Automated Temperature and Humidity Monitoring System for Quality Control, Drying and Storing of Rice Varieties

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About 20 typhoons devastate the Philippines annually. This, along with lengthy rainy seasons, caused wastage of over 12.5 million tons of rice since 2001. Moreover, Filipino farmers have no to little technology to improve post-harvest methods. These factors aggravate the rice insufficiency nationwide. The study aimed to construct an Automated Temperature and Humidity Monitoring System for Quality Control, Drying, and Storing PSB RC-82, RC-152, NSIC RC-132H, and HYDRA rice varieties. The device has DHT22 sensors for humidity and temperature measurement inside the chambers. Arduino MEGA microcontroller receives and interprets these data. If the parameters do not meet the ideal moisture index of 14%, it commands the blower to regulate the temperature while the exhaust fans remove excess moisture inside the chamber. Humidity is regulated in the storage chamber through fan speed-adjusted according to the sensor's reading. Five kilograms for each of the four freshly-harvested rice varieties were exposed at room temperature and another group was dried using the device for 10 minutes. The initial and final moisture content of all rice grains were measured. A second test was conducted to measure the time it took the grains to reach 14% moisture level. Independent samples t-test results revealed that the device could draw out significantly higher amount of moisture than mere exposure to room temperature. ANOVA showed no significant difference in the mean drying time of four rice varieties using the device. The study proved beneficial to creating better post-harvest methods helping solve the rice insufficiency crisis. Keywords: Automated rice dryer, rice quality control