

# *50 Years And Beyond – The Academic Challenge*

DUANE ACKER\*

---

No issue should be more stimulating to a scientist/educator than challenges for the future. The future is what science and education is all about. As academics, you seek to see the future. You alert your students and your extension clientele to what that future may hold. You prepare them for it. Academic work would be uncomfortable work for one who focuses on the past. You people here are the enthusiastic teachers and inquisitive scientists, impatient to see the future. You are eager to test your hypotheses for the future against the realities that will appear.

I thank you for inviting me to talk about the academic challenge, and also to be a part of celebrating 50 years of achievement by the Reciprocal Meat Conference.

You and your predecessors deserve congratulations for what you have achieved. For 50 years this conference has provided open interchange among meat scientists and educators; it has enhanced communication between institutions and industry. I look forward to "The Industry Challenge" by Bill Buckner and the "AMSA Challenge" by Chris Calkins.

Congratulations to the National Pork Producers Council and the National Cattlemen's Beef Association for joining with the American Meat Science Association in sponsoring this conference.

I come to this task from work in five land grant universities; agricultural roles in the Reagan and Bush administrations; four years operating our family farm, more than 1,000 acres of corn, beans, alfalfa, and grazing land for a beef herd; four years work with a rural development action committee; and speaking and consulting in several states and countries.

The first two, universities and federal agencies, gave me full confidence in the capacity, dedication, and productivity of our county's publicly-financed agricultural scientists and educators. The more recent put me face-to-face, as an owner, a borrower, and a community resident, with business and societal realities. The more recent also gave me some disil-

lusionment–recognition of the low impact some of our research and educational endeavors have had on some sectors of the meat industry. These recent experiences have helped me understand the challenges you face.

Visiting with a local group of vocational agriculture students, I mentioned that in 2020 they will be about the age their parents are now. One student blurted out, "Now, that's a scary thought!" However, those students, and your students, will, in 2020, be only about midway in their occupational life.

Let me share with you some of the realities I see, and suggest some things that academics ought to do about them.

## **Meat Trade Will Be Global**

The U.S. exports increasing percentages of its beef, pork, and poultry meat. These increases will continue. The trend in all agricultural exports is toward higher value products, including meat. As incomes go up around the world, that shift will continue, including increases in the proportion and tonnage of prepackaged and premium meat products to some countries.

It's not all roses for the U.S. meat industry—many import barriers remain and more will be dreamed up. Though trade agreements call for barriers being science-based, competitive interests in some importing countries work full time at stretching "science" to block product imports.

Your strategies? Press your students to learn customer countries' languages. Press them to believe and to operate their future businesses with the concept that the customer is king. Press them to meet their customers' specifications—package size, flavor, color, texture, or whatever! Press them to insure consistent high quality!

Help your industry recognize the importance of customers in the importing country having product choices. If some want hormone-free beef, the total U.S. beef industry benefits by the customer in that importing country having it available. Regardless of country, consumers are less resistant to purchasing a product when they have a choice among products. They resent and resist when a supplier limits their choices.

There is a bonus here—for one of your students or clients to export a niche product for a niche market.

---

\*Duane Acker, Former Assistant Secretary for Science and Education, USDA.

*Reciprocal Meat Conference Proceedings, Volume 50, 1997.*

## People Are Focused On Food Safety

Can a U.S. or European citizen find a magazine or local newspaper without an article on food safety? Cholesterol and “hazardous chemicals” have been the favorite topics, and now the attention is on *E. coli* and salmonella. The attention is not improper—the supreme concern has to be consumer confidence and satisfaction, whether that consumer is domestic or foreign.

Recent legislation authorizing the HACCP (Hazard Analysis and Critical Control Point) system for meat is the right direction. In fact, most of the HACCP features are based on your research. Most of the strategies for implementation of the system, and for sectors of the industry to adapt to the system, will be based on your research, your teachings, and your guidance and coaching.

The HACCP concept is routine today in the fresh vegetable business, especially in prepackaged salads. It soon will be in the meat industry. HACCP features can make product safer. It will also make product liability real, at all levels.

Academics carry a heavy load with HACCP—to help identify where all the hazards are, to quantify them, and to provide bases for completion of the protocols. Academics must help the industry refine and adapt these protocols for production, processing, and handling. It is a daunting challenge, especially among the diverse production systems of the beef industry.

## Molecular Genetics Advances

The animal and plant genomes are well along in being mapped, and will be increasingly manipulated. We will routinely tailor animal production and product characteristics. We now tailor grains for specific feeding and processing systems, as well as for insect and herbicide resistance.

For decades, we have improved quality traits by traditional selection. Gene mapping and gene translocation will speed up the process. For the meat scientist, that speed potential puts a higher value on the precision and accuracy of product quality assessment techniques.

## Product Technology Advances

The product knowledge reservoir is awesome, and you add to it daily—processing technologies, muscle characteristics, post mortem changes, quality assessment devices and techniques, pathogen behavior, risk assessment, and consumer preferences and how these are expressed. The challenge for you is to determine what knowledge voids are now being inadequately addressed.

I am reminded that my generation of animal production scientists put most emphasis on nutrition and population genetics. We tended to ignore animal comfort and the handling of manure. Yet, knowledge voids in these areas were to become major bottlenecks to intensive animal production systems.

What knowledge voids in meats warrant your research or education attention now to help the industry in 2010 or 2020?

## Specialization and Concentration Will Continue

Economics and competitiveness drives specialization and concentration in production, processing, and distribution. Though we and others may decry this trend—even pass laws or organize protests. In the case of producers or processors, there may be jealousy of the neighbor or competitor who expands. However, the public as a whole rewards this specialization and concentration. The buyer seeks and patronizes increased product quality, uniformity, and the lower cost that specialization generally provides.

Vertical integration—by extended ownership, contracts, or by significant price premiums and discounts for quality gradients—will continue to grow in the meat industry. Both safety and meat quality demands will add impetus to this trend. HACCP and other safety-directed and quality-directed requirements will make it more disadvantageous to be a small, separate producer, processor, or handler.

An integrated production-processing-handling system allows tighter control of every component—genetics, nutrition, disease control, market weight, processing methods, inventory time, and so on.

I see only three “brakes” on this trend:

1. Anti-trust laws, regulations, and enforcement,
2. Development of more niche products and markets by entrepreneurs, and
3. Alliances of producers/processors that facilitate and lower the cost for smaller (some would call them “independent”) units meeting the quality and safety requirements.

## Business Alliances Will Increase

The reasons, stated above, are clear. The challenge to you and your institutions is to help make these happen where they can be beneficial to individuals, to their businesses, to the industry, and to society.

## More Niche Markets and Niche Products Will Be Developed

People want more choices the world over—in developing countries as well as in North America, Europe, and Japan.

The entrepreneurs developing these niche products need technology, knowledge, education, and, most of all, encouragement and support from knowledgeable academics. Your challenge will be to provide these things.

## Beyond Knowledge—Some Profound Realities

The first seven challenges/realities are often discussed; the next two—more important and profound, in my opinion—are rarely discussed.

## The Value of Knowledge

The value of knowledge is directly proportional to its productive implementation. Its productive implementation is dependent on human behavior, and in turn, on the attitude, confidence, determination, enthusiasm, judgment, creativ-

ity, energy level, and other human traits that determine behavior.

I offer two illustrations:

1. We know and teach that grain and livestock prices go up and down. We know and teach historic seasonal and long-term price patterns. We know and teach that we can forward contract. We know and teach how to hedge, with futures contracts or options. Yet, most estimate that fewer than 10 per cent of producers use these devices to manage grain or livestock price risk.

Our Rural Development Action Committee was challenged, a few years ago, to “help area farmers develop their marketing skills.” We invited 12 couples into our home for an evening of brain-storming; to learn what they wanted, what they feared, and what they thought their needs might be.

Our facilitator, a sharp young woman, county extension director in a neighboring county, divided the 24 people into 3 groups; husbands and wives were put in separate groups. She asked a question—that question was discussed in the groups, and responses were recorded. Then a second question, then a third, and so on, throughout the evening.

The first question: “If you could sell your grain for \$2,000 more, what would you use the money for? Next came, “Who do you trust for marketing advice?” Then, “What are the barriers to your trying new things?” Some of the responses to this third question: fear, what the neighbors will think, emotions, greed, and support. These are some of the major factors that affect behaviors—behaviors such as procrastination, lack of discipline, failure to hedge, unwillingness to make a decision, and failure to write and follow a marketing plan!

Oh, yes, one person did mention knowledge.

The next question: “What will I hear (from others or from myself) if I make a sale and then the price goes up?” Responses: “I told you so.” “I should have known better.” “Why did you do that?” “That’s what I expected.” “There goes the van!” “I held; hit the market top!” “How does it affect our average?” “We locked in a 50 cent profit on those beans.” “Sounds like something you would do!”

Only sixteen percent of the responses were positive. Eight percent were neutral. 76 percent were negative statements! How confident will that person be the next time a sale decision is confronted? Will one, in fact, make a decision? Or will one leave the grain unpriced and exposed to price risk?

That evening’s exercise, my four years experience marketing grain, and other observations have convinced me that human behaviors, such as procrastination, lack of discipline, failure to hedge, failure to write and follow a marketing plan, or timidity in implementing proven knowledge, and the factors fear that influence behavior, such as what the neighbors will think, confidence, support or lack thereof, emotions, and greed are the issue!

The knowledge is there. Human behavior determines its use or lack of use; its value or lack of value.

2. A second example—behavior of the beef industry. From 1953 to 1962 I taught introductory animal science. Midway in that time period I wrote a book. (With the good work of Dr. Merle Cunningham of Purdue University, the fifth edition came off the press this week, in time for fall semester.) My lectures and my book emphasized the four cardinal rules for achieving genetic change—change needed for any animal species to compete with a consistently uniform, high quality product. The rules: have maximum genetic variation, spend selection effort on traits that are highly heritable, measure the traits accurately on prospective breeding animals, and use the selected breeding animals most effectively.

Heritability of tenderness in beef cattle is reported on page 211 of my first edition, 35 years ago, as 60 per cent (a summary of several research studies in the 30s, 40s, and 50s). Heritabilities of two measures of leanness, fat covering and loin eye area, are reported as 40 and 65 per cent respectively. That important knowledge existed, and was taught nation-wide by academics. It was conveyed to the industry in many forms, in trade journals, extension meetings, and bull sale catalogs, for example.

Aggressive application of that knowledge, beef industry-wide, could have given us a national beef herd in the 1990s that would provide consumers a 95 per cent or higher confidence level that the beef they buy in a store or restaurant will be lean and tender. Does the consumer today have that confidence? When I ask people, including farmers, what their level of confidence is when they order chicken, pork, or beef, they’ll generally respond above 98 per cent for chicken, above 90 per cent for pork, and around 65 per cent for beef. Is there any wonder that beef has lost 25 per cent of its market share?

Why have not the good and sincere people of the beef industry, between the early 1960s and 1997, made more aggressive use of the knowledge that I and dozens of my generation of academics gathered and taught our students and industry clients?

Did we not placate their fears—of culling the fat ones, finding and culling those less tender? Did we not give them the courage to by-pass what their neighbors might think? Did we not convince them that emotion has no valid role in selection decisions? Did we not instill in them that greed—money they might make by repeatedly chasing another of the 70 or more “exotic breeds”—would likely cost their industry more? Did we not give them continued and strong support?

### Structure and Focus Determine Behavior

Industry structure and the profit focus of each sector largely determine an industry’s behavior, including the extent to

which and just how knowledge will be used to advance the industry.

Again, I will use the beef industry in an example, contrasting it with competitor industries—broilers and pork. The broiler industry is highly integrated, pork has moved significantly that way. As early as 1960, 95 per cent of broilers were marketed through contracts and other forms of integration—integration was virtually 100 per cent in 1990. Pork moved from 2 per cent in 1960 to 10 per cent in 1990, and probably 25 per cent or more today.

Whether we like integration or not, focus on consumer-desired product quality is manifest at all levels, in all sectors of the industry where integration is complete. To the extent that knowledge discloses how quality attributes can be consistently achieved, management will implement it at all levels and in all sectors. Financial interests are as one, through ownership or incentive contracts.

For beef, little such integration exists. Financial interests among levels or industry sectors are not as one! Management foci for consumer-desired product quality are not as one!

Management focus by the steak house is more on eating quality of the meat (tenderness, leanness, flavor, and juiciness) in order to have repeat customers, customer loyalty, and the expanded customer base necessary for long-term profit. There is less focus on quantity—the number of today's diners who order steak. The fast food shop manager deals with a prescribed and narrow product quality, so focus is largely on number of units sold. Retail meat department managers focus more equally on quality and quantity, in general.

What is a beef processing plant manager's first order of business? Keeping the line moving—volume! What instructions go out on Monday morning to the live cattle buyers? Numbers and price! Now, I'm not saying that management in the processing business has no interest in quality, but each quality level can find a home. A processing line running at full capacity usually means profit to a processor.

What is the main determiner of profit in a commercial beef feedlot? Cost of gain! Is this not, therefore, the primary focus of management? Second comes numbers—the source of yardage fees.

What gives a calf producer bragging rights? Weaning weight (and topping the market). Certainly, we calf producers will talk about quality, but generally that quality refers more to reputation for feedlot performance. Too rarely do we have any measure of tenderness or retail value of previous calf crops—so how can these attract management focus?

When we look seriously and analytically at the collective behavior of the beef industry, then the structure and the profit sources in the industry sectors, should it surprise us that the knowledge gathered for 60 years and taught for 30 or more has not resulted in a U.S. beef product that is consistent and uniform in the consumer-desired degree of leanness, tenderness, flavor, and juiciness?

These are some of the realities—challenges—that academ-

ics face today and in the years ahead. You don't face them alone, but you academics are very, very important because you impact so many people! You also have a large reservoir of respect. Your institutions, both universities and federal laboratories, have a large reservoir of respect. As a whole, the academic and scientific community is well respected.

Your seeing these realities, believing them, understanding them, responding to them, and helping your students and clientele see, believe, understand, and respond to them can sharply increase the value of your research and educational endeavors. Your vision can increase your impact, your students' success, your industry's success, and society's welfare.

## What You Need To Be

In light of the realities and challenges I have mentioned:

1. You need to be proud! Your work, in the classroom, in a student advising relationship, in the laboratory, and with industry, has both economic and societal importance!
2. You need to be enthusiastic. Enthusiasm must show in your teaching, in your writings, and in every conversation! Enthusiasm is essential and contagious.
3. You need to be focused. Focus has long characterized meats research and instruction—perhaps more than in some other scientific sectors because you work with a consumer product. Keep that focus!
4. You need to be right. Because your work is so important, your instruments must be calibrated, your methods valid, your data solid, and your lectures well-researched.
5. You need to be a prolific and convincing writer and teacher. Research outcomes should be shared in a timely manner with four audiences: other researchers, professional practitioners (producers, processors, retailers, regulators, input suppliers, etc.), students, and the general public.
6. You need to build into your students and clients creativity, confidence, security, and an understanding of the importance to them of support systems. You need to talk openly with them about fear—what the neighbors (or company colleagues) may think, emotions, greed, support, and other factors, and how they influence behavior. You probably need to be a continuing part of their support system.
7. Use your academic freedom. Challenge tradition, challenge practices, challenge structure, challenge thought. Society gave academic freedom to academics—teachers, extension specialists, and research workers—for a purpose, to insure that they will “seek the truth and teach the truth, as they see it, in their discipline of training.

## Conclusion

If I leave you with but one message, it is that the value and impact of your teaching and research is almost totally

dependent on the attitudes, confidence, feeling of security, and courage of your students and clientele—and that it is influenced by the industry and societal structures within which they live and work. Think that through as you prepare a lecture, as you write a summary of your research, as you prepare an extension program, and especially as you

interact one-on-one with those valuable people.

If you can do these things, we'll see the meat industry and all those serious people in it, flourish through the 21st century. If you can do these things, we'll see the world's population live more healthy, longer lives—in part because of good meat in their diets.