SOP No: SOP-PHYS-003	SOP Description: Automatic Moisture Content Determination
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SOP-PHYS-003: Automatic Moisture Content Determination

Scope:

Adequate drying to an industry-accepted moisture content (MC) of approximately 12.5% (wet-basis) is necessary to ensure the quality and safety of stored rice. However, conventional oven drying methods for measuring MC of whole kernels may take 24 h or longer. In order to improve production efficiency, the grain industry has adopted specialized rapid moisture meters, which are designed to measure the MC of single kernels, based on electrical conductance/resistance. These instruments are used in order to estimate the MC of large production lots, or to quantify MC variability among individual kernels within a given lot.

Principle:

The CTR-800E Single Kernel Moisture Tester measures the DC resistance of a single kernel as it is crushed between two metal roller electrodes. The resistance values are correlated with moisture contents obtained via conventional drying methods. As each kernel passes through the rollers, its MC is digitally displayed.

Equipment:

Single Kernel Moisture Tester (CTR-800E, Shizuoka Seiki Co. Ltd., Shizuoka-ken, Japan)

Procedure:

1. Turn on instrument.
2. Set date by pressing the Date button, and entering the date in MMDDYY format, using the numerals specified on the key pad. The date entered will appear on the print-out.
3. Select the following:
    a. Appropriate kernel number to be used for the sample, using arrow keys on the lower left-hand side of the keypad. Options range from 25 to 800 kernels. Always select at least 100 kernels.
    b. Type of rice to be analyzed (ex. rough, brown) under Grain section.
    c. Type of data to be reported on the print-out. Selecting AVG will display the average moisture content (MC) for the number of kernels analyzed; selecting WITH DATA will display individual kernel MCs, distribution plot, average and standard deviation of the total sample.
4. Pour rice sample into the sample chamber. (Sample size varies with the kernel count selected.)
5. Press the Start button. The instrument will automatically feed the selected number of kernels into the analysis chamber, and the MC of each kernel will be shown on the digital display.
6. Use the calibration curve (posted in the pilot plant) to verify that CTR moisture readings correlate with oven moisture values.
7. Raw data should be printed and manually transferred into an electronic file for further analysis, as necessary.