PADDY RICE

TESTING AND GRADING

FAST, ACCURATE, AUTOMATED



PaddyCheck 6800 System

Official Method: AACC 61-10.01

Perten

a PerkinElmer Company



TEST SINGLE PADDY GRAINS



PREDICT HEAD RICE YIELD (HRY)

Test Paddy Rice – No De-Husking Required

Designed specifically for breeders, rice traders, and millers, the PaddyCheck 6800 system tests for critical parameters that indicate rice quality. The system is automated, objective, simple-to-use and takes about 5 minutes total for analysis. No de-husking of the grains is required.

How it Works

First a visual image is taken to center the grain and determine dimensions, next, a polarized image is taken to determine translucency, followed by a texture analysis.

Visual Image

The visual image is used to measure various grain attributes such as length, width, color and more.

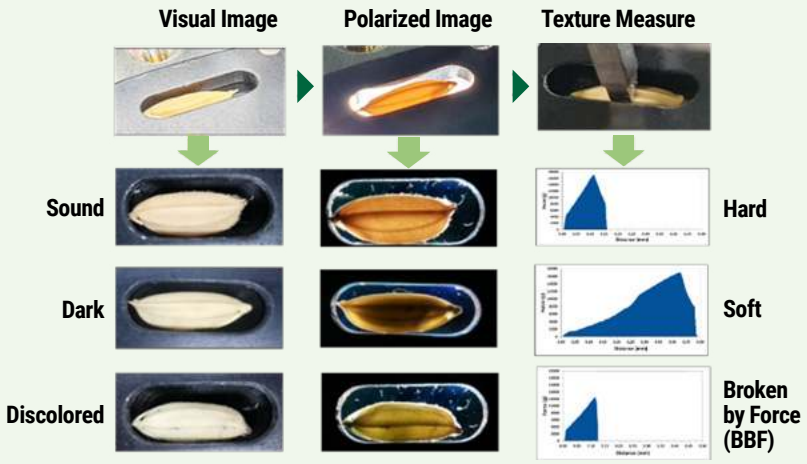
Polarized Translucency Image

The translucency image provides information about the internal structure such as translucency, internal fissures/cracks, and insect damage, amongst others.

Texture Analysis

A texture measurement of each single grain is performed to determine thickness and resistance to force. Combinations of this collected data can then be used to model and predict complex rice attributes such as head rice yield (HRY).

Example: AACC Method 61-10.01 Measurement





FOR BREEDERS



FOR TRADERS

Rapid Grading and Quality Measurements on Paddy Rice

By using the PaddyCheck to collect objective data automatically, breeders and traders can improve the continuous work of optimizing the value of rice early in both processes.

Rice breeders can use the PaddyCheck 6800 system to describe physical characteristics (length/width/thickness) and gauge translucency. The system can help determine numbers of immature kernels, uniformity of size and shape, and kernel hardness. These measurements can be used in conjunction with texture analysis (3-point bend test) to create models to predict process relevant indicators such as HRY.

The PaddyCheck 6800 system can help rice traders to quickly assess varietal purity based on grain length, by categorizing grains into the three broad grain types – long, medium, and short. It can provide an indication of immature, fissured/cracked, and soft or defective kernels. And of course, it can be used to predict HRY, allowing sellers, buyers, and processors to obtain optimal value and set pricing based on a quantifiable, objective standard.

Additionally, the PaddyCheck system can provide visual assessment (dimensional and translucency analyses) and milling durability information (texture analysis) for brown and polished rice.

Features and Benefits

- Fast, direct analysis of clean paddy samples without the need for husk removal
- Objective, operator-independent measurement
- Prediction of head rice yield (HRY)
- Compact, portable, battery option, and simple to operate
- AACC Method 61-10.01

PaddyCheck Easy Workflow



1. Use the SPD 4200 to collect a representative sub-sample.



2. Select analysis profile suitable for the grain.



3. Pour the sample into the PaddyCheck.



4. Display during analysis.



5. Example results. Can be customized to display desired parameters.



BUY THE RIGHT GRAIN
PAY THE RIGHT PRICE



ACCURATE, REPEATBLE, RELIABLE

Use to Price, Buy, and Process Rice

The PaddyCheck helps automate and standardize the rice trade by supplying objective, quality information at exchange points. The system comes complete with standard measurements of grain dimensions, broken by force, hard, and soft kernels. HRY prediction is also available.



Profitability Maximization

Since milled rice can range from 3 to 4 times the price of paddy rice while brokens can be as little as 70% the price of paddy rice, buying the right rice at the right price is critical to profitability. Millers can use the PaddyCheck to balance price versus yield to maximize profitability, as well as to obtain optimal yield from a given batch of grain.

Paddy Rice Classification

The PaddyCheck can be used as a tool to help identify batches of paddy rice that may have lower tolerance to milling pressures. From the polarized images of paddy rice, low translucency can indicate higher degrees of chalk, insect damage, or immaturity, which can reduce head rice yield.

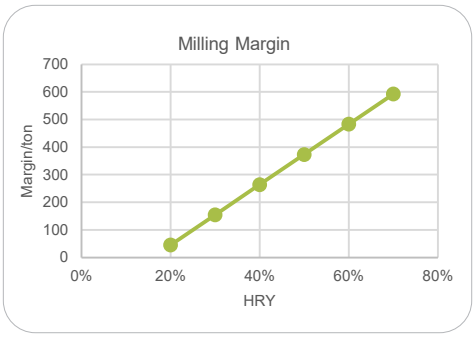
Mill Setting Optimization

Millers use the indicative information from the PaddyCheck to determine mill settings to optimize milling yield for each batch/lot of grain. By knowing if a specific lot of grain is long, medium, short (or worse, blended), or its milling potential (from HRY), the PaddyCheck can help determine roller speeds and gaps to optimize milling yield and quality.

Additional Rice Types

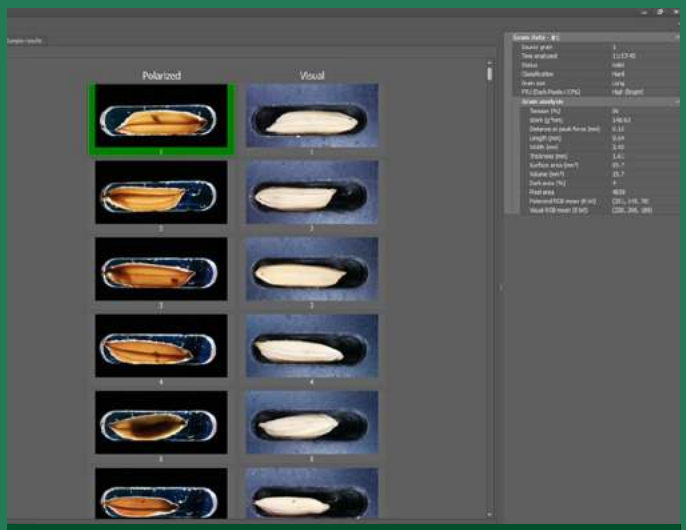
In addition to measuring paddy rice, the analyzer can test brown and milled rice for many attributes – broken kernels, length, width, color, and more. The translucency image can identify batches of milled rice with high levels of chalky kernels. The PaddyCheck has an official AACC Method (61-10.01) demonstrating its capabilities to produce precise, repeatable measurements across multiple instruments.

- Precise, repeatable, and objective
- Buy the right grain at the right price
- Characterize varieties
- Detect blends and mixes





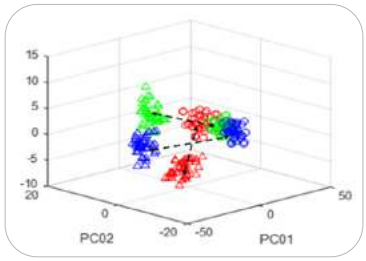
EASY TO OPERATE



USES AACC METHOD NO. 61-10.01

Get New Varieties and Cultivars to Market, Faster

The PaddyCheck, when combined with Singulator PLUS software, provides powerful insights to rice breeders and researchers. They can help identify the most promising cultivars that match desired traits, while also monitoring varietal processing characteristics.



Example: varietal segregation

Singulator PLUS *provides investigative tools to review PaddyCheck images, as well as texture data and next order information from the raw data. Functionality includes:*

Histograms: View histograms/ distribution of the various measurements such as broken by force, R,G,B color values, length, width, grain hardness, peak force, translucency units, immature kernels, and much, much more. Review visual, polarized images, and texture plots.

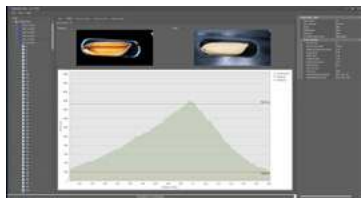
Select and Export: Pick data to export to 3rd party data analysis programs, such as Excel, for prediction model development. Export images for AI/machine learning training datasets in combination with force measurements.

Change/Develop PaddyCheck Embedded Analysis Profiles: Singulator PLUS can be used to configure profiles for download to the PaddyCheck.

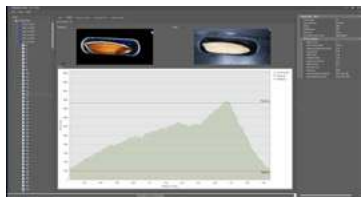




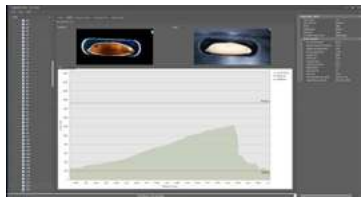




Hard

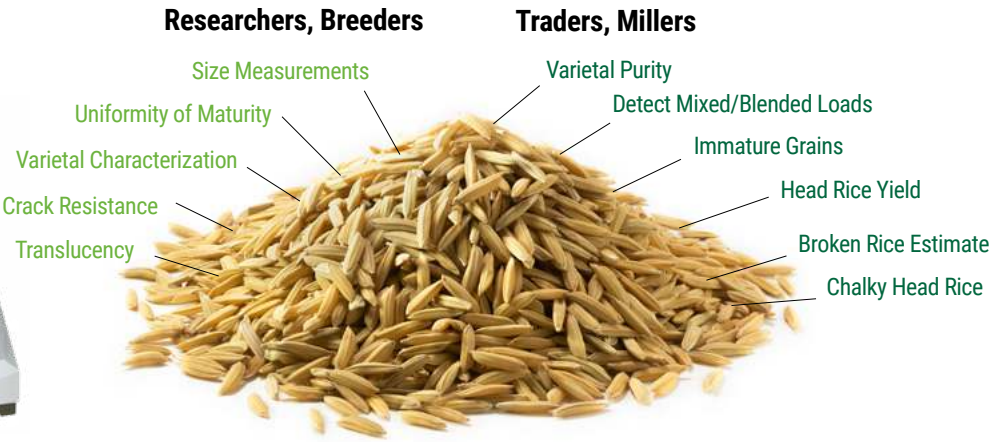


Soft



Broken by Force





Specifications			
Size (H/W/D)	259mm/186mm/235mm	**Weight**	3.5kg
Power	100-240V, 50/60Hz, 100VA	**Battery**	4-cell Li-ion, 36.0 WH
Operating Temperature	+5-40°C ambient	**Maximum Relative Humidity**	80% for ambient temps to 31°C, decreasing linearly to 50% at 40°C
Acoustic Noise Emission	<70dB (A) operator position, normal operation	**Analysis Rate**	1.5 seconds/grain
Display	5-inch capacitive touch, 800 x 480 pixels	**Camera**	225 x 105 pixels at 96dpi
Force Range	0 - 5,000g force with power-off transport lock	**Force Accuracy**	Better than 1%
Grain Size Accuracy	+/- 0.3mm	**Test Modes**	Fracturability and image only
Storage	At least 8GB eMMC	**Connections**	2 x USB type A, 1 x USB type B, 1 x ethernet RJ45 cat 5+, 1 x micro-USB type AB (service only)

For more information, please visit www.perkinelmer.com/PC6800

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