

# SOYBEANS



## Definition of soybeans

*Grain that consists of 50 percent or more of whole or broken soybeans (*Glycine max* (L.) Merr.) that will not pass through an 8/64 round-hole sieve and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.*

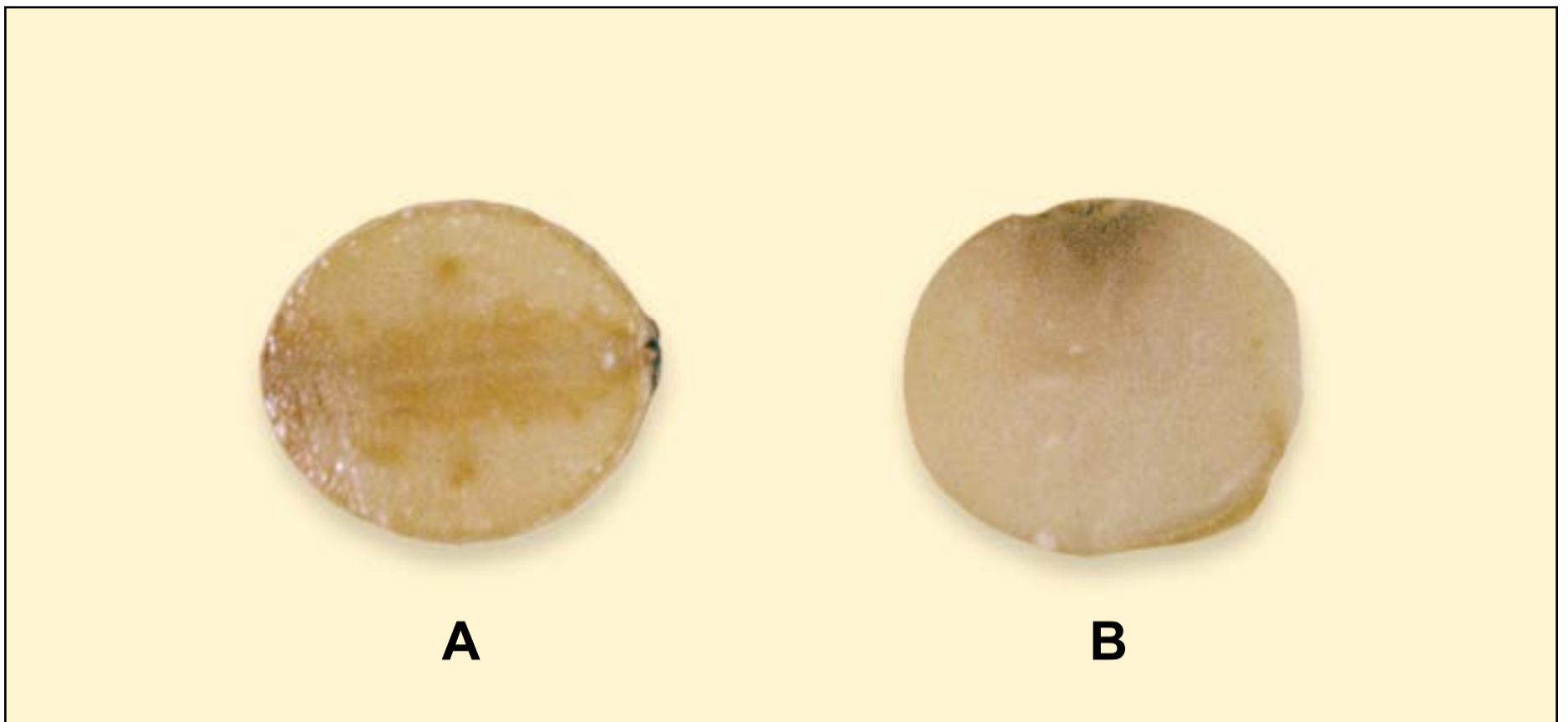


### **BADLY GROUND AND/OR WEATHER DAMAGE**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans in which the seed coats are discolored to the extent that the area of coverage and intensity is equal to or greater than shown. Soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** The discoloration may appear on one or both sides of the soybean. Affected soybeans may also be elongated and/or misshapen.



### **DAMAGED BY HEAT**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans which have been damaged by heat and the area of coverage and intensity is equal to or greater than shown. Cross-sectioned or pieces of soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** The discoloration may appear on one or both sides of the soybean. Affected soybeans may also be elongated and/or misshapen.

#### **A. CROSS-SECTIONED WHOLE SOYBEAN**

1. Only half cross-sectioned soybean must meet the VRI.

#### **B. SPLIT SOYBEAN**

1. Examine the flat side of the split.
2. Do not cross-section splits and pieces of soybeans.



### **FROST DAMAGE (WAXY)**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans which have a glassy, wax-like appearance. The color of affected soybeans may vary provided the color intensity is equal to or greater than shown. Cross-sectioned or pieces of soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** Only half of the cross-sectioned soybean must meet the VRI. Do not cross-section splits and pieces of soybeans. Examine the flat side of the split.





### **GREEN DAMAGE**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans that are discolored green with an area of coverage and intensity equal to or greater than shown. Cross-sectioned or pieces of soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, only half of the surface area needs to be discolored.

**NOTE:** Only half of the cross-sectioned soybean must meet the VRI. Do not cross-section splits and pieces of soybeans. Examine the flat side of the split.



### **HEAT DAMAGE( MATERIALLY DAMAGED/HEATING)**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans which are materially discolored and damaged by heat with an area of coverage and intensity equal to or greater than shown. Cross-sectioned or pieces of soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** Only half of the cross-sectioned soybean must meet the VRI. Do not cross-section splits and pieces of soybeans. Examine the flat side of the split.



### **IMMATURE (WAFER)**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans which are immature and have a thin, flat, wrinkled, or wafer like appearance. Immature soybeans are considered sound unless otherwise damaged.

**NOTE:** If cross-sectioned wafers do not contain endosperm (meat), they are considered damaged.



### **STINKBUG OR INSECT STUNG KERNELS**

*Portion for Analysis: Approximately 125 grams*

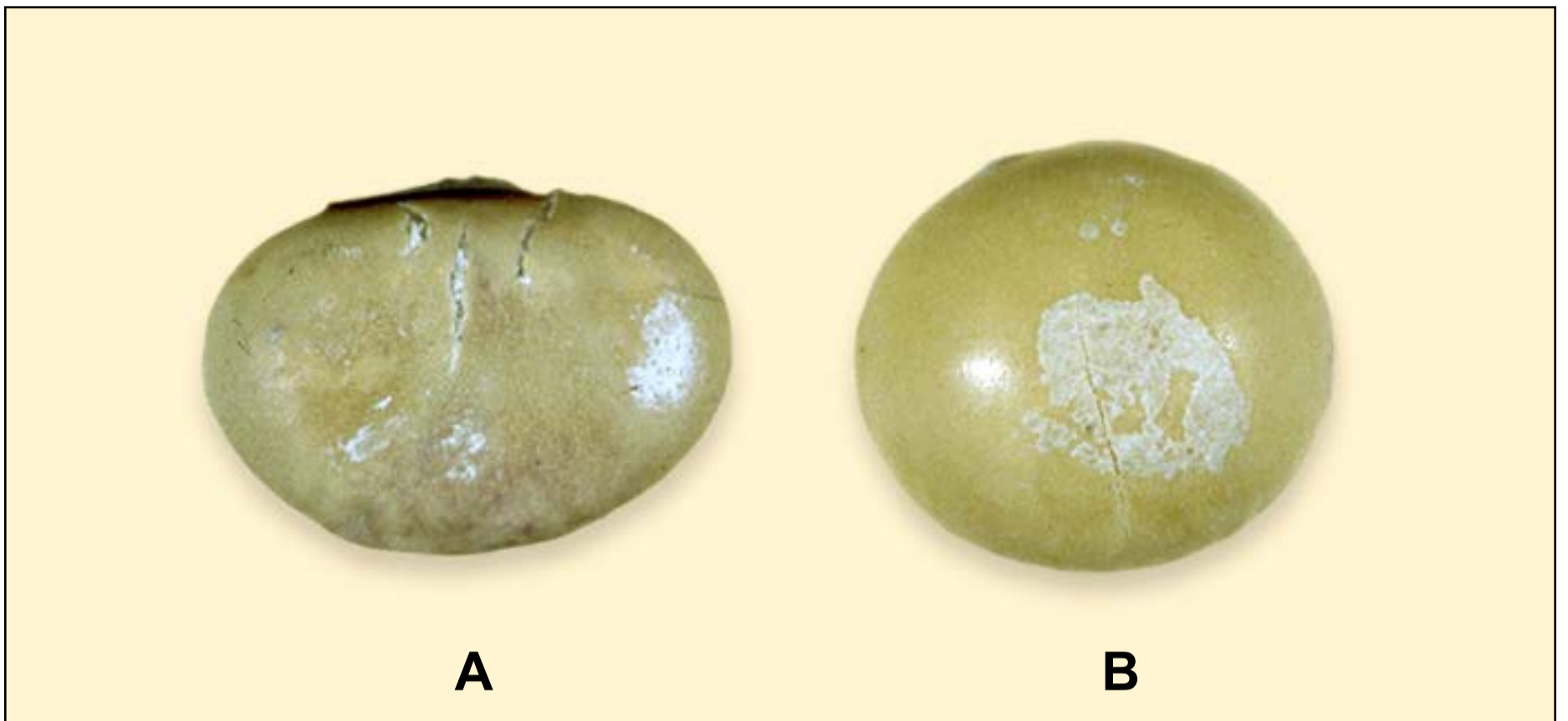
Soybeans or pieces of soybeans which show an indentation or discoloration on the seed coat. To determine the extent of damage, it is generally necessary to cross-section the soybean.

1. The top row contains confirmed stinkbug or insect stung soybeans. The third kernel from the left represents the minimum discoloration/damage requirement.
2. The bottom row contains suspected stinkbug or insect stung soybeans.

Splits and pieces of soybeans may be cross-sectioned to determine damage. Cross-section soybean at the suspected area. If a kernel is otherwise damaged, it functions as other damage.

**NOTE:** Stinkbug damage is one-fourth of the actual damage.





### **MOLD DAMAGE**

*Portion for Analysis: Approximately 125 grams*

#### **Soybean A: INVADED BY MOLD**

Soybeans that are discolored, elongated, or misshapen, and contain white or gray mold on the seed coat equal to or greater than combined amounts shown. Seed coats may be split or cracked.

#### **Soybean B: SURFACE MOLD GROWTH**

Soybeans with little or no apparent deterioration having a milky white or grayish crusty growth caused by downy mildew. Seed coat is not discolored and contains no splits, cracks, or fissures. Soybeans that contain mildew on 50 percent or more of the seed coat in sufficient concentration to meet or exceed the minimum shown shall be considered damage.

**NOTE:** Soybeans and pieces of soybeans containing mold which penetrates the seed coat, regardless of amount, are damaged.

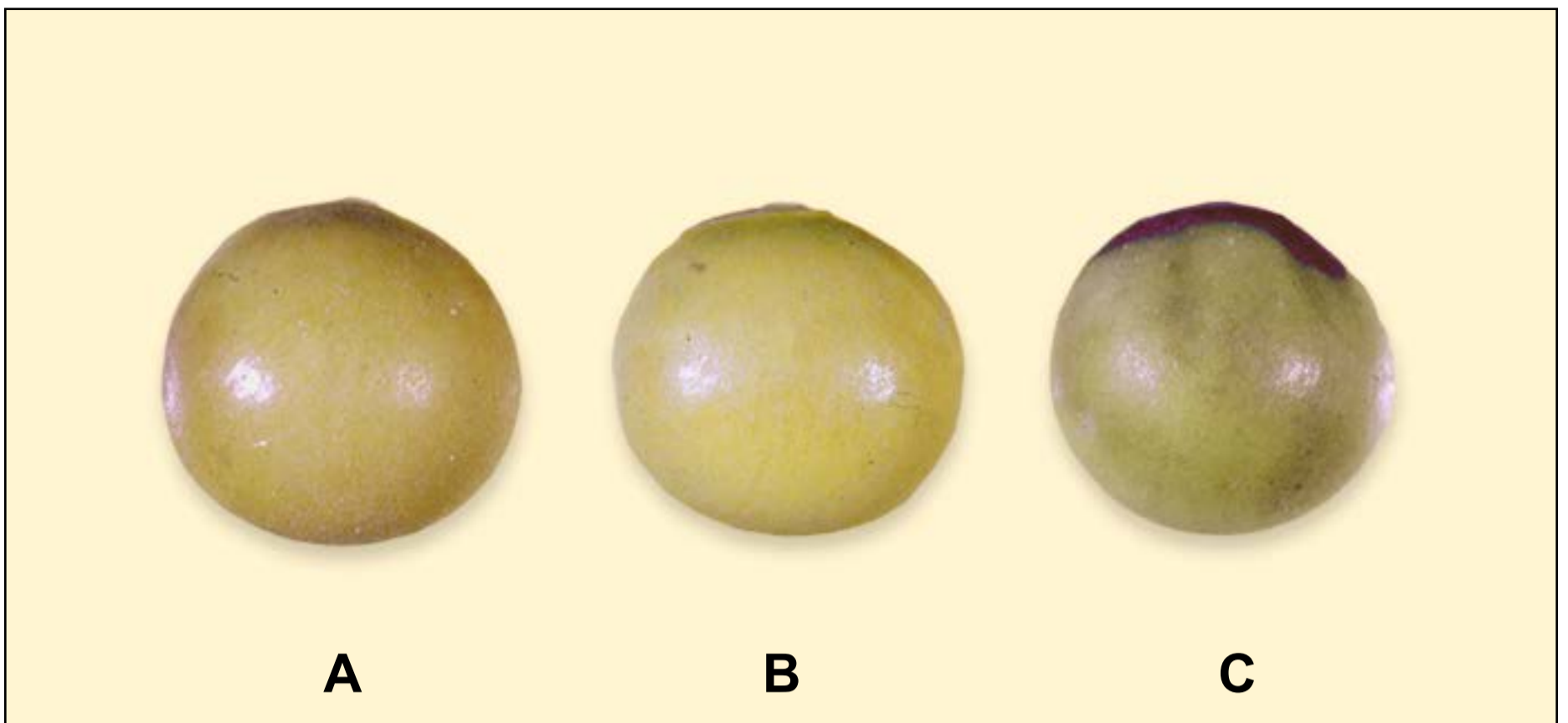


### **MOLD DAMAGE (PINK)**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans that exhibit a pink discoloration (caused by fungal activity) on the seed coat with an area of coverage and intensity equal to or greater than shown. Soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** The pink discoloration may appear on one or both sides of the soybean. **DO NOT** confuse the pink fungus with pokeberry juice stains, treated, or purple mottled soybeans.



### SOYBEANS OF OTHER COLORS

*Portion for Analysis: Approximately 125 grams*

Soybeans that have green, black, brown, or bicolored seed coats. Soybeans that have green seed coats will also be green in cross-section. Bicolored soybeans have seed coats of two colors: yellow and brown, black, or greenish-grey. The non-yellow color must cover at least 50 percent of the seed coat (disregard the hilum) to meet the minimum coverage requirements.

Illustration shows, from left to right, the minimum requirement for bicolored soybeans:

Kernel A: Brown bicolored soybeans.

Kernel B: Yellow soybeans (for comparison purposes only).

Kernel C: Black or greenish-grey bicolored soybeans.

**NOTE:** When applicable, soybeans of other colors (SBOC) shall function as damaged or splits when analyzed on the same portion. Like whole soybeans, splits require 50 percent or more coverage to function as SBOC.



### **SHRIVELED AND WRINKLED**

*Portion for Analysis: Approximately 125 grams*

Whole, sound soybeans passing through a 10/64" x 3/4" slotted sieve, and remaining on top of a 8/64" round-hole sieve that are wrinkled to the minimum extent shown are considered shriveled and wrinkled.



### **SPROUT DAMAGE**

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans in which the sprout protrudes from the seed coat equal to or greater than shown are considered damage.

NOTE: On the soybean illustrated, the sprout has emerged from the seed coat and extends toward the upper end of the hilum.





### **WEATHER DAMAGE (GRAY/BLACK)**

*Portion for Analysis: Approximately 125 grams*

Soybeans that contain Gray/Black discoloration on the seed coat with the area of coverage and intensity equal or greater than shown are considered damaged.

Soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** The discoloration may appear on one or both sides of the soybean.

**DO NOT** confuse discolored soybeans with soybeans containing pigmented streaks or blotches that are considered soybeans of other colors.  
(VRI SB-12.0).

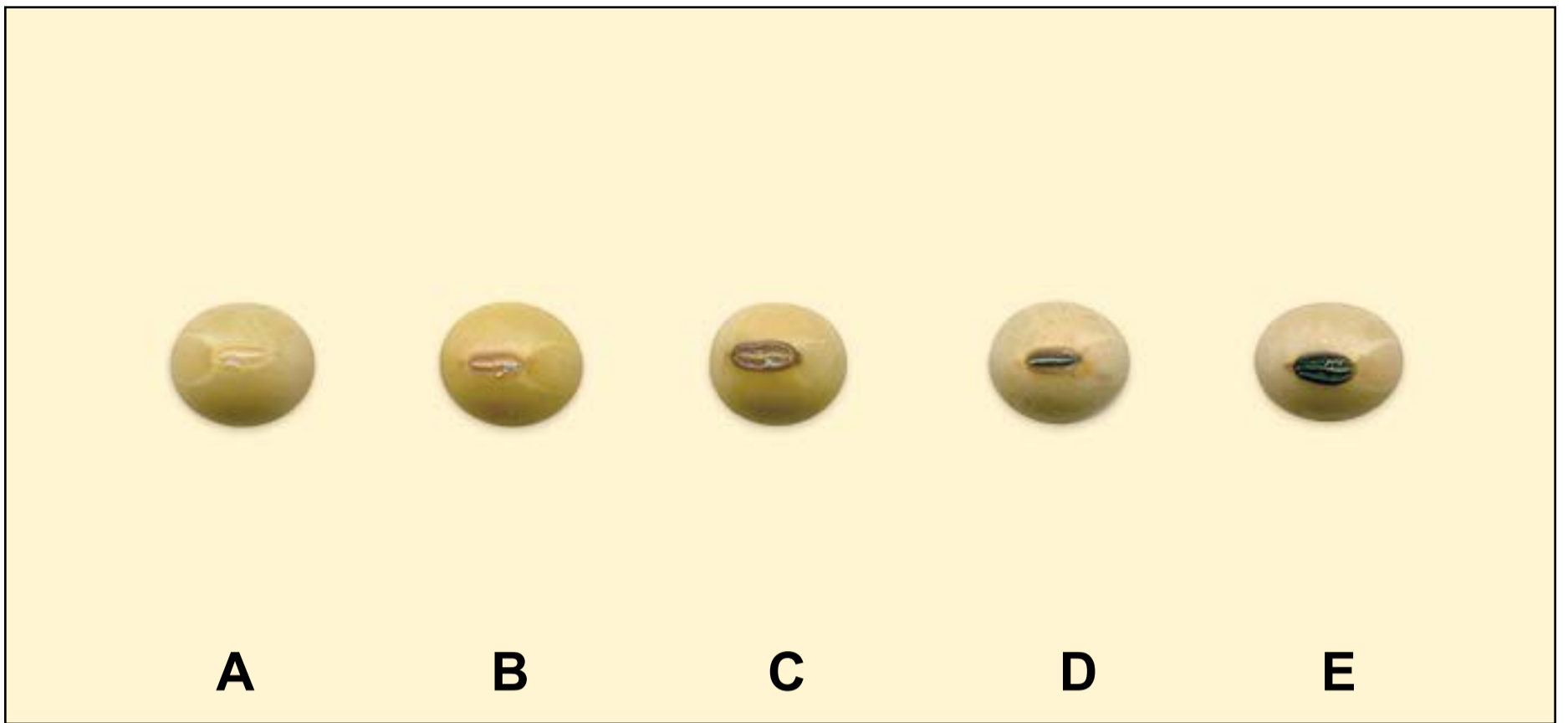


## INSECT BORED KERNELS

*Portion for Analysis: Approximately 125 grams*

Soybeans and pieces of soybeans in which the seed coats are discolored to the extent that the area of coverage and intensity is equal to or greater than shown. Soybeans that have a discolored area(s) which does not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, the required area of coverage can be reduced by one half.

**NOTE:** The discoloration may appear on one or both sides of the soybean. Affected soybeans may also be elongated and/or misshapen.



### WHITE HILUM

*Portion for Analysis: Approximately 125 grams*

HILUM COLOR :

Soybean A: white, yellow, clear\*

Soybean B: buff

Soybean C: brown

Soybean D: imperfect black

Soybean E: black

\*These descriptors are used interchangeably and represent the only hilum color considered a “white hilum” soybean.

NOTE: For information purposes only.





**MOTTLED OR STAINED (POKEBERRY)**

*Portion for Analysis: sample as a whole*

Soybeans with seed coats discolored by pokeberry stain shall be considered purple mottled or stained. Graded lots of soybeans meeting the criteria for purple mottled or stained are to be qualified on the pan ticket and certificate with the special grade designation "Purple Mottled or Stained".





**MOTTLED OR STAINED (FUNGUS)**  
*Portion for Analysis: sample as a whole*

Soybeans with pink or purple seed coats shall be considered purple mottled or stained. This discoloration is caused by the growth of a fungus and may cover all or part of the kernel. Graded lots of soybeans meeting the criteria for purple mottled or stained are to be qualified on the pan ticket and certificate with the special grade designation "Purple Mottled or Stained".





**MOTTLED OR STAINED (DIRT)**

*Portion for Analysis: sample as a whole*

Soybeans with seed coats discolored by pokeberry stain shall be considered purple mottled or stained. Graded lots of soybeans meeting the criteria for purple mottled or stained are to be qualified on the pan ticket and certificate with the special grade designation "Purple Mottled or Stained".