United States
Department of
Agriculture

Grain Inspection,
Packers and
Stockyards
Administration

Brazil/Argentina
Fact-Finding Mission

August 23-September 3, 2004

Brazil










Argentina





Introduction

Delegates from United States Department of Agriculture (USDA), North American Export Grain Association (NAEGA), American Soybean Association (ASA), U.S. Grains Council (USGC), and U.S. Wheat Associates (USW) participated in a fact-finding mission to Brazil and Argentina to assess each country's inspection system and the quality assurances that it provides. Team members from USDA/Grain Inspection, Packers and Stockyards Administration (GIPSA) were David Shipman, deputy administrator, GIPSA/Federal Grain Inspection Service (FGIS); John Pitchford, director, Office of International Affairs; and Eric Jabs, economist. Other team members were Craig Ratajczyk, Director of Trade Analysis, ASA; Arvid Hawk, Grain Handling Coordinator-North American Grain, Cargill (Representing NAEGA); Rick Fruth, Board of Directors, USGC, and Miguel Galdos, Market Specialist, USW.

The delegation found that the grain handling and inspection systems in Brazil and Argentina starkly differ from those in the United States. Both countries' inspection systems are privatized with limited government oversight of phytosanitary issues and, to a lesser extent, of quality certification. Each government accredits private surveyors and/or companies to perform inspection, and the private surveyors rely on Grain and Feed Trade Association (GAFTA), the Federation of Oils, Seeds and Fats Association (FOSFA), and to lesser extent International Organization for Standardization (ISO) guidelines for sampling, inspection, and quality assurance. Inspection fees are charged by private surveyors for inspection at approximately $0.15/metric ton (mt) in Brazil and $0.10/mt in Argentina plus quality testing costs. The governments charge disparate amounts for quality testing in Brazil and Argentina. Brazil's Ministry of Agriculture (MOA) has no authority over export grain quality and consequently assesses no government fee. It does issue a phytosanitary certificate, and is establishing a yearly $300/entity plus a $100/product fee to provide service. In contrast, SENASA, Argentina's government agency equivalent to GIPSA and the USDA/Animal and Plant Health Inspection Service (APHIS), charges approximately $0.20/mt (including overtime) to visually verify quality and issue a phytosanitary certificate.

Section I

Mission Purpose

The impetus for the mission was two resolutions passed by the GIPSA Grain Inspection Advisory Committee at its meeting in May 2004. The first stated:

> "We recommend GIPSA evaluate the benefits and methods of outsourcing the inspection services at export locations, with GIPSA oversight and without jeopardizing the program integrity."

The second resolution stated:

> "We would ask that GIPSA establish a fact-finding mission to Brazil and Argentina with the express purpose of reviewing the components of their grain export inspection system. This will better enable us to understand our competition and aid us in examination of our export inspection system to meet the needs of the future."

In response, GIPSA organized a delegation that met with the Brazilian and Argentine governments, grain industry members, and private export inspection certifying companies to gain an understanding of grain receiving standards, inspection procedures, quality assurance programs, and costs and risks associated with each component.

Meeting Participants

Brazil

Grain Trade
Archer Daniels Midland (ADM)
Organization of Brazilian Cooperatives, Export Facility
Castrolanda, Cooperative
Serra Morena Commodities, Commodities Brokerage
CCGL Termasa Termina, Export Facility

Government
Ministry of Agriculture

Trade Associations
Associacao Nacional dos Exportadores de Cereals (ANEC)

Private Surveyors
Société of Générale de Surveillance (SGS)
EMATER/RS

Argentina

Grain Trade
Cargill, Export Facilities
Bunge/Aceitera General Deheza (AGD), Export Facility
Camara Arbitral de Cereales (CAC), Grain Arbitration Board

Government
El Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA)

Private Surveyors
Société of Générale de Surveillance (SGS)
British Standards Institution (BSI)
Bureau Veritas

Each group briefed us on their respective role in the supply chain and answered questions regarding grain receiving, inspection, costs, etc.

Section II
Brazil

This section provides an overview of the Brazilian grain inspection process from grain receiving to export shipment. Commercial, government, and private surveyor roles are detailed throughout the process.

The grain procurement, inspection, and export processes in Brazil differ widely from those in the United States. Grain origination is conducted directly via dealers or brokers who charge a commission. Once the grain is destined for a port terminal, there are a variety of mandated inspection procedures, which vary by state.

Grain Receiving

The majority of grain delivered to port facilities is bulk soybeans, corn, and wheat. Identity preservation (IP) programs are evolving, as evidenced by four cooperatives, including Castrolanda, that have developed testing and IP programs to deliver non-biotech commodities. The process involves: 1) testing seeds using Polymerase Chain Reaction (PCR) to determine presence of biotech; 2) performing field inspections using quick tests in production phase; 3) testing inbound grain trucks using quick tests; 4) thoroughly inspecting storage; and 5) certifying outbound trucks proceeding to port. The process tracks product from start to finish, and provides premiums to its members for non-biotech commodities.

Most inland grain movement is via truck due to limited rail infrastructure and capacity. The state of Paraná requires the State controller, CLASPAR (Clasificación Paraná), to inspect inbound freight for quality and presence of biotech grain prior to arrival at the terminal. In the State of Rio Grande do Sul, State inspection is not required at the port. Terminals receiving grain rely on private surveyors or their own internal quality assurance staffs to sample and assess the quality of grain receipts.

Inspectors sample truck and rail receipts using a predefined diagram similar to that used in the United States, and conduct a physical analysis to ensure that each factor is within the Ministry of Agriculture (MOA)-defined commodity standards. Receipts failing to meet the standards may be rejected or accepted at the discretion of the grain facility. Rejected receipts may be reconditioned to meet the standard. A second analysis is available to shippers for grain receipts rejected based on the initial analysis. Private surveyors charge a reported $0.06/mt fee for inbound inspections.

Trucks wait up to 3 days to unload at the ports depending on the season. This is mainly caused by a limited amount of off-farm storage and poor infrastructure leading to port facilities. The trucks are gross weighed and proceed to the sampling area where each truck is sampled using an automatic probe. The automatic probe observed at the Port of Rio Grande resembled a vacuum cleaner with a non-compartmented, open-ended long rod. The probing procedure varied-some inserted the probe and then started the vacuum; others started the vacuum and then inserted the probe into the truck. Regardless of the procedure used, the sample varied according to the speed at which the rod was drawn upwards from the truck. Inspection personnel indicated that

the sampling method provided an adequate sample to detect any pockets of inferior quality in the carrier. Each probe sample is examined visually for general quality. A composite of the multiple probings is then analyzed according to the standards. The moisture content of the sample is measured using commercial diaelectric-type moisture meters; the protein and oil contents are measured using a commercial NIRT instrument. Inspectors run check samples on a daily basis to verify the accuracy of the various instruments.

In the ports of Paranaguá and Rio Grande, soybean samples are also tested for the presence of biotech grains using a Roundup Ready strip test. The Governor of Paraná has declared the State of Paraná a biotech-free zone, thus, all grain receipts at the Port of Paranaguá are tested by CLASPAR and rejected if they contain biotech grain. In the Port of Rio Grande, testing is conducted in accordance with an agreement with Monsanto to enforce payment of a technology or royalty fee. In the State of Rio Grande do Sul, at the first point of delivery in the marketing system, farmers must declare whether soybeans are biotech. If they are biotech, the State assesses a technology fee, reportedly equivalent to half that charged in the United States. If the farmer declares the soybeans to be non-biotech, the shipment is subject to testing. If it is found to contain biotech soybeans, it is subject to the technology fee plus a penalty.

Grain receipts at port facilities that meet the minimum quality standard are accepted and discounts/premiums are discussed with the commodity seller. Grain receipts outside the standard may be rejected depending on inventory and must be cleaned/dried/blended offsite, then can return for new sampling and analysis. Terminal managers indicated that most grain meets the required quality standard.

Grain Storage

Most commercial storage facilities in Brazil are flat storage with the exception of a few concrete silos. Most of the facilities have a system of automated temperature controls that keeps the grain in condition even though the average cycle time is usually less than 30 days. Segregation and blending capabilities are limited due to the inherent nature of storage infrastructure. This limited segregation capability at the port facilities results in a commingled average quality stock for export.

Export Grain

Contracts

The majority of corn and soybeans destined for export adhere to the quality specifications set forth in the standard ANEC 41 (soybeans) and 43 (corn) contracts. Associacao Nacional dos Exportadores de Cereals (ANEC) is an association similar to the North American Export Grain Association (NAEGA). ANEC consults with the MOA and grain industry representatives about export quality specifications, but the final quality specifications are baseline commercial contract terms established by ANEC and subject to individual company modification, not government standards or requirements. ANEC convenes meetings every 30-40 days to discuss contractual terms, quality problems, importer demands, and new developments influencing the performance of ANEC contracts and their ability to remain internationally competitive. ANEC 41, which

covers soybeans and became effective March 1, 2000, includes the following quality specifications:

Oil: ≥ 18.5%
Moisture: ≤ 14.0%
Foreign Material: ≤ 1.0%, Max 2%
Total Damage: ≤ 8% (Heat Damage: ≤ 5%)
Broken Beans: ≤ 30%
Free from poisonous seeds/husks, Castorseed/Husks ≤ .005%

ANEC 43 governs Brazilian yellow corn and requires:

Moisture: ≤ 14.5%
Foreign Material: ≤ 3.0%
Total Damage: ≤ 27% (Heat Damage/Germination: ≤ 10%)
Free from poisonous seeds/husks, Castorseed/Husks ≤ .10%

Discounts and premiums are negotiated between the buyer and seller, and applied to factors deviating from contract terms. Currently, ANEC, along with other industry organizations, is working with MOA on potential revisions to the Brazilian soybean standards. Once the standards are revised, ANEC intends to revise the ANEC 41 to reflect any changes deemed necessary.

Industry representatives indicated that the current average export soybean quality in Brazil is equivalent to U.S. No. 2 Yellow soybeans even though the factor limits differ due to variation in testing methods and definitions. Overall, the general quality was reported as comparable. The standard changes being considered by MOA and industry representatives include modifications to terms and methods to mirror the U.S. standards. (See Appendix for U.S. standards)

Inspection

The private surveyor for the buyer and seller, elevator personnel, and officials from the MOA are all involved in the inspection process to assess weight and quality.

Private Surveyors

There are approximately 30 MOA-authorized private surveyors providing quality assurance services in Brazil. Many are small local companies that primarily service the domestic market. Large multinational companies, such as SGS and BSI, tend to service the export market. An SGS representative explained that the export market is very competitive and inspection fees have been driven down to a “marginally profitable” average of $0.15/mt. Consequently, SGS is concentrating on the specialty and domestic markets for business growth. The larger private surveyors also offer expanded services to the export market such as guaranteed inspection, whereby they provide both buyer and seller inspection services and guarantee the quality and quantity at destination. Precise terms and cost for such services were not revealed.

The commercial ANEC contracts specify the inspection process as well as the basic quality requirements. In a typical case, the buyer (importer) nominates a private surveyor to inspect the export cargo. The seller (exporter) nominates the same, or a different, surveyor to represent its interests. Inspection results from the buyer's surveyor are used for final settlement unless there is a dispute between buyer and seller. If a dispute occurs, the buyer and seller may elect a mutually agreed upon third surveyor to analyze an agreed-upon composite sample representing the cargo. Settlement is then based on the average of the third surveyor's results and the results from either the buyer's or seller's initial surveyor, whichever is closest to the results from the third.

Private surveyors that perform grading must be accredited by the MOA and follow GAFTA/FOSFA guidelines. In contrast, samplers are not required, but are encouraged, by the MOA to be accredited. In addition, private surveyors occasionally receive in-house training before they can perform inspection work. The majority of training relies on written assessments that are not performance based. The lack of performance-based training was evidenced in the non-uniform application of procedures. Approximately 85 percent of employees are full-time and the other 15 percent are subcontracted from a surveyor pool. It is not uncommon for an employee to work for several surveying companies over his or her career. The delegation inferred that an average employee earns approximately $7,000 per year including overtime and benefits.

Inspection equipment, although not nationally standardized, is checked once annually and recalibrated as necessary. Private surveying companies use "ring" testing to periodically review performance by reanalyzing samples and critiquing individual surveyors. Private surveyors' inspection fees of $0.10 to $0.15/mt do not include quality analysis and guarantee provisions. Quality analysis fees that were disclosed were $10 for a physical analysis, $20 for falling numbers, and $120-$160 for Polymerase Chain Reaction (PCR).

House Inspection

The elevator stages its employees throughout the facility during inspection of an export vessel. Elevator employees accompany private surveyors for stowage, fumigation, and inspection if there is a risk of non-conformance. Export elevator personnel load and/or source grain from different flats/silos based on private surveyor quality checks. The private surveyor will notify the seller and buyer of contract non-conformance for resolution, if necessary.

Government

The MOA conducted inspections and issued all quality and weight certificates until 2000, when inspection was privatized.

The MOA maintains 73 official standards for fibers, grains, and oils. Each standard is reviewed every 5 years and changes or amendments are made as necessary.

MOA accredits private surveyors through a training course provided by research

institutions, and conducts periodic surveillance audits to assess surveyor performance. Each private surveyor in Brazil is required to be accredited by MOA.

While the MOA accredits private surveyors to provide inspection services in Brazil, it is not directly involved in assessing export grain quality. The MOA involvement with export shipments is limited to activities related to phytosanitary certification. The MOA oversees stowage examinations for an unspecified fee. The MOA also analyzes samples for prohibited pests and oversees any fumigation that may occur concerning the issuance of phytosanitary certificates. The MOA relies on MOA officials and private surveyors to perform the inspections necessary as a basis for the issuance of phytosanitary certificates. Currently the MOA does not charge for issuing phytosanitary certificates, but a $300/entity/year plus a $100/product/year is proposed in 2005 to cover agronomist and agricultural specialist costs.

The MOA also maintains minimal standards for testing equipment and procedures by identifying acceptable equipment types and procedures akin to GAFTA/FOSFA.

Weighing

As in the United States, weighing equipment in Brazil appears to meet current commercial standards. Elevator personnel with minimum private surveyor oversight weigh exported grain. The private surveyor confirms the scale weights based on a comparison with a maritime draft survey and issues a final weight certificate. Bulk weighing equipment is calibrated and certified semiannually by INMETRO, a national weighing authority. Locking mechanisms limit commercial access to weighing equipment. According to one private surveying company, weight discrepancies are rarely a problem except for occasional discrepancies, which can be up to 2 percent.

Quality Assessment

The quality of export cargoes is assessed through sampling and testing using procedures defined by GAFTA/FOSFA and outlined in “Normative No. 15,” a directive issued by MOA in June 2004 in response to Chinese allegations that Brazilian soybean shipments were contaminated with fungicide-treated seeds. Normative No. 15 has new requirements for testing soybean exports for impurities and moisture, which appear to move beyond the single phytosanitary inspection activity.

Inspection equipment is not standardized, but is based on performance criteria. Inspection equipment is examined on a periodic basis at the elevator’s discretion. Sampling procedures for an export soybean shipment are described below (the procedures are similar for all commodities). A random sample is drawn from a moving conveyor belt at a rate of 4 intervals per 500 tons with a cylinder-shaped device similar to a small coffee can attached to a rod. The cylinder’s volume does not allow the user to obtain a representative sample because it is filled before it can capture a portion from the bottom tier of grain. The subsamples are visually examined for general quality (similar to U.S. procedures for component samples) and combined to make a sample representing 5,000 tons (similar to a sublot sample in the United States). The sublot samples are analyzed according to the standards and factor results recorded. No between-

sublot uniformity criteria are applied. All sublot samples are combined when loading is complete to make a composite sample representing the entire shipment. The composite sample is analyzed according to the standards and for any additional quality attributes specified by the contract, and is used as the basis of the final quality certificate.

Private surveyors, elevators, and MOA all stated that their system was trusted and importers generally do not report discrepancies. However, one private surveyor mentioned that the pressure to misreport quality was great, and that either buyer's or seller's interests could be compromised.

Section III
Argentina

This section outlines the Argentine grain inspection process from grain receiving to export shipments including commercial, government, and private surveyor roles.

Argentina's inspection process is similar in many respects to Brazil's, although government involvement, export criteria, and inspection procedures vary to a limited degree.

Grain Receiving

Most inbound grain is bulk corn, soybeans, and wheat. However, there is an IP program (like Castrolanda's) for "Red Flint" corn, which comprises 5 percent, or 500,000 tons, of the total corn export market. The program is designed to supply the European market and preclude biotech regulatory complications.

Most inland grain movement is via truck due to limited rail infrastructure and capacity. Grain is originated through dealers and cooperatives with brokers mainly selling logistics. Truck queues can be lengthy, but shorter than in Brazil due to a more sophisticated grain receiving system with more dump pits and staging areas. Several of the port facilities that the delegation visited reported the ability to dump 50 trucks per hour or 1,200 trucks per day. Upon entering port facilities, the trucks are staged, gross weighed, and automatically probed before discharging. Compartmented pneumatic probes collect a sample from multiple locations in the truck and represent the bottom, lower, middle, and top cross-sections of grain. Grain is visually analyzed for general quality in accordance with Argentina's standards. Moisture, protein, and oil are tested, as needed, using commercial equipment similar to that found in the United States. Further testing may be performed depending on the results of the initial quality assessment and the terms of any commercial contract.

By law, grain receipts determined to be within the quality standards (classification #1, #2, or #3 for wheat and corn, and a single classification for soybeans) must be accepted by the elevator. In brief, the process works as follows:

Elevator personnel sample and test the grain receipts. If the grain quality is determined to be:

#1 Classification. The grain is accepted with minimum testing and premiums applied where applicable.

#2 Classification. The grain must be sent to the Camara Arbitral de Cereales (CAC), a non-profit inspection company to determine the correct grade (more information on CAC follows). The cost is $4/sample equally borne by the seller and buyer. Applicable discounts are applied based on the results. In the rare event (< 1 percent) that the seller or buyer disagrees with the CAC results, a sample may be sent to SENASA, a government agency, for a final determination.

#3 Classification. The grain is sent to the CAC and handled as above. Applicable discounts are applied based on the results.

Out of Standard. The elevator may accept or reject the grain at its discretion. If accepted, grain is reconditioned and applicable discounts apply. If rejected, the farmer may request CAC inspection. The party whose position is not supported by the inspection results pays the charge and the grain gets diverted as necessary.

Camara Arbitral de Cereales (CAC)

There are six independently operating CACs or arbitration chambers located throughout Argentina. Each has a board of directors representing the industry from producer to exporter. The CACs three main activities are to:

1) Intervene in the arbitration of grain trade;

2) Communicate prices of seeds and grain (similar to USDA/Agricultural Marketing Service's Market News program); and

3) Upon request, analyze samples for standards classification and a variety of other quality factors.

In practice, the CACs serve as reference laboratories for grain quality, much like GIPSA's Technical Services Division in Kansas City, MO. The CAC in Rosario, Argentina tests an average of 1,600 samples per day and 3,000 samples per day during harvest. The cost for this service is $4/sample. The independent CACs exchange samples for certain quality factors as part of their quality assurance process. Private surveyors submit samples to the CACs on a periodic basis for quality assurance purposes.

Storage

Commercial grain storage in Argentina is a mix of concrete silos and flat storage. Unlike Brazil, Argentina can segregate and blend grain at export to meet quality specifications, although not as extensively as exporters can in the United States. This follows, since elevators are required to purchase all commodities within the standard, and export shipment criteria may differ from inbound quality specifications. The average storage cycle time for grains and oilseeds is 30 to 45 days. Off-farm storage capability and producers' commodity marketability has increased with the advent of low-cost silo bags in the past few years. The 200-mt polypropylene bags are placed in production areas, filled by blowing in grain, purged, and then reclaimed using evacuators. An estimated 25 percent of Argentina's annual production can be stored in these bags.

Export

Contracts

The majority of grain exports use GAFTA-38 contracts. Wheat and corn shipments are typically #1 or #2 grade, respectively; while soybean shipments are generally higher quality than defined in the standard. In addition to the basic Argentine standards, most importing customers specify additional contract terms that exceed the standard limits and include added quality criteria.

Inspection

Private surveyors, elevator personnel, and government officials inspect commodities for quality and weight.

Private Surveyors

Currently, 27 private surveying companies are accredited to perform grain inspection by SENASA, the equivalent of America's GIPSA and APHIS. All accredited private surveyors follow GAFTA/FOSFA inspection guidelines. In addition, a number of private surveying companies require additional employee training before surveyors can perform inspection work. Approximately 85 percent of employees are full-time and the other 15 percent are subcontracted from a surveyor pool. It is not uncommon for an employee to work for several surveying companies over his or her career. An interview with BSI Inspectorate indicated that an employee earns approximately $7,000 per year with overtime plus benefits.

We met with three surveying companies in Argentina: SGS, BSI, and Bureau Veritas. As in Brazil, the private surveyor represents the buyer and/or seller, and issues quality and weight certificates. The buyer (importer) designates a single, private surveyor for 85 percent of sales; and provides a choice of 3 or 4 approved choices to the seller (exporting firm) the remaining 15 percent of the time. In all cases, the seller pays for the private surveyor. The surveyor usually receives instructions from the seller, and occasionally from the buyer, for the grade, weight, and specifications for the export cargo. Since the seller dictates the buyer's private surveyor in most cases, disputes between the buyer and seller are infrequent.

Inspection equipment is not nationally standardized, but is checked annually and recalibrated as necessary. Private surveyor fees are $0.10/mt plus quality analysis costs, which are equivalent to those in Brazil.

House Inspection

The elevator stages its employees at all inspection points to load an export vessel. Employees accompany private surveyors and SENASA officials for stowage, fumigation, and inspection activities if there is a risk of non-conformance. The elevator can stop loading and/or source grain from different flats/silos based on private surveyor quality checks. The private surveyor will notify seller and buyer of contract quality non-conformance for resolution as

necessary.

Government

Since quality inspection activities were privatized in the late 1980s, SENASA's role is to provide the oversight of quality, conduct stowage and fumigation examinations, and issue phytosanitary certificates. SENASA accredits private surveyors through three schools in Rosario, Bahia Blanca, and Buenos Aires. They audit private surveying companies annually, and can revoke certifications and assess fines.

SENASA officials work with private surveyors to visually monitor outbound grain quality and sampling on conveyor belts to ensure that export grain meets minimum Argentine standards. Samples are kept for 30 days or until discharge, whichever comes first. If Argentine quality or phytosanitary standard limits are exceeded at any time during loading, SENASA has the authority to stop loading, require alternate sourcing, and/or quarantine and shut down the elevator.

SENASA officials are not present at all times during export loading, and rarely test grain quality. Instead they rely mostly on private surveyors and elevator personnel. Once a vessel is loaded, SENASA issues a "normal" phytosanitary certificate for Argentine exporting requirements based only on a composite sample. Phytosanitary certificates can take up to 7 days to receive, and are often illegible due to antiquated typewriters. The seller must convey any additional importer phytosanitary requirements to SENASA. For example, China may request a phytosanitary certificate with additional declarations for an export shipment. SENASA will perform additional work such as biotech or mycotoxin testing and issue a "complementary" phytosanitary certificate at the seller's expense.

SENASA charges about $0.17/mt for overseeing quality and issuing a phytosanitary certificate, and about $0.03/mt for overtime and travel expenses, which totals $0.20/mt. Stowage examinations are $133 per vessel plus $90 per hold plus any overtime charges. Regular time is Monday through Friday, 6 a.m. to 6 p.m., and Saturday, 6 a.m. to 12 p.m. Overtime is charged at $5.25 per hour and configured as follows for each 6-hour shift:

Monday to Friday
12 a.m. to 6 a.m.: 32 hours are charged, 32 x $5.25 = $168.00
6 p.m. to 12 a.m.: 26 hours are charged, 26 x $5.25 = $136.50
Saturday
12 p.m. to 6 a.m.: 32 hours are charged, 32 x $5.25 = $168.00
Sunday and Holidays
All Times: 32 hours are charged, 32 x $5.25 = $168.00

Weighing

Argentina's weighing equipment was similar to Brazil's. Customs, the private surveyor, and the maritime agent all certify weight. Bulk weighing equipment is calibrated and certified

annually, and checked on a periodic basis by INTA, a state weighing entity. In addition, elevators perform monthly inspections.

Government custom officials certify weights for the purpose of assessing differential export taxes of 23.5 percent for soybeans and 20 percent for meal, oil, and all other grains. Customs does not charge for regular hours, but does charge $200 to $300 per 6-hour overtime shift.

Quality

Export quality is assessed based on sampling and testing using GAFTA/FOSFA procedures. The procedures are similar to Brazil's, and include interval sampling and visual inspection on a moving conveyor belt for every 500 mt, analyzing every 5,000-mt sublot sample, and performing an analysis on the sublot composite sample for the final certificate. Unlike Brazil's cylindrical device, Argentina uses a cone-shaped sampling device, which also causes sampling errors due to its configuration.

Most of Argentina's grain trade believes that the inspection system works well with minimal complaints from importers. However, several elevators resented SENASA costs and the low quality of work they perform, especially in regard to phytosanitary certificates.

Comparison of Argentina, Brazil, and the United States

As in the United States, the Governments of Brazil and Argentina establish quality standards for grains and oilseeds, and rely on internationally recognized analytical methods, as applicable, for specific quality attributes. Both Brazil and Argentina also provide for a system of authorized inspection firms and personnel to apply the standards, and an appeal process for commercial entities to challenge inspection results provided by authorized firms and personnel. However, there are a number of noteworthy differences between the U.S. system and those in Brazil and Argentina.

Quality Control and Assurance

While all three countries rely on internationally recognized reference methods for quality factors such as moisture, protein, oil, and mycotoxins, and maintain written procedures on the application of quality grain standards, the United States uses more robust and stringent evaluation, approval, and control processes to meet the high level of accuracy and consistency demanded by the U.S. grain market participants. Accurate and consistent grades and grain quality factor results across different geographical locations and market participants are essential in the U.S. marketing system. Meeting the accuracy and consistency expectations of the U.S. market (e.g., a 15.0 percent NIRT wheat protein for a railcar loaded in Minnesota must be within 0.4 percent of the origin result when unloading in Portland, Oregon) requires a level of control exceeding that observed in Brazil and Argentina. In part, this requires more precise sampling requirements, equipment evaluation and approval processes, and ongoing (daily) quality control and assurance of all inspection personnel and instrumentation correlated to reference methods at a central technical center.

Scale Testing and Weighing Oversight

Export bulk grain scale test and performance requirements in the United States exceed those of Brazil and Argentina. The frequency of testing and continuous monitoring of scale performance (e.g., tare weight deviation) during export grain loading enables the U.S. system to detect and correct errors during loading. Both Brazil and Argentina rely on a comparison of final scale results with a marine draft survey to verify weights.

Government Quality Assurance of Export Grain Quality

The U.S. government maintains stringent controls to ensure the accuracy of the final inspection certificate for export grain quality and quantity. In Brazil, the government is not involved in export quality and quantity certification. In Argentina, the government's involvement related to quality focuses on ensuring the grain exported meets a minimum quality standard, and not on the accuracy of the quality certificate. The Argentine government, through customs officials, plays a larger role in the weighing of export shipments due to the assessment of a differential tax, but there was no indication that the government ensures the accuracy of the final weight certificates. There are no criteria applied to control within-lot (between sublot) uniformity of quality in Brazil or Argentina.

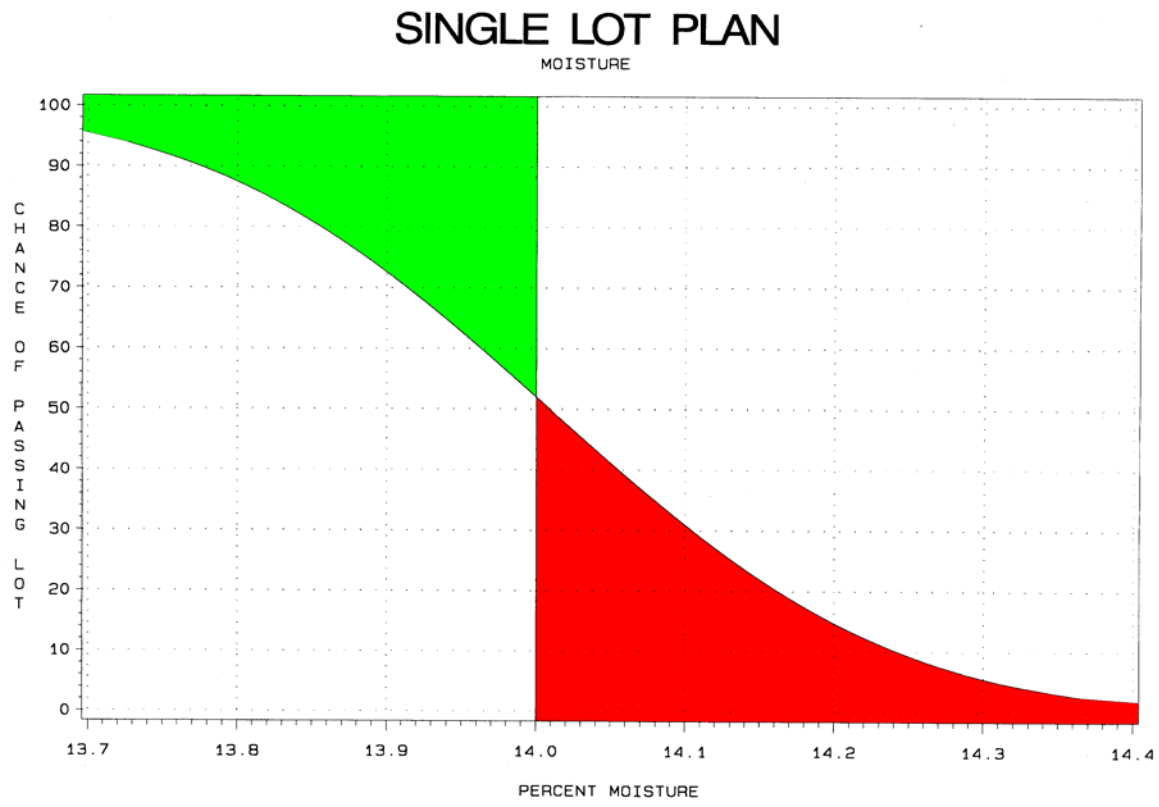
Impact of Systems on Final Export Grain Quality

While the U.S. delegation was unable to obtain data to compare Brazilian, Argentine, and U.S. export grain quality, the systems used to sample, test, and certify quality may influence the targeted quality loaded by an exporter. The sampling equipment and methods used in Brazil and Argentina for export shipments are subject to considerable variability and have a high probability of under representing quality factors such as foreign material and broken grains. The particle size and density of material in grain results in segregation of material during transfer on conveyor belts. The export grain sampling processes observed in Brazil and Argentina do not obtain a representative portion of the grain, and especially of the finer material (broken grains and foreign material) that typically settles on the lower portions of a conveyor belt.

Furthermore, in Brazil and Argentina, the general quality loaded is assessed during loading, but the final certified quality is based on the analysis of a composite sample tested and certified after the vessel has been loaded and, in many instances, has sailed. Some exporters reported receiving certificates up to 7 days after loading. Any risk of receiving a final certificate not conforming to contract quality specifications is unacceptable in international trade. Consequently, the delay and uncertainty of final results may result in a Brazilian or Argentine exporter targeting better quality than required by contract specifications.

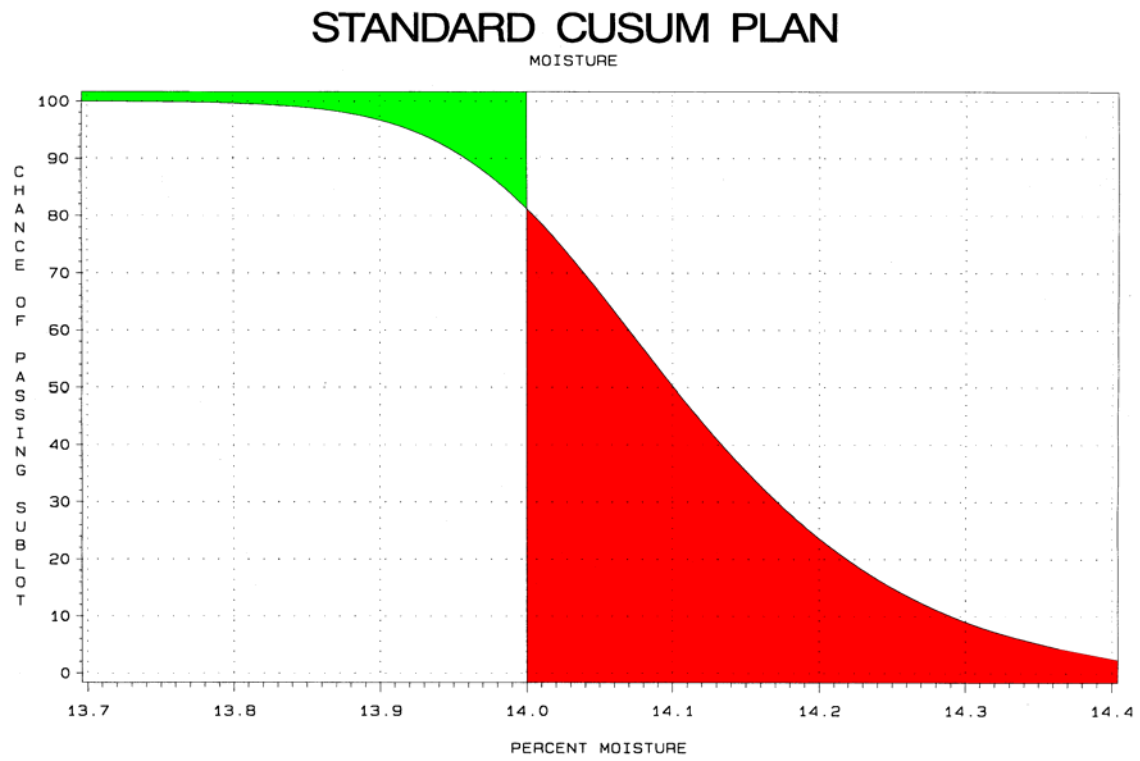
The following statistical operating characteristic curve illustrates the probability of acceptance, taking into consideration sampling, testing, and operator error (variability) when relying on a single sample. For example, if an exporter targeted the specific contract moisture limit of 14 percent, there would be only a 50 percent probability that an actual 14 percent moisture level would be accepted based on a single composite sample. The exporter would have

to target a much lower moisture level to increase the probability of acceptance, and to mitigate the risk of rejection.



Conversely, in the United States, the highly controlled government inspection process and the availability of shipping bins (grain is held for final quality results before loading) permits an exporter to target quality closer to contract specifications. Exporters receive continuous quality results during loading, which serve as the mathematical basis for the final result. U.S. exporters adjust loading quality based on government quality results provided during loading, thereby avoiding the sampling and analytical variability associated with basing final certified results on a composite sample after final loading. Theoretically, U.S. exporters can minimize or eliminate risk related to grain quality by targeting contract specifications closer than can their counterparts in Brazil and Argentina, giving U.S. exporters a competitive advantage.

The following statistical operating characteristic curve illustrates the probability of acceptance taking into consideration sampling, testing, and operator error (variability) when relying on the U.S. CuSum loading plan. If an exporter targeted the specific contract moisture limit of 14 percent, there would be an 80 percent probability that an actual 14 percent moisture level would be accepted. Thus, the U.S. exporter could target the moisture level closer to the contract limit and still increase the probability of acceptance to better manage the risk of rejection.



Cost of Inspection Services

Comparing and contrasting U.S., Brazilian, and Argentine inspection costs is complicated due to the interrelationship of quality and phytosanitary activities, and labor costs. The table below compares inspection costs in the United States, Brazil, and Argentina. In the United States, GIPSA inspection costs (fees charged for official inspection and weighing) average $0.34/mt, with a range of $0.10 to $0.69/mt depending on the facility. In addition, a stowage examination fee of approximately $0.007/mt and phytosanitary fee of $0.001 are incurred for an overall average inspection cost of $0.348/mt in the United States. In comparison, Brazil's average inspection cost is $0.10-$0.15/mt and Argentina's is $0.33/mt. In any of the three countries, when both seller and buyer elect to retain separate surveyors, the gross cost of inspection for a particular shipment of grain increases, but the cost to the seller would not exceed those mentioned above. Because the Brazilian and Argentine inspection systems, practices, and quality control programs fundamentally differ from those in the United States, there is no way to directly compare their costs to the U.S. system.

Inspection Activity	**United States**	**Brazil**	**Argentina**
General Grading	GIPSA FY '04 Average $0.34/ton	Average $0.10-$0.15/ton	Average $0.10/ton
Additional Quality Tests	Included	Vary based on contract specifications (minimum cost due to composite analysis)	Vary based on contract specifications (minimum cost due to composite analysis)
Stowage Examinations	$51/shiphold or $0.007/ton (based on average seven hold, 50,000 ton vessel)	Included	$133 base + $90/shiphold or $0.015/ton (based on seven hold, 50,000 ton vessel)
Total Quality	$0.347/ton	$0.10-$0.15/ton	$0.115/ton
Total Weighing	Included	Included	$250/Customs overtime shift or $0.015/ton (based on 3 overtime peiords for 50,000 ton vessel)
Total Phytosanitary	$50/certificate or $0.001/ton (based on 50,000 ton vessel)	Proposed Yearly MY '05 $300/entity + $100/product	$0.20/ton
Total Inspection Fee	**$0.348/ton**	**$0.10-$0.15/ton**	**$0.33/ton**
Other Information			
Export Grain Volume	104.922 MMT	16.251 MMT	24.699 MMT
GNI per capita	$37,610	$2,710	$3,650
Grain inspector yearly earnings	$55,000-$60,000	$7,000	$7,000
Labor allocation	85%	90%	90%

Appendix

Subpart J -- United States Standards for Soybeans

Terms Defined

§ 810.1601 Definition of soybeans.

Grain that consists of 50 percent or more of whole or broken soybeans (*Glycine max* (L.) Merr.) that will not pass through an 8/64 round-hole sieve and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

§ 810.1602 Definition of other terms.

(a) *Classes.* There are two classes of soybeans: Yellow soybeans and Mixed soybeans.

(1) *Yellow soybeans.* Soybeans that have yellow or green seed coats and which in cross section, are yellow or have a yellow tinge, and may include not more than 10.0 percent of soybeans of other colors.

(2) *Mixed soybeans.* Soybeans that do not meet the requirements of the class Yellow soybeans.

(b) *Damaged kernels.* Soybeans and pieces of soybeans that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, stinkbug-stung, or otherwise materially damaged. Stinkbug-stung kernels are considered damaged kernels at the rate of one-fourth of the actual percentage of the stung kernels.

(c) *Foreign material.* All matter that passes through an 8/64 round-hole sieve and all matter other than soybeans remaining in the sieved sample after sieving according to procedures prescribed in FGIS instructions.

(d) *Heat-damaged kernels.* Soybeans and pieces of soybeans that are materially discolored and damaged by heat.

(e) *Purple mottled or stained.* Soybeans that are discolored by the growth of a fungus; or by dirt; or by a dirt-like substance(s) including nontoxic inoculants; or by other nontoxic substances.

(f) *Sieve. 8/64 round-hole sieve.* A metal sieve 0.032 inch thick perforated with round holes 0.125 (8/64) inch in diameter.

(g) *Soybeans of other colors.* Soybeans that have green, black, brown, or bicolored seed

coats. Soybeans that have green seed coats will also be green in cross section. Bicolored soybeans will have seed coats of two colors, one of which is brown or black, and the brown or black color covers 50 percent of the seed coats. The hilum of a soybean is not considered a part of the seed coat for this determination.

(h) *Splits.* Soybeans with more than one-fourth of the bean removed and that are not damaged.

Principles Governing the Application of Standards

§ 810.1603 Basis of determination.

Each determination of class, heat-damaged kernels, damaged kernels, splits, and soybeans of other colors is made on the basis of the grain when free from foreign material. Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole.

§ 810.1604 Grades and grade requirements for soybeans

Grading factors	Grades U. S. Nos.			
	1	2	3	4
Minimum test weight per bushel	56.0	54.0	52.0	49.0
	Maximum percent limits of			
Damaged kernels				
Heat (part of total)	0.2	0.5	1.0	3.0
Total	2.0	3.0	5.0	8.0
Foreign material	1.0	2.0	3.0	5.0
Splits	10.0	20.0	30.0	40.0
Soybeans of other colors [1/]	1.0	2.0	5.0	10.0
	Maximum count limits of			
Other materials				
Animal filth	9	9	9	9
Castor beans	1	1	1	1
Crotalaria seeds	2	2	2	2
Glass	0	0	0	0
Stones [2/]	3	3	3	3
Unknown foreign substance	3	3	3	3
Total [3/]	10	10	10	10

U.S. Sample grade are soybeans that:
(a) Do not meet the requirements for U.S. Nos. 1, 2, 3, or 4; or
(b) Have a musty, sour, or commercially objectionable foreign odor (except garlic odor); or
(c) Are heating or otherwise of distinctly low quality.

1/ Disregard for Mixed soybeans.
2/ In addition to the maximum count limit, stones must exceed 0.1 percent of the sample weight.
3/ Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, and unknown foreign substances. The weight of stones is not applicable for total other material.

Special Grades and Special Grade Requirements

§ 810.1605 Special grades and special grade requirements.

(a) *Garlicky soybeans.* Soybeans that contain five or more green garlic bulblets or an equivalent quantity of dry or partly dry bulblets in a 1,000-gram portion.

(b) *Purple mottled or stained.* Soybeans with pink or purple seed coats as determined on a portion of approximately 400 grams with the use of an FGIS Interpretive Line Photograph.

Subpart D -- United States Standards for Corn

Terms Defined

§ 810.401 Definition of corn.

Grain that consists of 50 percent or more of whole kernels of shelled dent corn and/or shelled flint corn (*Zea mays L.*) and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

§ 810.402 Definition of other terms.

(a) *Broken corn.* All matter that passes readily through a 12/64 round-hole sieve and over a 6/64 round-hole sieve according to procedures prescribed in FGIS instructions.

(b) *Broken corn and foreign material.* All matter that passes readily through a 12/64 round-hole sieve and all matter other than corn that remains in the sieved sample after sieving according to procedures prescribed in FGIS instructions.

(c) *Classes.* There are three classes for corn: Yellow corn, White corn, and Mixed corn.

(1) *Yellow corn.* Corn that is yellow-kerneled and contains not more than 5.0 percent of corn of other colors. Yellow kernels of corn with a slight tinge of red are considered Yellow corn.

(2) *White corn.* Corn that is white-kerneled and contains not more than 2.0 percent of corn of other colors. White kernels of corn with a slight tinge of light straw or pink color are considered White corn.

(3) *Mixed corn.* Corn that does not meet the color requirements for either of the classes Yellow corn or White corn and includes white-capped Yellow corn.

(d) *Damaged kernels.* Kernels and pieces of corn kernels that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(e) *Foreign material.* All matter that passes readily through a 6/64 round-hole sieve and all matter other than corn that remains on top of the 12/64 round-hole sieve according to procedures prescribed in FGIS instructions.

(f) *Heat-damaged kernels.* Kernels and pieces of corn kernels that are materially discolored and damaged by heat.

(g) *Sieves.*

(1) *12/64 round-hole sieve.* A metal sieve 0.032 inch thick with round perforations 0.1875 (12/64) inch in diameter which are 1/4 inch from center to center. The perforations of each row shall be staggered in relation to the adjacent row.

(2) *6/64 round-hole sieve.* A metal sieve 0.032 inch thick with round perforations 0.0937 (6/64) inch in diameter which are 5/32 inch from center to center. The perforations of each row shall be staggered in relation to the adjacent row.

Principles Governing the Application of Standards

§ 810.403 Basis of determination.

Each determination of class, damaged kernels, heat-damaged kernels, waxy corn, flint corn, and flint and dent corn is made on the basis of the grain after the removal of the broken corn and foreign material. Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from broken corn and foreign material.

Grades and Grade Requirements

§ 810.404 Grades and grade requirements for corn.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of:		
		Damaged kernels		Broken corn and foreign material (percent)
		Heat damaged kernels (percent)	Total (percent)	
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0

U.S. Sample Grade

U.S. Sample grade is corn that:

(a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or

(b) Contains stones with an aggregate weight in excess of 0.1 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (*Xanthium* spp.), or similar seeds singly or in combination, or animal filth in excess of 0.20 percent in 1,000 grams; or

(c) Has a musty, sour, or commercially objectionable foreign odor; or

(d) Is heating or otherwise of distinctly low quality.

Special Grades and Special Grade Requirements

§ 810.405 Special grades and special grade requirements.

(a) *Flint corn.* Corn that consists of 95 percent or more of flint corn.

(b) *Flint and dent corn.* Corn that consists of a mixture of flint and dent corn containing more than 5.0 percent but less than 95 percent of flint corn.

(c) *Waxy corn.* Corn that consists of 95 percent or more waxy corn, according to procedures prescribed in FGIS instructions.

Subpart M -- United States Standards for Wheat

Terms Defined

§ 810.2201 Definition of wheat

Grain that, before the removal of dockage, consists of 50 percent or more common wheat (*Triticum aestivum* L.), club wheat (*T. compactum* Host.), and durum wheat (*T. durum* Desf.) and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of the dockage, contains 50 percent or more of whole kernels of one or more of these wheats.

§ 810.2202 Definition of other terms.

(a) *Classes.* There are eight classes for wheat: Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, Hard White wheat, Soft White wheat, Unclassed wheat, and Mixed wheat.

(1) *Durum wheat.* All varieties of white (amber) durum wheat. This class is divided into the following three subclasses:

(i) *Hard Amber Durum wheat*. Durum wheat with 75 percent or more of hard and vitreous kernels of amber color.

(ii) *Amber Durum wheat*. Durum wheat with 60 percent or more but less than 75 percent of hard and vitreous kernels of amber color.

(iii) *Durum wheat*. Durum wheat with less than 60 percent of hard and vitreous kernels of amber color.

(2) *Hard Red Spring wheat.* All varieties of Hard Red Spring wheat. This class shall be divided into the following three subclasses:

(i) *Dark Northern Spring wheat*. Hard Red Spring wheat with 75 percent or more of dark, hard, and vitreous kernels.

(ii) *Northern Spring wheat*. Hard Red Spring wheat with 25 percent or more but less than 75 percent of dark, hard, and vitreous kernels.

(iii) *Red Spring wheat*. Hard Red Spring wheat with less than 25 percent of dark, hard, and vitreous kernels.

(3) *Hard Red Winter wheat.* All varieties of Hard Red Winter wheat. There are no subclasses in this class.

(4) *Soft Red Winter wheat.* All varieties of Soft Red Winter wheat. There are no subclasses in this class.

(5) *Hard White wheat.* All hard endosperm white wheat varieties. There are no subclasses in this class.

(6) *Soft White wheat.* All soft endosperm white wheat varieties. This class is divided into the following three subclasses:

(i) *Soft White wheat*. Soft endosperm white wheat varieties which contain not more than 10 percent of white club wheat.

(ii) *White Club wheat*. Soft endosperm white club wheat varieties containing not more than 10 percent of other soft white wheats.

(iii) *Western White wheat*. Soft White wheat containing more than 10 percent of white club wheat and more than 10 percent of other soft white wheats.

(7) *Unclassed wheat.* Any variety of wheat that is not classifiable under other criteria provided in the wheat standards. There are no subclasses in this class. This class includes any wheat which is other than red or white in color.

(8) *Mixed wheat.* Any mixture of wheat that consists of less than 90 percent of one class and more than 10 percent of one other class, or a combination of classes that meet the definition of wheat.

(b) *Contrasting classes.* Contrasting classes are:

(1) Durum wheat, Hard White wheat, Soft White wheat, and Unclassed wheat in the classes Hard Red Spring wheat and Hard Red Winter wheat.

(2) Hard Red Spring wheat, Hard Red Winter wheat, Hard White wheat, Soft Red Winter wheat, Soft White wheat, and Unclassed wheat in the class Durum wheat.

(3) Durum wheat and Unclassed wheat in the class Soft Red Winter wheat.

(4) Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, and Unclassed wheat, in the classes Hard White wheat and Soft White wheat.

(c) *Damaged kernels.* Kernels, pieces of wheat kernels, and other grains that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(d) *Defects.* Damaged kernels, foreign material, and shrunken and broken kernels. The sum of these three factors may not exceed the limit for the factor defects for each numerical grade.

(e) *Dockage.* All matter other than wheat that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of wheat kernels removed in properly separating the material other than wheat and that cannot be recovered by properly rescreening or recleaning.

(f) *Foreign material.* All matter other than wheat that remains in the sample after the removal of dockage and shrunken and broken kernels.

(g) *Heat-damaged kernels.* Kernels, pieces of wheat kernels, and other grains that are materially discolored and damaged by heat which remain in the sample after the removal of dockage and shrunken and broken kernels.

(h) *Other grains.* Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wild oats.

(i) *Shrunken and broken kernels.* All matter that passes through a 0.064 x 3/8 oblong-hole sieve after sieving according to procedures prescribed in the FGIS instructions.

(j) *Sieve. 0.064 x 3/8 oblong-hole sieve.* A metal sieve 0.032 inch thick with oblong perforations 0.064 inch by 0.375 (3/8) inch.

Principles Governing the Application of Standards

§ 810.2203 Basis of determination.

Each determination of heat-damaged kernels, damaged kernels, foreign material, wheat of other classes, contrasting classes, and subclasses is made on the basis of the grain when free from dockage and shrunken and broken kernels. Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

Grades and Grade Requirements

§ 810.2204 Grades and grade requirements for wheat.

(a) Grades and grade requirements for all classes of wheat, except Mixed wheat.

Grading factors	Grades U.S. Nos.				
	1	2	3	4	5
Minimum pound limits of:					
Test weight per bushel					
Hard Red Spring wheat or White Club wheat	58. 0	57.0	55.0	53.0	50.0
All other classes and subclasses	60.0	58.0	56.0	54.0	51.0
Maximum percent limits of:					
Defects:					
Damaged kernels					
Heat (part of total)	0.2	0.2	0.5	1.0	3.0
Total	2.0	4.0	7.0	10.0	15.0
Foreign material	0.4	0.7	1.3	3.0	5.0
Shrunken and broken kernels	3.0	5.0	8.0	12.0	20.0
Total [1/]	3.0	5.0	8.0	12.0	20.0
Wheat of other classes: [2/]					
Contrasting classes	1.0	2.0	3.0	10.0	10.0
Total [3/]	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
Maximum count limits of:					
Other material:					
Animal filth	1	1	1	1	1
Castor beans	1	1	1	1	1
Crotalaria seeds	2	2	2	2	2
Glass	0	0	0	0	0
Stones	3	3	3	3	3
Unknown foreign substances	3	3	3	3	3
Total [4/]	4	4	4	4	4
Insect-damaged kernels in 100 grams	31	31	31	31	31

U.S. Sample grade is Wheat that:
(a) Does not meet the requirements for U.S. Nos. 1, 2, 3, 4, or 5; or
(b) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor) or
(c) Is heating or of distinctly low quality.

1/ Includes damaged kernels (total), foreign material, shrunken and broken kernels.
2/ Unclassed wheat of any grade may contain not more than 10.0 percent of wheat of other classes.
3/ Includes contrasting classes.
4/ Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, or unknown foreign substance.

(b) *Grades and grade requirements for Mixed wheat.* Mixed wheat is graded according to the U.S. numerical and U.S. Sample grade requirements of the class of wheat that predominates in the mixture, except that the factor wheat of other classes is disregarded.

Special Grades and Special Grade Requirements

§ 810.2205 Special grades and special grade requirements.

(a) *Ergoty wheat.* Wheat that contains more than 0.05 percent of ergot.

(b) *Garlicky wheat.* Wheat that contains in a 1,000 gram portion more than two green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.

(c) *Light smutty wheat.* Wheat that has an unmistakable odor of smut, or which contains, in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 5 smut balls, but not in excess of a quantity equal to 30 smut balls of average size.

(d) *Smutty wheat.* Wheat that contains, in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.

(e) *Treated wheat.* Wheat that has been scoured, limed, washed, sulfured, or treated in such a manner that the true quality is not reflected by either the numerical grades or the U.S. Sample grade designation alone.