New Software Algorithm Advances Measurement Technology in Agribusiness

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WARF: P140371US02

Inventors: Edgar Spalding, Nathan Miller

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a new imaging software algorithm for fast measurement of yield and quality of corn and other commercially valuable crops.

Overview

Assessing new varieties of maize and other crops is time-consuming and costly. Researchers must count and weigh kernels from hundreds of ears of corn to measure yield characteristics such as kernel number, size and packing along an ear. A faster, more automated method could allow researchers to collect more extensive data earlier in the process, increasing the likelihood of successful field trials in crop development.

The Invention

UW–Madison researchers have developed a new scanning algorithm for use in assessing yield and quality of crop production.

To determine characteristics such as kernel loading on an ear of corn and ear size, researchers scan up to three ears at a time using a common flatbed scanner. To measure 100 kernel weight, another common yield measurement, researchers weigh a handful of individual kernels and scatter them on the scanner. The resulting images are then analyzed using the algorithm to quickly provide yield data.

The algorithm uses a thresholding technique to separate the ears from the background and a Fourier transform to more accurately estimate kernel length. It also corrects for individual kernels clustering together.

Applications

- Assessing new crop varieties

Key Benefits

- High throughput
- Fast and accurate
- Streamlines yield assessment
- Used with common flatbed scanners and devices

Stage of Development

The imaging method and subsequent algorithm/software package have been coded and are being used by the inventors and their collaborators.

Additional Information

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For More Information About the Inventors

- Edgar Spalding

Related Technologies

- For more information about image analysis and algorithmic solutions to corn output and measurement, see WARF reference number P140381US01.

Publications

- Heckwolf S., Heckwolf M., Kaeppler S. M., de Leon N. and Spalding E. 2015. Image Analysis of Anatomical Traits in Stalk Transections of Maize and Other Grasses. Plant Methods. 11, 26.

Tech Fields

- Animals, Agriculture & Food : Plant biotech
- Information Technology : Computing methods, software & machine learning

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842