

Bring the fattened calf and kill it. Let's have a feast and celebrate.

96% of Americans include beef in their diet.

Ground beef is a staple food

SNAP expenditures Non-SNAP expenditures

Food	Rank	\$, million	Food	Rank	\$, million
Soft drinks	1	357.7	Fluid milk	1	1270.3
Fluid milk	2	253.7	Soft drinks	2	1263.3
Ground beef	3	201.0	Cheese	3	948.9
Bag snacks	4	199.3	Baked bread	4	874.8
Cheese	5	186.4	Bag snacks	5	793.9
Baked bread	6	163.7	Ground beef	6	621.1
Cold cereal	7	139.2	Cold cereal	7	583.9
Fresh chicken	8	121.4	Candy - packaged	8	527.7
Frozen snacks	9	101.5	Coffee and creamers	9	519.4
Lunchmeat	10	99.4	Ice cream	10	481.8

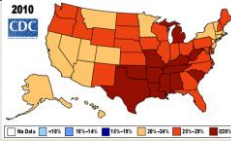
Nutrition assistance program report; USDA, November 2016

Why do we have some of our issues?

- Fear of the uninformed and unknown
 - human-animal bond, human safety
- Lack of consumer attachment
- We live in a 1st world country

.....and food is abundant

Country	% of personal income spent on food at home
China	34
India	32
Brazil	25
Saudi Arabia	24
Israel	18
Japan	15
Germany	11
Australia	10
Canada	8
United States	6



USDA Economic Research Service



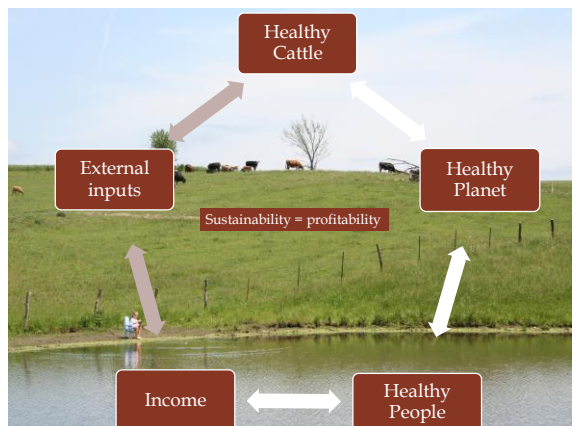
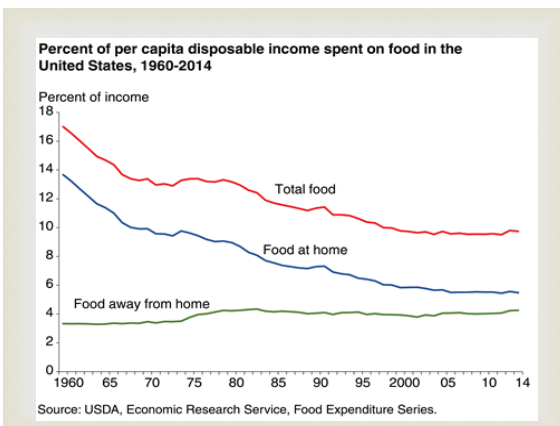
Animal rights activists use animal abuse cases to drive animal welfare policy



May 6, 2016
The Humane Society of the United States
Forms National Agriculture Advisory Council



Food animal Production Is at a tipping Point



Sustainability

- ☞ Humankind, country, business, family, yourself
- ☞ Do you practice sustainability - always?
- ☞ Sustainability modeling - where and how to farm
- ☞ Sustainability regulation/taxes - conservation
 - ☞ Global change verses corporate taxes
- ☞ Global climate change will have more impact on agriculture than agriculture will on global climate change.
- ☞ The globes climate, water availability, disease, population centers, tastes.....therefore food production will change

Embrace diversity



- Silence
- Distance
- Eye contact
- Group setting
- Family

It is not meat.



- ☞ FDA verses USDA
- ☞ Grocery store placement
- ☞ Environment and beef
- ☞ Animal welfare and beef
- ☞ Current research - toxicology, taste panels, nutrition



- ☞ National security
- ☞ Inability to keep facilities clean
- ☞ Antibiotics and hormones
- ☞ Fetal calf serum



McDonald's Animal Welfare

Summary of Global Consumer Attitudes
December 2011

GLOBAL CONSUMER & BUSINESS INSIGHTS

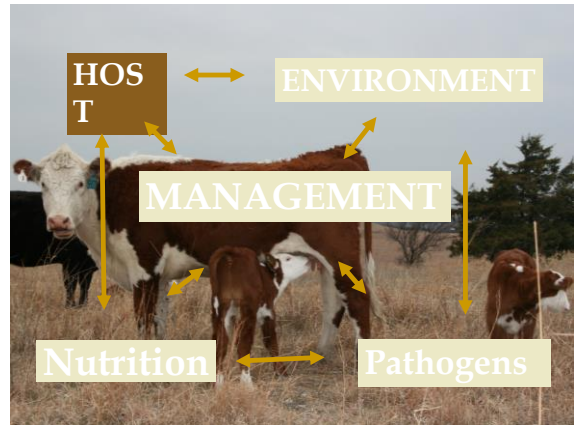
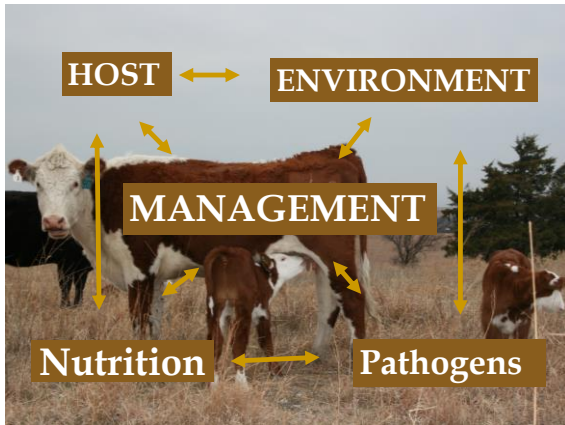
Loss of trust - Audits

Beef Quality Assurance
FEEDYARD ASSESSMENT
Assessor's Guide
REVISED 2018

Category	Considered Acceptable (%)	Average of All Yards (%)
Driving	~10	~10
Abuse	~5	~5
Falling	~5	~5
Tipping	~10	~10
Vocalizing	~5	~5
Jumping	~5	~5
Mismatch	~25	~25

A SAFE, WHOLESALE AND HEALTHY BEEF SUPPLY

Creating culture verses checking a box



Animal Genetic advancements

- ☞ Sire selection and genetic amplification
 - ☞ Artificial insemination
- ☞ Maternal selection and genetic amplification
 - ☞ Embryo transfer
- ☞ Embryo selection and genetic amplification
 - ☞ Sexed semen
 - ☞ Embryo biopsy
 - ☞ GMO Salmon
- ☞ CRISPR



Enhancing the host's immune and hormone profile

- ☞ Immunology
 - ☞ Killed vaccines - MLV Vaccines - Subunit vaccines
 - ☞ Immunostimulants
- ☞ Growth promoters
 - ☞ Steroid implants
 - ☞ Beta-agonists
- ☞ Hormone control
 - ☞ Suppress estrus
 - ☞ Express estrus

Nutritional Composition

“Organic foods differ from conventional foods *only in the way in which they are grown and processed.*”
 Source: American Dietetic Association

“On the basis of a systematic review of studies of satisfactory quality, there is *no evidence of a difference in nutrient quality* between organically and conventionally produced foodstuffs.”
 Source: American Journal of Clinical Nutrition July 2009

“No distinctions should be made between organically and non-organically produced products in terms of quality, appearance or safety.”
 Source: USDA

Estrogenic activity of common foods (ng / 8 ounce serving)

Soy flour defatted	342,468,000
Tofu	51,483,600
Pinto beans	408,240
White bread	136,080
Peanuts	45,360
Eggs	252
Butter	141
Milk	15
Beef from implanted steer	3
Beef from non-implanted steer	2

Loy, 2011

Estrogen production in humans

Pregnant woman	19,600,000 ng/day
Non-pregnant woman	513,000 ng/day
Adult man	136,000 ng/day
Pre-puberal children	41,000 ng/day

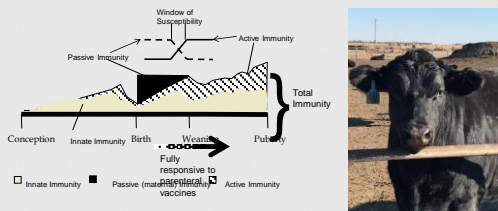


Losing technology increases price of shopping list ↑ 68%!!!!

Item ^a	Brand		% difference
	Conventional ^b	Organic ^c	
Whole Milk (Gallon)	\$4.19	\$5.99	43%
85% Hamburger (1lb)	\$3.99	\$7.99	100%
Boneless Chicken Breasts (1lb)	\$3.69	\$4.99	35%
Beef Sirloin (\$/lb)	\$5.99	\$8.99	50%
Large Eggs (Dozen)	\$1.45	\$4.89	237%
Pork Chops (\$/lb)	\$3.99	\$6.99	75%
White Bread (20oz)	\$1.99	\$2.69	35%

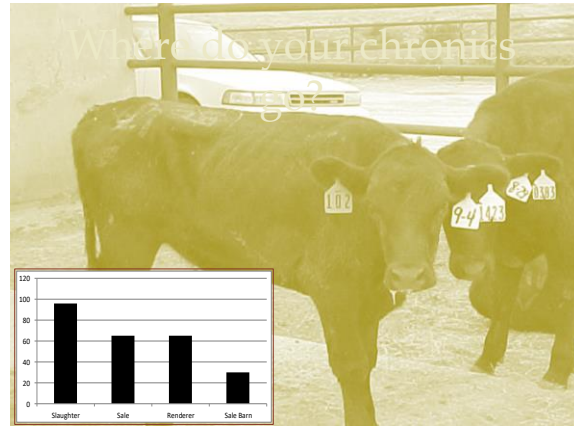
a) Milk Price as of 8/21/2012 all others as of 7/10/2012
 b) Hy-Vee, Overland Park, KS
 c) Whole Foods, Overland Park, KS

Preventative medicine is the future

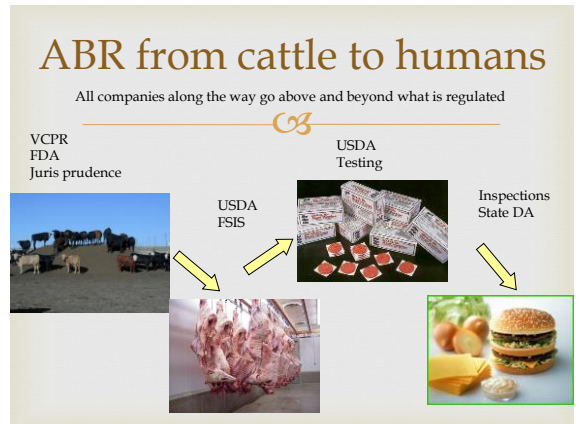


Modified from Figure 1, Morein et al Vet Immunol Immunopath 85:202-213, 2006 with permission of Dr. G Bloomqvist and Fig 3 Butler et al Vet Res 37:417-441, 2006 with permission of Dr. J. Butler.

Slide credit to Dr. Chris Chase



- ## Diagnostic diagnosis
- ☐ Diagnostic development
 - ☐ Culture and isolation to PCR
 - ☐ AB sensitivity - blood agar to microtiter to high throughput
 - ☐ Chute side diagnostics
 - ☐ Thermometer to Whisper
 - ☐ BVD - chute side
 - ☐ Pregnancy testing
 - ☐ Manual
 - ☐ Ultrasound
 - ☐ Blood test



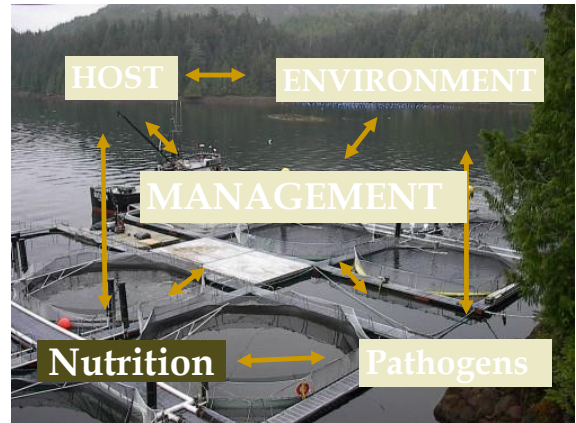


Antibiotics

- ☞ Need to measure usage
 - ☞ Late day drug usage
 - ☞ Drug priorities for human medicine
- ☞ Shipping in resistance not creating resistance
- ☞ Metaphylaxis and feed grade products might be protective against resistance

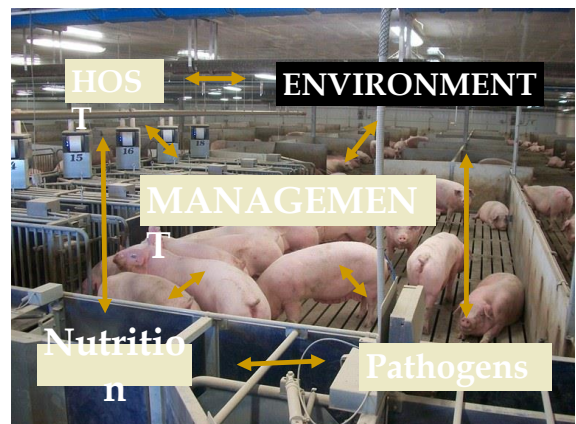
We have a story of continuous improvement with AB usage, but we still have a ways to go

- ☞ Beef Quality Assurance
- ☞ AMDUCA - EDLU
- ☞ US FARAD
- ☞ Voluntary ban on aminoglycosides
- ☞ Veterinary Feed Directive
- ☞ No over the counter AB
- ☞ Others will come in the future

Technology and nutrition

- ☞ Development of designer animal feeds
 - ☞ GMOs - Salmon and soybeans
- ☞ Feeding management
 - ☞ Individual feeding programs for swine and dairy
 - ☞ Precision feeding



ENVIRONMENT

RELATIVE HUMIDITY (PERCENT)	
100	100
95	95
90	90
85	85
80	80
75	75
70	70
65	65
60	60
55	55
50	50
45	45
40	40
35	35
30	30
25	25
20	20
15	15
10	10
5	5
0	0

Apparent Temperature
(It's how hot the horse-human combination makes it feel)

Animal comfort and protection

- ☞ Housing
 - ☞ Thermal neutral zone
 - ☞ Animal protection - behavior
 - ☞ Environmental protection
 - ☞ Land mass needed
 - ☞ Placing animals where the feed is
 - ☞ Amazon
- ☞ Transportation - more to do

San Francisco

CONVENTIONAL: 320 acres
 <1% of San Francisco

HOST **ENVIRONMENT**

MANAGEMENT

Nutrition **Pathogens**

Managing animals and managing people

- ☞ Surveillance people
 - ☞ Video surveillance
 - ☞ GPS tracking
- ☞ Robotics
- ☞ Animal Surveillance
 - ☞ Disease and injury diagnosis
- ☞ Slaughter facilities
 - ☞ Instrument grading
 - ☞ Food safety

"Our current methods of disease diagnosis are not adequate for evaluating management changes or product efficacy if we are interested in understanding the cost effectiveness of our decisions."

Bryant LK, Perino LJ, Griffin DD, Doster AR and Wittum, TE... A method for recording pulmonary lesion of beef calves at slaughter, and the association of lesions with average daily gain. *Bov Pract* 33(2):163-173, 1999.

People are needed - interaction

Farm Jobs, % of Total U.S. Jobs 1790 to 2011

During the course of this presentation...



Scott Fleetwood, Novus International

60 babies will be born in the U.S.

244 babies will be born in China

351 babies will be born in India

Poverty

Enough is as good as a feast.

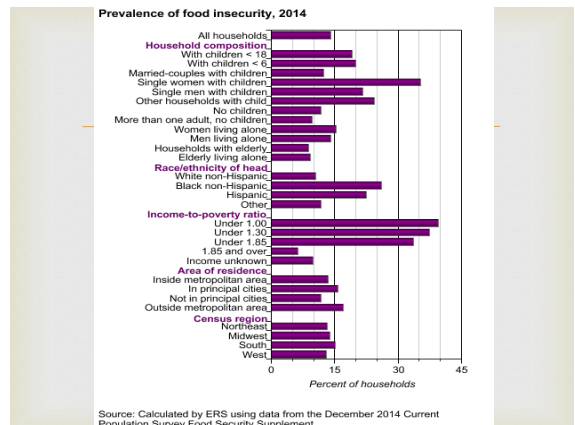
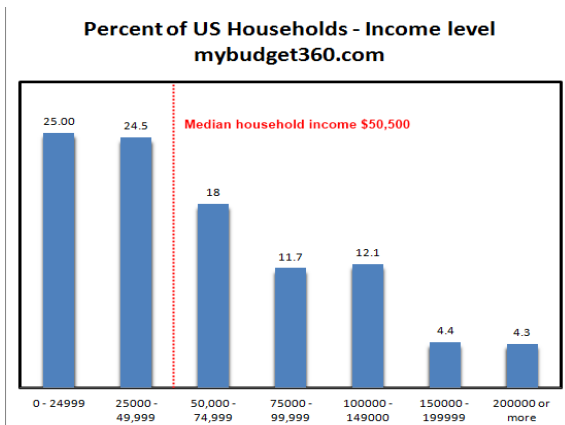
"To feed our growing global population, we will have to produce the same amount of food in the next 40 years that we previously produced in the last 10,000 years"

Quote:
Norman Borlaug (father of the modern Green Revolution)

Rich **Impoverished**

▲

"From these preliminary results, Caucasians that are well educated with higher incomes are the most likely market sector to focus marketing organic vegetables to."



Explain this to single mom with two children to feed



Year : 1957
Time to market: 120 days
Average Weight: 1.4 kgs
Average Conversion : >3

Year : 2009
Time to market: 42 days
Average Weight: 2.6 kgs
Average Conversion : 1.7

55



“Some people are so poor that all they have is money.”



We need strong, humane leadership in our country to not undo all the good we have done for our people.

