

# On-Farm Food Safety and Quality Assurance Programs

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## ▪ Introduction

Compared to other industries, agriculture is rather unstable due to factors such as highly complex biological systems, and dependence on climate. However, the increasing uncertainties for the independent farming community originates mainly from the rapid and accelerating structural change in agriculture, which is creating a more industrialized model of production. The resulting increase of instability raises the volatility of the economic environment for almost every agricultural enterprise. Unfortunately, there are significant differences in the capability of responding to these changes in vertically integrated agricultural corporations with command-and-control structures, compared to family farms with little, if any coordination.

Finding a way of directing agricultural development that the majority of the society can agree upon is extremely difficult, since the general public has developed a uniquely complicated attitude toward agriculture. Most controversial issues such as nuclear power, global warming, and biotechnology divide populations into opponents and proponents. Affluence coupled with nostalgia for the idyllic “old McDonald’s farm” have produced a somewhat “schizophrenic” attitude about how society expects their food to be produced. This attitude is characterized by simultaneously demanding the preservation of the idealized family farm *and* strict compliance with the latest knowledge about food safety and food quality, for which traceability and coordination are major enablers. The public does not realize that, in contrast to the socially stigmatized “factory farming” systems, the traditional agricultural system of independent farms is not only rather inefficient, but also not able to implement on its own standardized food safety and quality assurance procedures to decrease food-borne health risks and increase food quality. The “tug-of-war” between expecting inexpensive, safe and high-quality food and the nostalgic sympathy

for the family farm has led to a mixture of misperceptions, unrealistic expectations and loss of respect for those who produce our food.

The public, overwhelmed with confusing and contradicting opinions about and signals from agriculture, seems to expect from agricultural leaders and policy makers a family farm structure that preserves the values of family-based rural communities AND can compete without subsidies in a global economy with growing vertically integrated corporations.

The purpose of this paper is to investigate the question, if and how this seemingly impossible ideal can be achieved.

## ▪ **The Drivers of Change in Agriculture**

There are several drivers of the changes that agriculture is undergoing at present. The major drivers are:

- World peace and the end of the Cold War have allowed countries, which until recently had a secure internal food production system, to rely on foreign food supply. National agricultural programs that had been designed for self-sufficiency contribute now to overproduction.
- Globalization and liberalization of trade, including agricultural products and food, accelerate the pace of the increase of the societal disagreement with subsidies for non-competitive agricultural production procedures.
- Consumers in industrialized countries with fading memories of hunger ask for a growing variety of quality criteria before they buy food, including intangible quality criteria such as how the food-producing animals were raised. Environmental stewardship, the use of antimicrobials, and animal well being are becoming more and more determinants of quality.
- The distrust in mandatory single point inspections as guarantors of food safety is growing due to incidents such as the BSE crisis, the dioxin scandal and emerging food safety risks such as E. coli O157:H7 and increasing bacterial resistance to antimicrobials.

## ▪ **The Consequences of These Changes**

These changes have remarkable impact on the entire food industry; however, the most drastic implications apply to the agricultural primary production area, especially to small and medium-sized producers that are independent and not part of any coordinated marketing organization. The major consequences are:

- ▶ The dependence of nations on self-sufficient domestic food production systems is shrinking, which results in a quite steep decline of the acceptance of continuously subsidizing inefficient farming methods.
- ▶ The traditional commodity price cycles lost their “stability” (low-price phases were relatively reliably followed by compensatory high-price phases). The increasing specialization of growing farms and the diminishing sector of diversified small- and medium sized farms result in less flexibility to reduce production in response to low prices in one commodity. Consequently, low-price phases grow longer and high-price phases shorter, unless there are other regulators of price beside quantity. As a result of this development, many farmers have tried to become part of value-added production chains.
- ▶ Food production chains try to extend transparency and traceability “back” to their farm supply, and ask for on-farm measures for environmental stewardship, animal well being and food safety, which creates new tasks and responsibilities for livestock producers and their veterinarians.
- ▶ There is a move away from single-point inspections of products for sorting out products that carry risks to human health or low-quality products, and movement toward quality management procedures for preventing errors and mistakes during production procedures, as well as to a constructive combination of industry self-controls and governmental oversight.

## ■ **The Changes in the Pork Industry**

The recent slaughter-hog price crisis that affected almost every pork producing country has clearly shown that, under the conditions of the current pork commodity market, the quantity- and cost-reduction-oriented independent pork producers face the risk to become a cost center of the pork industry they supply.

The meat market (retailers, purveyors exporters) clearly dictates the conditions for the “down-stream” partners of the production chain. Additionally, the independent producers are “trapped” in between the corporate suppliers and the corporate packers/processors. The natural reaction to this pressure is to reduce costs. However, the corporate, vertically integrated farming systems such as the Smithfields and the Seaboards can lower their costs even more due to their built-in “command and control” system. Consequently, maintaining the commodity model means nothing less than gradually extinguishing the independent farmer.

The so-called “hog-cycle” has turned into a downward spiral for the non-integrated pork producer. The major reason for this is that the traditional tools of pork producers to react to lower prices, such as reducing the number of sows and lowering costs of production, do not work any longer, since the small- and

medium-sized producers, which served as “buffer” by quickly reducing production, are disappearing. This has created a volatile business environment for those who sell pigs for a living

Many producers and their veterinarians recognize the need for changing the pork industry from a “push-through” (producing as much as possible) to a “pull-through” (producing what the market asks for) system. This change can also be described as transition from “commodity production” to “demand-driven production”, where suppliers, pork producers and packers/processors have partnered up with the market segments that exist or are emerging in a way that the agricultural primary production “mirrors” the various segments of the meat market AND is treated as a partner that is essential to produce the quality the market requires, and not as a potential cost center.

### ▪ **Creation of “Minnesota Certified Pork” (MNCEP)**

MNCEP is a pork producer network that is developing a demand-driven supply chain. It is a new generation cooperative, the members of which buy shares (per number of produced pigs), pay yearly fees and agree on standardized, market-oriented production procedures. MNCEP is based on the principles of implementing and certifying high food quality and safety standards on all member farms to produce a pork product for the market that is differentiable from the currently anonymous commodity pork.

MNCEP’s mission is: To provide the market with superior quality pork products, traceable back to the farm(s) of origin, produced by independent farmers, guaranteeing a minimized risk of food-borne threats to human health through standardized, audited and certified production procedures.

The quality standards of MNCEP are outlined in the "*MNCEP Quality Handbook*", mandating every MNCEP member to meet these standards. The Quality Handbook includes the following topics:

- **MNCEP’s quality policy**
- **Best Production Procedures** such as biosecurity, daily procedures throughout production cycles, cleaning and sanitation etc., etc.
- **Pre-harvest Food Safety** such as prudent use of antimicrobials, salmonella control, trichinella- and toxoplasma-free production procedures, and residue and foreign body avoidance procedures
- **Environmental Stewardship** such as rules for proper manure storage and spreading, odor reduction measures, and contingency plans for environmental accidents

- **Animal Welfare** such as a herd health program, rules for humane handling and animal care, opportunities for the animals to move and be active, rules for transport and pre-slaughter handling, and humane euthanasia
- **Recording and Documentation.**

Apart from the detailed description of every daily production procedure as **Standard Operating Procedures (SOP's)** to provide the basis for the intended standardization within MNCEP, new standards for improving food safety such as prudent use of antibiotics, on-farm salmonella control, and standards for protecting the environment and improving the animals' well being on the farm that exceed the current mandatory requirements. The implementation of the standards outlined in the MNCEP Quality Handbook is done in close cooperation with the veterinarians, who conduct the monthly audits on each member farm to assure the compliance with the standards, and with the Minnesota Department of Agriculture, which provides the third-party certification once a year.

## ■ **Conclusion**

Agriculture is shifting from the traditional quantity-oriented commodity production to the quality-oriented production of defined and specified products for vertically coordinated production chains supplying special market segments. Vertical integrators can easily cope with the drastic changes, however, small- and medium-sized family farmers run the risk of being left behind and disappearing. The market and society demand traceability of food products and transparency in agricultural production procedures. Introducing quality management systems (such as Quality Handbooks and standard operating procedures for specific market demands), developing networks of cooperating independent farmers such as "Minnesota Certified Pork" (MNCEP), and organizing internal audits and third-party certification, provide an opportunity for family farmers to adapt to the growing demands of the market and society. There is no use expecting that the community of independent farmers can initiate such a development on its own. There is no structure in place that enables this diverse group to organize concerted activities that lead to standardized production procedures on multiple farms. Therefore, it is necessary to provide neutral entities such as "Minnesota Certified" (MnCERT); a cooperative state program of the University of Minnesota and the Minnesota Department of Agriculture. This program brings independent farmers of any size together to form networks of interdependent producers that can supply high-quality and safe agricultural primary products produced under audited and certified production standards. Finally, the concept of MNCEP and MnCERT is not only improving the safety and quality of our food supply, and thus, increasing the society's appreciation of agriculture, but it is also a tool for involving the "endangered species" - the family farmer - in the development of future food supply systems.