



A question for C-Level Executives: how well is your company controlling animal intrusion in your farms and facilities?



December 21, 2018 - On one of my first trips to Chile, I will never forget driving up to a farm and asking the grower who was with me what the meaning of a large sign was posted next to the gate entrance. Well, he says, “it means no animals are permitted on the farm. But, unfortunately the dogs can’t read the sign!”

This aptly describes the age-old effort of trying to protect crops against animal intrusion. With science research, we have learned a lot about how pathogens from animals enter our food supply chain. Yet we still have significant outbreaks implicating animal intrusion on farms, and through animals being in close proximity to farms with environmental factors contributing to contamination. Often with outbreaks, the root causes are complex with many confounding factors.



This is the first of a series of articles that focuses on the challenges of animal and plant agriculture co-existence. With most fresh produce items, there is no “kill step” such as cooking. Once pathogens enter the food supply, the only options left are to take steps reducing pathogen counts and minimizing cross-contamination. That is why it is so critical to focus on pre-harvest mitigation efforts, to stop pathogens from entering our food supply in the first place.

Animal fecal matter may contain all kinds of enteric viruses and bacteria. Contamination can occur from animal intrusion onto farms, or from animals in close proximity contaminating land and irrigation water sources. Known contamination sources include domesticated animals (cattle, sheep, dogs), wild animals (rodents, coyotes, wild pigs), to reptiles (salamanders, frogs, snakes, etc), and all types of birds. In other words, any animal that walks, crawls, slithers or flies is a potential contamination source.

At the CPS (Center for Produce Safety) there has been a stream of research projects over the years focused on animal intrusion. Not only does the research outline sources and extent of potential contamination, they also provide solutions that can greatly improve food safety practices, and in the end save growers a lot of money. Here are some examples:



Ecological approaches to reducing pacific tree frog intrusion into leafy greens agriculture, led by Michelle Green, University of Illinois. While frogs aren’t a major source of *Salmonella*, finding one can cost hundreds of thousands as product needs to be destroyed and processing plants need to be cleaned and sanitized before production can start again. I know what most sales people are thinking, “With extra protein we can sell those salad mixes for more!” Luckily, we have our food safety people in control. The results of the research study has come up with a novel fence design that combined with acoustics can control frog intrusion.



Use of raptors to control wild bird and rodent intrusion led by Paula Rivadeneira, University of Arizona. The results of this research has shown that nuisance birds can be deterred 97% of the time with the use of trained falcons. In later stages of this project, researchers will introduce native owls to provide a sustainable approach to controlling rodents. To lower the cost of falconry, a new falconry center will be setup in Yuma, Arizona. This could be a great model for other growing regions to follow.

Let me introduce Vic Smith, President and CEO of JV Smith Companies, with farming, cooling and distribution facilities in Yuma, Arizona, Colorado, Salinas Valley, CA and Baja, Mexico. They grow conventional romaine, iceberg lettuce, spinach, potatoes, mixed leaf and organic spring mix, carrots, celery and green onions.

Vic has been involved with the CPS (Center for Produce Safety) since its inception, as well as numerous leadership roles with the LGMA and Western Growers Association. Not only does he keep abreast of research findings to improve his company's food safety programs, he has also initiated CPS research projects. Back in May, 2010 after an earlier romaine lettuce outbreak in Yuma, Vic pointed out that stray dogs roaming around in Arizona and Mexico could be a vector for *E. coli*. This prompted the CPS research project: *Investigation of potential reservoirs of shiga toxin-producing E. Coli and Salmonella in produce production areas of Arizona and Mexico* led by Michele Jay-Russell of University of California, Davis.

As part of this research project, Vic was instrumental in setting up the Rapid Response team. They employed dogcatchers and visited dog pounds in Arizona and Mexico for the researchers to take fecal samples. Vic commented, "Taking swab samples from hundreds of dogs showed amazing dedication to this project!" The final project results indicate that "Canids in the US-Mexico desert production region are not major reservoirs of STEC (Shiga-Toxin producing *E. coli*) but may be a source of *Salmonella* contamination. Wild animals including dogs can be a vector in pathogen transfer, so we must remain vigilant in monitoring animal intrusion into produce production areas.

To summarize the topic of animal intrusion, I reference another CPS research project. *Contamination of leafy green crops with foodborne pathogens: Are wildlife a problem?* Led by Alan Franklin, USDA National Wildlife Research Center. Summary findings indicate that low levels of wildlife incursion does not necessarily translate to widespread crop contamination.

So where does this leave us? My view is that direct animal intrusion onto farms may cause isolated contamination leading to low incidence of food safety events, but are likely not the source of widespread outbreaks. CPS articles on animal intrusion support the notion that common sense and vigilance prevails in terms of monitoring fields for signs of animal intrusion, and taking steps to avoid harvesting crop areas with visible signs of animal feces. I highly recommend reading the FDA draft - "*Produce for Human Consumption*" chapter 5 on animal intrusion, which provides some excellent guidance in this area.

Vic Smith's major contributions with CPS and the LGMA demonstrates his proactive leadership in food safety. We need more like him.

Stay tuned for the next article, where I will discuss the topic of "environmental factors involved with animal proximity to farms".

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