

**Industry Guidance on Setting Low Level Presence
Marketing Thresholds**

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What is a Low Level Presence Marketing Threshold?

The potential for the unintended mixing between different crops or other impurities within cereal, oilseed, pulse and special crop grain and grain products (hereafter “grain”) is well recognized and widely understood in international trade.

The vast majority of grain is traded internationally in bulk form, with overseas shipments often comprised of 60,000 metric tonnes or more of grain. Central to the affordable, efficient movement of grain is a ‘fungible’ grain supply. Fungibility refers to all grain in the system being basically the same. It facilitates the delivery of grain from multiple points in the exporting country and the distribution of the grain to multiple points in the importing country for a variety of end uses. By limiting the amount of segregation and special handling of grain, the cost of the movement of supplies from regions of excess to regions of need is kept at a minimum.

Numerous standards currently exist to account for the incidental low-level presence of various materials other than the intended product, such as broken kernels, foreign material, diseased kernels and other varieties of the same grain. As well, long before the advent of biotechnology, it was well established that seed itself is not 100% pure and has been regulated accordingly.

As is true for other marketing standards for grain and grain product shipments, it is well recognized that products from biotechnology-derived plants may be incidentally present at low levels in shipments between producing and importing countries, despite the application of good agricultural and manufacturing practices by the commodity supply chain.

Low level presence of plant material derived from rDNA plants is the trace levels of plant materials in commodity grain and grain products that can reasonably be expected to be present consistent with current production practices and industry standards (hereafter “LLP”). To this end, the seed technology developers are committed to stewarding their products in such a manner that the likelihood of LLP of an event not approved in the importing country will remain low. As such, for global bulk commodity supply chains, the primary approach for managing LLP must remain the implementation of rigorous good agricultural practices for the cultivation of biotechnology-derived plants.

In the context of a grain and grain product shipment intended for direct use as food, feed, or further processing, unintentional low-level presence of transgenic events in that shipment could reasonably be expected, consistent with generally accepted agricultural and manufacturing practices. The Canada Grains Council believes it is useful to look at existing international grain and grain product standards to understand and provide guidance on current generally accepted agricultural and manufacturing practices.

Guidance for setting a low-level presence marketing threshold

In the evolution of global grain and grain product supply chains, *de minimus* and marketing thresholds have been set for attributes that are not related to safety (like broken kernels and the presence of other varieties of the same grain) and these thresholds are generally set as a compromise between a reduced quality attribute and the cost of attaining higher thresholds of purity. In general, these thresholds are created

to allow grain and grain product supply chains to *maximize the value* of the grain or grain product and *minimize cost inefficiencies* and handling costs associated with channeling and quality management.

As a general rule, the lower the threshold the higher the costs to achieve this specification. Existing threshold-based standards that strive to maintain low cost and maximize handling efficiencies for grain and grain products tend to be in the 3-6% range.

In the case of setting thresholds for the low level presence of genetic materials, it is important to keep in mind that the safety of the product is not in question. Low Level Presence is defined as “low levels of recombinant DNA plant materials that have passed a food safety assessment according to the Codex Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants (CAC/GL 45-2003) in one or more countries, and are present in food or feed in an importing country in which the presence of the relevant recombinant-DNA plants has not been approved”.

The International Grain Trade Coalition and the GAABT have commissioned an international study to look at the cost implications of a government establishing LLP marketing thresholds at different levels within the range discussed above.

Additionally, the Canada Grains Council has led the development of this paper, working with the IGTC and GAABT. The paper points out that there are numerous examples in the commercial trade of grain and grain products of internationally recognized marketing thresholds along with domestic quality standards and normal commercial practices that are useful reference points for governments in determining an appropriate LLP marketing threshold.

International Standards

De minimus thresholds for grain and grain product shipment attributes have been, and continue to be, established at the international level, including such forums as ISO and Codex. For example, the international ISO wheat standard (Wheat - Specification ISO 7970: 1989) includes maximum tolerances for other cereals (3%), shriveled grain (8%), harmful or toxic seeds (0.5%), etc. Similarly, the Codex Maize standard (Codex Stan 153-1985) defines thresholds for factors such as broken kernels (6%), foreign matter (2%), diseased kernels (0.5%), etc.

Grain Marketing Standard

Numerous thresholds and standards exist to manage the presence of various materials in grain products other than the intended product, such as broken or damaged kernels, foreign material and other varieties of the same grain. It is therefore useful to look at existing grain and grain product standards in a variety of jurisdictions to understand and provide guidance on what existing trade and commerce have already identified as generally accepted agricultural and manufacturing practices.

Many of these marketing standards have been developed over decades of experience in the grain trade and reflect a balance of keeping unintended materials out of a product while at the same time maintaining the cost efficiencies of a bulk grain handling system (i.e., reasonable standards without overburdening the system to the point of being commercially unworkable).

This report contains a compilation of existing grain grading standards (marketing thresholds) established by various agencies (mainly national governments) that serve to define the quality of grain for end-users and in doing so facilitate the grain trade. Our approach was to gather information on the majority of the GLI countries but also to include a sample of non-GLI major grain importing countries from different regions to obtain a balanced view of standards in both import and export jurisdictions.

The countries examined in this report are Argentina, Australia, Brazil, Canada, China, France, Indonesia, Japan, Mexico, Paraguay, the Philippines, South Africa, Spain, the US, and Vietnam. For Colombia, grain grading standards are not available.

For each country, where available, the established marketing thresholds for various grade levels of the major grains produced (constituting 3% or more of seeded acres in the particular country) were identified. The country/grain coverage is summarised in Table 1. (page 6). For a few countries, information on some of the grains covering more than 3% of the grain area was not available (indicated in the Table using a red cross).

Table 1: Report coverage

	Argentina	Australia	Brazil	Canada	China	Colombia	France	Indonesia	Japan	Mexico	Paraguay	Philippines	South Africa	Spain	USA	Vietnam
Barley	✓	✓		✓			✓								✓	✓
Beans		✓	✓			✗				✓						
Canola/Rapeseed		✓		✓	✗		✗									✓
Maize/corn	✓		✓		✓	✗	✓	✓		✓	✓	✓	✓	✓	✓	✗
Flaxseed				✓												
Lentils		✓	✓													✓
Oats		✓		✓										✓		
Peas		✓	✓	✓												✓
Sorghum	✓			✓	✓			✗	✓	✓				✓		✓
Soybeans	✓		✓	✓	✓			✗			✗		✓			✓
Sunflower	✓						✗						✓	✗		
Rice			✓		✓	✗		✓	✓			✗			✓	✓
Wheat	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	

Notes: Data for Australia, Canada, and US provided by CGC.

1. Argentina

In Argentina, the grading standards are set by the *Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGyP)*, *Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA)* and *Instituto Argentino de Sanidad y Calidad Vegetal (IASCAV)*.

Malting barley: A maximum of 1% of foreign matter is accepted. For broken grains, the tolerance level is 1.5%, while for damaged and peeled grains the upper limit is 4%. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.* [NORMA V - ANEXO A - Resolución SENASA 27/2013](#)

Feed barley: Depending on the grading standards, feed barley is classified into three grades. Maximum foreign matter ranges from 1% for Grade 1 to 3% for Grade 3. Damaged kernels can reach up to 1.5% in Grade 1 and 3% in Grade 3. For damaged and peeled grains, the tolerances are 4%, 6% and 8% for Grades 1, 2 and 3, respectively. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.*

https://viejaweb.senasa.gov.ar/Archivos/File/File7202-anex%20re%2027_13.pdf

Maize: The thresholds apply to both dent maize and flint maize. Maize is classified into three grades. The maximum percentage of damaged kernels is 3%, 5% and 8% for Grades 1, 2 and 3, respectively. The upper threshold for kernels of abnormal size is 2%, 3% and 5% for Grades 1, 2 and 3, respectively. Grade 3 allows a maximum of foreign matter of 2%, falling to 1% for Grade 1. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.* [NORMA XII - Resolución SAGyP 1075/94](#)

Grain sorghum: There are three grades of grain sorghum. Grade 1 allows for a maximum of 2% of damaged kernels; Grade 2 allows for a maximum of 4% and Grade 3 allows for a maximum of 6% of damaged kernels. The upper tolerance level for foreign matter and sorghum non *vulgare* (grain sorghum) is 4% for Grade 3. Grade 3 can contain up to a maximum of 7% of misshaped (non standard size) kernels; this is 3% for

Grade 1.

[NORMA XVIII - Resolución SENASA 554/2011](#)

Soybeans: Foreign matter is allowed up to 3%, blackened grains up to 1%, broken grains up to 5%, damaged grains (sprouted, fermented, heat-damaged, rotten) up to 5%. The tolerance for green grains is 10%. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.*

<https://viejaweb.senasa.gov.ar/Archivos/File/File1194-resolucion151.pdf>

Sunflower seeds: The tolerance for foreign matter is 3%.

[NORMA IX - Resolución SAGyP 1075/94](#)

Milling wheat: There are three grades of milling wheat. The percentage of maximum damaged kernels allowed is 1%, 2% and 3% for Grades 1, 2 and 3, respectively. The tolerance level for foreign matter ranges from 0.2% for Grade 1 to 1.5% for Grade 3. In addition, for hard varieties, a maximum of 5% of semi hard varieties is allowed.

[NORMA XX - Resolución SAGPyA 1262/2004](#)

Feed wheat: There are three grades of milling wheat. The tolerances for total foreign matter are 1%, 3% and 8% for Grades 1, 2 and 3, respectively. Within these levels, the tolerances for non-cereal matter are 1%, 2% and 3%, respectively. Total damaged grains are allowed up to a maximum of 2% in Grade 1, 5% in Grade 2, and 8% in Grade 3. Sprouted grain tolerances are 10%, 30% and 50% for Grades 1, 2 and 3, respectively. Other damaged grains are allowed up to a maximum of 15% in Grade 3. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.*

[NORMA XXI bis - Resolución IASCAV 499/96](#)

Australia

Barley: Both malt grade barleys have a minimum varietal purity of 95%. There is no varietal purity standard for feed grade. Malt No.1, 2 and feed barley have a screenings maximum of 7%, 10% and 15% respectively.

A maximum total count of 85 kernels of foreign grain (wheat, cereal rye, triticale, cultivated oats, rice) per half litre are accepted on malt barley and 500 kernels of foreign grain per half litre for feed barley. All grades have a tolerance of 1% for foreign material.

http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/2015_2016/Section%2002%20-%20Barley%20Trading%20Standards%20201516%20Final.pdf

Canola: For all canola (GM and non-GM) and rapeseed varieties, Australia allows a 7% tolerance for split or broken kernels. There is a 10% tolerance for defective canola kernels of which 3% may be diseased, immature, weather damaged and otherwise materially damaged. 5% may be sprouted and 2% may be green. There is a 3% tolerance for impurities for all canola grades which includes all foreign material including canola falling through the 1.0mm round hole screen. 5 of 1000 seeds may be mouldy (0.05%).

http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/2015_2016/201516%20AOF%20Standards%20V14%20-%20August%201%202015.pdf

Oats: Prime Milling and Milling Oats require a varietal purity of 95%. On feed oats, there is no varietal purity requirement. The maximum for unmillable material below the

maximum screenings is 5%. For Milling Oats No.1, the tolerance for damaged grain is 2% and 1% for other foreign materials.

http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/2015_2016/Section%2002%20-%20Oats%20Trading%20Standards%20201516%20Final.pdf

Pulses: Tolerance levels on the full range of pulse crops are between 99.5% and 97% for varietal purity. Allowance for defective kernels ranges from 1.5 to 8%. Mould tolerance levels on most pulse crops are set at 1%. Foreign material allowances are typically set at 3.0%. Allowances for poor colour in pulse crops are set at 3%.

http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/2015_2016/Pulse%20Australia%20Standards%20201516%20Final.pdf

Wheat: For all wheat classes, the maximum threshold for stains including staining due to moist plant material are between 5% for the highest grades and 15% for the lowest grades. There is a 1% tolerance on all grades and classes for frost damage and a 1% and 2% tolerance for insect damage. The maximum threshold for dry green or sappy kernels is 1%. The tolerance for small foreign seed is 0.6% for the highest grades and 1.2% for the lowest grade.

http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/2015_2016/Section%2002%20-%20Wheat%20Trading%20Standards%20201525%20_0%20Final%2016Nov15.pdf

Australia Certified Organic: The Australia Certified Organic certification stipulates that all products bearing the label are made up of no less than 95% organically produced agricultural ingredients, excluding water and salt.

<http://austorganic.com/wp-content/uploads/2013/11/ACOS-2013-final.pdf>

3. Brazil

For Brazil, standards are issued by the Ministry of Agriculture (*Ministério da Agricultura, Pecuária e Abastecimento (Mapa)*).

Dry beans: For common bean (*Phaseolus vulgaris*) and cowpea (*Vigna unguiculata*), there are three grades plus 'out-of-type' plus declassified depending on how the shipment conforms to the marketing standards. Grades 1 to 3 and 'out-of-type' may contain up to a maximum of 4% of foreign matter (this includes seeds of other plant species). There is no such limit for product which is outside the classification (*Desclassificado*).

Tolerance for total mouldy and sprouted grains ranges from 0-1.5% for Grade 1 to 6-12% for 'out-of-type'. Unclassifiable product can contain more than 12% of mouldy and sprouted grains. The same tolerances apply to grains damaged by pests.

Minor defects (i.e., crushed, damaged, immature and broken grains) have tolerances ranging from 0-2.5% for Grade 1 to over 16% for 'out-of-type' grains.

There are also standards for broken beans. These are shipments which must contain at least 70% of broken beans of the common bean and cowpea varieties. Depending on the grade, foreign matter is allowed from a minimum of 0-3% to a maximum of over 6%.

Tolerance for total mouldy and sprouted grains is 0-6% to over 12% for the lowest grade. The same thresholds apply to grains damaged by pests. Minor defects have greater tolerances of up to 32% for the lowest grade.

Canary grass (*Phalaris canariensis*): There is only one grade of canary grass. For this, the tolerances are 4% for foreign matter, 5% for grains still in the husk and 6% (in total) for mouldy and shrivelled grains.

Lentils (*Lens culinaris*): These are classified in four grades. Foreign matter tolerance ranges from 0.5% in Grade 1 to 2.5% in Grade 4 (this includes seeds of other plant species). Pest-damaged grains are allowed up to 0.5% in Grade 1 to 2% in Grade 4. Discoloured and mouldy grains have the same tolerances as pest-damaged grains.

Maize: Brazilian legislation distinguishes between maize destined for human consumption and maize for all other uses.

For food maize, there are three grades plus an 'out-of-type' grade. Total defective grains (*avariados*, which includes discoloured, sprouted, immature, fermented, mouldy, chalky etc grains) cannot exceed 2% for Grade 1 and 6% for 'out-of-type' grains. Non standard size grains are allowed up to 2% in Grade 1 and 4% in 'out-of-type'. Foreign matter thresholds range from 1% for Grade 1 to 2.5% for 'out-of-type' (this includes seeds of other plant species). Pest-damaged grains have tolerances ranging from 1.5% for Grade 1 to 3% for 'out-of-type'.

For maize for uses other than food, tolerances are higher. Total *avariados* are allowed up to 3% in Grade 1 and 8% in 'out-of-type'. Non standard grains thresholds are 2% for Grade 1; if they are higher than 5% the maize is classified as 'out-of-type'. Foreign matter is allowed up to 1% in Grade 1; if it is more than 2%, the grain is classified as 'out-of-type' (this includes seeds of other plant species). Tolerances for pest-damaged grains range from 2% for Grade 1 to 8% for 'out-of-type'.

Pea (*Pisum sativum*): There are five grades of pea depending on how the shipment conforms to the standards. Foreign matter tolerance ranges from 0.5% for the highest grade to 2.5% for the lowest grade (this includes seeds of other plant species). Heat-damaged and fermented grains have the same tolerances as foreign matter. Pest-damaged and mouldy grains have thresholds ranging from 0% for Grade 1 to 2% for Grade 5. Discoloured grains are allowed up to 1% in Grade 1 and up to 8% in Grade 5.

Rice: (Raw) rice is classified in five grades. Discoloured grains cannot be above 0.15% for Grade 1 and 1.5% for Grade 5. Broken grains are allowed up to 1.75% in Grade 1 and 8% in Grade 5. The tolerances for chalky and green grains range from 2% in Grade 1 to 10% in Grade 5. For red and black grains, thresholds are 1% in Grade 1 and 4% in Grade 5. Yellow grains are allowed up to 0.5% in Grade 1 and 5% in Grade 5. The thresholds on impurities (other material from rice processing) and foreign matter (which includes seeds of other plant species) apply to refined rice.

Soybeans: There are different standards for soybeans which are consumed raw and soybeans for processing.

For soybeans that are consumed raw, there are two grades. The maximum tolerances for defective grains (discoloured, charred, mouldy, fermented, sprouted, immature, mechanically- damaged, spotted or pest-damaged, and shrivelled or hollow) are 4% for Grade 1 and 6% for Grade 2. Within these overall limits, discoloured and charred grains are allowed up to 1% and 2% for Grade 1 and Grade 2, respectively. Within these limits, charred grains cannot be over 0.3% and 1% for Grade 1 and Grade 2, respectively. Mouldy grain tolerances are 0.5% for Grade 1 and 1.5% for Grade 2. Broken, non

standard size and mechanically-damaged grains are allowed up to a maximum of 8% in Grade 1 and 15% in Grade 2. Mature grains with green cotyledon can reach up to 2% in Grade 1 and 4% in Grade 2. Foreign matter threshold is 1% for both grades (this includes seeds of other plant species).

For soybeans for processing, the total tolerance for defective grains (discoloured, charred, mouldy, fermented, sprouted, immature, mechanically-damaged, spotted or pest-damaged, and shrivelled or hollow) is 8%. Within this, discoloured and charred grains are allowed up to 4%. Of this, the maximum for charred grains is 1%. Mouldy grains cannot exceed 6%. The thresholds for green grains, broken, non standard and mechanically-damaged grains and foreign matter are 8%, 30% and 1%, respectively.

Wheat: The legislation states that wheat is classified into five classes: soft wheat, breadmaking wheat, enhancing wheat, wheat for other uses and durum wheat. These are defined in terms of their gluten strength and Hagberg falling number.

Each class of bread is further classified into three grades. Foreign matter is allowed up to 1% in Grade 1 and 2% in Grade 3 (this includes seeds of other plant species). The maximum for pest-damaged grains ranges from 0.5% for Grade 1 to 1.5% for Grade 3. Grains damaged by heat are allowed up to 0.5% in Grade 1 and 2% in Grade 3. The tolerances for broken grains are higher at 1.5% for Grade 1 and 5% for Grade 3.

4. Canada

Malt barley: Contracts typically allow up to 5% of other varieties from the one specified on the contract.

Flaxseed: No.1, 2, and 3 brown flaxseed allow 2%, 3% and 4%, respectively, of yellow flaxseed. <http://www.grainscanada.gc.ca/oggg-gocg/11/oggg-gocg-11d-eng.htm>

Oats: No.1, 2, 3 and 4 oats with tolerances of 2%, 4%, 6% and 8%, respectively, on other cereal grains and wild oats.
<http://www.grainscanada.gc.ca/oggg-gocg/07/oggg-gocg-7e-eng.htm>

Peas (dry): Dockage allowances for dry peas are often up to 8%, depending on customer specifications.

Rapeseed/canola: No.1 canola allows for up to 5% damaged kernels (12% and 25% for No.2 and No.3, respectively).
<http://www.grainscanada.gc.ca/oggg-gocg/10/oggg-gocg-10d-eng.htm>

All canola grades allow 5% of “inconspicuous admixture” related to visually indistinguishable varieties of various mustards and carinata that may be present in canola. <http://www.grainscanada.gc.ca/oggg-gocg/10/oggg-gocg-10d-eng.htm>

Dockage allowances on commercially clean canola are often up to 2%, with ‘un-cleaned’ shipments much higher depending on customer specifications.

Soybeans: No.1, 2, 3 and 4 soybeans have tolerances for “other coloured soybeans” of 2%, 3%, 5% and 10%, respectively.
<http://www.grainscanada.gc.ca/oggg-gocg/20/oggg-gocg-20f-eng.htm>

Wheat: No.1, 2, and 3 CWRS wheat allows for 2.3%, 4.5%, and 7.5%, respectively, of wheat of other classes or varieties – further relevant as this includes an allowance for unregistered wheat varieties. <http://www.grainscanada.gc.ca/oggg-gocg/04/oggg-gocg-4e-eng.htm>

No.1, 2, 3, and 4 CWAD wheat allows for 4%, 7.5%, 11% and 49%, respectively, of wheat of other classes or varieties.
<http://www.grainscanada.gc.ca/oggg-gocg/04/oggg-gocg-4e-eng.htm>

No.1 and 2 CPSR wheat allows for 5% and 10%, respectively, of wheat of other classes or varieties. <http://www.grainscanada.gc.ca/oggg-gocg/04/oggg-gocg-4e-eng.htm>

No.1, 2 and 3 CWSWS wheat allows for 3%, 6% and 10%, respectively, of wheat of other classes or varieties. <http://www.grainscanada.gc.ca/oggg-gocg/04/oggg-gocg-4e-eng.htm>

The Canadian Organic Products Regulations: Only multi-ingredient products, the contents of which are at least 95% organic products and single ingredient organic products, may bear the logo “Canada Organic”.
<http://canadagazette.gc.ca/partII/2006/20061221-x6/pdf/g2-140x6.pdf>

5. China

For China, the grading standards are set by the Government.

Maize: There are six maize grades in China (1 to 5, and substandard). The maximum percentage of unsound kernels ranges from less than 4% for Grade 1 to less than 15% for Grade 5. No such limit applies to substandard maize. For all grades, up to 1% of foreign matter is allowed.

Rice: There are two main classes of rice in China: standard and higher quality. Within each, there are four different types of rice: milled long grain non-glutinous, milled medium to short grain non-glutinous, milled long grain glutinous and milled medium to short grain glutinous.

Each category of non-glutinous rice is further subdivided into four and three classes, for standard and higher quality rice, respectively. For both qualities, each category of glutinous rice is split into three classes.

For standard rice, total broken kernels are allowed up to 15% for the highest grade of long grain rice (both non-glutinous and glutinous) and up to 7.5% for medium to short grain rice (both non-glutinous and glutinous). For higher quality rice, the tolerances are 5% for long grain rice and 2.5% for medium to short grain rice.

For standard rice, unsound kernels are allowed up to a maximum of 6% in the lowest grades. In higher quality rice, the maximum threshold is 4% for the lowest grades.

Maximum foreign matter in standard-quality rice is allowed up to 40% in the lowest grades. Higher-quality rice has a lower threshold of 30%.

The tolerances for yellow kernels and other varieties of rice are 1% and 5%, respectively, for both standard and higher quality.

In addition to the standards above, higher-quality rice also has thresholds for chalky kernels (ranging from 10% to 30% in the various grades of non glutinous rice), taste and flavour (minimum 75%) and amylose content. This should be less than 2% in glutinous rice.

Soybeans: Soybeans of standard quality are subclassified into five grades. Damaged kernels are allowed up to 8% in the lowest grade; for Grade 1, the maximum permitted is 1%. Foreign matter cannot exceed 1% for all grades. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.*

Wheat: There are six wheat grades in China (1 to 5, and substandard). Unsound kernels are allowed up to 6% in Grade 1 and 10% in Grade 5. No limit applies to wheat of substandard Grade. Total foreign matter is admitted up to 6% for all grades. Within this limit, stones and other mineral matter cannot exceed 5%. *No references to 'inconspicuous admixture' or tolerances for 'unregistered varieties' in these standards.*

6. France

In France, as in Spain, the large majority of the requirements are established by private contracts among parties.

There are, however, EU-wide regulations which set the classification standards for imported products. This is for the purpose of import duties.

Wheat, maize, rye, barley and sorghum: The classification standards for imported products are set in Commission Regulation (EU) [No 642/2010](#). [Maximum impurity percentage](#) is set at 1.5% for common and durum wheat of high and medium quality. No minimum standard is set for low quality wheat and for the other grains.

Malting barley: INCOGRAIN (the Parisian Union of Grain Producers and Traders) sets the following standards for malting barley which are to be used in the absence of contractual specifications: foreign matter and other cereals are allowed up to 2%; tolerance for sunflower seed is 1 sunflower seed per 50 kilograms of barley; the threshold for inert matter, seeds other than cereals (except for sunflower), rotten, decayed or totally heated grains is 1%.

Organic Farming - EC Control System: (Regulation (EEC) No 2092/91) to be used by producers whose systems and products have been found on inspection to satisfy EU regulations. Consumers buying products bearing this logo can be confident that at least 95% of the product's ingredients have been organically produced.
http://ec.europa.eu/agriculture/qual/organic/logo/index_en.htm

7. Indonesia

The grain grading standards in Indonesia are issued by the Research Centre for Quality Systems and Technology Testing of the Institute of Science.

Maize: For feed maize, broken kernels are allowed up to 5%. The same threshold of 5% applies to grains of other colour. Foreign matter tolerance is 2%.

Rice: There are five grades of rice in Indonesia. The tolerance for broken grains ranges from 5% in Grade 1 to 35% in Grade 5. Hulled and crushed grains are allowed up to a maximum of 5% in Grade 5. No hulled or crushed grains are allowed in Grade 1. The maximum for red grains ranges from 0% in Grade 1 to 3% in Grade 5. Yellow and broken grains are not allowed in Grade 1 but are allowed up to 5% in Grade 5. No

foreign matter is allowed in Grade 1 but up to 0.2% is allowed in Grade 5. The limits for chalky grains are 0% in Grade 1 and 5% in Grade 5.

8. Japan

Grading standards are set by *MAFF*, the Japanese Agriculture Ministry.

Rice: For non-glutinous brown rice and brown paddy rice, 15%, 20% and 30% of maximum overall impurities are allowed for Grade 1, 2 and 3, respectively. The tolerance for other grains is 0.7% for Grade 1 and 2.7% for Grade 3. Foreign matter threshold is between 0.2% and 0.6%.

http://www.maff.go.jp/j/seisan/syoryu/kensa/kome/k_kikaku/index.html

Soybeans: For domestic soybeans, the thresholds for total defective grains/impurities range from 15% for Grade 1 to 30% for Grade 3. Soybeans for processing have a higher threshold of 35% for total defective grains and impurities.

Within these limits, there are tolerances for badly damaged grains (up to 4% for Grade 3), other grains (up to 2% for Grade 3). The tolerance for foreign matter is 0% across all grades. <http://www.jsapa.or.jp/daizu/torihiki21/DaizuKikaku.html>

Wheat: For both soft and hard wheat, up to a maximum of 0.5% of foreign grain is allowed for Grade 2; this is 1% for Grade 1. For foreign matter, the percentages are 0.5% for Grade 1 and 0.7% for Grade 2.

Total impurities, including foreign matter and grains, should not exceed 5% for Grade 1 and 15% for Grade 2 for both soft and hard wheat.

<http://www.maff.go.jp/j/seisan/syoryu/kensa/mugi/pdf/kikakumg.pdf>

9. Mexico

In Mexico, the grain grading standards are set by the *Secretaria de Comercio y Fomento Industrial*.

Beans (*Phaseolus vulgaris*): This crop is classified into three classes depending on its quality: premium (*extra*), first class and second class.

The tolerance for total impurities and foreign matter ranges from 0.8% for the premium class to 2% for the second class. Within this upper limit, a maximum of 0.3% for stones and 0.5% for others is allowed for the premium class. For the second class, the upper limit is 1% for both stones and others.

The tolerance for damaged grains ranges from 3% for the premium class to 4.9% for the second class. Within this maximum, there are various tolerances for the different types of damage (heat, insects and rodents, etc).

The upper limits for contrasting varieties is set at 1%, 2% and 3% for the premium class, first class and second class, respectively. For similar varieties, the tolerances are 2%, 4% and 8% for the premium class, first class and second class, respectively.

Defective grains are allowed up to 4% in the premium class; this increases to 11% for the second class. Within these upper limits, there are various tolerances for the different types of defect.

Maize: White maize destined for human consumption is categorised into three classes depending on its quality.

Impurities are allowed up to 2% in Grade 1 and up to 3% in Grade 3. Impurities are defined as any type of foreign matter which is different from the maize grain or parts of the maize grain. The tolerances for heat damaged grains are 1.5% for Grade 1 and 3.5% for Grade 3. The overall total for damaged grains should not exceed 5% in Grade 1 and 10% in Grade 3. This includes germinated grains, grains damaged by insects and rodents, fungi-damaged grains etc)

The maximum for grains that have been damaged (during harvest or handling) ranges from 3% for Grade 1 to 4% for Grade 3.

Yellow maize which is used for the production of starch and derivative products is categorised into three classes depending on its quality: Mexico 1, Mexico 2 and Mexico 3.

The maximum for impurities and damaged grains (*quebrados*) is set at 2%, 3% and 4% for Mexico 1, Mexico 2 and Mexico 3, respectively. Impurities are defined as any type of foreign matter which is different from the maize grain and parts of the grain of maize which can get through a sieve with round holes having a diameter of 4.76 millimeters and all matter that remains on top of the screen which is not maize (such as stones, cob debris, etc).

The tolerance for heat damage is 0.2%, 0.5% and 1% for classes Mexico 1, Mexico 2 and Mexico 3, respectively. The total for all damaged grains (including weather-damaged, fungi-damaged, and damages from rodents and insects) cannot exceed 3%, 5% and 7% for classes Mexico 1, Mexico 2 and Mexico 3, respectively.

Sorghum: Sorghum for food use is classified into four grades.

Heat-damaged grains are allowed up to 0.2% in Grade 1, increasing to 3% in Grade 4. The maximum tolerances for damaged grains (all damages including heat) ranges from 2% in Grade 1 to 15% in Grade 4.

Broken grains (*quebrados*) are allowed up to a maximum of 2.5% in Grade 1 and 8.5% in Grade 4. Impurities are tolerated up to 1.5% in Grade 1; this increases to 4.5% in Grade 4.

The tolerance for sorghum containing tannins is 3% across all four grades.

Wheat: Wheat is classified into three classes depending on the quality parameters: Mexico 1, Mexico 2 and Mexico 3.

The tolerance for damaged grains is 2%, 4% and 7% for classes Mexico 1, Mexico 2 and Mexico 3, respectively. Broken grains (*quebrados*) are allowed up to 3% in Mexico 1; this increases to 8% in Mexico 3.

The upper limit for impurities is 2% in class Mexico 1, 3% in class Mexico 2 and 5% in class Mexico 3. Total defective grains cannot exceed 4% in class Mexico 1 and 9% in class Mexico 3.

The maximum for wheat of contrasting (*contrastantes*) classes is 1%, 2% and 3% for classes Mexico 1, Mexico 2 and Mexico 3, respectively. The maximum for wheat of

contrasting (*contrastantes*) groups (with varying gluten levels) is 3%, 5% and 10% for classes Mexico 1, Mexico 2 and Mexico 3, respectively.

10. Paraguay

The grain grading standards for Paraguay are issued by the *Instituto Nacional de Tecnología y Normalización*.

Maize: The standards apply to both dent and flint maize. Depending on the quality, maize shipments are classified into three grades: 1, 2 and 3.

Foreign matter tolerances are 1%, 1.25% and 1.5% for Grades 1, 2 and 3, respectively. This includes seeds of other plant species. A maximum of 3% is allowed in Grade 1 for damaged grains; this increases to 8% in Grade 3. Within these limits, heat-damaged grains are tolerated up to 1% in Grade 1 and 3% in Grade 3, and insect-damaged grains are allowed up to 0.5% in Grade 1 and 1% in Grade 3.

Broken grains and pieces of corn grain that pass through a sieve with round holes having a diameter of 4.76 millimeters are allowed up to 5% in Grade 1 and 10% in Grade 3.

Wheat: There are three classes of wheat depending on the quality. Foreign matter (including seeds of other plant species) allowance is 0.5%, 1% and 2.5% for Grades 1, 2 and 3, respectively.

The upper limit for grains that exhibit a dark colour (due to fermentation) or a white-ish colour is 0.5% for Grade 1 and 1.5% in Grade 2. Total damaged grain tolerance is 1.5% for Grade 1 rising to 5% for Grade 3.

There are limits for grains with a black tip (as this affects the colour of the flour) of up to 0.1% in Grade 1 and 0.3% in Grade 3. The tolerance for grains with white spots is 15% in Grade 1 and 40% in Grade 3. The tolerances for wheat grains of breadmaking quality which show no damage and pass through a sieve having dimensions of 1.6 millimetres by 9.5 millimetres are 0.8% for Grade 1 and 3.5% for Grade 3.

11. Philippines

The grain grading standards are issued by the Bureau of Product Standards within the Department of Trade and Industry.

Maize: The maize grades range from Premium to Number 3. The highest thresholds are for the lower grade (Number 3). Corn of other colour is allowed up to 8%, damaged kernels are allowed up to 10%. Shrivelled and immature, and broken kernels have a maximum tolerance of 7% and 6%, respectively. No more than 2% of foreign matter is allowed (this includes other crop seeds).

12. South Africa

In South Africa, the marketing standards are set by the Department of Agriculture, Forestry and Fisheries.

Maize: Standards are set for white and yellow maize. For each type, shipments are categorised in three classes. The highest tolerance is for defective maize kernels. These can reach up to 30% in Grade 3 for both white and yellow maize. White maize allows for up to 10% of other colour grains. The percentage is lower for yellow maize, which allows up to 5% of other colour grains. Pinked maize kernels are allowed up to 12% across all grades of white maize. <http://www.agbizgrain.co.za/uploads/documents/regulations-maize.pdf>

Soybeans: The tolerance for foreign matter is 4%. This includes stones, sunflower seeds and other grains, each of which has its own maximum ranging from 0.1% for sunflower seeds to 1% for stones. Both defective and soiled soya beans are allowed up to 10% each. http://www.nda.agric.za/daoDev/sideMenu/foodSafety/doc/localImportRegulations/gg37741_nn478%20APS%20Regulations%20re%20soya%20beans%20RSA.pdf

Sunflower seeds: For all classes, up to 10% of damaged seeds is allowed. Up to 6% of screenings, sclerotia and foreign matter is allowed collectively. Each of these has a maximum of 4%. http://www.gov.za/sites/www.gov.za/files/39613_gon45.pdf

Wheat: There are two grades for soft wheat. For this type, up to 2% of damaged kernels are allowed in both grades. Within this maximum, the tolerance for heat-damaged kernels is up to 0.5%. Both grades allow up to 1% for foreign matter, within this limit, gravel, sand, stones and glass have a tolerance of 0.5%. For both grades, heavily frost damaged kernels have a tolerance of 5%, field fungi infected kernels are allowed up to 2%, storage fungi infected kernels up to 0.5%. No more than 3% and 1% is allowed for screenings, and other grain and unthreshed ears, respectively. http://www.gov.za/sites/www.gov.za/files/39613_gon44.pdf

13. Spain

In Spain, as in France, the large majority of the requirements are established by private contracts among parties.

There are, however, EU-wide regulations which set the classification standards for imported products. This is for the purpose of import duties.

Wheat, maize, rye, barley and sorghum: The classification standards for imported products are set in Commission Regulation (EU) [No 642/2010](#). [Maximum impurity percentage](#) is set at 1.5% for common and durum wheat of high and medium quality. No minimum standard is set for low quality wheat and for the other grains.

Organic Farming - EC Control System: [Regulation (EEC) No 2092/91] to be used by producers whose systems and products have been found on inspection to satisfy EU regulations. Consumers buying products bearing this logo can be confident that at least 95% of the product's ingredients have been organically produced.

http://ec.europa.eu/agriculture/qual/organic/logo/index_en.htm

95% of the product's ingredients have been organically produced.

http://ec.europa.eu/agriculture/qual/organic/logo/index_en.htm

14. United States

Barley: U.S. No.1, 2, 3 and 4 Six-Row malting barley allows for 4%, 6%, 8% and 10% of skinned and broken kernels and 0.5%, 1%, 2% and 3% of foreign material and 2%, 3%, 4% and 5% of other grains. To be considered six-rowed barley, samples cannot contain more than 10.0% of two-rowed varieties. U.S. No. 1, 2, 3, 4 and 5 of feed barley allows for 4%, 8%, 12%, 18% and 28% of broken kernels respectively, and 1%, 2%, 3%, 4% and 5% respectively of foreign material. Neither malt nor feed barley can contain more than 4% of fungus-damaged and/or mould-damaged kernels.

<http://www.gipsa.usda.gov/fgis/standards/810barley97.pdf>

Canola: U.S. No. 1, 2 and 3 canola allow for 3%, 10% and 20% kernel damage as well as 1%, 1.5% and 2% of conspicuous admixtures including stones, ergot and sclerotinia.

<http://www.gipsa.usda.gov/fgis/standards/810canola.pdf>

Corn: U.S. No. 1, 2, 3, 4 and 5 corn allows for 3%, 5%, 7%, 10% and 15% total damaged kernels and 2%, 3%, 4%, 5% and 7% of broken corn and foreign materials, respectively. FGIS Special grades and special grade requirements for Flint corn: corn that consists of 95% or more of Flint corn (5% tolerance). Waxy corn: corn that consists of 95% or more waxy corn according to procedures prescribed in FGIS instructions (5% tolerance). Yellow corn: corn that is yellow-kernelled and contains no more than 5% of corn of other colours. <http://www.gipsa.usda.gov/fgis/standards/810corn.pdf>

Wheat: All eight U.S. wheat classes namely: 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 have the same tolerance levels and are as follows:

- No.1, 2, 3, 4 and 5 allow for 2%, 4%, 7%, 10% and 15% of damaged kernels, respectively.
- No.1, 2, 3, 4 and 5 allow for 0.4%, 0.7%, 1%, 3%, and 5% of foreign material, respectively.
- No.1, 2, 3 4 and 5 allow for 1%, 2%, 3%, 10% and 10%, respectively, of wheat of other classes or contrasting classes.
- Every class and grade also allows for 0.1% of stones.

<http://www.gipsa.usda.gov/fgis/standards/810wheat.pdf>

Soybeans: U.S. No.1, 2, 3 and 4 soybeans allow for 1%, 2%, 3% and 5% of foreign material, respectively. U.S. No.1, 2, 3 and 4 soybeans allow for 1%, 2%, 5% and 10% of soybeans of other colors. U.S. No. 1, 2, 3 and 4 soybeans allow for 10%, 20%, 30% and 40% of split peas. <http://www.gipsa.usda.gov/fgis/standards/810soybean.pdf>

Whole dry peas and lentils: For both dry peas and lentils after the removal of dockage, sample must contain 50% or more of whole peas or lentils and not more than 10% of foreign material. <http://www.gipsa.usda.gov/fgis/standards/lentils.pdf>;
<http://www.gipsa.usda.gov/fgis/standards/wholedrypeas.pdf>

Rice: Tolerance for chalky kernels runs between 1% for the highest grade and 15% for the lowest grade. <http://www.gipsa.usda.gov/fgis/standards/ricestandards.pdf>

Organic Standard: The USDA Organic Seal may appear on organic agricultural products that are certified 100% organic or products that are certified as containing at least 95% organic ingredients. <http://www.ams.usda.gov/NOP/indexIE.htm>

15. Vietnam

For long grain rice (milled), the grading standards reported below are published on the website of [EMS Intercontinental](#), a grain trading commodity located in the US.

Depending on the percentage of broken grains, rice shipments are classified into five classes. Class 1 contains a maximum of 5% of broken grains; classes 2, 3 and 4 contain 10%, 15% and 25% of broken grains, respectively. Class 5 consists of broken rice containing 100% of broken grains.

Foreign matter tolerances range from 0.1% in Class 1 to 0.4% in Class 5. Paddy rice grains are allowed up to 12 grains per kilogram in Class 1, 15 grains per kilogram in Class 2, 17 grains per kilogram in Class 3 and 22 grams per kilogram in Class 4. The limit in Class 5 is 25 grains of paddy rice per kilogram.

16. Agricultural biotechnology

For agricultural biotechnology specifically, there are several examples of tolerances that are set to trigger documentation or labelling at the 5% level, including:

- NAFTA trilateral arrangement for labelling a cargo to comply with BSP BCH listing: <http://bch.biodiv.org/database/record.shtml?id=7375>
- GM food labelling tolerance for products derived from modern biotechnology for Japan.
- Voluntary GM food labelling tolerance for Hong Kong.

The EU sets an allowable threshold for GMO content, Regulation (EC) No [1829/2003](#) of the European Parliament, establishing a 0.9 % limit in Article 12.