

# Directive

9180.76

5/18/09

## INSPECTION OF BUCKWHEAT

### 1. PURPOSE

This directive establishes procedures under the Agricultural Marketing Act of 1946, as amended, for the factor analysis of buckwheat.

### 2. REPLACEMENT HIGHLIGHTS

This directive is revised to establish moisture calibrations, approximate sample size for the Dickey-john GAC 2100, Grain Analysis Computer and other minor editorial changes

### 3. GENERAL INFORMATION

There are no classes, subclasses, or grades for buckwheat. Inspection of buckwheat is on a factor only basis. The factors analyzed are odor, moisture, garlicky, dockage, test weight per Winchester bushel, ergoty, and smutty.

In addition to the analysis described in this directive, an applicant may request an analysis for other factors such as rodent pellets, bird droppings, other animal filth, broken glass, castor beans, crotalaria seeds, heating, infestation, stones, unknown foreign substance(s), and commonly recognized harmful toxic substance(s).

### 4. HOW FACTORS ARE REPORTED

TABLE 1

Nearest Tenth Percent	Nearest Hundredth Percent	By Count
Dockage Moisture Test Weight per Bushel	Ergot	Garlic Bulblets Smut Balls

5. HOW FACTORS ARE DETERMINED

**TABLE 2**

<b><u>Before the Removal of Dockage</u></b>	<b><u>After the Removal of Dockage</u></b>
Garlic Bulblets Moisture Odor	Ergot Odor Smut Balls Test Weight per Bushel

6. SAMPLING PROCEDURE

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

7. DEFINITION OF BUCKWHEAT

**Buckwheat** (*Fagopyrum esculentum* Moench) or (*Fagopyrum sagittatum* (Gilib.)) consists of 50.0 percent or more of whole or broken buckwheat kernels before the removal of dockage.

**Basis of Determination.** Normally, a visual appraisal of the sample is sufficient to determine if it meets the definition of buckwheat. However, if analysis is necessary, make the determination before the removal of dockage on a portion of approximately 50 grams.

8. ODOR

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

Record on the work record odors detected at the time of sampling. However, make the final determination for odor in the laboratory. The inspector is responsible for making the final determination for all odors. Use a consensus of experienced inspectors, whenever possible, on samples containing marginal odors. The consensus approach is not required if no odor or a distinct odor is detected.

**TABLE 3**

**(Odor Classification Examples)**

<b>Sour</b>	<b>Musty</b>	<b>COFO</b>
Boot Fermenting Insect (acid) Pigpen * Smoke	Ground Insect Moldy	Animal hides Decaying animal and vegetable matter Fertilizer Fumigant Insecticide Oil products Skunk Smoke (evidence of fire-burnt material) Strong weed
* Consider smoke odors as sour unless there is evidence of fire-burnt material.		

**Commercially Objectionable Foreign Odors.** Commercially Objectionable Foreign odors are odors foreign to buckwheat that renders it unfit for normal commercial use.

Fumigant or insecticide odors are commercially objectionable foreign odors if the odors linger and do not dissipate. When a sample of buckwheat contains a fumigant or insecticide odor that prevents you from determining if 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.

Based on the above criteria, the sample has a commercially objectionable foreign odor if the fumigant or insecticide odor persists.

**Certification.** Record the terms “Sour,” “Musty” or “Commercially Objectionable Foreign Odor” on the work record and on the inspection certificate.

**9. MOISTURE**

Moisture is the water content in buckwheat determined by using the Dickey-john GAC – 2100 instrument utilizing the coefficients listed below for Buckwheat (811224) with a moisture range of 8 to 21 percent.

Determine moisture on the sample as a whole before the removal of dockage on a portion of approximately 350 grams.

K1: 0724	K6: 2070
K2: 1923	K7: 2108
K3: 1267	K8: 1593
K4: 0931	K9: 1104
K5: 2100	

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

**10. GARLICKY BUCKWHEAT**

Garlicky Buckwheat is buckwheat that contains in a 1,000-gram portion more than two green garlic bulblets or an equivalent quantity of dry or partially dry bulblets.

**Basis of Determination.** Determine garlicky before removing dockage on a portion of approximately 1,000 grams, except when the garlic bulblet count is in excess of 10 green bulblets. When garlic bulblets are in excess of 10 green bulblets, use a portion of approximately 250 grams. After determining the count of bulblets on the 250-gram portion, multiply the count by four to obtain the equivalent number of bulblets in the 1,000-grams portion.

**Characteristics of Garlic Bulblets.**

- A. Green garlic bulblets are bulblets that have retained all of their husks intact.
- B. Dry or partly dry garlic bulblets are bulblets that have lost all or part of their husks. Consider bulblets with cracked husks as dry.
- C. Three dry or partly dry garlic bulblets are equal to one green bulblet. Garlic bulblets apply in the determination of garlicky but also function as dockage or foreign material. (Reference: Visual Reference Image ([VRI-OF-Garlic Bulbs](#)) and [VRI-OF-Garlic Bulbs](#)).

**Certification.** Record the terms "Garlicky" and the number of garlic bulblets in whole and thirds on the work record and the inspection certificate. On request, record the number of garlic bulblets on the inspection certificate when the buckwheat is not considered garlicky.

## 11. DOCKAGE

Dockage is all material other than buckwheat that can be removed from the original sample by use of an approved device and by handpicking a portion of the sample. Dockage also includes underdeveloped, shriveled and small pieces of buckwheat kernels that are removed when separating the material other than buckwheat.

**Basis of Determination.** Determine dockage on a representative portion of approximately 1-1/8 to 1-1/4 quarts cut from the original sample.

**Procedure.** Determine dockage in two steps: mechanically separated and handpicked.

### **STEP 1. Determine Dockage with the Carter Dockage Tester.**

Set up the Carter dockage tester as follows:

- (1) Set the air control at Number 6.
- (2) Set the feed control at Number 6.
- (3) Use a Number 35898 riddle in the riddle carriage.
- (4) Use no sieve in the top sieve carriage.
- (5) Use a Number 8 sieve in the middle sieve carriage.
- (6) Use a Number 6 in the bottom sieve carriage.

#### **Mechanically separated dockage consists of:**

- (1) Material removed by the aspirator (air collection pan).
- (2) Coarse material, other than buckwheat, that passed over the riddle (riddle collection pan).
- (3) Material that passed over the Number 6 sieve when the material consists of less than 50 percent, by weight, of whole or broken kernels of buckwheat. When 50 percent or more of whole or broken kernels are found, return the material to the cleaned buckwheat.
- (4) Material that passed through the Number 6 sieve (bottom collection pan).

**STEP 2. Handpick the Mechanically Cleaned Buckwheat.**

- (1) Cut out a portion of approximately 50 grams from the mechanically cleaned buckwheat.
- (2) Remove all material other than buckwheat.

**Compute the Percentage of Dockage.** When computing dockage, proceed as follows:

- (1)  $\text{Weight of mechanically separated dockage} \div \text{original sample weight} \times 100 = \% \text{ of mechanically separated dockage.}$
- (2)  $100 \% - \% \text{ of mechanically separated dockage} \div 100 = \text{change of base factor.}$
- (3)  $\text{Weight of handpicked dockage} \div \text{by weight of handpicked portion} \times 100 = \% \text{ of handpicked dockage.}$
- (4)  $\% \text{ of handpicked dockage} \times \text{change of base factor} = \text{adjusted \% of handpicked dockage.}$
- (5)  $\% \text{ of mechanically separated dockage} + \text{adjusted \% of handpicked dockage} = \% \text{ of dockage.}$

**Example for Computing Dockage:**

Original sample weight <u>1</u> /	1,000 grams
Weight of mechanically separated dockage	68.0 grams
Weight of handpicked portion	51.7 grams
Weight of handpicked dockage	2.64 grams

- (6)  $(68.0 \div 1,000) \times 100 = 6.80\% \text{ mechanical dockage.}$
- (7)  $(100\% - 6.8\%) \div 100 = .93 \text{ change of base factor.}$
- (8)  $(2.64 \div 51.7) \times 100 = 5.10\% \text{ handpicked dockage.}$
- (9)  $5.10 \times .93 = 4.74\% \text{ adjusted percentage of handpicked dockage.}$
- (10)  $6.80\% + 4.74\% = 11.54\% \text{ total dockage (round to 11.5\%).}$

**Certification.** Record the percentage of total dockage on the pan ticket and the inspection certificate to the nearest one-tenth percent.

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1/ Original sample weight may vary. Use 1-1/8 to 1-1/4 quarts

## 12. TEST WEIGHT

Test weight is the weight per Winchester bushel (2,150.42 cubic inches) as determined using an approved device according to procedures prescribed in FGIS instructions.

**Basis of Determination.** Determine test weight on a representative portion of sufficient quantity to overflow the kettle after the removal of dockage.

The procedures for performing test weight determination are in book II, chapter 1, section 1.11 of the Grain Inspection Handbook.

**Certification.** Record the test weight results on work record as displayed on the electronic scale or in whole and tenth pounds. Record the test weight on inspection certificate in whole and tenth pounds.

## 13. ERGOTY BUCKWHEAT

Ergoty Buckwheat is buckwheat that contains more than 0.05 percent ergot.

Ergot is a hard, reddish-brown, or black grain-like mass of certain parasitic fungi that replaces the kernels of cultivated buckwheat and other grains. (Reference: Visual Reference Image ([VRI-OF-Ergot.](#)))

**Basis of Determination.** Determine ergoty on a dockage-free portion of approximately 250 grams.

**Certification.** Record the term "Ergoty" and the percentage of ergot to the nearest hundredth percent on the work record and the inspection certificate. On request, show the percentage of ergot on the inspection certificate when the buckwheat is not considered ergoty.

## 14. LIGHT SMUTTY AND SMUTTY BUCKWHEAT

**Light Smutty.** Buckwheat 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.

**Smutty.** Buckwheat 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.

**Basis of Determination.** Determine "Light smutty" on the sample as a whole (odor only) or on a dockage-free portion of 250 grams. Determine "Smutty" on a dockage-free portion of 250 grams.

**Certification.** Record the term "Light Smutty," or "Smutty" on the work record and the inspection certificate. On request, record the odor (in the case of light smutty) or the number of smut balls. Also, on request, record the number of smut balls on the certificate when the buckwheat is not considered smutty.

**15. CERTIFICATION**

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

*/s/ John Giler*

John Giler, Director  
Field Management Division