

## **INSPECTION OF WHOLE BUCKWHEAT GROATS PURCHASED BY THE FARM SERVICE AGENCY**

### **1. PURPOSE**

This directive establishes procedures under the Agricultural Marketing Act of 1946, as amended, for the factor analysis of whole buckwheat groats purchased by the Farm Service Agency (FSA) for use in the United States Food Assistance Program.

### **2. REPLACEMENT HIGHLIGHTS**

This is a new directive.

### **3. GENERAL INFORMATION**

Buckwheat is one of many agricultural food commodities assigned to the Federal Grain Inspection Service (FGIS) for standardization, classing, inspection, grading, sampling, or testing. Despite its name, buckwheat is not related to wheat and is not a true cereal grain, but rather a fruit of a plant (Fagopyrum genus) belonging to the same family as rhubarb. Buckwheat groats are the raw buckwheat kernels with their inedible black hull removed. Buckwheat groats are either white (unroasted) or brown (roasted) in color.

There are no classes, subclasses, or grades for whole buckwheat groats. Inspection is on a factor only basis. The factors analyzed for FSA purchases are odor, moisture, whole buckwheat groats, unhulled buckwheat kernels, foreign material, admixture, purity, stones, live insects, and dead insects. Factor results are reported on a Commodity Inspection Certificate.

### **4. HOW FACTOR PERCENTAGES ARE REPORTED**

Except for purity and stones, all percentages are reported in whole and tenth percent to the nearest tenth percent. Purity and stones are reported to a hundredth of a percent without rounding (e.g., 98.997 = 98.99 percent for purity, and 0.059 = 0.05 percent for stones).

### **5. SAMPLING PROCEDURE**

Sample whole buckwheat groats using procedures outlined in Chapter 2, Sampling, of either the Bean Inspection Handbook or the Rice Inspection Handbook.

**6. BASIS OF DETERMINATION**

Except for odor, make all determinations on the sample as a whole. Determine odor either on the sample as a whole or on the sample after removing admixture.

**7. ODOR**

**Basis of Determination.** Determine odor at the time of sampling, or on the sample either before or after removing admixture. Determine odor based on the lot as a whole, or a representative sample as a whole, or a representative portion of whole buckwheat groats.

Table No. 1 shows examples of odor classification:

**TABLE NO. 1**

Sour	Musty	COFO *
Boot Fermenting Insect (acid) Pigpen	Ground Insect Moldy	Animal hides Decaying animal and vegetable matter Fertilizer Fumigant Insecticide Oil products Skunk Smoke Strong weed

\* Commercially Objectionable Foreign Odors are odors foreign to grain or commodities that renders it unfit for normal commercial usage.

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

**Original Inspections.** Allow the work portion to aerate in an open container for 4 hours, or less, if the odor dissipates in less time.

**Appeal, and Board Appeal Inspections.** Allow unworked file samples and new samples to aerate in an open container for 4 hours, or less, if the odor dissipates in less time. The 4-hour aeration requirement does not apply when the original work portion was aerated and retained as the final file.

Consider the sample as having a commercially objectionable foreign odor if fumigant or insecticide odor persists based on above criteria.

**Final Determinations.** The inspector 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.** Record the words "Musty," "Sour," or "Commercially Objectionable Foreign Odor" on the work record and in the "Remarks" section of the certificate.

## 8. MOISTURE

Water content is determined by an approved device in accordance with procedures prescribed in FGIS instructions. For the purpose of this directive, "Approved Device" includes the Dickey-John GAC 2100.

**Basis of Determination.** Determine moisture on the sample as a whole.

**GAC 2100 Calibration.** The range of calibration is limited to 13-16 percent moisture. (When sample moisture falls outside the valid moisture range, the GAC 2100 will give an extrapolated moisture reading with an error message.) Use the following statement when sample moisture falls outside the valid sample range:

"Moisture content exceeds 16 percent." or "Moisture content less than 13 percent."

**Calibration Constants.** Before determining GAC 2100 moisture on buckwheat groats, install the calibration constants as explained in the Operators Manual (Chapter 6, page 26).

000615	K5: 2100
K1: 0718	K6: 2070
K2: 1923	K7: 1613
K3: 1267	K8: 1599
K4: 0931	K9: 1104

Take moisture measurements at or near room temperature with sample temperature within the range of 60-85 F (16-29 C).

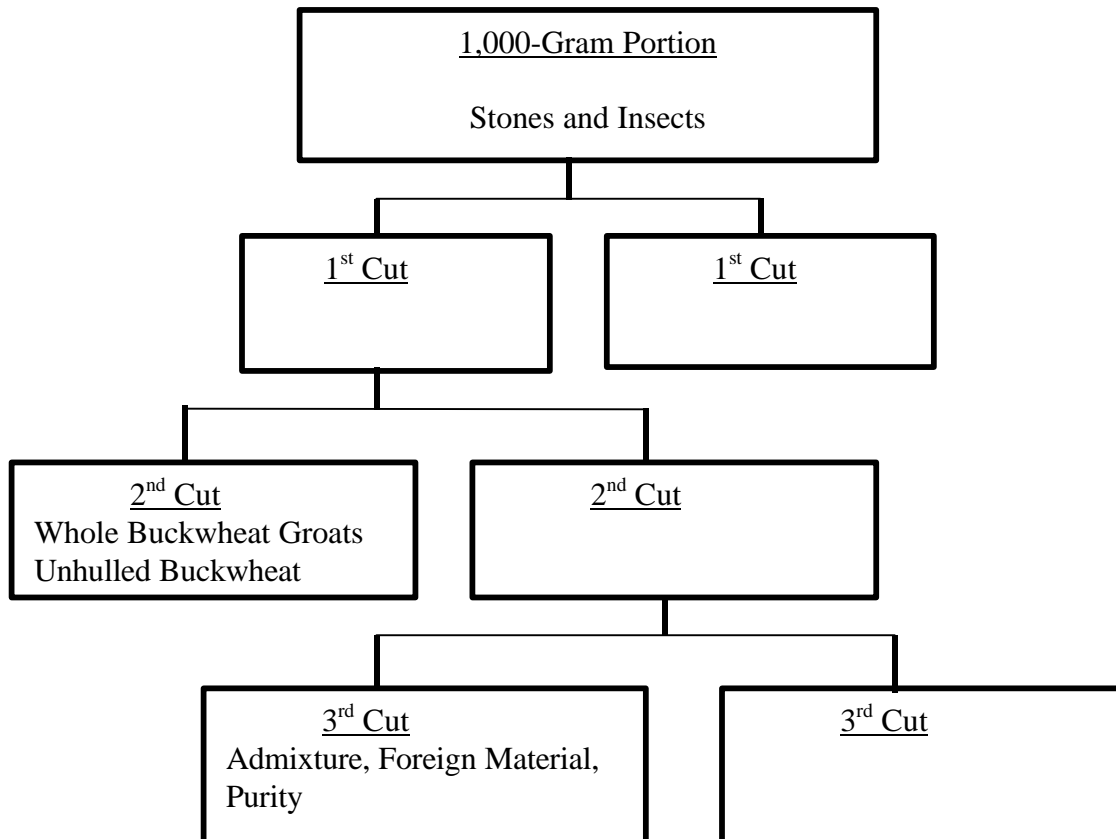
**Certification.** Record percentage of moisture on the work record and certificate to nearest tenth percent.

**9. PROCESSING THE WORK SAMPLE**

Using the Boerner divider, divide the work sample into fractional portions as illustrated in Table No. 2 and the following chart.

**TABLE NO. 2**

APPROXIMATE ANALYTICAL PORTION SIZES	
Factors	Grams
Stones	1,000
Insects	1,000
Whole Buckwheat Groats	250
Unhulled Buckwheat Kernels	250
Admixture	125
Foreign Material	125
Purity	125



## 10. STONES AND INSECTS

**Stones.** Stones are concrete earthy or mineral matter and other substances of similar hardness that do not disintegrate readily in water.

Consider stones as foreign material. Stones are also a separate factor for analysis.

**Insects.** Insects refer to weevils or other insects injurious to stored grain and commodities. Weevils include rice weevils, granary weevils, and lesser grain borers. Other insects injurious to stored grain and commodities include grain beetles, grain moths, mealworms, vetch bruchids, and larvae. (See Grain Inspection Handbook, Chapter 1, General Information, Section 1.2, Visual Grading Aids.)

Live and dead insects are also separate factors for analysis. Live and dead insects are considered separately because of different contract tolerance for each factor.

**Basis of Determination.** Determine stones, live insects, and dead insects on a representative portion of approximately 1-1/8 to 1-1/4 quarts or a minimum of 1,000-grams before removing admixture and foreign material.

**Certification.** Record the percentage by weight of stones on the work record and certificate to a hundredth of a percent without rounding. Record separately the number of live and dead insects in a 1,000-gram portion on the work record and certificate.

## 11. WHOLE BUCKWHEAT GROATS AND UNHULLED BUCKWHEAT KERNELS

**Whole Buckwheat Groats.** Whole buckwheat groats are whole kernels of dehulled buckwheat and pieces of dehulled buckwheat kernels remaining on top of a 7/64 round-hole sieve after sieving. Dehulled buckwheat kernels are kernels of buckwheat with 95 percent or more of the hull removed.

**Unhulled Buckwheat Kernels.** Unhulled buckwheat kernels are kernels of buckwheat with more than 5 percent of the hull attached.

**Basis of Determination.** Make the determination of whole buckwheat groats and unhulled buckwheat kernels on the sample as a whole (250-gram portion).

Determine whole buckwheat groats and unhulled buckwheat kernels as follows:

- a. Place the 7/64 round-hole sieve and bottom pan in the sieve holder.
- b. Set the stroke counter to 20.
- c. Pour the 250-gram portion in the center of the sieve.

- d. Turn the machine on. (If a mechanical sieve shaker is not available, hold the sieve and bottom pan level and using a steady motion, move the sieve from right to left approximately 10 inches and return from left to right to complete one sieving operation. Repeat this operation 20 times.) Mechanical sieving is preferred over the hand sieving method because of uniformity in the sieving operation and accuracy in counting the number of strokes.
- e. Return any buckwheat groats lodged in the perforations of the sieve to the material remaining on top of the sieve.
- f. Handpick and separate whole buckwheat groats, unhulled buckwheat kernels, and all other material remaining on top of the sieve.
- g. Handpick any unhulled buckwheat kernels from the material that passed through the sieve and add it to the handpicked unhulled buckwheat kernels that remained on top of the sieve. Determine percentage of unhulled buckwheat kernels.
- h. Determine the percentage of whole buckwheat groats. Whole buckwheat groats is the material remaining on top of the sieve after separating all material other than buckwheat groats (including unhulled buckwheat kernels).

**Certification.** Show the individual percentage of whole buckwheat groats and the individual percentage of unhulled buckwheat kernels on the work record and certificate to the nearest tenth percent.

## 12. **ADMIXTURE, FOREIGN MATERIAL AND PURITY**

**Admixture.** Admixture is all material, which passes through a 1/15 round-hole handsieve and all material other than buckwheat groats handpicked from the material remaining on top of the handsieve. Empty hulls and unhulled buckwheat kernels are not considered as admixture.

**Foreign material.** Foreign material is all material other than buckwheat groats and unhulled buckwheat kernels.

There are four components within foreign material:

- a. Organic Material
  - Pieces of sticks, stems, or empty hulls.
  - Any other organic material (including dead insects).
- b. Mineral Material
  - Sand, stones, soil.

- c. Grains
  - Any grain or commodity for which official standards are established.
- d. Weed Seeds
  - Seeds of all wild plants including wild buckwheat.
  - Any grain or commodity for which official standards are not established.

**Purity.** Purity refers to the total percentage of buckwheat groats minus admixture.

**Basis of Determination.** Determine admixture, foreign material and purity on 125-grams. Determine percentage of purity by weight of kernels and pieces of kernels of buckwheat groats using a 125-gram portion after removing admixture.

Determine admixture, foreign material and purity as follows:

- a. Place 125-grams on upper edge of a 1/15 round-hole sieve.
- b. Hold sieve at a 10 to 20 degree angle and gently work material down over sieve with a side-to-side motion. Perform this step twice.
- c. Handpick all material other than unhulled buckwheat kernels, empty hulls, whole buckwheat groats and pieces of buckwheat groats from the material remaining on top of the sieve and add it to the material that passed through the sieve. Consider this material as admixture.
- d. Handpick any material meeting the definition of foreign material, while handpicking admixture.
- e. Determine percentage of purity by subtracting the weight of admixture from the weight of the portion to obtain the weight of pure kernels. Then divide the weight of pure kernels by the portion weight, and multiply by 100, for the percentage of purity.

**Certification.** Show the individual percentage of admixture and the individual percentage of foreign material on the certificate to the nearest tenth percent. Show the percentage of purity on the work record and certificate to a hundredth of a percent without rounding.

If requested, list the individual components of foreign material on the certificate in remarks. Show each component to a hundredth of a percent without rounding.

### **13. CERTIFICATION**

Certify analysis of whole buckwheat groats on a commodity inspection certificate (FGIS-993). Issue a lot inspection certificate for officially sampled lots. Issue a submitted sample certificate (FGIS-994) for a sample submitted by an applicant or their agent.

Show results of analysis in the following order and place an asterisk in front of any result that does not meet contract specifications.

- a. Odor
- b. Moisture
- c. Whole Buckwheat Groats
- d. Unhulled Kernels
- e. Foreign Material
- f. Admixture
- g. Purity
- h. Stones
- i. Live Insects
- j. Dead Insects

/s/ John C. Giler

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