[P4] Crop Genetics and Physiology

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 4 (Poster) (Crop Genetics and Physiology)

1:15 PM - 2:00 PM

[P4-04]Visualizing Aleurone Layers in Mature Rice Grains by a Modified Half-Cut Method

*Nominated for Presentation Awards

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Rice bran, a byproduct of rice milling process, is utilized to produce rice bran oil. Larger embryo size or increased aleurone layer thickness are effective on amount of bran oil. So far, mutants of giant embryo mutated by N-methyl-N-nitrosourea have been developed. However, varieties having thickened aleurone have not considerably established due to difficulty in screening methods. In this study, a simple method was established to screen the aleurone layer's thickness from a larger number of rice grains.
Total of 100 of half-cut brown rice (*Oryza sativa* L.) were embedded in one plate by acrylic resin and soaked into water overnight at room temperature, then subsequently stained with two solutions (1) new MG solution diluted 1:2 with methanol (99.8%) and (2) iodine solution. The sample sections were observed under digital microscope (MSX-500Di, Moritex Schott) and analyzed by software (WinROOF 2018, Mitani Corporation).
The method was successfully established by combination with preparation of half-cut samples on plate, staining and clear observation under a digital microscope. After staining, aleurone layer was detected clearly by light blue, whereas, starchy endosperm was distinguished by purple. This modified method can generate a massive number of seeds of 100 halved grains staining at the one-time cut. Besides, when seeds are attached on plates one day beforehand, screening aleurone layer thickness of about 700 seeds is achievable on the next day.