



Canadian Grain  
Commission

Commission canadienne  
des grains



# Mustard Grading Factors

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## Presentation

Ross Warkentin

Grain Inspector, Saskatoon Service Centre

# Presentation Overview



- About the Canadian Grain Commission
- Representative sample
- Dockage Assessment
- Classes of Domestic Mustard Seed
- Mustard Grading Factors



# About the Canadian Grain Commission



# About the Canadian Grain Commission



- Federal government agency
- Operate under Canada Grain Act
- Regulate 20 grains
- Certify the quality, safety and weight of grain



# Service locations



# Representative Sample



- **Why is it important?**



# Representative sample



## Why is a representative sample important?

- To ensure samples adequately reflect the entire lot of grain, proper sampling procedures must be used
- The key to having a dependable and representative sample is sampling often and thoroughly mixing and dividing down the selected sample



# Assessment of Dockage





# Assessment of Dockage



## Assess Dockage using prescribed Methods

A grade can only be assigned to a cleaned sample as prescribed in the Official Grain Grading Guide



# Assessment of Dockage



## Assess Dockage using prescribed Methods

- Choose appropriate round hole sieve:
  - No. 5.5, 6, 6.5, 7, 7.5
- Material remaining on top is considered dockage
  - Stems, straw, pods, other grains

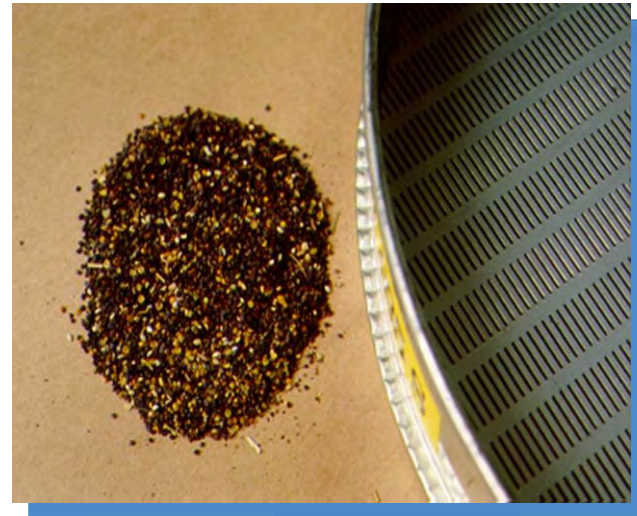


# Assessment of Dockage



## Assess Dockage using prescribed Methods

- Choose appropriate slotted sieve:
  - No. .028, .032, .035, .038, .040
- Material passing through the sieve is considered dockage
  - Weed seeds, broken mustard seed



# Assessment of Dockage



## Assess Dockage using prescribed Methods

- Run the sample through the Carter Dockage Tester for aspiration & large material over the riddle





## Insect Pests

- Review dockage material for signs of infestation
- Check clean sample
- Samples sent for entomology testing for monitoring purposes





# Determine the Moisture



## High moisture content can damage grain in Storage

- Analyze grain sample to determine the condition of the grain sample'

Tough      9.6 to 12.5

Damp      over 12.5





# Classes of Domestic Mustard Seed





## Three classes of domestic mustard seed

- Yellow
- Brown
- Oriental



# Seed Characteristics



## Yellow Mustard

- Light creamy colour
- Oval to spherical in shape
- Typically large
- Hilum is a small white spot in a deep yellow or light tanned area
- Faint reticulations are obscured by waxy orange peel appearance
- Small shallow interspacing
- No stipples



# Seed Characteristics



## Brown Mustard

- Reddish brown to brown
- Oval with some spherical seed
- Midsized
- Reticulations are prominent with a FISH NET appearance
- Large interspaces
- Small stipples





# Seed Characteristics



## Oriental Mustard

- Light to medium yellow – some light brown
- Oval in shape
- Midsize
- Reticulations with a FISH NET appearance but not as prominent as brown mustard
- Large interspaces
- Small stipples



# Mustard Grading Factors





# Grading Factors



## Assess Sample for Safety Concerns

- Stones, Ergot, Excreta, Extraneous Material, and Poisonous Compounds



# Grading Factors



## Ergot

- Purplish-black exterior
- Purplish-white to off-white interior
- Ergot bodies grow in place of kernels
- Contains alkaloids
- Toxic
- Not common in oilseeds
- Established tolerances



# Grading Factors



## Excreta

- Excrement from any animal including mammals, birds and insects.
- Established tolerances





# Grading Factors



## Suspect Contaminated Grain

- Grain suspected to be treated with a substance unfit for consumption by persons or animals
  - Canada Grain Act
  - Food & Drug Act



# Grading Factors



## Fertilizer Pellets

- Fertilizer pellets
  - Typically either small, round and white or irregular shaped and pink or red.
- Fertilizer pellets are considered as a separate grading factor in all grades of domestic mustard seed



# Grading Factors



## Stones

- Hard shale, coal, hard earth pellets, and any other non toxic materials of similar consistency.
- Established tolerances





# Grading Factors



## Conspicuous Admixture

- After cleaning, the amount of conspicuous admixture left in becomes a grading factor
- Analyze for conspicuous admixture by picking out the admixture
- This includes
  - Seeds and foreign material designated as distinctly detrimental.

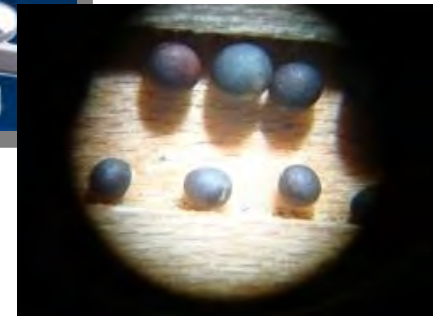


# Grading Factors



## Inconspicuous Admixture – Brown and Oriental

- Canola
- Common wild mustard seed
- Any other seeds that blend with brown or oriental mustard seed and are not readily identified
- Microscope is used to analyze factor



# Grading Factors



## Damage

- Damaged seeds include:
  - Distinctly shrunken or shrivelled
  - Badly discoloured from mould
  - Completely and densely covered with rime or dried white mucilage.
  - Excessively weathered, sprouted, distinctly green, heated or otherwise damaged



# Grading Factors



## Damage

- Additionally in oriental mustard only
  - Completely discoloured by blotch



# Grading Factors



## Damage - Distinctly Green

- Distinctly Green tolerances are applied to crushed seeds that are a distinct green throughout
- Pale green or immature seeds are taken into account in the evaluation of colour





# Grading Factors



## Weathered

- Damage caused by environmental issue resulting white to grayish discolouration
- Excessively weathered seeds are included in damage
- When not excessively weathered, consider as part of overall colour evaluation





# Grading Factors



## Damage - Heated

- Heated refers only to seeds that are distinctly heated or badly binburnt. Heated seeds have a heated odour.
- Crushed seeds may be
  - Black—badly binburnt
  - Dark chocolate brown—distinctly heated
  - Light tan—slightly damaged from oxidation. If they have an odour or are present with brown or black crushed seeds, they are considered heated. Otherwise, they are included in *Total damage*, not heated.



# Grading Factors



## Damage - Fireburnt

- Evidence of being charred or scorched by fire
- Odour
- Seeds pop when crushed



# Grading Factors



## Damage - Sprouted

- Seeds having a ruptured seed coat in combination with either a rootlet that protrudes beyond the normal contour of the seed or distinct swelling of the seed.
- Seeds having a ruptured seed coat that are otherwise sound are only considered sprouted when found in combination with seeds meeting the definition of sprouted.



# Grading Factors



## Damage – Shrunk or Shriveled

- Distinctly shrunk and shriveled kernels are classed as damage



# Grading Factors



## Sclerotinia

- Established tolerances
- Considered part of distinctly detrimental and conspicuous admixture totals
- Fungus producing hard masses of fungal tissue called 'sclerotia'
- Course surface texture
- Varies in size, shape and colour
- Dark black to gray to white exterior
- Pure white interior





# Grading Factors



## Assign the Grade

- Once the grading factors have been evaluated, the inspector can assign a grade

The screenshot shows a web browser window with the URL <https://www.inspection.gc.ca/eng/food-products/grades-standards/food-products/2016-01-01>. The page displays the 'Primary and export grade determinants tables' for 'Domestic Mustard Seed, Brown, Canada (CAN)'. The table is titled 'Domestic Mustard Seed, Brown, Canada (CAN)' and contains the following data:

Grade name	Standard of quality		Damage		
	Degree of soundness	Other classes %	Distinctly green %	Heated %	Total %
No. 1 Canada	Reasonably well matured, sweet, good natural colour	0.5	1.5	0.10	1.5
No. 2 Canada	Fairly well matured, sweet, reasonably good colour	2	2.0	0.20	3
No. 3 Canada	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	5	3.5	0.5	5
No. 4 Canada	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	10	5.5	1	10
Grade, if No. 4 specs not met		Over 10%—use all other grading criteria and grade as Domestic Mustard Seed (grade) Mixed	Domestic Mustard Seed, Sample Canada Brown Account Damaged	Domestic Mustard Seed, Sample Canada Brown Account Heated	Domestic Mustard Seed, Sample Canada Brown Account Damaged

Canada 