DONALD DANFORTH
PLANT SCIENCE CENTER

Data Science Team

NOAH FAHLGREN,
Director and Principal Investigator

MAO LI,
Principal Investigator

HALEY SCHUHL,
Data Scientist

JOSH SUMNER,
Data Scientist

KEELY BROWN,
Research Scientist

DHIRAJ SRIVASTAVA,
Geospatial Data Scientist

PARAG BHATT,
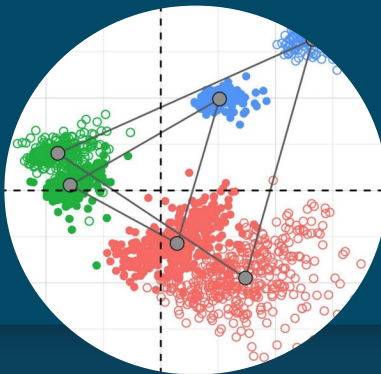*Data Science Trainer*

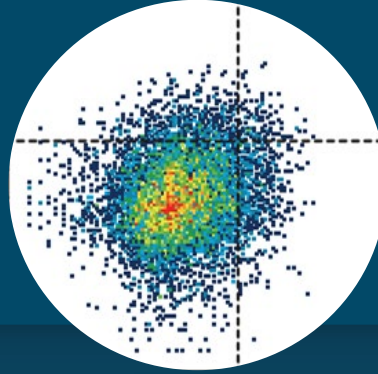# Data Science

CLOUD COMPUTING

- High-performance computing and data storage
- Automated data management
- On-demand, flexible computational workflows

STATISTICAL ANALYSIS

- Experimental design and power analysis
- Parametric and non-parametric hypothesis testing
- Bayesian inference
- Dimensionality reduction
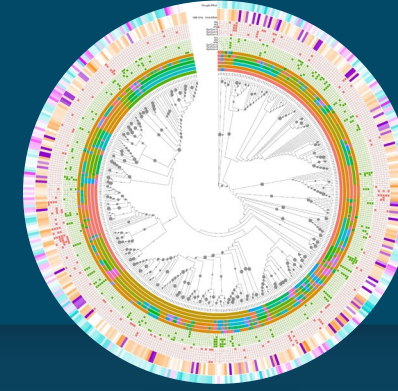- Data visualization

GENOMICS & TRANSCRIPTOMICS

- Genome assembly and annotation
- Comparative genomics
- Differential expression analysis
- Gene network analysis

IMAGE ANALYSIS

- Image analysis workflows
- Machine learning
- Plant growth analysis

MICROBIOME

- Taxonomic classification
- Population diversity
- Differential analysis

SOFTWARE DEVELOPMENT

- Image analysis
- Computational workflow management
- Data management
- Interactive web applications

Contact: Noah Fahlgren, Director
Email: nfahlgren@danforthcenter.org

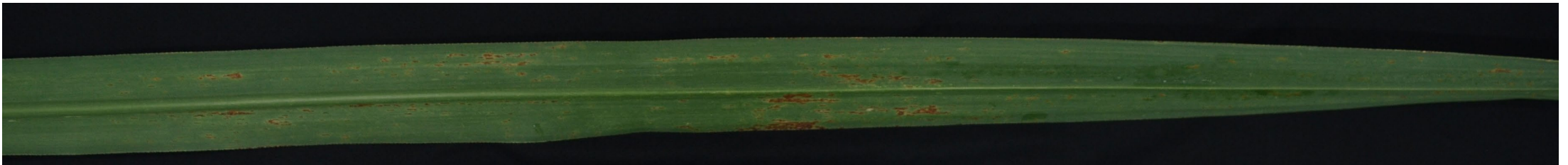# Using PlantCV's Naïve Bayes Classifier for Segmentation
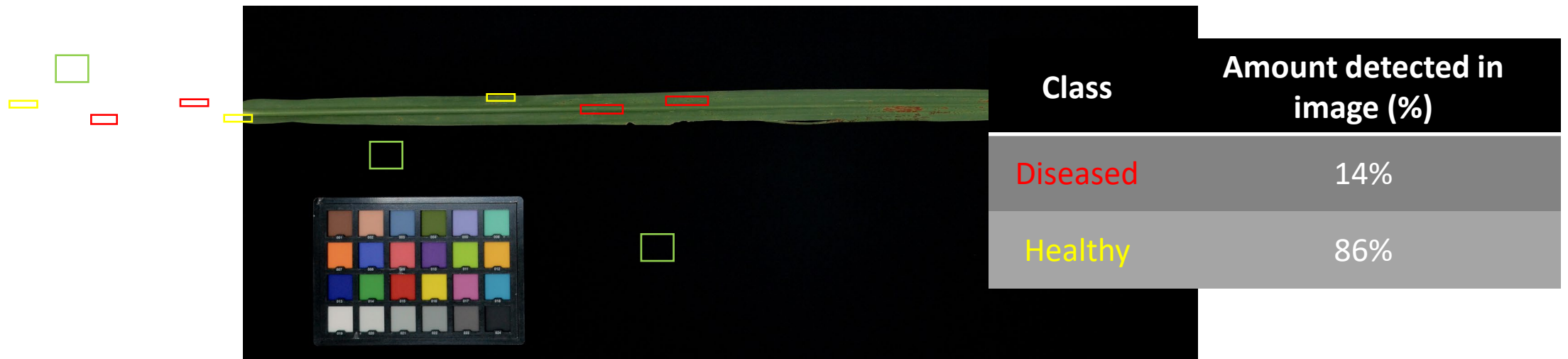
May 21, 2024

Can you spot the difference?

- Healthy Sugarcane

- "Rusted" Sugarcane

Naïve Bayes Classifiers

Class	Amount detected in image (%)
Diseased	14%
Healthy	86%

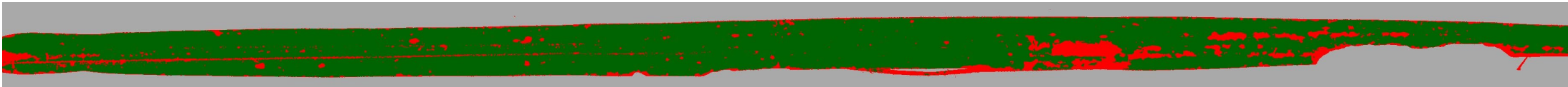|			
Input data with multiple features	Calculate feature probability for each class	Multiply probabilities for all features per class	Output class with the highest overall probability

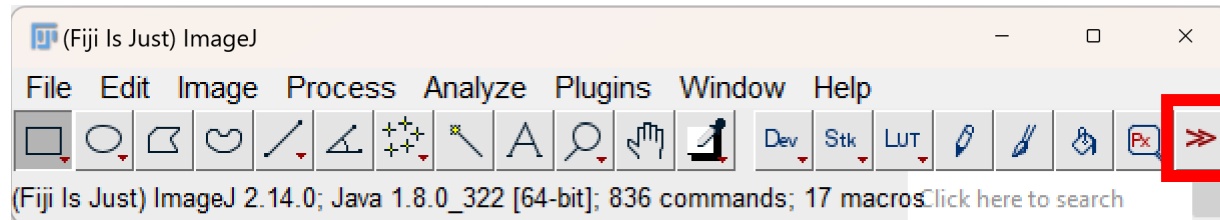# Using Fiji's Pixel Inspector Tool

- Original Image
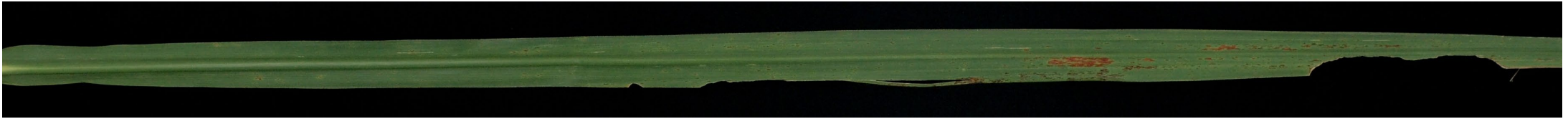
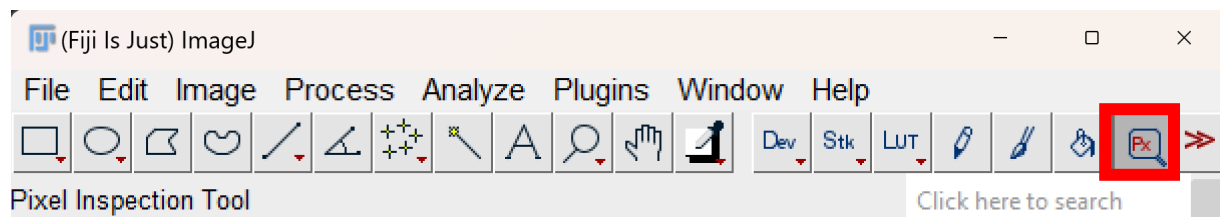- Segmentation using PlantCV's naïve Bayes classifier

Getting started

- Install the latest version of
  - OPTIONAL: Add Fiji to your taskbar for easier access
- Open the application
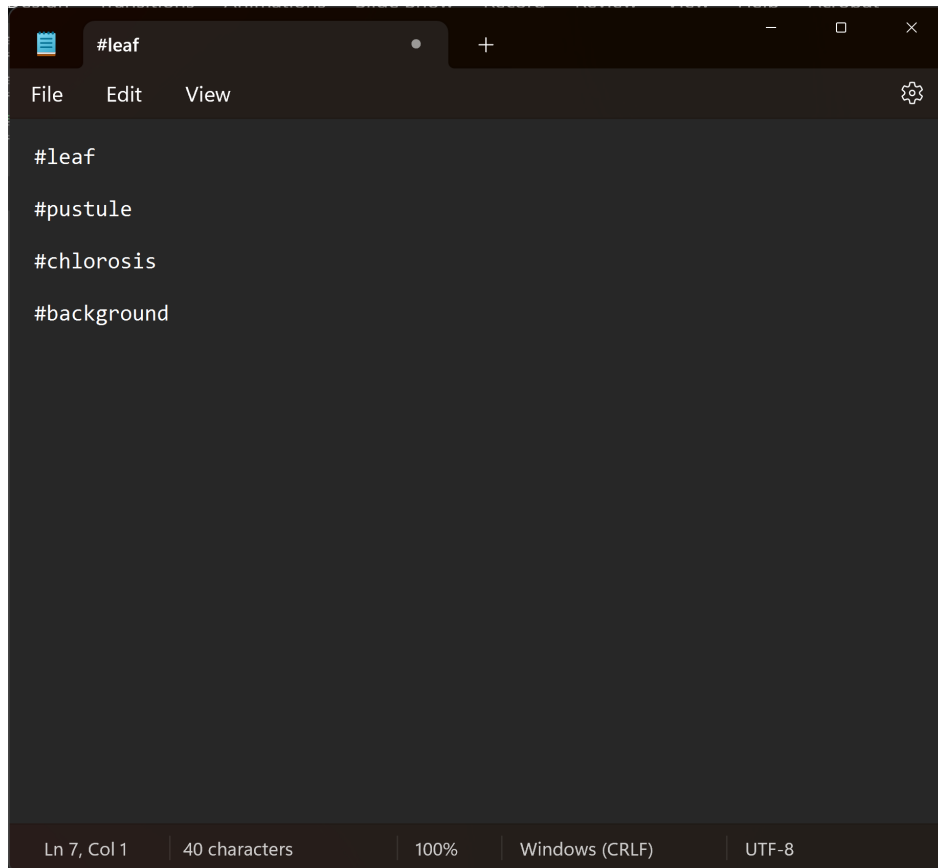 - Select ≫ on the left-side of tool bar

  - Select **Pixel Inspector** from the drop-down list
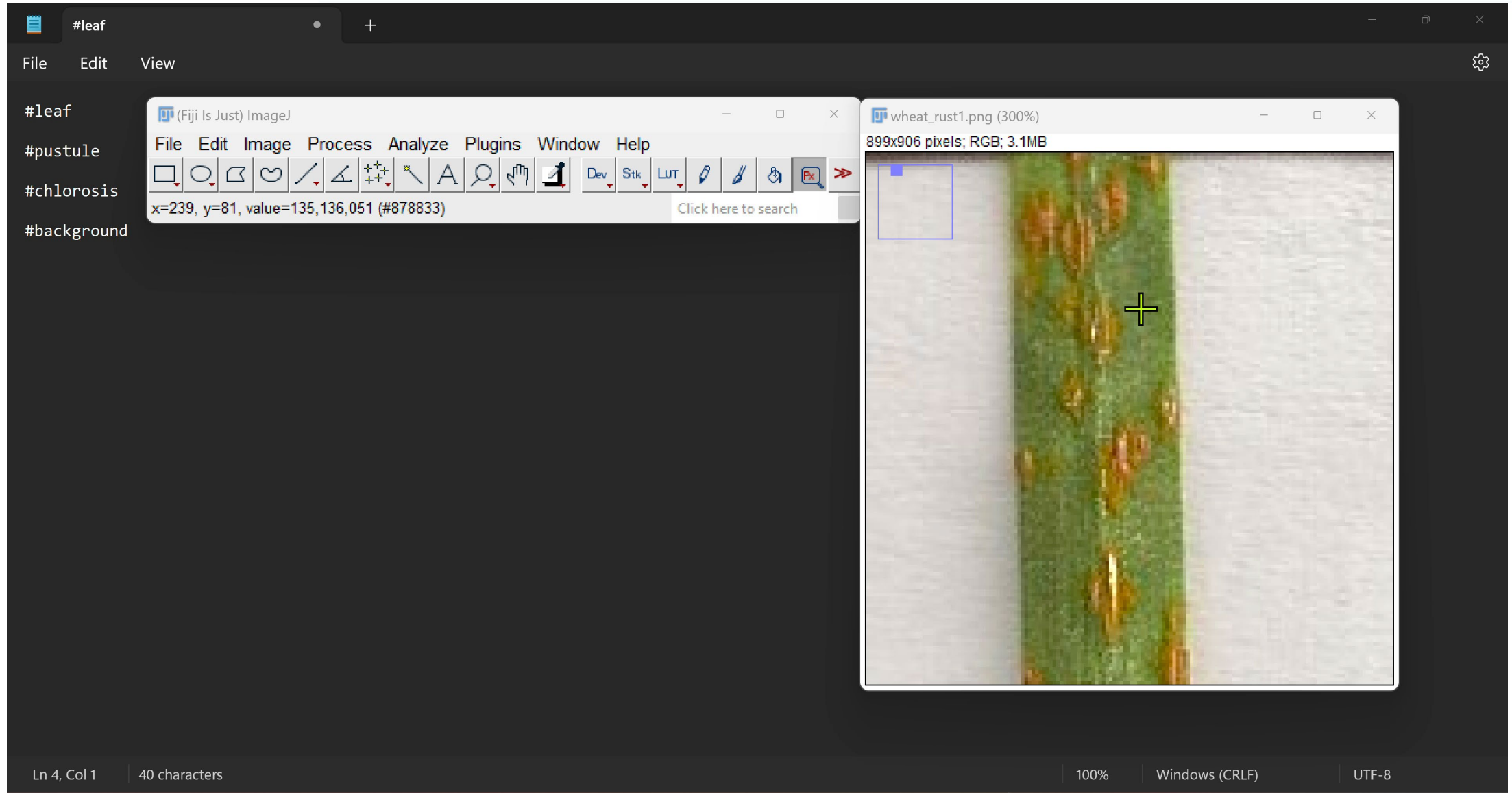- You should now see a new icon on your tool bar

Using Fiji's Pixel Inspector Tool

- Open a text editor and label your classes

- Open your image sample in Fiji

Using Fiji's Pixel Inspector Tool

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