****

**TITLE**

*(Insert author’s passport picture)*

*size 3.5 x 4.5 cm*

[Title: uppercase, Times New Roman, font size 12, bold, align left]

**AUTHOR’S FULL NAME (*only main author/participant’s name*)**

[Times New Roman, font size 11, bold, collaborators’ name not required, align left]

[Indicate author’s affiliation, Times New Roman, font size 11, align left]

*\*e-mail: abc@mardi.gov.my* [Times New Roman, italic, font size 10, align left]

**ABSTRACT**

(Not more than 300 words) [Times New Roman, font size 11, justified]

Keywords: (maximum 5 words) [Times New Roman, font size 11, align left, arrange in alphabetical order]

**CONTOH PENULISAN ABSTRAK**

**MARDI IoT-BIOSENSOR PROTOTYPE for ON-SITE RICE DiseaseS Detection**

**NORHAFNIZA AWALUDIN**

Biodiagnostic-Biosensor Programme,

Biotechnology and Nanotechnology Research Centre,

Malaysian Agricultural Research & Development Institute (MARDI),

Persiaran MARDI-UPM,

43400 Serdang, Selangor

[*\*e-mail: hafniza@mardi.gov.my*](mailto:*e-mail:%20hafniza@mardi.gov.my)

**ABSTRACT**

Advance plant disease detection offers the most cost-effective and efficient means in plant disease management. Current and normal practice in detecting rice diseases relies on visual assessment of plant symptoms by farmers or plant pathologist. Laboratory analysis, on the other hand, requires the samples to be sent to the laboratories, time-consuming, involve expensive laboratory equipment and required technical personnel to perform the analysis. With this regard, biosensor technique is gaining attention in recent years due to its practicality, portability and simplicity of construction. In RMK-11, our research group have successfully developed an antibody-based biosensor or immunosensor for the detection of three major rice diseases in Malaysia (i.e. bacterial leaf blight, bacterial leaf streak and blast). The biosensor system consists of two components; modified sensor strips with immobilized antibodies and an Android-based portable reader device with built-in mobile app that allows users to perform on-site testing and GPS function for test location tracking. The data performed on the samples will be saved into the device, followed by the real-time transmission of the data together with GPS location and date/time to a central cloud server. The server will collect all the field test data to allow users to perform further analysis/monitoring such as location-mapping or trend-mapping. The system can also be set to send alerts to mobile phones of supervisors/relevant agencies if the test data exceeds certain pre-set limits to indicate immediate actions. Based on inoculated samples, the biosensor is able to detect bacteria as low as 102 CFU/mL within the first week of infection. This method has been validated with PCR technique and showed good correlation of more than 80% for BLS and blast disease; and 92.7% for BLB. The detection of rice diseases takes less than 30 minutes and requires minimum sample extraction without organic solvents and lab instruments.

Keywords: biosensor, electrochemical biosensor, immunosensor, internet of things, rice disease