Chapter 10 – Bioethics, Animal Welfare, Animal Rights, and Biotechnology Issues
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Learning Objectives:

1) To define ethics and to identify ethical issues in animal and plant agriculture

2) To discuss animal welfare and animal rights and to identify what rights livestock may have

3) To discuss ethical implications of biotechnology and genetic engineering of animals and plants

4) To suggest problems in current agricultural teaching and research, with possible solutions and opportunities arising from changing realities of animal and plant agriculture
Chapter Outline:

I. BIOETHICS AND ETHICAL PERSPECTIVES
II. ANIMAL BEHAVIOR AND WELFARE
III. ANIMAL RIGHTS
IV. RELIGION AND THE USE OF ANIMALS
V. BIOTECHNOLOGY: SCIENCE, GOD, AND GENE JOCKIES
VI. ETHICS AND NATURAL RESOURCE ISSUES
VII. GENDER ISSUES IN ANIMAL SCIENCE/VETERINARY MEDICINE
VIII. OPPORTUNITIES ARISING SOCIETAL CONCERNS
IX. PERCEPTIONS OF AGRICULTURAL AND ANIMAL RESEARCH
X. PERCEPTIONS OF AGRICULTURAL AND ANIMAL SCIENCE TEACHING
I. BIOETHICS AND ETHICAL PERSPECTIVES

- **ETHICS** is the branch of philosophy that deals with human character and conduct and involves the systematic examination of moral issues for the purpose of distinguishing right from wrong.

- **MORAL ISSUES** involve what an individual or a society believes to be right or wrong.

In animal agriculture, the defining ethical issue is whether and how we should raise and kill animals so we can eat them. What is your view?
I. BIOETHICS AND ETHICAL PERSPECTIVES

The killing and eating of other sentient animals by humans is an ethical and moral issue worthy of debate. The argument against this practice has little, if anything, to do with ecological or environmental considerations or with animal welfare. Instead, it has everything to do with animal and human rights. Ethical issues in the plant area are in many ways less contentious than with animals.

- Ethics in animal agriculture is closely tied to the subjects of animal welfare and animal rights.
- It is reasonable that animal production practices that cause pain or suffering are morally questionable.
- Interest in animal rights and ethical treatment of animals is more pronounced in societies where there is a strong respect for human rights. Should we educate urban consumers about meat animal production to convince them that we use good welfare practices?
I. BIOETHICS AND ETHICAL PERSPECTIVES

Classic case of the sow with a broken leg, which was kept alive until she gave birth to her litter, or the sheep worth $30 with an injury that required veterinary attention ($60 bill). Probably most Americans would find such cases highly appalling (see pages 333-334).

B.E. Rollin, a veterinarian and an animal ethicist from CSU, has written many articles and books on the subject. (see summary on page 336).
I. BIOETHICS AND ETHICAL PERSPECTIVES

- “How valuable is an animal’s life compared to a human life”? This is the most hotly debated question concerning the use of animals in biomedical research.

- “A rat is a pig is a dog is a boy; they’re all equal” (PETA).

- “In the strict biological sense, human beings are animals too, but in the broader sense, human beings are much more than animals” (Dennis, 1997; see list on page 335). Dennis (1997) concludes that human life has special value because of our unique mental and language abilities. “The activities and experiences that we most highly value, whether they are intellectual, cultural, relational or achievement related, are all distinctively human and require, as a minimum, a human brain.”
I. BIOETHICS AND ETHICAL PERSPECTIVES

- **TERMINOLOGY OF BIOETHICS**: Hurnik (1993) reviewed ethical theories used in consideration of farm animal welfare.

1. **DIVINE COMMAND** – “God gave us dominion over animals”

2. **KANTIAN PHILOSOPHY** – German philosopher, Immanuel Kant, who believed that it was wrong to mistreat animals (more so to the detriment of the individual’s character)

3. **UTILITARIANISM** – The belief that the proper course of action is the one that provides the greatest good for the greatest number. The right action is the one that benefits the most individuals. P. Singer (1975; *Animal Liberation*) believes that animals in CAFOS suffer more than the benefits to humans as food, and that we are obliged morally to become vegetarians to alleviate animal suffering.

4. **COMMUNITARIAN ETHICS** – The concept that we do not treat all people equally (family members) but have a sense of our own versus different communities (degrees of ethical concern both among humans and among animals).
I. BIOETHICS AND ETHICAL PERSPECTIVES

- Modern animal rights theory stems from the book *The Case for Animal Rights* by Tom Reagan: Animals have moral rights based on the concept of “inherent value” (Lifeboat scenario?)

- The “least harm principle”? Davis (2001) argues that killing one large grazing animal is more ethical than a vegan diet because more subjects of a life are killed when food crops are produced. Also, there is less wildlife habitat in a crop field.

- PETA and ALF

http://www.peta.org/
http://www.animalliberationfront.com
I. BIOETHICS AND ETHICAL PERSPECTIVES

- Ruth Harrison (1964) in her book, *Animal Machine*, coined the term **factory farming**, which was prompted by an ad: The modern pig farmer sees the pig itself as merely a cog in a machine for converting feedstuffs into cash at the bank. This resulted in a Farm Animal Welfare Advisory Committee that developed the “five freedoms” that animals are entitled.

- Frazer (1999) has suggested that animal ethicists (philosophers) and animal welfarists (scientists) live in two different worlds or cultures, neither communicating with or understanding the other. He subscribes that animals should feel and function well, and live natural lives.

Five Freedoms of Animals
(UK Farm Animal Welfare Council)

1. **Freedom from thirst, hunger, and malnutrition** – by ready access to fresh water and a diet to maintain full health and vigor

2. **Freedom from discomfort** – by providing a suitable environment including shelter and a comfortable resting area

3. **Freedom from pain, injury, and disease** – by prevention or rapid diagnosis and treatment

4. **Freedom to express normal behavior** – by providing sufficient space, proper facilities, and company of the animal’s own kind

5. **Freedom from fear and distress** – by ensuring conditions that avoid mental suffering

Which animal enterprise meets all five of these freedoms? Rollin (1995a) states: “Of all production systems, beef production most closely approximates the social ethic of husbandry” ([video](#)). But Americans eat more chicken!
II. ANIMAL BEHAVIOR AND WELFARE

- **ETHOLOGY** – The study of animal behavior.

- Proper animal handling and management are facilitated by knowledge of the behavioral characteristics of animals.

- Animal management techniques that reduce or eliminate stress are an important component of animal welfare.

- **Welfare** refers to the state of an individual in relation to its environment, which can be measured (behavioral measures of responsiveness, stereotypies and preferences, and biochemical measurements of hormones).

- Environmental factors that adversely affect an animal’s welfare include: pain, injury, fear, frustration, absence of normal stimuli, sensory deprivation, and overstimulation.

- **Cognitive process** - refers to what an animal feels, or the manner in which animals process information from the environment.
II. ANIMAL BEHAVIOR AND WELFARE

- **PAIN** – is a biological response to stimulation of pain receptors, which can be eliminated with the use of analgesics (endorphins)
- **FEAR** – is an aversive response dependent on an animal’s perception of its environment (handling, transport, surgery). Both acute and chronic fear can affect performance and welfare
- **FRUSTRATION** – occurs when animals wish to respond appropriately to their environment but are prevented from doing so (limited feeder space, stall confinement)
- **SENSORY DEPRIVATION** - occurs when animals with elaborate behavioral characteristics are kept in a pen with nothing to do (environmental enrichment: tires, bowling balls, gnawing sticks, opportunities to root or graze)
II. ANIMAL BEHAVIOR AND WELFARE

- Poor welfare can be assessed a number of ways:
  1. Physical damage – spent hens with broken bones (roosting sticks) and stomach ulcers in pigs (sign of overcrowding). Also, in general, life expectancy (kept under intensive systems) is shorter and disease incidence is higher in stressed animals, due to inhibitory effects of high adrenal cortex activity (high serum glucocorticoid levels) on the immune system.
  2. Why are chicks “debeaked” (beak trimming)? Opposed by animal welfare advocates.
  3. Why are dairy cows culled after only 3 to 5 lactations?
  4. Stereotypies – Repeated sequences of movements that serve no obvious purpose (route tracing, swaying), common for animals reared in close confinement (crates, pens, and stalls) and animals in zoos.
II. ANIMAL BEHAVIOR AND WELFARE

- **Animal Preferences** – Can be tested involving experiments aimed at improving welfare involving accurate measures, animal preferences, design of facilities, and handling techniques.

- **Alternative Systems for Egg Chickens:**
  - Free-range, pastured pens, deep litter, perches, etc. Usually costs are increased. When not used properly, welfare may be worse than cages (rain, wind and mud, parasites, predators)

- **What is “forced molting”?** (feed deprived for as long as 21 days)
  - Poultry scientists and the poultry industry tend to look at this issue strictly in terms of economics.
  - “If the egg industry is expected to operate in an atmosphere of free enterprise in which supply and demand establish the market price, then egg producers should be allowed to use molting to alter the supply of eggs in the short term” (McDaniel and Aske, 2000).
  - Such statements are unlikely to be believed by the public!

- **Dawkins (1999)** basically states that physical and psychological health are the basis for good welfare, which can be assessed.
II. ANIMAL BEHAVIOR AND WELFARE

- The European Union has regulations that require cage sizes for hens be large enough to allow normal behaviors of nest building, dust bathing, perching, and wing flapping.
- Several present welfare and animal rights issues exist for the broiler chicken industry.
  - Ascites – Response to selection for rapid growth (accumulation of fluids due to pulmonary and cardiac insufficiency). Sudden death.
  - Lameness, bone defects, deformities,…

The abdominal and thoracic cavity of a broiler with ascites syndrome, which can often follow salt deficiency. Yellowish fluid can be seen in the abdomen, and the liver is firm and swollen. Photo by H. Michael Opitz.
II. ANIMAL BEHAVIOR AND WELFARE

- **SWINE** – A major welfare question is the raising of sows in gestation crates or stalls.

- A new system is group-housing of pregnant sows in an exercise area, including use of transponders in ear tags that provide each sow with specific meals. Management can also tell if any sows are off feed.

- Animal activists oppose such “de-animalized” methods - perceived as using animals as mere “meat machines” (Concerns – page 345)

- Are extensive swine systems more humane? Less humane?
II. ANIMAL BEHAVIOR AND WELFARE

■ BEEF INDUSTRY – Welfare issues are more about certain practices. What are these? Are feedlots more animal friendly?

■ VEAL INDUSTRY – Is a prime target of animal rights activists. Why?
  ▪ Traditionally, male dairy calves were raised individually in slotted-floor stalls, being denied physical and social behaviors, and fed an iron-deficient diet.
  ▪ Rollin (1995a) “white veal is a symbol to the public of the worst in industrialized agriculture”
  ▪ Group housing on straw is recommended
II. ANIMAL BEHAVIOR AND WELFARE

- OTHER MAJOR ISSUES:

- Animals used in entertainment (bullfights, cockfighting, circuses, rodeos, dog and horse racing, livestock shows, sea worlds, zoos, etc.)

- Do you believe that these are cases of animal abuse? – Cover later in Animal Rights
II. ANIMAL BEHAVIOR AND WELFARE

- Who is Temple Grandin?
- Knowledge of animal behavior can lead to the better design of corrals and chutes, handling and processing facilities, etc., and in general animal management. Such knowledge is also important in effectively responding to animal rights activists (video).
II. ANIMAL BEHAVIOR AND WELFARE

**SUMMARY:**

- In many respects, welfare of domestic animals has never been better than it is today. Do you agree?
- Good animal welfare means that *the animal is content* which involves cognitive processes; more likely content animals will be more productive animals (Whole Foods *video*).
- Good farmers have always known that livestock respond favorably to good treatment
- Many animal rights activists have only had pets
- No matter how many measures showing that animals are content, there will always be some critics
III. ANIMAL RIGHTS

- The animal rights movement has developed rapidly in Europe and North America, which is one of the most important issues faced by the livestock industries.

- **Animal Welfare** - refers to the state of an individual in relation to its environment, which can be measured (behavioral measures of responsiveness, stereotypies and preferences, and biochemical measurements of hormones).

- **Animal Rights** – refers to a belief system that animals intrinsically have the same rights to life and liberty as afforded by humans. To harvest an animal is murder! The aim is that the use of animals by humans would all end. Would domestic animals become extinct?
Profile of animal rights activists

- Caucasian
- Women 30-38 years old
- College-educated
- Urban professionals
- Median income of $33,000+
- Democrats or Independents (moderate to liberal political views)
III. ANIMAL RIGHTS

- Animal scientists are trained and indoctrinated to believe that their mission is to produce food as efficiently and cheaply as possible. American and European societies are increasingly rejecting this belief and are demanding that moral concern for livestock be considered, even if they have to pay higher food prices, which they are willing to do.

- “Cheap food, at any moral costs, may not be worth the price”!

- Animals rights activists have a particular aversion against industrialized agriculture.

- “… Instead the debate is about the perception of what is real, and in public policy, perception becomes reality. Agriculturalists and animal rights activists have different realities” (Jamison, 1992). Can they simply be educated?

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<td>Mink</td>
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<td>Veal calves</td>
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Kentucky Fried Cruelty

Each year, roughly 1 billion chickens raised for KFC suffer from extremely crowded conditions, crippling bone and joint problems resulting from top-heavy breeding, callous handling, inhumane slaughter techniques, and shortened life spans. Because chickens are intelligent and sensitive animals with strong social bonds, I urge David Novak and KFC to address these issues with urgency and negotiate with PETA to improve the lives of these animals.

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Third Eye Blind

[link]
III. ANIMAL RIGHTS

- **Anthropomorphism** – is the belief that animals have the same feelings and emotions as humans. “How would you feel…”

- Animal welfare should be assessed using objective measurements rather than by anthropomorphic ideas. How does the animal wish to feel?

- What is the “cute and cuddly syndrome” (rabbits and veal calves!)

- Animal welfare and animal rights groups must be recognized as organizations involved in the animal industry of the future.

- Friend (1990) – In an article “Teaching Animal Welfare in the Land Grant Universities” contends that animal (agriculture) students should be exposed to the philosophical basis of the animal rights movement, in part to encourage intellectual activity to form their own values.
III. ANIMAL RIGHTS

- A recent proactive, voluntary approach has emerged involving several fast-food restaurant chains in consultation with animal scientists that have adopted certain standards for humane treatment of animals (McDonald’s role on animal welfare). However, some animal industry groups claim that this development is a “sell-out” to animal rights activists.

- Rollin (1995a) has adapted the word, Telos – to refer to the essential nature of animals. “Fish gotta swim and birds gotta fly”.

- Society is moving towards a new social ethic for animals that demands that food animal production systems be humane and sensitive to animal’s basic needs and nature (Fraser, 2001; list on page 356).

- Animal agriculturists should avoid terms such as spent hens, trash fish, baby animals, and bunnies!

- Role of genetic selection: blind hens, featherless chickens, furless rabbits. Are these ethical choices?

- The public is extending the concepts of rights to an ever-expanding circle of life. Such concerns has led to the formation of a new field of study, animal law.
IV. RELIGION AND THE USE OF ANIMALS

- Do we humans have dominion over every living thing upon the earth?
- The issue of animal rights is heavily impacted by our religious beliefs. Those who do subscribe to their religious beliefs typically divorce themselves from the biological reality of evolution, although this is changing. Catholic church?
- In general, according to Shapiro (1999):
  - Western philosophies tend to teach that humans are dominant; a special creation of God
  - Eastern philosophies (Buddhism, Hinduism) tend to believe that humans are equal to other animals (which is why they tend to be vegetarians). Animal rights philosophies more closely resemble that of Eastern religions
IV. RELIGION AND THE USE OF ANIMALS

- Religion influences livestock production in terms of food taboos (Jewish people forbid eating pork, whereas Hindus forbid killing cattle for their meat; social basis may be that cattle instead are more valuable for work, milk, and fuel)

- Food taboos may have evolved as a means of fostering cultural and religious identity. “What distinguishes human groups are our cultural practices – our customs and beliefs regarding the proper foods, the proper clothes, the proper adornments, the proper behavior“ (Milton, 1997).
Biotechnology – deals with applications of technology to biology and generally refers to the manipulation of living cells and their components. For example, cloning, manufacturing of biologically active substances and GMO, so-called, but not exclusive to Genetic Engineering.

1. Transgenic pigs possessing phytase activity to enhance P digestion
2. Pharmaceuticals (antibodies, enzymes, hormones) in milk from dairy cows
3. Transgenic plants such as Round-up resistant crops has led to global trade disputes (WTO; “EU’s Precautionary Principle”); another position is that companies like Monsanto may gain control of the global food system
4. If you consume a tomato that contains chicken or fish genes, are you still a vegetarian? Views on Patents? Who really owns the genes?
5. Sex control in dairy cattle to produce mostly heifer calves.
6. One position is that genetic engineering is artificially accelerated evolution!
7. GM salmon that grow twice as fast. Are scientists “playing God”?
8. Human eugenics is widely considered to be morally wrong.
V. BIOTECHNOLOGY: SCIENCE, GOD, AND GENE JOCKIES

- Position of scientists – Common view is that biotechnological research has resulted in the production of cheaper and safer food (and while saving millions from starvation). Is science value-free, involving neither moral nor ethical judgements? Is it fair for the public to complain? Does this “bite the hands that feed them”? Who was Norman Borlaug?
V. BIOTECHNOLOGY: SCIENCE, GOD, AND GENE JOCKIES

- **The Frankenstein syndrome** – the public perception that science and technology are running amok, with potentially hellish consequences of a wrecked planet populated by genetically engineered monsters (Rollin, 1995b)

- Must the public be prepared to accept the ethical consequences of research discoveries aimed at producing cheaper and safer food (Dolly)?

- **Rollin (1996)** – genetic engineering is probably the most powerful technology ever devised by humans. He and others also blame scientists for much of the present mistrust by the public. Further, humans have been “playing God” for thousands of years through hunting and domestication activities! What are the potential risks? (see page 367)

- Why is there so much mistrust of scientists? Examples of man-made disasters?
VI. ETHICS AND NATURAL RESOURCE ISSUES

- **Aldo Leopold (1949)** – Coined the term “land ethic”, which refers to our relationship to land and to plants, animals, and other organisms that live upon it. “A land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it”.

- One encouraging sign is the present environmental movement (i.e., good stewards of the land).
VI. ETHICS AND NATURAL RESOURCE ISSUES

- **Cornett and Thomas (1996)** – Ethical considerations of natural resources:
  1. **Passion** – “There is simply no way to avoid emotions when making important resource management decisions.”
  2. **Vision** – “A profession can move forward only to the extent that individuals within the profession develop new philosophies…”
  3. **Ethical Choices** – “There are no black-and-white ethical decisions; ethics is about a realm of greyness, of complexity, and of questions that are difficult to answer.”
  4. **Integrity** – Aldo Leopold put it this way: “A thing is right when it tends to preserve the integrity, stability, and beauty of the community. It is wrong when it tends otherwise.”

- **Private Property Rights** – At what point does the public good overtake personal rights or ethics? Examples: Use of DDT, growing of hemp, soil erosion onto neighbor’s farm… Science is unlikely to solve any natural resource disputes - Issues are over disputes and there is a clash of values.
VII. GENDER ISSUES IN ANIMAL SCIENCE/VETERINARY MEDICINE

- **Cheeke** – At Oregon State University, for example, over 80% of the incoming students (in Animal Science) are female, with non-farm backgrounds, with primary interests in horses and companion animals, and who aspire to become veterinarians.

- **Miller (1998)** – “feminization of the veterinary profession”. Presently, about one-half of all U.S. veterinarians are female. What’s the big fuss all about? (See Miller, 1990; page 376.)
VII. GENDER ISSUES IN ANIMAL SCIENCE/VETERINARY MEDICINE

- Schillo (1998) – The animal science community has traditionally embraced methods and outlooks that reflect values consistent with masculine views and experiences. “Efficiency is the dominant value of the economically privileged men who have controlled agriculture since the scientific revolution”. Schillo further contends that animal scientists attempt to socialize female students to acquire male traits of aggression, competitiveness, and dominance, perpetuating behaviors that have got us to where we are now, which is an animal agriculture dominated by the industrial model.

- This great influx of female students into animal (and veterinary) science offers the potential for a redirection of these disciplines, embracing other values (What are these?) besides control and economic efficiency.

- Postliberal feminism asserts that men and women are not equal, but different, and recognizes that there are characteristics typical of each gender that are different but equally valuable.

- Increased proportions of female students in animal science classes may necessitate changes in instructional methodology. Examples?
VII. GENDER ISSUES IN ANIMAL SCIENCE/VETERINARY MEDICINE

- Adams, author of *The Sexual Politics of Meat - A Feminist-Vegetarian Critical Theory* (1996) - Meat eating is the re-inscription of male power at every meal... the presence of meat proclaims the disempowering of women... there is a moral imperative for people, especially feminists, to be vegetarians ("Ethical vegetarianism"). Some feminists also link domination of animals by men, including ultimately butchering and eating them, with male domination, subjugation, and sexual assault of women.

- George (2000), in the book, *Animal, Vegetable or Woman? A Feminist Critique of Ethical Vegetarianism* – takes exception, claiming to the contrary that women have greater nutritional requirements than men.
Rifkin, author of *Beyond Beef* (1992) - Has a chapter, “Meat and Gender Hierarchies,” in which the basic thrust is that meat-eating cultures tend to be patriarchal (male dominated). “The identification of raw meat with power, male dominance, and privilege is among the oldest and most archaic symbols still visible today in contemporary civilization”.

Wells and Gradwell (2001) - The emergence of CSA in Iowa (2/3 women of growers) and elsewhere signals a possible renewal of a smaller-scale, people-focused, nature-friendly, and community-based agriculture. The blurring of divisions between male/female and gardening/farming holds promise for society.
VIII. OPPORTUNITIES ARISING
SOCIETAL CONCERNS

- Opportunities for niche markets from “green” animal production that embrace animal welfare, people-focused, community-based, and reflect environmentally-friendly practices:
  1. Green pigs
  2. Grassfed beef
  3. Pastured poultry
  4. Free-range eggs
  5. Grain-free, seasonal milk
  6. Organic food products

- Some markets are likely to be supported by small-scale entrepreneurs. Who is Whole Foods Market?
IX. PERCEPTIONS OF AGRICULTURAL AND ANIMAL RESEARCH

- Society is also concerned about the quality and direction of agricultural research.
- Many of the new developments in biotechnology include cloning and genetic engineering (Transgenic animals and plants).
- Critics such as Hightower (1973), author of Hard Tomatoes, Hard Times, have targeted the land-grant universities that have catered their research to the privileged, larger farmers, while largely ignoring those with the greatest needs for assistance, such as family farmers and farm laborers or migrant workers.
- Another example is the research that resulted in the development of large-scale “automated agriculture”, while another is the past use of DES.
- “The advantage is all on one side – agribusiness, millions; folks, zero”.
- Quotes by Hightower on page 383 about professors and by Vavra (1996).
- The land grant system, which has served agricultural science and agriculture in the United States for over 100 years, is in need of reestablishment of a mission for the twenty-first century... with an increased emphasis on the entire food chain (food safety and environmental concerns) and the offering of an undergraduate curricula that attract students from urban and rural backgrounds. New courses?
- Cheeke summarizes: “The general thrust of these papers is that the status quo is unacceptable; without major changes in research, extension, and teaching, departments of animal science (perhaps even entire colleges of agriculture) will become irrelevant to society’s needs and will meet the natural fate of irrelevance.”
X. PERCEPTIONS OF AGRICULTURAL AND ANIMAL SCIENCE TEACHING

- Colleges of agriculture receive a lot of flak about their teaching programs, as well as their research. In general, students want more hands-on opportunities, while alumni (farmers and ranchers) complain that their education was not practical enough.

- However, employers are not concerned whether agriculture graduates have specific skills, such as plant and animal judging and animal handling.

- Consensus from an NRC symposium was that students need:
  1. To think more globally
  2. To act creatively
  3. To value diversity
  4. But mostly – to be able to think!

- Overall, an educated person with a good foundation in science, with highly developed intellectual capacity and thinking abilities, never becomes obsolete.
Curricula in animal (agricultural) science will have a greater environmental and ecological orientation, with a holistic approach to the management of natural resources.

According to Schillo (1997), our goal in agriculture science education should be to teach individuals to think independently in an analytical and critical way.

A KSU survey revealed that over 95% of respondents agreed or strongly agreed that communication, people skills, and problem solving were “important to me in my current position” (Barkley, 1995).

Animal (Agriculture) students need to acquire many facts, but they also need to learn how to use them in conflict resolution.

Cheeke: “It is hoped that university administrators will be up to the task of explaining to their constituency (stakeholders is the current buzz word) that they are not abandoning university programs in agriculture, but are making them better”.