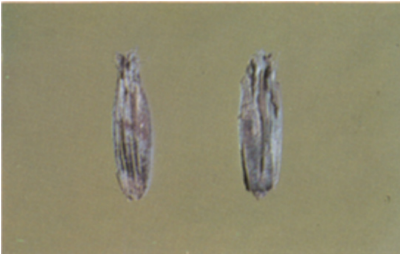


# Oat Kernel Damage



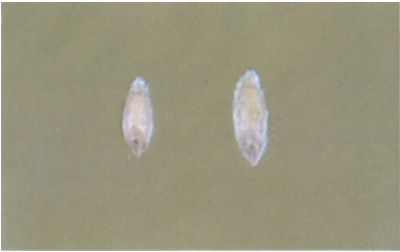
Oklahoma Cooperative Extension Service  
Division of Agricultural Sciences and Natural Resources  
Oklahoma State University

## PRINCIPAL OAT KERNEL DAMAGE



### **BADLY GROUND AND/OR WEATHER DAMAGE**

Kernels which are badly discolored by ground and/or weather conditions shall be considered damaged and scored against sound oats.



### **GERM DAMAGE (SICK AND/OR MOLD)**

Kernels in which the germ is discolored or moldy as a result of respiration shall be considered damaged and scored against sound oats.



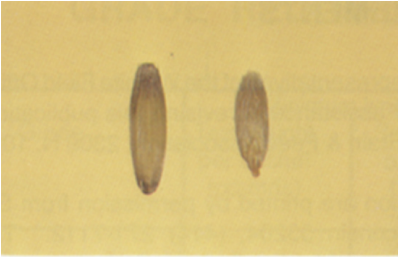
### **HEAT DAMAGE**

Kernels which are materially damaged as a result of heating and which show a reddish discoloration extending back from the germ shall be considered damaged and scored against sound oats. **Note:** The hulls must be removed to determine the extent of heat damage.



### **INSECT DAMAGE**

Kernels which have been bored or tunneled by insects shall be considered damaged and scored against sound oats.



### **SPROUT DAMAGE**

Kernels which have sprouted or which generally have a crack in the seedcoat over the germ area shall be considered damaged and scored against sound oats. The hull must be removed to determine if the cracked seedcoat indicated sprouting.

## **APPEARANCE FACTORS**

Slightly weathered. In order for a sample of oats to be designated slightly weathered, (1) each individual kernel may have a slightly dusty, grey appearance on the brush end in sufficient amounts so that the entire sample has a slightly weathered appearance or (2) the sample may contain a sufficient number of severely weathered kernels giving it a slightly weathered appearance. In either case, the oats shall be considered slightly weathered and shall not grade higher than U.S. No. 3.

Badly stained or materially weathered. When discoloration due to weather has progressed to a point where many of the kernels are badly discolored and weathered, the oats shall be considered badly stained or materially weathered and grade no higher than U.S. No. 4.

## **OTHER GRADING FACTORS**



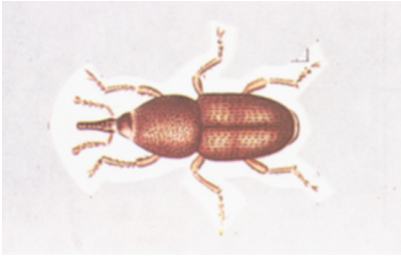
### **WILD OATS**

Seeds of *Avena Fatua* and *A. Sterilus*. Wild oats are usually identified by their characteristic slender kernels with twisted awns (so-called "sucker mouths") and basal hairs or bristles on the germ end of the kernels.

Foreign material. All matter other than oats, wild oats, and other grains. Oat clippings and detached oat hulls and pieces of detached hulls are foreign material.

Other grains. Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, non-grain sorghum, polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wheat.

## SPECIAL GRADES



### INFESTED

Oats that are infested with live weevils or other live insects injurious to stored grain. Oats are considered infested when the representative sample, or lot as a whole (stationary) or component sample (continuous loading/unloading of shiplots and bargelots) contains two or more live weevils, or one live weevil and five or more other live insects injurious to stored grain, or ten or more other live insects injurious to stored grain.

Bleached oats. Oats that in whole or part, have been treated with sulfurous acid or any other bleaching agents.

Bright oats. Oats, except bleached oats, that are of good natural color.

Ergoty oats. Oats that contain more than 0.10 percent ergot.

Extra-heavy oats. Oats that have a test weight per bushel of 40 pounds or more.

Garlicky oats. Oats that contain 4 or more green garlic bulblets or an equivalent quantity of dry or partly dry bulblets in 500 grams of oats.

Heavy oats. Oats that have a test weight per bushel of 38 pounds or more but less than 40 pounds.

Smutty oats. Oats that have kernels covered with smut spores to give a smutty appearance in mass, or that contain more than 0.2 percent of smut balls.

Thin oats. Oats that contain more than 20.0 percent of oats and other matter, except fine seeds, that pass through a 0.064 x 3/8 oblong-hole sieve. Fine

## GRADE REQUIREMENTS FOR OATS

Grade	Minimum limits		Maximum limits		
	Test weight per bushel (pounds)	Sound oats (%)	Heat damaged kernels (%)	Foreign material (%)	Wild Oats (%)
U.S. No. 1	36.0	97.0	0.1	2.0	2.0
U.S. No. 2	33.0	94.0	0.3	3.0	3.0
U.S. No. 3 <sup>1</sup>	30.0	90.0	1.0	4.0	5.0
U.S. No. 4 <sup>2</sup>	27.0	80.0	3.0	5.0	10.0

U.S. Sample grade-

U.S. Sample grade are oats that:

- (a) Do not meet the requirements for the grades U.S. Numbers 1, 2, 3, or 4; or
- (b) Contain 8 or more stones which have an aggregate weight in excess of 0.2 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 cockleburrs (*Xanthium* spp.) or similar seeds singly or in combination, 10 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1 1/8 to 1 1/4 quarts of oats; or
- (c) Have a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
- (d) Are heating or otherwise of distinctly low quality.

<sup>1</sup> Oats that are slightly weathered shall be graded not higher than U.S. No. 3.

<sup>2</sup> Oats that are badly stained or materially weathered shall be graded not higher than U.S. No. 4.

## OATS

Grain that consists of 50 percent or more of oats (*Avena Sativa* L. and *A. Byzantina* C. Koch) and may contain, singly or in combination, not more than 25 percent of wild oats and other grains for which standards have been established under the United States Grain Standards Act.

### SPECIAL GRADE DESIGNATIONS

When applicable, a special grade is added to and made part of the grade designation. The grade designations for bright, extra-heavy, and heavy oats shall include preceding the word "oats," the word(s) "bright," "extra-heavy," or "heavy," as warranted. The grade designations for bleached, ergoty, garlicky, smutty, thin, and infested oats shall include, following the word oats, the word(s) "bleached," "ergots," "garlicky," "smutty," "thin," or "infested," as warranted.

## ACKNOWLEDGEMENTS

We wish to express sincere appreciation to representatives of the Wichita Field Office of the Federal Grain Inspection Service for their assistance in revising this publication. Appreciation is also extended to the Oklahoma Grain & Feed Association, 2309 N. 10th, Suite B, P.O. Box 1747, Enid, Oklahoma 73702.

The photographs appearing in this publication are printed by permission from S J Systems, 645 West Virginia, Milwaukee, Wisconsin 53204, (414) 271-7112. The photographs are reproductions of the line slides used by the Federal Grain Inspection Service and are intended for illustration only. Since the intensity of the reproductions may not precisely duplicate the originals, we do not recommend that they be used for grading purposes.

**Authors:** Dr. Kim Anderson and Dr. Phil Kenkel, Department of Agricultural Economics, Cooperative Extension Service, Oklahoma State University, and Roger Friedrich, Supervisory Physical Scientist, FGIS Technical Center, Kansas City, Missouri.

For additional copies contact:

Kim Anderson  
513 Ag Hall  
Oklahoma State University  
Stillwater, OK 74078-0505  
(405) 744-6082

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, disability, or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at no cost to the taxpayer. 0805 GH Reprint.