerance for fecal material, ingesta, and milk residues (from slaughter heifers or cows) were widely viewed as important regulatory problems for beef harvest operators.

Non-BSE downer cattle restrictions were not particular problems for harvest processors, as the downer animal disposition is defined by USDA BSE control procedures, making it a low priority issue.¹⁶ *Salmonella* presence was noted as a problem for some (“very important” to half the sample), but others found it less pressing than other bacterial organisms, while *Listeria* control was

¹⁵ Noel, *et al.*, found food and agricultural processing sector workmen’s compensation costs to be substantially higher in California wheat processing than in Kansas even though Kansas wheat mill wage levels were substantially higher.

¹⁶ Some slaughter cow processors reported this as a major burden from a revenue loss standpoint.

a lower level concern for all but two processors, only one rated *Listeria* as very important and another scored it as “some what” important.

Processors had a mixed response on the importance of environmental regulations, one-half responded concern (“Very Important” or “Somewhat Important”) about advanced meat recovery problems, while the other half declared it “Not an Issue” for them (see App.2 Q1-Problem Area: Revised AMR Regulatory Requirements). Those with concerns were those involved in ground meat products. A couple of firms reported processing wastewater as a major issue. Concern over animal welfare issues was not uniform, but it was widely perceived as an important issue, but perhaps less pressing than in the past. General labor issues were “very important” for only two firms. As broader issues Bio-Security and Bacterial Food Recalls received mixed responses, they created less apparent concern than more specific or focused issues among the sample respondents.

Management Change Areas

Most interviewees agreed to a great degree that Plant Modifications (either citing “Major” – as more than 5 changes or “Some” or 3 to 5 changes) were necessary to meet compliance requirements. Six of the seven declared the changing regulations had resulted in major plant modifications involving capital and labor requirements. The same was true for “Microbial Interventions” with most of the respondents saying major meat processing line changes were necessary, which induced increased labor/management requirements in seven of the eight plants. Beef harvest plant modifications and microbial interventions were widely perceived as problems.

Next the respondents were asked to separate the level of requirements between the “dirty” areas of the plant where hair, hide, hoof, and digestive tract and ingesta were still potential contamination sources and the “clean” areas where the aforementioned potential contaminants had been removed. Clean area actions included modification of hot water washes, shields, and steam vacuum. A good number had major changes on both sides of the harvest operation and only one firm in each case found that no changes were necessary. Most firms had some changes in internal laboratory requirements, but were split between major change and a few changes. It was widely held that the plant modifications, microbial interventions, and lab requirements had increased the number of employees needed.

The survey elicited whether those changes (*i.e.*, plant modifications, microbial interventions, and laboratory requirements) had necessitated changes in their buying operations and, if so, what physical effects they had. The buying operation responses included:

- more sanitation / animal identification / animal health concerns
- no downers / avoiding the risk of downers / substituting steers for lost cow harvest
- decreased variation in livestock purchased
- created short supplies which has driven prices up
- no change / buying in the Panhandle / same cattle base / many dairy animals lost
- no downers, otherwise little change in cattle procurement

The physical effects on buying operations included:

- increased lab supplies / chemicals / equipment / labor needs
- required traceability and feed verifications
- cut back on purchases of supplies and packaging materials
- more sanitizing equipment / more clerical requirements
- requires sanitizing purchased animals / labs / inspection

Processors were questioned about the speed of rule implementation. Most processors agreed that lag periods between regulation and implementation must exist, but were often coerced into changes with a very short-term period for such changes. Time needed to implement mandated changes (lag periods) in processing or the lack of reasonable time spans for FSIS' directives implementation was an issue all processors confronted. Most agreed that regulatory compliance costs were likely worse in California. One respondent generalized that it might be 2.5 months from regulation to program adoption by processors, and then another two months to audits by USDA's Agricultural Marketing Service (AMS). Failure to accomplish the changes would have made them subject to plant shutdowns by FSIS-USDA. Several changes were virtually immediate, as the firms more than once were confronted with a rule on a Friday to be implemented by the following Monday. Source country labeling, COOL¹⁷, BSE handling requirements were implemented over very short periods. Some firms felt they had to anticipate the threats of increasing standards and have immediate responses. Their customers were also anxious and may have over reacted at times, which helped create an environment with great uncertainty. Some customers began "guessing" at

¹⁷ While COOL has not been officially implemented its preliminary regulatory drafts become strong suggestions to processing plants that they should begin adapting responses. Equally demanding from their views are the customer requests or demands for process modifications from harvest plants.

the regulatory outcome of FSIS' 10,010.1, an *E. coli* directive, and then forced their “thoughts” or approaches back onto harvest processors.

Downstream Market Relationships

All processors interviewed agreed that client demands for health food-security and food safety issues had affected their operations, as compared to only a few beef producers' concern on the same issue. This reflects the broad agreement from survey area 1) **Problem Area** (see Appendix 2) of the survey related to *E. coli* O157: H7 and BSE regulation were “very important” to most of the processors. All had begun working on the larger set of food safety-security issues, but the threat of loss from the major disruptions of BSE cases or the presence of the dangerous *E. coli* O157:H7 remained major problems. A majority of processors responded that they had increased demand for antibiotic and hormone free natural products. Several had mentioned that they would meet client demands in these areas, if the client were willing to pay the additional costs.

In the analysts' experience some firms will begin building the regulatory and client demands into their internal marketing programs, thus turning an external effect on operations into an internal program response, and then give it a positive marketing twist or spin. In response to the query whether McDonald's type “no antibiotic growth promotant” position had affected their operations the response was evenly split across processors. A majority of operations found clients were not pressing diet/health conscious demands. One-half reported some ability to push back compliance costs to suppliers (*e.g.* for pathogen pre-harvest interventions) and most claimed some ability to push additional costs forward or up the market channel.

Budget and Cost Impacts

The increased labor requirements (part of section 4 of the beef harvest survey, see Appendix 2) for compliance were highly variable, but only one firm reported no additional labor. The labor increase seen as necessary ranged from 0 to 30% with a mean of 14% and a median of 16.5%. As beef anatomical parts were banned then the loss of those items in big plants induced layoffs of persons employed in that part of processing, such as tripe and head meats. The capital costs to achieve the required changes were varyingly estimated at \$30,000 to \$60,000, 2-3.5%, or \$40-\$45/head. Most found the additional labor costs to be positive, although a couple processors

reported no additional labor cost, their reasoning was that “everyone does a little more” in those operations.

When asked about the effects on revenue streams, a few reported 100% revenue losses on animals aged over 30 months. Some had not handled the older livestock, and others reported only minor losses. Some processors had handled downer cattle regularly, which meant important losses in their revenue streams. Ostensibly this was for protection against potential BSE carriers, but certainly not all such animals would have tested positive for BSE. The public anxiety about BSE and the government’s response has made the harvest of non-BSE downers a moot point. The reported firm downer cattle value losses were estimated as high as \$100,000 to \$1,000,000 annually. Older animal revenue stream losses included: offal sales to Mexico, cow short loins, expanded SRM, head meats, and intestines. For younger animals the losses included: small intestines, heads, and brains, but these are to some extent avoidable with animal identification programs.¹⁸

All firms reported important losses in the sales of offal items, while a couple of firms reported important losses in byproducts, which maybe as much as \$20/head processed for products such as bone and blood. For some firms the loss of offal sales revenue was more important, as they had cultivated local ethnic market clients.

Most firms reported layoffs related to the decreased revenue flows and also thought the compliance costs problems were worse in California than in other states. California seems to be a state bent towards greater levels of regulation from a beef industry viewpoint. Further, cattle sourced for slaughter in California, then the transported here include longer distance hauling costs, and some final meat products can no longer be sold here. Some firms identified the primary interstate difference for California was workmen’s compensation.

Processor Planning Responses

Processors were asked about their relationships and the demands placed on them by outside sources, either other competitors or firms in the markets with whom they dealt. One example is third party audits for pathogen monitoring and tracking systems. The majority thought they were more vulnerable to foreign competition under their regulatory burden. Further, they felt they were less competitive in foreign markets. The most apparent threats in the international markets were

¹⁸ Animal age influences BSE control mechanisms under FSIS directives.

reported as Australia, Canada, and New Zealand; however, three firms did not consider foreign competition an issue.

One-half the firms reported increased employment, some over 10%. A couple of firms were able to charge back for regulatory restrictions, half the firms did not charge back for these costs, and a few firms reported charge back amounts varying from \$2-\$25 per head. No firms reported discounting prices paid for cattle generally to cover the cost for regulatory restrictions. This was contrary to beef industry rumors, especially for loss of saleable materials. Further, none of the firms reported any notable loss in cuttable meat, but discounting the loss of organ meats ranged from 2% to 20% for a few firms that reported such losses. Lastly, two firms reported discounting for losses related to the age limits.

CONCLUSIONS

Beef producers held fairly positive outlooks facilitated by high beef price levels in 2004. Higher prices were likely linked to many possible causes, including the reduction of live cattle imports from Canada and the reduced value of cattle over 30 months of age, which has left US processors with excess capacity and had driven up cattle prices to a very high level. Beef producers views of the regulatory process were different than harvest processors, often with less urgency or acuteness to particular threats or issues of food safety regulation. Producers were beginning to confront their role providing safe meat products in the globally affected food safety picture. The recognition of pathogen control, animal health at slaughter, having credible vaccination programs, and the potential of individual animal ID systems were all components of a potential beef producer HACCP philosophy. This was far more pronounced and visible with mandated harvest HACCP.

The harvest processors were vitally concerned with a myriad of potential food safety-health risks. As a group they appeared anxious about the uncertain nature of evolving regulatory requirements they face. Their uncertainty over these product and process risks persists as food safety problems continue to arise despite advances in science. The industry has to accommodate customer and client demands for safe food products exists, but processors were aware of the potentially huge financial implications of what might seem to be minor or after-the-fact needed process changes. While the Environmental Quality Incentives Program (EQIP)¹⁹ and other federal programs may help fund environmentally oriented production improvements in agriculture there is little or no assistance for most regulatory changes. The policy effects likely will be felt in increased labor and record keeping requirements, but also in increased capital requirements and decreased revenues from various byproducts.

California harvest operators are smaller firms relative to the larger national/international scale of the leading beef processing firms. Even the largest California harvest processors voice concerns the increasing cost implications of regulatory changes, the increasing rate of regulatory change demands, and the speed at which they are often required to implement regulatory changes. The medium and smaller harvest processors are even more threatened by the important (fiscally), sudden, swift regulatory changes. As an example, the moratorium on downer cattle affected several

¹⁹ The Environmental Quality Incentives Program (EQIP) was reauthorized in the 2002 Farm Bill to provide a voluntary conservation program for farmers and ranchers promoting agricultural production and environmental quality as concurrent and compatible goals.

harvest processors very adversely causing them to have to restructure their entire business plan emphasis.

RECOMMENDATIONS

Beef producers appear to have a narrower focus than beef processors that is centered on their own production activities and challenges, as might be expected. Some producers may be less aware or unaffected in the US, where they have been more isolated from major international food and animal health problems, *e.g.*, foot and mouth disease in the past. Beef producers and harvest processors should become aware of the major issues confronting each other, as these issues are important in this unsubsidized meats sector supply chain. The issues confronting beef harvest processors may likely end up requiring more regulatory changes on beef producers, as food safety and security aligns the entire supply channel.

Further analysis could address how the regulatory areas reviewed have affected the operating budgets and balance sheets of the sector for typical firms or industry aggregates as extensions of annual reports and extension pro-forma budgets. This could be reflected in production inefficiencies, efficiencies²⁰, increased transactions costs, capital needs, and/or revenue effects. After-the-fact cost comparisons industry regulatory change effects could be made with Office of Management and the Budget (OMB) required before-the-fact fiscal effects of regulatory changes. The OMB positions could be seen or used as proscriptive (the normative) in contrast to the ultimate industry practices found in California (the positive).

Avenues for further investigation and application of the “beef” regulatory situation could be contrasted to other livestock and meat areas (swine, smaller ruminants, and poultry industries), including both production and processing aspects.

Producer/industry strategic planning responses could be modeled and designed to reflect logical response to new restrictive policy. Budget implications and suggested strategic responses could be channeled into the live production and meats industry relationships, with effects defined in both directions. Ultimately, larger social welfare issues of those changes can be examined.

²⁰ Efficiencies are possible if market failure had existed in livestock and meats sector food safety and inspection precautions. Appropriate policy remedies possibly could correct those market failures.

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APPENDICES

Appendix 1. Beef Harvest Facilities in California.*

<u>Firm</u>	<u>Location</u>	<u>Daily Volume</u>
<u>Large Plants (Greater than 900 head per day)</u>		
Fresno Meat Company	Fresno, CA	~1300 head
Brawley Beef, LLC	Brawley, CA	~1000 head
Harris Ranch Beef Company	Selma, CA	~900 head
<u>Medium Plants (100 to 899 head per day)</u>		
Central Valley Meat Company	Hanford, CA	~700 head
Hallmark Meat Packing	Chino, CA	~300 head
Manning Foods, Inc.	Pico Rivera, CA	~200 head
Los Banos Abattoir	Los Banos, CA	~200 head
Rancho Veal Company	Petaluma, CA	~100 head
Stagno's Meat Company	Modesto, CA	~100 head

* Interviews were attempted on all firms, with one refusal and one partial response.

Appendix 2. Beef Regulation Project: Harvest Processors' Survey with Enumerated Responses.
Confidentiality: All responses will held in strictest confidence, individual responses will be summarized into the industry picture, not identified by specific size or name and be presented in an aggregated form only.

1) Regulations from Federal and State sources:

Which of the following areas has created “regulatory problems” for your operations since 1998?

Please rank each issue's importance as:

1-Very important, 2- Somewhat, 3-Less of a problem, or 4-Not an Issue.

<u>Problem Area</u>	Very Impor	Some -what	Less of a Problem	Not an Issue	Comments NR
Biosecurity (post 9/11)	2	2	1	3	
Bacterial food recalls	3	2	1	1	
<i>E.coli</i> 0157: H7	6	1		1	
<i>Salmonella</i>	4	1	2	1	
<i>Listeria</i>	2	1	2	3	
Other BacT(_____)	1	1		3	2
BSE – Food Safety	7	1			
General Food Safety	4	1	1		2
Downers w/o BSE	3	2	1	2	
Zero Tolerance (fecal mat., ingesta, & milk)	6	1		1	
Specified Risk Materials >30 Months Age	7				1
Revised AMR Regulatory Requirements	2	2		4	
Environmental Issues e.g. EPA, CalEPA	3	1	1	2	
Animal welfare	6	1	1		
Workmen's Comp	8				
General Labor Issues	2	3	2	1	
Other _____	2	1			5

2) Strategic Responses of firms and individuals:

Are you now subject to greater foreign competition from the regulations? 5_Y 0_N 3Not Considered

Are you less competitive in foreign markets because of regulations? 5Y N 3 country dependent

In your view what countries are the sources of this competition? 4Aust 3Can 2Arg

1Brz Chile SoAfr EU Spain Mex Venez 3 (NZea) (_____)

Unsure Can't Say 2 NR

Where in your operations have these reduced the value you add to the beef (meats) sector?

How has your average employment changed? 3 of 8 report increases of 23% mean (17% median) and 32 empl

Do you charge back for the regulatory restrictions to sellers of cattle? 2_Y 4N NR 2

\$/hd \$17.33 (3) mean, \$25 median

Do you discount for regulatory restrictions involved? 0_Yes 3_No 5_NC/NR Means/Medians:

0 (2) % Loss of cutable meats 8.6 % (3) mean loss organ meats 24% (3) mean loss age related
0 median 2% median 2% median limits

3) Management Changes: What types of line changes have you made to adapt to each of these changing regulations, in terms of labor and capital changes? (Circle appropriate response)

Area Changes: Major Some Few No
 Number of changes >5 3-5 1-2 Change Comments

Area Changes	Major	Some	Few	No	Change	Comments
Plant Modifications	6	1		1		
Microbial Interventions	6	1	1			
In Which Plant Locations?						NR
Slaughter-Dirty Areas	3	2	1	1	1	
Slaughter-Clean Areas	4	2		1	1	
Laboratories	3		3	1	1	
Increased Employees	3	2	1	1	1	
Other _____	1		1		6	

What have these changes done to your buying operations? _____

Physical effects? _____

What effects have these changes had on discounting and premiums given? _____

Were there definitive lag periods between regulation and implementation, where inaction adversely affected your business? 6 Y 1 N NR 1 If yes, please describe: _____

4) Budget/Cost Implications for firms:

Can you estimate the effects of these changes on your operation in increased labor needs required to achieve compliance? 13.7% mean Increase/Employee or >0 total \$ cost
 16.5% median

Can you estimate the effects of these changes on your operation in increased capital required to achieve compliance? _____ \$ or % Increase in capital and equipment or per unit processed
13% mean \$ or % additional labor costs/employee
 6.5% median

What sources of revenue streams have been lost in complying with the new rules?

_____ Older animals - greater than 30 months of age? 5 of 8 revenue loss 10% mean, 0% median

_____ Younger animals 43% mean % loss describe loss: 2 of 8 “ _____ ”
 2% median

_____ Downer cattle value loss 6 of 8 \$ or Increased cost of sick animal inspection or condemnation

_____ Loss of Offal Items 7 of 8 report % loss or \$ Loss describe loss: _____

_____ Byproducts (e.g. bone or blood meal) 2 of 8 % loss or \$ Loss describe loss: _____

Have the changes resulted in layoffs? 4 Yes 2 No NR 2 Number or %: 22% area

Are compliance costs/problems worse in California than other states? 6 Yes 2 No

Most respond that environmental compliance and water law are much more stringent here
also workmen's compensation higher

5) Questions Involving Downstream Processors:

Have you been affected by client demands for food security-food safety-health issues?

8 Yes 0 No Describe: _____

Have you been affected by demands for hormone/antibiotic free, natural, or organic products?

5 Yes 3 No Describe: _____

Have general client demands like McDonalds “antibiotic growth promotant” position affected your operations? 4 **Yes** 3 **No** **NR** 1 Describe: _____

Have you been affected by demands for more health conscious diets (*e.g.* Atkins, South Beach)? 3 **Yes** 5 **No** Describe: _____

Have you been able to “push back” costs to suppliers? 4 **Yes** 3 **No** **NR** 1 Describe: _____

Have you been able to “push “ costs forward to customers? 6 **Yes** 1 **No** **NR** 1 Describe: _____

Appendix 3. Beef Regulation Project Cow-Calf Operators' Survey with Enumerated Responses.

Confidentiality: all responses will be held in the strictest confidence, individual responses will be summarized into the industry picture, not identified by specific size or name and be presented in an aggregated form only. (n = 36)

1. What type of cattle operation do you run? (circle all that apply)

- a. Purebred or seedstock [7] b. Commercial cow-calf [25] c. Stocker operation [7] d. Feedlot operation [4] and
 [All a-e 1] Is it a [3] Grow-out lot or a [3] Finishing lot?

2. Have recent federal and state regulations changed your operation's management practices?

21 Yes 13 No 1 Not Sure

3. Please rank the following areas that may have created regulatory problems for your operation since 1998.

1 = Very much an issue 2 = Somewhat an issue 3 = Slight issue 4 = Not an Issue

To what extent have the following regulatory issues affecting your operation? (Circle one only per line)

Issue area:	Very much	Some -what	Slight	Not an Issue	Comments (NoResponse)
a. Bio-security (post 9/11)		7	12	17	-
b. General food safety – HACCP	6	8	6	16	-
c. Bacterial food recalls		6	5	24	1
C1. <i>E.coli</i> O157:H7	2	5	6	23	-
C2. <i>Salmonella</i>		4	9	24	-
C3. <i>Listeria</i>		3	8	22	-
C4. Other _____		2	1	22	11
c'. BSE	14	7	8	6	1
d. Downers w/o BSE	6	6	10	14	1
e. Foot and Mouth Disease	4	6	4	20	1
f. Confined animal feeding operation-CAFO	5	4	6	18	2
g. Animal welfare	4	11	4	17	-
h. Specified Risk Materials >30 Months Age	4	5	9	18	-
i. Revised "Advanced Meat Recovery"-AMR Regulatory Requirements	2	2	5	23	4
j. Environmental Issues e.g. EPA, CalEPA	8	13	8	7	-
k. Non-point source water pollution	9	7	10	10	-
l. Particulate matter air pollution	5	7	10	13	-
m. Workmen's compensation	12	6	5	8	-
n. Other	1			14	19

3.1 Where in your operations have recent imposed federal and state regulatory controls "reduced the value of" or created problems for your operations? (circle all that apply) **Yes** **Comments**

a. In the price of cattle per pound	12
b. In the update of equipment to comply with regulations	9
c. In training of employees of new regulations	8
d. In overall maintenance of your operations	12
e. In reduced grazing opportunities	14
f. In increased costs of inputs	20
g. In decreased property values	4
h. Operations have not been affected by recently imposed federal and state regulatory controls	8

Note: Question numbering errors above in 3 c' BSE (first table above).

4. How strongly do you agree or disagree with the following statements? (circle only one answer in each row)

Market cattle prices per lb. have to increase to compensate for regulatory controls imposed for...	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Comments? NR If volunteered
a. Post 9/11 biosecurity	4	12	12	2	2	1
b. Bacterial food recalls (<i>E.coli</i> O157-H7, <i>Listeria</i> , <i>Salmonella</i> , etc.)	4	15	9	3	3	1
c. BSE and food safety	11	16	2	2	3	1
d. Downer cattle	4	14	7	3	6	2
e. Country of origin labeling	6	17	8		4	1
f. Foreign origin-Mexican or aged cattle	4	16	10	2	3	1

5. What type of operational changes have you made to adapt to each of these changing regulations, in terms of labor and capital? (seeking the intensity and/or number of changes by category)

Changes In:	Many >5	Some 3-5	Few 1-2	Not an Issue	Description of Changes NR
a. Cattle handling	6	10	8	10	1
b. Shipping procedures	3	10	8	12	2
c. Sale animal health	3	7	8	9	8
d. Shipped stock sanitation	6	2	6	18	2
e. Laboratory testing	1	9	4	21	1
f. Increased labor effort-time	6	7	6	15	1
g. Other _____	1	2	3	4	No responses for g submitted

6. Has your need for part-time help (labor) changed?

a. Increased 7 b. Decreased 2 c. Stayed the same 18 d. No outside employees 6 NR What level? 7.9 % mean 0 % median

7. What is your estimate of the percentage change of increased labor needs to meet compliance? 6.7 % mean 2.5 % median

8. What is your estimate of the dollar amount needed for the increased labor needs to meet compliance and what percentage have labor costs increased? \$7947 mean and 9.2 % mean labor cost increase
\$115 median 7.5 % median

9. What is your estimate of capital and equipment costs from the changes required to achieve compliance?
11.1% mean increase 7.5 % median

10. What source of revenue streams have been lost in complying with the new rules? (circle all that apply)

- a. Older animals greater than 30 months of age % loss 9.9 % mean and 3.5% median
- b. Younger animals less than 30 months of age % loss 0.2 % mean and 0% median
- c. Downer cattle value loss % loss 29.9% mean and 0 % median
- d. Loss of Offal items % loss 3.1% mean and 0 % median
- e. Byproducts % loss 4.7% mean and 0 % median

11. Are compliance costs/problems greater in California than other states? a. Yes b. No c. Not sure NR
Describe: _____ 23 3 9 1

12. Have you been affected by buyer-client demands for food security or food safety issues? a. Yes b. No c. Not sure NR
Describe: _____ 12 19 4 1

13. Have you been affected by demands for hormone/antibiotic free, natural, or organic products?

a. Yes b. No c. Not sure NR Describe: _____
13 18 4 1

14. Have general meat buyer demands like McDonalds' "antibiotic growth promotant" position affected your operations?

a. Yes b. No c. Not sure NR Describe: _____
4 17 14 1

15. Have you experienced lag (dead) period where you have not been able to do business when the new federal/state regulations were implemented? a. Yes b. No **NR** How Long? 1 mo (2), 12 mos (1) (weeks/months)
 (Description) 3 31 2

16. Do you feel there is a greater threat of foreign competition because of recent imposed regulations?
 a. Yes b. No **Not sure NR** Comment? _____
14 20 1 1

17. Are other countries a prime source of competition? Which ones? (circle all that apply)
 a. Australia 27 b. Canada 18 c. Argentina 20 d. Brazil 18 e. Chile-Venezuela 4
 f. Mexico 20 g. Europe-gen h. Spain i. South Africa j. ~~Venezuela~~
 k. Other _____

18. Are you less competitive in foreign markets because of recent imposed regulations?
 a. Yes 16 b. No 8 c. Not sure 12

19. Have recent federal and state regulations changed your operation's profitability or net returns?
 a. increased 2 b. decreased 8 c. remained constant 17 d. not sure 6 **NR** 3 Comment: _____

20. Roughly what percentage have your operation's net returns changed from such policy effects? 4.2 % mean
 Comment: _____ 0 % median

21. Is there a charge back from the processor for regulatory restrictions? a. Yes b. No c. Not Sure **NR**
3 12 18 3

22. If yes in Question 21 What is your "estimate" of cost per head you are charged back for regulatory restrictions?
 \$ most NR /head [We recognize that this may be very difficult to discern/quantify]

23. Are there any other related regulatory issues that come to mind? _____

24. How long have you had your cattle operation?
 a. 1-5 years b. 6-10 years c. 11-20 years d. 21-30 years e. Over 30 years **NR**
3 7 5 5 15 1

25. Approximately how many head of cattle do you buy per year? 1349 hd mean
15 hd median

26. Approximately what percentage of cattle do you market annually, of your total calf crop?
 Sold 69 % **plus** Retained Ownership 10 % **plus** Retained breeding heifer 21 % mean
80 % median 0 median 20 % median

27. Do you retain ownership of your cattle in the feedlot? a. Always b. Sometimes c. Never **NR** **NA**
1 13 19 1 2

28. Do you participate in an "alliance" program? a. Yes b. No **NA**
10 25 1

29. Do you own your own feedlot? a. Yes b. No **NA**
4 31 1

30. What size feedlot are your cattle sent to normally? (circle only one) mean = 15,157 median = 15,000
 a. less than 1000 head 4 b. 1000-1999 2 c. 2000-3999 1 d. 4000-5999 3 **NA** 10
 e. 6000-9999 0 f. 10,000-19,999 3 g. 20,000-30,000 2 h. 30,000+ head 4 **NR** 7

31. Approximately how many cattle do you produce annually?
 a. 1-49 5 b. 50-99 2 c. 100-199 4 d. 200-499 12 e. 500-999 4 f. 1000-4999 6 g. 5000+ 2 **NA** 1
 estimated group centered mean = 1087 head and median = 350 head

Appendix 4. Harvest Operations - Question 2: Comments (separated by slashes).

2a. Are you now subject to greater foreign competition from the regulations?

Probably no markets / USDA inspection has helped

2b. Are you less competitive in foreign markets because of regulations?

Cow meat deemed lost / Lost Mexico/Canada/Japan

2c. In your view what countries are the sources of this competition?

Foreign competition-we do little export / Can't export, except to Mexico

2d. Where in your operations have these reduced the value you add to the beef (meats) sector?

Loss of small intestine (2), condemned check meat from over 30 months of age / Loss of offal related to export limitations, short loins, AMR has been in flux / Offal, export of tenderloins, liver, and short loins / 35% of business is affected from tenderloins, ribeyes, and tripia / small intestine, SRM, lost ARM product, export markets for offal, short loins and vertebo column / Tongue prices dropped from \$5 to \$1 per pound / Merchandising offal / Tongue and intestine export, cow meat prices down / "Drop Credits" - avoid any 30+ months aged cattle in the future / SRM has a range of interpretation

2e. How has your average employment changed?

800 employees down to 650, but added a dentition for animal identification; lost small intestine crew-their jobs were eliminated / Net employees up; however, last two years down due to lower production / Increased amount of labor for security and quality control, also required pre-employment screening and background checks; 8 people lost their jobs / Some let go 100-200 down the rest lose 2-5 hours per week over time, which is 70-80 FTE over 6 months, but that's related to the cow cycle / Canadians are running at excess capacity as border is not open to live cattle, so US processing volume is down / Yes, downsized by one-half an employee involved, have a greater push for college educated people

2f. Do you charge back for the regulatory restrictions to sellers of cattle?

No prices have gone up / Operation is in the red as volume is down, an artificial short supply situation, while Canada is over capacity and US is under capacity kill

2g. Do you discount for regulatory restrictions involved?

Rendering losses and blood / Pass on to customers / Head meats lost for over 30 months aged cattle

3d. Were there definitive lag periods between regulation and implementation, where inaction adversely affected your business?

Implementation time frames: get notice of changes on Friday late in the afternoon and told to implement by Monday. One could think of it as the intrusion rate of USDA influence. "Discretionary issues where non-standardized inspections have big economic effects. Intervention processes are highly variable some causing six figure investments and diseconomies of scale.

App. 4 Continued – Harvest Operation: **Budget/Cost Implications for Firms (Question 4).**

4a. Can you estimate the effects of these changes on your operation in increased labor needs required to achieve compliance?

Increased a crew 30% / Loss of credit values on “drop credit” / Net loss of employees in tripe area

4b. Can you estimate the effects of these changes on your operation in increased capital required to achieve compliance?

4c. What sources of revenue streams have been lost in complying with the new rules?

 Older animals - greater than 30 months of age?

SRM potential separate handling required / Loss of offal, small intestine, short loins, & headmeat / Brain, intestine and tonsils lost / Offal export to Mexico

 Younger animals % loss **describe loss:**

Loss of small intestines, heads, and brains / Margin of error associated with physical age ID

 Downer cattle value loss \$ **or Increased cost of sick animal inspection or condemnation**

Varied from negligible to 3% loss of value / Not huge, a big loss to dairymen, a pain for processors

 Loss of Offal Items % loss **or \$ Loss** **describe loss:**

Abomasums, tripias, aorta, rumen pillar, and liver / Tripias market and heads / Offal items from animals over a certain age are not eligible for export, other items wait for government clearance.

 Byproducts (e.g. bone or blood meal) % loss **or \$ Loss** **describe loss:**

4d. Have the changes resulted in layoffs?

Yes, through the reactions of people due to change / Economies of scale to cover fixed costs, cost increases are not proportional

4e. Are compliance costs/problems worse in California than other states?

Given the daily harvest and the number we can process with overtime at \$1 per head this amounts to thousands a week / Product in California has to see for a higher price to meet higher costs.

5a. Have you been affected by client demands for food security-food safety-health issues?

HACCP, E. Coli, animal welfare, and interventions the list is endless, more often though the issues are driven by customers before regulation / Third party audits / Increased testing and intervention Very often customer demands often precede regulatory demands / Authorities always asking for more and changing issues / More driven by customers, government muddles it up / Definitely, especially for major fast food firms where the emphasis is on multiple 3rd party audits. These require time and money, as well as huge paper trails / Customer required specific items for security and welfare are being handled in unusual ways

App. 4 Continued – Harvest Operation: **5. Questions Involving Downstream Processors:**

5b. Have you been affected by demands for hormone/antibiotic free, natural, or organic products?

Has a natural beef program sourced / Doing Lora's Leans and other specialty programs / On the supply side the cost of cattle rises because such programs exist, *e.g.* price of bulls went up because of a natural beef program / Requests made and we actively pursuit the options / All natural products require source verification and trace back to the mother cow / Greater demand for that now, but the natural beef concept goes back to the 1980's

5c. Have general client demands like McDonalds "antibiotic growth promotant" position affected your operations?

Dropped natural beef customer due to cow harvest decrease / Residue programs are required / All customers are natural already / Not aware of any / Increased testing / We separate animals in our operation, so not a problem / Not this one specifically, but yes on animal welfare, food security, etc.

5d. Have you been affected by demands for more health conscious diets (*e.g.* Atkins, South Beach)?

General beef demand is up due to low carb diets, prior to that less demand for good beef / Probably has helped, more likely fewer consumers are opposed to consumption / Favorably-export market loss offset. The industry was very fortunate that the diet things cycled in when they did / Not lamb specifically

5e. Have you been able to "push back" costs to suppliers?

Preharvest interventions, vitamin E treatments / Money has gone up / Move cost to suppliers / Have to, can't eat those big costs, don't have excessive demand now / They push discounts for over

5f. Have you been 30 months of age cattle able to "push " costs forward to customers?

Minimal – definitely need more / But not as much as they would like / We price in accord and with customer demands, especially branded beef business and cost plus initiatives for special handling programs

Appendix 5. Beef Producer Operations Open Ended Comments (separated by slashes).

- 1.** What type of cattle operation do you run? We keep our own calves over as stockers /
- 2.** Have recent federal and state regulations changed your operation's management practices?
More accounting for drugs, Rx needs to be in place / Not yet, but they will, the ID issue /
- 3.** To what extent have the following regulatory issues affecting your operation? a-Bio-security (post 9/11):
Cattle in feedlot are their responsibility / We're along the aqueduct so we get patrolled /
- 3b.** General food safety – HACCP: ID system and records to the feedlot / A benefit to all /
- 3c.** Bacterial food recalls: Indirect market effects
- 3c'. BSE:** ID system / If 100% testing is required / Loss of seed stock sales to Mexico /
- 3d.** Downers w/o BSE: Broken legs / Do not market non-ambulatory animals / We kill downers and leave them on the ranch /
- 3e.** Foot and Mouth Disease: Stop taking guests from UK for over a year / Awareness issues /
- 3f.** Confined animal feeding operation-CAFO: On-ranch and feedlot effects / Under current regulations /
Local feedlot shut down /
- 3g.** Animal welfare: Extremely, participating in guidelines for both the nation and California /
- 3h.** Specified Risk Materials: Watching because of buying from other countries / ID system / Will affect our cull cows /
- 3i.** Rev Advanced Meat Recovery(AMR): Slaughter requirements / Don't know enough about this issue to comment on it /
- 3j.** Environmental Issues: Open range, but aware for ecological reasons / Local feedlot closure /
- 3k.** Non-point source water pollution: Hooked up to the aqueduct, used to be oil water / Unless non-point source expanded / Local feedlot closure / Have taken water quality short course /
- 3l.** Particulate matter air pollution: As yet / Local feedlot closure / Not a problem yet, dirt roads could be /
- 3m.** Workmen's compensation: Highly effected by rates / Rates are very high for a cow-calf operator /
- 3n.** Other: None of the regulations by themselves are an "issue", it is the "accumulative effect" that is the big issue /
- 3'. Where in your operations have recent imposed federal and state regulatory controls "reduced the value of" or created problems for your operations?**
 - 3a.** In the price of cattle per pound: Yes with BSE / Prices are up /
May have increased butcher prices / Canadian influence-price is up / BSE / Market at an all time high / Indirectly Japan BSE has hurt us. The Canada issue I think helped us /
 - 3'b.** In the update of equipment to comply with regulations: Have not / Ear tags in addition to brands /
Need to have good safe equipment / Normal operation / Not an issue yet /
 - 3'c.** In training of employees of new regulations: Consult veterinarian / in pharmaceutical use / Keep up with quality assurance / Slight / Don't have employees yet will an issue when we hire /
 - 3'd.** In overall maintenance of your operations: Somewhat / Public opinion-views of the operation / Water quality is taking most of our time and effort /
 - 3'e.** In reduced grazing opportunities: Yes, with regulations to environmental restrictions on streams /
drought cut back / Leases on state and federal lands / Yes, public grazing land / Increased cost from reduced available grazing lands /
 - 3'f.** In increased costs of inputs: Increase because of workmen's compensation / medications, *etc.* /
somewhat / Typical concerns / Workers compensation and other state and federal regulations / Shipping costs to feedlot increased / We are just beginning to feel the increased costs /
 - 3'g.** In decreased property values: Not at this point, property has increased / Prices are up / No-only at the ag level / Critical habitat for endangered species / Our property values are set by the "home site" market /

- 3'h.** Operations have not been affected by recently imposed federal and state regulatory controls: Not really (2) / Not much / Not true / We don't even know what all the regulations are! If we did know I feel it would be impossible to comply with them all. You are only asking about a few in this survey. We deal with all kinds, from the DMV to IRS to county zoning and building regulations /
- 4a.** How strongly do you agree or disagree with the following statements (price effects)? Post 9/11 biosecurity: Market went down / Tag and test / Prices should increase, but history shows they usually do not /
- 4c.** BSE and food safety: Prices gone down / If individual ID required /
- 4d.** Downer cattle: Feed outlet / Public opinion /
- 4e.** Country of origin labeling: On natural cattle / If mandatory /
- 4f.** Foreign origin-Mexican or aged cattle: >30 months of age
- 5. What type of operational changes have you made to adapt to each of these changing regulations, in terms of labor and capital? Changes in-**
- 5a.** Cattle handling: ID system increase the process / drought same stress / We try to handle our cattle in a safe and humane manner prior to any regulations / Just try to do a better job moving cattle / Rebuilt corrals / We made changes before the regulations came – use Bud Williams methods /
- 5b.** Shipping procedures: Shipping cattle out of state / Have always wet down pens to hold down dust
- 5c.** Sale animal health: Generally costing more for doctoring / won't unless healthy / We make sure animals are properly vaccinated / We use the recommended vaccination program and low stress handling /
- 5f.** Increased labor effort-time: Much in the cost and labor / We take things slower / Shipping cattle out of state /
- 5g.** Other: Public image /
- 6. Has your need for part-time help (labor) changed?** We need more help if the national ID program is started /
- 7. What is your estimate of the percentage change of increased labor needs to meet compliance?** We are not real sure what “compliance” is! /
- 10. What source of revenue streams have been lost in complying with the new rules?** Present cattle prices affect these questions, high prices currently / This could be our biggest issue for our cull cows; however, the market is so strong it is hard to know if anything has been lost /
- 10d.** Loss of Offal items: Loss for the feeder, aware of slaughterhouse profit / Indirect effect by the buyer/
- 10e.** Byproducts: Manner of disposal, green waste has to be composted / Indirect effect by the buyer/
- 11. Are compliance costs/problems greater in California than other states?** Not for US / Because water and air quality with increasing population in rural areas / Workmen's compensation is the worst compared to everything else, but most costs are higher for us here / Most regulations and endangered species habitats / Just the fact that California is so liberal on their environmental laws / Cost of doing business here is more / Available herbicides and pesticides / Air and water quality central issues are cutting edge in California. Agriculture suffers or is penalized more than other industries / More non-ag pressure on ag production / Environmental regulations are more stringent in California / Because of environmental compliance /
- 12. Have you been affected by buyer-client demands for food security or food safety issues?** Major issue, country of origin labeling / Retail demand on meat items / Natural beef safety issues / Huge price differences / Indirectly affecting sales at auction yard / We follow a strict vaccination program this translates to a bonus / ID tags and follow-up / Mexico is not accepting live

- animals / We are working with USDA inspected mobile slaughter unit to address small growers need to supply niche` markets / We mitigate through quality assurance programs /
- 13. Have you been affected by demands for hormone/antibiotic free, natural, or organic products?** Only upon request / residual or hormone free beef, a major issue in alliance with Harris / natural, SLO guarantees hormone free / Some sales to natural beef, not a demand / Hormone free / More careful with the use of antibiotics / Natural beef safety issues / Too early to tell, niche` markets are too new / But there looks to be an opportunity in the market to provide those types of products / Increased my belief that the industry should end implant use / Do not use hormones / If we direct market any meat it will be hormone-antibiotic free /
- 14. Have general meat buyer demands like McDonalds' "antibiotic growth promotant" position affected your operations?** Reported to them / Yes, eventually we may stop using them / Once again, prices are high / I do not use implants and already tag calves that are given antibiotics / As a cow-calf operation it is hard to gauge the effects, but it will have an effect on us /
- 15. Have you experienced lag (dead) period where you have not been able to do business when the new federal/state regulations were implemented?** Mad cow scare stopped sales / When BSE was discovered in Washington / One year /
- 16. Do you feel there is a greater threat of foreign competition because of recent imposed regulations?** Mostly from Australia into Asian markets / If foreign markets accept unsafe products / Particularly in some foreign trade / Most countries don't have the same quality requirements as the US standards / Uneveled playing field /
- 17. Are other countries a prime source of competition?** Cannot export to Europe, Mexico is a big source of feeders
- 19. Have recent federal and state regulations changed your operation's profitability?** Had to buy more capital and labor / No, this is the best time in the cattle business / Charged customer transportation / High prices / Zero export sales / It takes a while to get down to the cow-calf operator, usually six months to a year / Recently, profitability has increased, but is not correlated to regulations /
- 20. Roughly what percentage have your operation's net returns changed from such policy effects?** Can't tell, the market is good for other reasons / No data to compare /
- 21. Is there a charge back from the processor for regulatory restrictions?** Not yet affected / If supplies are large-charges for everything / Not yet! /
- 22. What is your "estimate" of cost per head you are charged back for regulatory restrictions?** Paying for ID system, but it could even out with premiums bringing prices back.
- 23. Are there any other related regulatory issues that come to mind?** Misuse of ESA by environmentalists limits productivity on private and public lands / See 3-n and 3-h, we don't know what all the regulatory issues are. We only hear about the ones that make the paper or affect us directly.
- 24. How long have you had your cattle operation?** Partners have over 30 years experience
- 25. Approximately how many head of cattle do you buy per year?** Just bulls / Less than 20, bulls primarily / Purebred bulls only /
- 26. Approximately what percentage of cattle do you market annually, of your total calf crop?** Not since 1996 / Retained as stockers /
- 27. Do you retain ownership of your cattle in the feedlot?** Retain ownership in the feedlot 75% of the time / Go to Harris / Not for several years, on a small scale fed some of our own cattle.
-