

RINGKASAN

Padi merupakan tanaman sereal yang bernilai sosial, politik dan ekonomi, karena merupakan bahan makanan pokok bagi lebih dari setengah penduduk dunia. Beberapa kendala utama tiga kendala utama produksi padi global, yaitu meningkatnya intensitas serangan organisme pengganggu tanaman, tingginya tingkat penggunaan pupuk kimia, serta berkurangnya pasokan air sebagai dampak perubahan iklim global. Pemakaian air yang efisien pada budidaya padi sawah sangat diperlukan untuk mempertahankan ketahanan pangan pada kondisi ketersediaan air yang semakin terbatas. *Green Super Rice* (GSR) merupakan genotipe padi yang dirakit agar memiliki daya hasil yang tinggi dan stabil pada kondisi tercekam biotik ataupun abiotik.

Penelitian ini bertujuan untuk mengetahui: 1) perbedaan pertumbuhan dan hasil antar galur *GSR*, 2) pengaruh kondisi ketersediaan air pada pertumbuhan dan hasil dan 3) respon galur-galur *GSR* terhadap tiga kondisi ketersediaan air. Penelitian ini dilaksanakan di *Screen House* Fakultas Pertanian Universitas Jenderal Soedirman, pada April-Agustus 2016. Rancangan yang digunakan adalah Rancangan Acak Kelompok (RAK) dengan dua faktor perlakuan yaitu tiga taraf pemberian air: Jenuh Air (A3), Kapasitas Lapang (A2), 50% Kapasitas Lapang (A1) dan galur padi (CH1, CH2, CZ1, CZ2, CW1, CW2, Ciherang dan IR-64), sehingga terdapat 24 kombinasi perlakuan. Variabel yang diamati yaitu tinggi tanaman, jumlah anakan total, jumlah anakan produktif, luas daun, umur berbunga, panjang malai, persentase gabah isi permalai, bobot gabah per rumpun, bobot kering tajuk dan bobot 1.000 biji. Data dianalisis menggunakan uji F, apabila terdapat keragaman dilanjutkan dengan uji DMRT pada taraf kesalahan 5%.

Hasil Penelitian menunjukkan bahwa ada perbedaan pertumbuhan dan hasil yaitu pada variabel tinggi tanaman, jumlah anakan total, jumlah anakan produktif, luas daun, umur berbunga, panjang malai dan bobot gabah per rumpun. Kondisi ketersediaan air pada galur-galur *GSR* mempengaruhi tinggi tanaman, luas daun, umur berbunga, panjang malai, persentase gabah isi permalai, bobot gabah per rumpun, bobot kering tajuk dan bobot 1.000 biji. Kondisi jenuh air (A3) meningkatkan tinggi tanaman, luas daun, panjang malai, bobot gabah per rumpun, bobot kering tajuk, dan bobot 1.000 biji dibandingkan kondisi 50 % kapasitas lapang (A1) dan kapasitas lapang (A2). Respon galur-galur *GSR* terhadap kondisi ketersediaan air menghasilkan interaksi pada variabel bobot gabah per rumpun dan respon galur terbaik pada G2 (Ciherang x Huanguazhan) pada perlakuan kapasitas lapang (A2) sebesar 29,41 g/ rumpun.

SUMMARY

The rice production improvement effort is a necessity in parallel with the growth of Indonesian population. Several main problems which obstruct the global rice production effort are the increased intensity of pest attacks, high levels of chemical fertilizer use, and reduced water supplies as a result of global climate change. Efficient water use in rice cultivation is necessary to maintain food security in conditions of water availability which is increasingly limited. Green Super Rice (GSR) is rice genotypes designed to have high yielding ability and stable across biotic and abiotic stresses.

This research was aimed to find out: 1) the differences between growth and yield of GSR, 2) the effect of water availability condition towards growth and yield, 3) the response of GSR strains towards three water-available conditions. This research was conducted in the Screen house of the Faculty of Agriculture, Jenderal Soedirman University, from April to August 2016. This research used a Randomized Block Design (RBD), with two factors of treatments, which consisted of levels of watering application, of flooded (A3), field capacity (A2), and 50% of field capacity, and rice strains (CH1, CH2, CZ1, CZ2, CW1, CW2, Ciherangdan IR-64), with a total of 24 treatment combinations. The observed variables were plant height, total amount of plant tillers, amount of productive tillers, leaf area, flowering age, length of panicle, percentage of hulled at each panicle, weight of hulled rice per clump, dry weight of plant canopy, and weight of 1000 seeds. Data were analyzed by using the F-test, then continued with DMRT test with an alpha of 5%, when there was a generated variation.

The result showed that there were differences in plant growth and yield GSR which included plant height, amount of productive tillers, leaf area, flowering age, length of panicle, and weight of hulled rice per clump and dry weight of plant canopy, over-watered condition increased the plant height, leaf area, flowering age, length of panicle, percentage of hulled at each panicle, weight of hulled rice per clump, dry weight of plant canopy, and weight of 1.000 seeds. the respond of GSR strains towards water-availability condition between weight of hulled rice per clump and the best G2 (Ciherang x Huanguazhan) respond was the field capacity treatment with the value of 29.41 g/clump.