



DuPont™ Acurum™

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**Western Canadian  
Wheat Growers  
Association**

March 16, 2006





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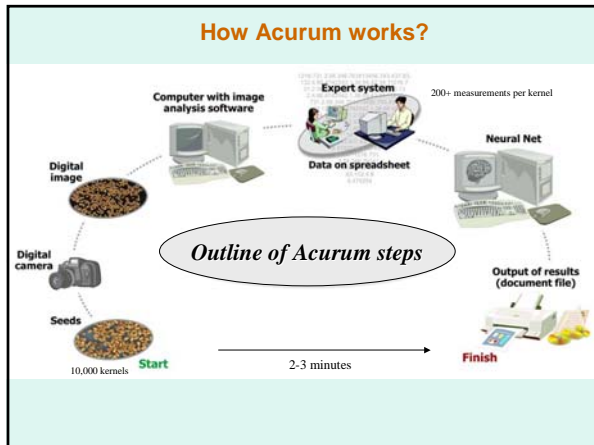
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## What is Acurum?

- Acurum™ is a system that performs visual analysis of grains. It uses digital imaging to capture images of a sample and analyzes each kernel using mathematical modeling software.
- All instruments are networked to a central database providing frequent updates to all instruments. This allows consistency throughout the grain handling system.




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### Development process



- Understand customer priorities
- Obtain small number of kernels with the features of interest
- Use image analysis to determine technical feasibility
- If feasible:
  - Build a sample library
  - Build models
  - Validate for accuracy, repeatability and reproducibility
  - Pilot test with commercial samples




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### Sorting seeds for software modeling

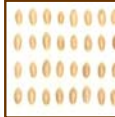





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### Drawing the line

Acurum is trained to reflect the level of acceptance of each quality factor

Healthy	Diseased
	






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### Sample library

Contains seeds from various growing regions, varieties and crop years


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### Projected use in Red Spring Wheat & other crops

Canada

- Spring 2006 - CWRS
  - Broken kernels
  - Fusarium
  - Frosted kernels
  - Frost green
  - Immature kernels
  - Green
  - Mildew
  - Piebald
  - Admixtures
  - Sclerotinia
  - Ergot
  - Grass Green
  - \*Acurum Prediction Index (API)
- Harvest - 2006
  - CWRS
    - Heated
    - Bin burnt
    - Black Point
    - Smudge
  - Amber Durum
    - HVK
    - Fusarium
  - Lentils
    - Colour
    - Size
    - Staining
    - Wrinkling





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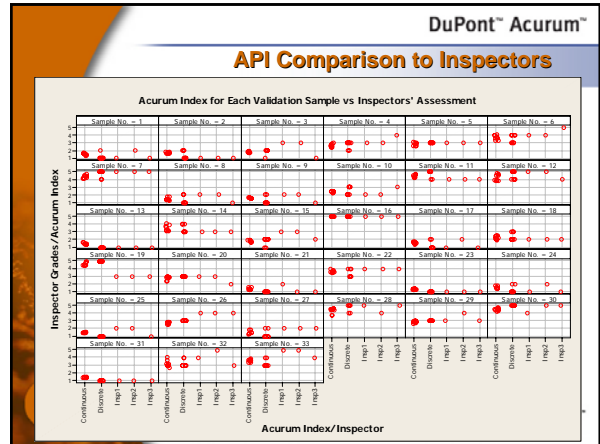
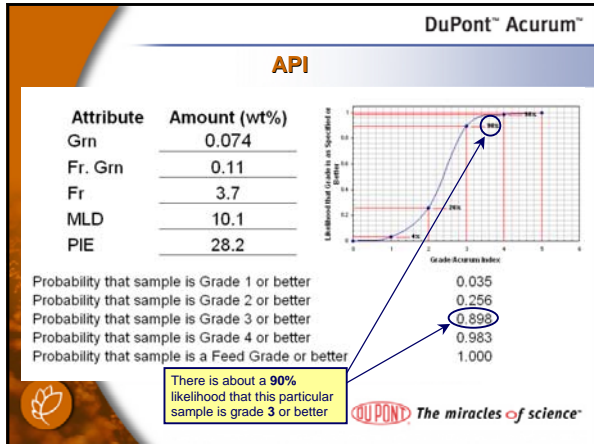
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### Acurum Prediction Index (API)

- Provides a grade probability based on subjective "Degrees of Soundness" factors
- Model based on Acurum measurements of frost, frost green, mildew, green and piebald correlated to inspector grades
- Current version based on 300 graded samples
- Does not provide grade for objective factors



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- ### Advantages of Acurum™
- Rapid and consistent quantification of visual defects such as fusarium
  - Quantification of subjective factors such as frost and immature
  - Larger size of sample (300 g) provides a better statistical assessment of the load
  - Speed of analysis (2-3 minutes) does not slow down quality assessment process
  - Consistency of results: Acurum is not prone to inexperience or fatigue
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- ### Current Status of Acurum™
- Currently undergoing pilot testing on CWRS with three large grain handlers in Canada
  - CGC to conduct internal test on API
  - Developing HVK for CWRS and CWAD
  - Developing colour, size, staining and others for green and red lentil
  - Developing wheat and barley applications for Australia and France
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