Vanilla Breeding Smart Detector Gun

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Farmers have been having difficulties in determining the right time to breed their vanilla because there is not any definite measurement to detect it. As a result, the vanilla export commodity has decreased from 309 tonnes in 2011 to 188 tonnes in 2018. The accuracy of the vanilla mating time greatly determines the success of conception and the quality of the fruit produced. This project aimed at inventing a Vanilla Breeding Gun that can detect the of mating vanilla based on the density of the leaf color and moisture parameters. This study used the bservation method from March 10, 2020 to September 14, 2020, located at Bali Mandara Public High School and 3 vanilla plantations in Bali. Based on the observations, it was found eligibility that there are three (3) measured leaf conditions to indicate the readiness of the vanilla plant to mate: (1) less eligible for breeding (leaf humidity is 24.88-25.87 and color value R=24-26, G=31-34, B=32-36); (2) eligible for breeding (leaf humidity is 25.98-26.77 and color value R=19-22, G=25-28, B=29-31); (3) ineligible for breeding (leaf humidity 24.01-24.77 and color value R=17-19, G=19-24, B=24-26). After testing 150 samples of vanilla plants, 143 samples were properly detected, the accuracy rate of the tool has reached 93%. The Vanilla Breeding Gun is not only easy to use by the farmers, but also displayed the detection result directly on the LCD screen located on the back of the tool. Keywords : Arduino Nano, MLX90614 sensor, TCS230 sensor, vanilla breeding.

Awards Won:
Fourth Award of $500