



Ag Decision Maker



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Source Verification for Iowa Specialty Grain Markets

by Charles Hurburgh, Jr., Chair, Ag Quality Initiative, and professor of agricultural engineering

(First in a series of two)

Quality management systems, with their associated statistical process controls and product tracking, are not new to world industry, but the concept is a

radical departure from the generic commodity mindset that has typified agriculture. Trading undifferentiated commodities at constantly eroding margins provides little incentive for quality beyond that needed for minimal acceptance. However, a number of powerful and wide-ranging forces are converging to create a climate of change.

- Precise analytical and production practices have greatly increased expectations of what should and should not be included in food. Measurements in the part-per-trillion range, or even of individual DNA molecules, enable near zero specifications regardless of their validity in any risk analysis.
- Fewer people are involved in direct food production which has shortened the adoption time for new technologies
- World concepts of quality assurance are in the

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Handbook Updates

For those of you subscribing to the *Ag Decision Maker Handbook*, the following updates are included.

Crop Planning Prices – File A1-10 (2 pages)

Custom Farming: An Alternative to Leasing – File A3-15 (4 pages)

Livestock Planning Prices – File B1-10 (1 page)

Please add these files to your handbook and remove the out-of-date material.

- Biotechnology is creating plant and animal products with value that cannot be captured without process control from production to consumption.
- Consumers in affluent nations have increasing ability to include environmental and social values in purchasing decisions, leading to pressures on production processes as well as measurable quality of outputs.

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mainstream of all markets including those of the USA. Requirements for labeling of biotech products are forcing policy decisions in retail chains.

- Reduced margins are forcing a reexamination of operating efficiencies.
- Food safety and terrorist fears have greatly increased the willingness of food marketers to implement tracking systems for security reasons.

Some attributes cannot be measured by either visual inspection (e.g., natural beef) or by chemical analysis (e.g., BST in milk). In other cases, measurement is possible but cost prohibitive. For some consumers it is the process (how it was produced or by whom) that creates value (i.e., organic, animal welfare practices, locally grown) not the grade. Process control and more importantly source verification is necessary to capture the value of the trait. Finally, increased world security concerns are causing more scrutiny of all products intended for food – either commodity or specialty.

What is Source Verification?

Source verification is the ability to trace products from their initial components (for example, from seed) through a production and distribution system to the end user. Other terms have been used for source verification – trace-ability, product tracking, process verification and others. Source verification automatically applies to identity-preserved products – those that are physically isolated throughout the market – but is also increasingly used for documentation in bulk commodity markets as well. Some examples of soybean products that are or could be source verified are:

- Individual varieties grown by individual farmers (e.g. Vinton 81)
- Specialized bulk products, such as non-GM or large seeded soybeans
- Totally contract controlled products such as health foods, organics or pharmaceuticals
- General commodity soybeans if some risk factor is present (for example an unapproved GM event)

Source verification is a process. Testing for specific traits and special handling are part, but not all of the process. Source verification requires a documentation chain from start to finish, in addition to whatever actual confirmation testing can be done. Source verification functions even when testing is not possible, or when the value of the product is in consumer perception rather than physical attributes. As long as the integrity of the documentation is maintained, the source verification and protection will be intact.

Quality Management Systems

Source verification requires a certified (third-party audited) quality management system (QMS). Quality management systems are formalized procedures for requiring discipline and reproducibility in a production process. Discipline and documentation have not been mainstays of traditionally independent minded agriculture. Quality management systems force operators to document what and how processes are done, then prove through records and audit that the process, however described, is consistent. QMS do not require specific or high quality standards, just that desired standards are met. QMS are also a convenient framework under which to introduce environmental and/or safety standards.

The worldwide framework for quality management systems has been the ISO 9000 series of standards. Many manufacturing industries have customized a “front end” for the ISO standards to make them more user friendly for specific situations. This is also happening in agriculture, as in for example the American Institute of Baking Quality Systems Evaluation (QSE) program for flourmills and bakeries. Custom programs can also incorporate other elements such as food safety or environmental protection not addressed by ISO 9000. The USDA is considering starting a process certification similar to but not totally equivalent to ISO 9000 (See www.usda.gov/gipsa).

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There are strong reasons for creating a recognized general format for quality management systems.

- Reduction of parochial protectionist trade disputes based on process or measurement methods.
- Discovery through discipline of unrealized efficiencies.
- Confirmation to consumers of both process and quality of food consumed.
- Simplification of interchange among market generated QMS programs, so that users and/or suppliers do not become captive to a specific system and its associated marketing network.

For the producer and the user alike, quality management systems have immediate benefits:

- Operating efficiency and cost savings are created through the detailed study of operations required for QMS. Industrial firms have averaged around \$1.50 - \$2.00 of cost and efficiency gains for every \$1 invested.
- The chain-of-custody documentation that is required for a comprehensive QMS will be a major benefit in marketing sensitive or narrowly focused products, such as genetically

transformed pharmaceutical/industrial grains, or specifically fed specialty animals. Some of these products are genuine concerns to general users, and often are very hard to test or validate in the traditional inspect and pay scheme of commodity markets.

- The exhaustive analysis and procedural controls is well suited to reduction in security threats, such as addition of toxic agents or production limiting diseases. For example, white mineral oil is applied for dust control to nearly all grain handled at elevators, and the number of suppliers is very limited. The stringent validation and audit requirements of a QMS, which normally are imposed on suppliers to QMS firms, greatly reduces the chance that a terror agent could be distributed in this way.

For users, buying from QMS producers/handlers is an automatic method of pre-delivery tracking. The producer and first handler must be involved in source verification if any meaningful tracking and/or quality improvements are to be made.

Next Issue: Quality Management Systems for Grain Markets



Can We Save “Agriculture of the Middle?” *

by Fred Kirschenmann, Director, Leopold Center for Sustainable Agriculture

... if agriculture is to remain productive it must preserve the land, and the fertility and ecological health of the land; the land, that is, must be used well. A further requirement, therefore, is that if the land is to be used well, the people who use it must know it well, must be highly motivated to use it well, must know how to use it well, must have time to use it well, and must be able to afford to use it well. Nothing that has happened in the agricultural revolution of the last fifty years has disproved or invalidated these requirements, though everything that has happened has ignored or defied them.

—Wendell Berry

I first ran across these words by Wendell Berry when I read his book, *What Are People For?* in 1990. As a farmer who managed a 3,500-acre grain and livestock farm in North Dakota, I couldn't deny the impeccable logic of his thesis. But neither could I escape the demands of the industrial farming culture, of which I was a part. That culture imposed on

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* This article first appeared in the Spring 2003 issue of the *Leopold Letter*, a quarterly publication of the Leopold Center for Sustainable Agriculture at Iowa State University. The newsletter also is available on the Web at: <http://www.leopold.iastate.edu>.