Communicating with the Public about Animal Agriculture Technology

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Introduction

Consumers are asking questions about their food, and the processes leading from farm to table. We have seen unprecedented discussion about hormones, antibiotics, genetic engineering (familiarly "GMO") and other issues in animal husbandry. In addition, the internet provides substantial misinformation, propagated by parties unfriendly towards animal captivity and/or use for human sustenance. All of these variables create a perfect storm for animal agriculture, as misunderstood practices are frequently distorted in the familiar media.

Unfortunately, this confusion comes at a great time in animal genetics. Animal agriculture is at an important precipice. New genetic technologies are poised to impact the genetic improvement of livestock, creating targeted improvements in critical traits, such as size and disease resistance. The technologies known as 'gene (or genome) editing' stand to allow agile adjustment of important traits, customizing genetics to improve animal care and productivity. However, the public has expressed special disdain for laboratory-mediated intervention in animal genetics. While cloning and artificial insemination are the norm, modern excursions into genetic improvements are viewed with great skepticism or even fear. The internet is always glad to further the distortions that spawn the controversy and cloud the issues.

Realities do not reflect the claims. Hormones have a minor role and antibiotics are key in the treatment of bacterial infections. The concerns come at a time of great innovation in genetics, with new technologies available for use in medical application, crop biology, and animal improvement. Medical applications are lauded for their precision and speed, can capacity to solve pressing health challenges. Crop biology is blistering forward, with gene edited crops to hit the field in 2018. But animal gene editing remains locked in a special scientific purgatory. While the technology exists to solve grand problems, the overreaching and archaic regulatory climate arrests innovation that can reach the field.

The process of traditional animal breeding is a slow process, and remedies for today's problems must come at a much faster pace. Fortunately, scientists around the world have answered that call. With the use of genetic engineering (GE; synonymous with the colloquial, scientifically imprecise term 'GMO'), scientists can make precise changes to a plant's genetics to transfer much needed new traits with unprecedented speed. Plants solving deficiencies in vitamin A and iron exist. Plants resistant to disease, drought and pests exist. Most of all, these plants hold the promise of helping farmers produce abundant and predictable yields, and do it with more sensitivity to the

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environment. These are outstanding breakthroughs that satisfy the core tenets of sustainability.

Many public and private institutions have made great progress in animal agriculture innovation. Gene editing (also known as genome editing) has been used to introduce specific changes in DNA that target precise genes, leading to predictable outcomes. These animals exist today. Other animals, like the AquaAdvantage Salmon, use older technologies to generate the improved animal product. Sadly, while new innovations are being generated quickly, this massive public and private investment in improved animal genetics has not advanced to the field.

Why is innovation arrested? Policy formed around animal genetic engineering cannot move at the speed of the innovation. Modern gene editing practices are extremely rapid and have been implemented in a variety of species. However, while farmers and ranchers, research scientists and extension agents can identify problems, the lack of social license and even pressure from anti-biotech interests slows the development of helpful technology that ultimately could benefit animal agriculture, the environment and the animals themselves.

The controversial issues in animal agriculture are exacerbated by the landscape of alternative facts. With an internet full of clueless authoritative expertise, the role of legitimate food and farming experts becomes even more difficult. This is why scientists, farmers and ranchers, and agricultural-related industries, we must gain the trust of the public. We have to earn more credibility than television physicians, food activists, animal rights groups, and the internet's many celebrities that tarnish the motivations and methods of animal agriculture.

The ball is in our court. We know the evidence and we are the best authorities to communicate the science of our farms and industries. We just have to do it. We don't.

New Innovations

Genetic engineering in animals is surprisingly rapid, and the issues are no longer technical barriers. Aquaculture has wrestled with the introduction of the AquaBounty salmon, a fish that grows to market size in about half the normal time. Fewer inputs create the same output, which is the basis of sustainability. However, the technology has looped in endless regulatory discussion and even today, 28 years after the first fish was created, this sustainable technology has not reached the consumer. Avian influenza resistant chickens and low-phosphorous-emitting pigs are also old news. The next-generation 'genome editing' technologies are poised to impact animal agriculture. Genetically polled cattle, virus resistant hogs, and animals with greater meat production have all been created with a minor genetic tweak. Today we do not suffer a deficit in agricultural innovation. Agriculture worldwide faces a deficit in leadership, social license, and trust. The way to solve the problem is rethinking our strategy in education and communication, with communication being the main way we'll create durable change.

Put simply, ***we don't have a scientific or innovation problem. We have a communication problem***, and that can be corrected by scientists, farmers, ranchers and agricultural interests taking part in the public discussion.

Revising the Agriculture Communication Strategy

Farmers, ranchers and scientists must be part of the conversation. While they clearly are the most knowledgeable about the topic, those closest to farming and ranching are the least likely to step into public interaction. Similarly, scientists tend to remain on the sidelines. Additionally, when we do talk to the public we tend to make mistakes, as we speak from a heavy-hand of expertise and authority rather than providing an empathetic response to concerns. How can we change the way we engage the public to be more effective? It must be emphasized that this is not some plug-and-play formula for insincere conversions. You must always be honest, always share your true ambitions. Again, we're simply getting better at explaining what is true in a way that resonates with the listener.

1. **Audience.** The first rule of effective communication is to know who your audience is. Focus on those that have honest questions and concerns and avoid engaging people with deeply- entrenched ideas that cannot be changed. It is impossible to change people that do not accept data by applying more data. Identify audiences that are seeking answers and don't know who to trust.

2. **Establish rapport; Listen to understand their concerns**. Trust built from credibility and intimacy, meaning authentic feelings. Rapport is the connection between two parties where trust is established, and communication can flow. Our job as agricultural producers and scientists must start with listening to concerns—listening to understand, not listening to debate. While it seems overly simple, it actually is difficult to actively listen to someone and attempt to understand their point of view. ***The goal is to understand their position, not necessarily agree with them***, and show them that you understand their perspective.

3. **Trust from credibility.** What is your background, your expertise, your training? What is your perspective? Be transparent. Why do you favor one technology, product or approach? Does your business, or do you stand to profit? Never use your authority as a reason that they should accept your position—use it to demonstrate that you understand their questions and position.

4. **What are your concerns and interests?** Trust builds fast when others understand our goals and values. Discuss your interests in food and farming. Remember that sustainability includes profitable farming for producers. Describe your interests in seeing technology help farmers raise more nutritious, high-quality food. Discuss your feelings on the environmental impacts of farming. Talk about the new techniques, and how genetic innovation is just a part of achieving sustainability.

What you will find is that you actually are significantly in alignment with those harboring other opinions, and that the differences are relatively minor, and come from your deep understanding of food and farming.

5. **Share your story.** Describe the situation as it relates to you, your family, your city, or nation. What are some examples of how your solutions, once implemented, can create the change that satisfies everyone's shared values? Farmers and scientists make a common mistake when we talk about HOW. We discuss the details, we speak in the absolutes, and command agreement from our authority. Farmers and scientists don't communicate by bragging or exaggerating data. Scientists and farmers communicate with the facts. We communicate by describing ***how*** it works, ***how*** we do it, ***how*** we make it better.

   Unfortunately the consumer doesn't want to know ***how***, the consumer wants to know ***why***? Why do we do what we do? Why is it important? The consumer wants to know how on-farm decisions sync with our common interests and values. ***It is not about how we do it, it is why we choose to do what we do.***

   If we share the stories of the human element of new technology and then avoiding the sloppy language devised by anti-agriculture activists, we wage a more effective campaign of truth telling with impact.

6. **Say exactly what you mean.** While it is true that the American farmer feeds many worldwide, the "Feed the World" rhetoric comes off as disingenuous and inflammatory. Focus on specific examples of where technology helped others meet a production goal, or perhaps rescue a challenging situation. Talk about the story of the Hawaiian papaya, and how biofortification of crops like bananas, cassava and rice could benefit those facing malnutrition. These are stories of how biotechnology and next generation genetics have served people through improved crops. The same technology can eventually benefit animal agriculture.

7. **Be a friend, before an authority.** Experts like to remind non-experts that they are in fact the experts. Expertise is sometimes worn like a badge of authority, and that creates distance with the public we are trying to connect with. In medicine consumers are excited to trust authority. They want to know that those in command of the newest technology are trained and skilled.
   This is not true about food and agriculture. Consumers don't want to talk to an authority about food and farming. They want to talk to someone that eats, someone that farms, someone whose family lives on the farm. A friendly internet contact is more influential than a well-published scientific author. This phenomenon is rooted deep in the brain. Food technology is perceived as a threat whereas medicine appeals to our rational thinking.

   In wealthy industrialized nations medical technology is hope, food technology is a threat.

   It all distills down to ***how humans process information.*** This is why the final step in revising the agricultural communication process must make food and

farming technology a place of hope, a place of common dreams, a means to reinforce our mutual values and address our common concerns.

Summary

Go out and engage. The public has concerns they feel are very real, and they are looking to the media and to the internet for answers. They are not sure who to trust. When they don't know who to trust they make decisions that are over precautionary. These decisions ultimately negatively impact farmers, people in the world's emerging economies, the poor in the industrialized world, and the environment. Technology that exists is slow to meet the needs.

The solution is a simple one. Communicate. It is critical that experts step into the conversation, and describe the promise of new technology. Consumers love innovation—if it is not a threat to their families and appeals to their values.

That's where we classically have made mistakes. Rather than speaking to people to earn their trust, we provided a landslide of authoritative evidence. If agricultural producers want access to the best new technology communication will have to happen first to earn trust and gain social license to use them. In a way, it is a much more simple solution than we make it out to be.

SESSION NOTES