SUMMARY

Black rice has dark purple aleurones because it contains high anthocyanins as antioxidants that are beneficial for health. The problems that arise when farmers cultivate black rice are have higher stem than other rice varieties and longer harvest period. This problem can be prevented by addition paclobutrazol and gibberellin. The application of paclobutrazol and gibberellin at the same time can inhibit gibberellin synthesis, so gibberellin addition is carried out 2 weeks after paclobutrazol application. The application of paclobutrazol and gibberellin externally can affect the physiology and micromorphology of the Pekalongan black rice plant. This research was conducted to identify of micromorphology, chlorophyll and anthocyanin content of Pekalongan black rice leaves (*Oryza sativa* L.) with the addition of paclobutrazol and gibberellin.

This research was carried out in November 2020 - February 2021 at the Greenhouse, Plant Structure and Development Laboratory, and Plant Physiology Laboratory Faculty of Biology, Jenderal Soedirman University. This research was carried out experimentally with factorial Completely Randomized Design (CRD) experimental design with two factors. First factor (I) used 4 levels of concentration of paclobutrazol (0, 100, 200, 300 ppm) and second factor (II) used 4 levels of gibberellin concentration (0, 100, 200, 300 ppm), each treatment with 3 replications, so there are 48 experimental units. Variable that used in this research such as the micromorphological characters and the physiological responses. Variable of micromorphological characters with parameters of stomata density, trichomes density, stomata length and width, and mesophyll thickness. Variable of physiological response with parameters of chlorophyll content a and b, total chlorophyll, and anthocyanin content. The data obtained in this research was analyzed using the Analysis of Variance (ANOVA) at the error rate of 5%. The data was followed by analysis of Tukey's Honestly Significant Differences (HSD) test at an error rate of 5%.

The results of this research show that interaction between paclobutrazol and gibberellin not affected add to anthocyanin content. Paclobutrazol 300 ppm is the best concentration to increase stomata density and trichomes density and decrease stomata length and width. Gibberellin 300 ppm is the best concentration to increase stomata density and total chlorophyll and decreased length and width stomata. Paclobutrazol and gibberellin application independently not affected to mesophyll thickness and chlorophyll a and b.

Keywords: *anthocyanins*, *black rice*, *gibberellins*, *micromorphology*, *paclobutrazol*.