Not Standardized Grain, Commodity or Processed Commodity.

Inspection methods for

grains, pulses, oilseeds and specialty crops for which no standards have been established
processed commodities from standardized and not standardized crops
and screenings derived from cleaning or handling agricultural products.

Introduction

This handbook is to describe the procedure to determine certain quality factors for agricultural crops that have not had standards established. When crops are newly introduced into the market, normally the acreage is small and the market is not well established. These procedures will provide the market with factors that are typical to most commodity types. As the market develops, standards may be developed for a commodity as appropriate.

From a historical perspective, a commodity which fits this example would be Hulless Waxy Barley. This specialty crop was introduced into the market in the 1980's as a specialty feed and food crop. The Montana Department of Agriculture – State Grain Lab in cooperation with industry representatives developed grading standards in 1991 to describe the unique factors of this crop.

A partial list of examples of known not standardized grains, commodities and processed commodities include:

Millet Seed
Canary Seed
Alfalfa Seed
Emmer
Einkorn
Mustard screenings
Lentil screenings
Grain screenings

These procedures are not limited to the proceeding list. These procedures are not intended for seed, weed seed, grain for seed, forages, fruits, vegetables, spices, herbs, nuts, hops, tea, coffee, nursery stock or similar products that have quality standards addressed by other rules or regulations.

Inspection factors

Definition of Not Standardized Commodity

Any commodity is considered not standardized if standards have not been established for that commodity. Federal standardized grains under the USGSA (United States Grain Standards Act) include barley, canola, corn, flaxseed, mixed grain, oats, rye, sorghum, soybeans, sunflower seed, triticale and wheat. Federal standardized commodities under the AMA (Agricultural Marketing Act) include rice, whole dry peas, split peas, lentils, feed peas and beans. Montana standardized commodities include hulless barley, rape seed, cultivated buckwheat, mustards, crambe, camelina, Khorasan, safflower and spelt.

Basis of Determination: Normally, a visual appraisal of the sample is sufficient to determine if it meets the definition of not standardized commodity.

Type of Commodity

The type of commodity may be stated by the applicant. A visual inspection of the commodity type shall be done and confirmed with appropriate reference materials. These references include FGIS VRI (http://www.gipsa.usda.gov/fgis/educout/graingallery.html) and the USDA GRIN (http://www.ars-grin.gov/npgs/aboutgrin.html)

Certification: The sample is to be designated as "Not Standardized Commodity" in what is normally called the grade line of the certificate. The type of commodity is entered into the remarks section of the certificate.

On grade line

Not Standardized Commodity

In remarks section

Commodity determined to be "Yellow Pea Flour"

Applicant states sample consists of "Barley Screenings"

PERCENTAGES

Determine percentages on a weight basis to a nearest tenth percent except for stones and ergot. Report stones and ergot to the nearest hundredth percent. Calculate percents by dividing the weight of the material removed by the weight of the portion used and multiplying by 100.

Upon request by applicant, stones will be recorded by count as well as by the percentage.

Table No. 1 – How Factors Are Recorded

NEAREST TENTH PERCENT	NEAREST HUNDREDTH PERCENT	BY COUNT
Damaged Kernels (Total) Foreign Material Damaged Kernels	Ergot Stones	Animal Filth Glass Insects Large Debris Stones Unknown Foreign Substance(s) or a Commonly Recognized Harmful or Toxic Substance(s)

Special Determinations

DISTINCTLY LOW QUALITY: The determination of distinctly low quality is made on the basis as a lot as a whole at the time of sampling when a condition exists that may or may not appear in the representative sample and/or the sample as a whole.

CERTAIN QUALITY DETERMINATIONS: Each determination of rodent pellets, bird droppings, other animal filth, broken glass, dockage, live insect infestation, large stones, temperature, and unknown foreign substance(s), and a commonly recognized harmful toxic substance(s) is made on the basis of the sample as a whole. When a condition exists that may not appear in the representative sample, the determination may be made on the basis of the lot as a whole at the time of sampling.

Table No. 2 – Basis of Determination

Lot as a Whole	Sample Before the Removal of Foreign Material	After the Removal of Foreign Material
Distinctly Low Quality Infestation Heating Odor Type of Commodity	Infestation Odor Animal Filth Glass Unknown Foreign Substances Type of Commodity	Stones Ergot Odor Hand Picked Foreign Material Damaged Kernels

A general procedure based on the "basis of determination" definition is followed in the inspection of not standardized commodities. However, the procedure may vary according to the test required to determine the factors. The following sections of this chapter are arranged in a logical sequence typically followed in the inspection.

HEATING

A commodity developing a high temperature from excessive respiration is considered heating. Heating in its final stages usually produces a sour or musty odor. Care should be taken not to confuse commodity that is heating with commodity that is warm and moist because of storage in bins, railcars, or other containers during hot weather.

Basis of Determination: Determine heating on evidence obtained at the time of sampling.

ODOR

Basis of Determination: Determine odor on evidence obtained at the time of sampling and on the sample either before or after the removal of foreign material. Odors detected at the time of sampling must be recorded on the work record.

Table No. 4 – Odor Classification Examples

SOUR	MUSTY	COMMERCIALLY OBJECTIONABLE FOREIGN ODORS
Boot Fermenting Insect (acrid) Pigpen Smoke	Ground Insect Moldy	Animal hides Decaying animal & vegetable matter Fertilizer Fumigant Insecticide Oil products Skunk Smoke (evidence of fire-burnt material) Strong weed

Musty or Sour Odors: High temperatures resulting from excessive respiration causes the commodity to heat and give off a Musty or Sour odor.

Musty or sour odors in a commodity include musty, sour, earthy, moldy, ground odor, or a rancid, sharp, and acrid insect odor. An acrid insect odor (usually referred as "lesser grain borer" odor) is considered sour. An insect odor other than acrid (usually referred to as "bran bugs" odor) is considered musty.

Commercially Objectionable Foreign Odor: Commercially objectionable foreign odor are odors that are foreign to grain or commodities and render it unfit for normal commercial usage.

Fumigant or insecticide odors are considered objectionable foreign odors if they linger and do not dissipate. When a sample of a commodity contains a fumigant or insecticide odor that prevents a determination as to whether any other odor(s) exist(s), apply the following guidelines:

A. Allow the sample to aerate in an open metal container not to exceed four (4) hours; and

B. If the fumigant odor persists after four (4) hours, consider the sample as having a commercially objectionable foreign odor and grade it accordingly.

The inspector(s) is responsible for making the final determination for all odors. A consensus of experienced inspectors is used, whenever possible, on samples containing marginal odors. The consensus approach is not required if no odor or a distinct odor is detected.

Certification: The detected odor is to be reported in the results section of the certificate.

Infestation

Basis of Determination: Determine infestation on the basis of the sample as a whole.

Commodity or screenings that are infested with live weevils or other live insects injurious to stored grain. The presence of any live weevil or other live insect injurious to stored grain indicates the probability of infestation and warns you to examine carefully the commodity or screenings to determine if it is infested. In such cases, examine the work and file sample before reaching a conclusion as to whether the commodity or screenings are infested. Do not examine the file sample if the work portion is insect free.

Live weevils include rice weevils, granary weevils, maize weevils, cowpea weevils, and lesser grain borers. Other live insects injurious to stored grain include grain beetles, grain moths, and larvae. (See Grain Inspection Handbook, Book II, Chapter 1, Section 1.2, Visual Grading Aids for Insects Commonly Found in Grain.)

Certification: The word "infested" to follow the commodity type in the remarks section. In remarks section

Example: Commodity determined to be "Emmer" - Infested

ANIMAL FILTH, GLASS AND UNKNOWN FOREIGN SUBSTANCE

Basis of Determination: Determine animal filth, glass, and unknown foreign substances on the basis of the sample as a whole.

Certification: The number (count) or percentage of contaminants is to be reported in the results section of the certificate.

MOISTURE CONTENT

Moisture content will be determined on an electronic moisture meter with appropriate calibrations for the commodity type. If no calibrations are available, moisture content will not be reported.

Basis of determination: The moisture determination shall be made on a representative portion cut from the original sample.

Certification: The moisture percentage to the nearest tenth of is to be reported in the results section of the certificate.

Foreign Material / Percent of Commodity

A foreign material analysis will be performed on samples with an identified commodity type. Foreign material analysis is not to be performed on screenings. The inspector will use appropriate screens and setting in the Carter Dockage machine to separate foreign material from the commodity. Additional hand sieving and hand picking may be conducted to rescreen or further process the sample.

Upon request a percent of commodity analysis may be performed on screenings, which is defined as the percentage of a stated commodity in a sample.

Basis of Determination

Foreign material is determined on a representative sample of a the original sample of sufficient size to provide approximately 1000 grams for cereals, pulse or other large seeded commodities and 500 grams for oilseeds and other small seeded commodities. Hand picking may be performed on a mechanically cleaned and mechanically partitioned sub portion of the work sample.

Certification: The foreign material to the nearest tenth is to be reported in the results section of the certificate. The percent of commodity is to be reported in the remarks section of the certificate.

Test Weight

Test weight is the weight per bushel as determined using a standardized device and procedure described in Book II, Chapter 1 Section 1.11 of the FGIS Grain Inspection Handbook.

Basis of Determination: Determine test weight after removing mechanically separated foreign material. Use enough sample to overflow the test kettle. This amount is 1000 to 1050 grams for grains and pulse crops. Oils seeds and other small seeded crops test weight may be performed on a pint test kettle using 500 grams or a $1/8^{th}$ quart test kettle using 125 grams.

Certification: The test weight to the nearest tenth is to be reported in the results section of the certificate.

Sizing

A sizing determination may be performed upon request of the applicant. This procedure separates the mechanically cleaned portion of the sample into two or more portions based on screen size. The screen size is to be determined by the applicant. Available screen sizes may be obtained by contacting the Montana State Grain Lab.

Basis of Determination: Determine sizing of a grain on a mechanically cleaned portion of approximately 250 grams. Determine sizing on large seeded commodities on a mechanically cleaned and defect free portion of approximately 250 or 500 grams. Determine sizing on small seeded commodities on a mechanically cleaned of approximately 50 or 125 grams.

Mechanical Sieving Method

1. Mount the sieve and bottom pan on the mechanical sieve shaker.
2. Set the stroke counter for 30 strokes for grains and 20 strokes for pulses.
3. Place commodity in center of top sieve.
4. Return the material lodged in the perforations to the commodity which remained on top of the sieve.

Certification:

Certify the sizing in the remarks section of the certificate as the percentage above and the percentage thru the screens designated by the applicant.

For Grain:

Grain thru a 0.064 x 3/8 oblong-hole sieve: 2.5%

For Defect Free Commodities:

Sound remaining on top of a 22/64RH sieve: 66.9%.
Sound thru a 22/64 sieve and remaining on top of a 20/64RH sieve: 27.9%.
Sound thru a 20/64 sieve and remaining on top of a 18/64RH sieve: 5.2%.

Stones, Excreta and Ergot

A determination of the count of stones, excreta and ergot will be performed on commodities. Stones shall be concreted, earthy, or mineral matter and other substances of similar hardness which will not disintegrate readily in water. Ergot is a hard, reddish-brown or black grain-like mass of certain parasitic fungi that replaces the kernels of Khorasan. (Reference: Visual Reference Image VRI - OF-Ergot.) Excreta are rodent or bird droppings (Reference: Visual Reference Image VRI - OF-Animal Filth.)

Basis of Determination: Determine Stones, Excreta and Ergot on a mechanically cleaned portion of the sample. This is approximately 1000 grams for grains and large seeded commodities and 500 grams for small seeded commodities. This factor is not appropriate for screenings.

Certification: Record the number of contaminates in the results section of the certificate. Record the percentage of stones or ergot to the nearest hundredth of a percent.

Damages

Kernels that are heat-damaged, germ damaged, mold damaged, weather damaged, sprout damaged, immature or green are considered damaged. The inspector shall use the FGIS line slide for a standardized commodity which most closely relates to the not standardized commodity. This analysis will not be performed on screenings.

Note: You may use any Visual Reference Image VRI as long as it closely resembles the commodity that you are working on. Take into consideration the size of the commodity also.

Analysis of damaged kernels is performed on a mechanically separated and foreign material free portion of the sample. This portion size should have approximately 1000 kernels, where each kernel represents approximately 0.1% of the portion.

Certification: The total damages and types of damages to the nearest tenth are to be reported in the results section of the certificate.