

Mechanization and automation in agriculture

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utomation and mechanization technology in agricultural and plantation industry is still new and still under research and Adevelopment. The application of computer, mechatronics and machines for agricultural production has been one of the outstanding developments and shows the engineering and mechanization concept that flow from laboratory to real application as need in agriculture. The project describes on the stages of design, fabrication and testing for the development of stand alone agriculture machine of dioscrine removal system. The manual operation of water inlet and outlet in this machine was replaced with automatic operation by solenoid valve while the Peripheral Interface Controller was used for controlling input and output signal from sensor, solenoid valve and motor pump. The application of Videogrammetry technique is used and to define it capability for applying into bio-production arm in real cocoa plant environment. The testing was performed under laboratory control environment and dummy target point also was established to collect the actual data. The study also introduced the image based measurement for modeling the oil palm fresh fruit bunches maturity prediction which enables the determination of the correct time for harvesting. The images were analysed for optical properties of Hue, and the model is used to develop an equation for the software to enable the oil palm planters to determine the time of harvesting the matured oil palm fruit bunches in oil palm plantation. Research on 'development of automation and control design system for lowland tropical greenhouse' is also describes on the development of the data acquisition system for temperature and relative humidity in the lowland tropical greenhouse using a microcontroller. Vapor Pressure Deficit was used to identify air moisture conditions for plant production while taking into account different temperature levels. The development of variable rate sprayer for oil palm plantation describes on how to locate in the real time environment the existence and intensity of weeds and to spray the weedicides automatically and precisely. The sprayer nozzle will turn 'on' or 'off' depending on the percentage or intensity of green color pixel value of weeds. The Computer-controlled system also was applied in autonomous tractor. The electromechanical system was used to control the gear, brake, steering and accelerator system.

Biography

Mohd. Hudzari haji razali has completed his Ph.D. in field of Smart Technology and Robotic from University Putra Malaysia in year of 2010. Currently he is senior lecturer in Faculty of Agriculture and Biotechnology, Universiti Sultan Zainal Abidin Malaysia which toughly teaching the courses of Farm Mechanization and Irrigation System Technology. He has published more than 80 papers in reputed journals, conferences and books and serving as an editorial board member and reviewer for prestige journals and conferences.