

RINGKASAN

Perubahan iklim seperti perubahan suhu, curah hujan yang bervariasi, kekeringan, dan berkurangnya sumber air berdampak pada kestabilan produksi padi. Sistem budidaya aerob mampu berpotensi untuk menangani masalah kekurangan air dan perubahan iklim yang terjadi. *Green Super Rice* (GSR) merupakan genotipe padi yang digunakan untuk budidaya tanaman padi pada lahan suboptimal. GSR memiliki keunggulan toleran terhadap cekaman kekeringan, toleran terhadap cekaman biotik dan abiotik. Galur GSR terus dikembangkan guna mengoptimalkan pemanfaatan lahan serta meningkatkan kualitas produksi hasil panen. Penelitian ini bertujuan untuk 1.) mengetahui kualitas gabah dan mutu beras galur padi *Green Super Rice* (GSR) Unsoed pada perlakuan aerob dan anaerob; dan 2.) mengetahui perbedaan kualitas gabah dan mutu beras galur padi *Green Super Rice* (GSR) Unsoed dibandingkan dua varietas pembanding Inpari 32 dan Ciherang.

Penelitian dilaksanakan di *screen house* serta Laboratorium Pemuliaan Tanaman dan Bioteknologi Fakultas Pertanian Universitas Jenderal Soedirman. Penelitian dilaksanakan pada Bulan Juli hingga Desember 2024. Rancangan penelitian menggunakan Rancangan Acak Kelompok Lengkap (RAKL). Perlakuan yang diberikan pada penelitian ini adalah genotipe padi dan kondisi air tanah. Perlakuan genotipe padi menggunakan 3 genotipe padi, yaitu V1= *Green Super Rice* (GSR) Unsoed, V2=Inpari 32, dan V3=Ciherang. Perlakuan kondisi air tanah dibagi menjadi 3 kondisi, yaitu K1=kondisi air tanah tergeneng (anaerob 1), K2=kondisi air tanah optimum (anaerob 2), dan K3=kondisi air tanah kapasitas lapang (aerob). Data dianalisis menggunakan uji F analisis ragam ANOVA, hasil analisis yang berpengaruh nyata antar perlakuan yang diujikan dilakukan uji lanjut BNT pada taraf kesalahan 5%. Variabel penelitian yang diamati dan diukur adalah warna gabah, persentase gabah isi, bobot 1.000 butir gabah, panjang gabah, lebar gabah, panjang beras, lebar beras, bentuk beras, rendemen beras giling, butir kepala, butir patah, butir menir, dan butir mengapur.

Hasil penelitian menunjukkan bahwa genotipe padi menunjukkan pengaruh nyata pada persentase gabah isi, bobot 1.000 butir gabah, panjang gabah, rendemen beras giling, butir kepala, butir patah, dan butir menir. Kondisi air tanah berpengaruh nyata pada persentase gabah isi, bobot 1.000 butir gabah, rendemen beras giling, butir kepala, butir patah, butir menir dan butir mengapur. Genotipe padi galur GSR Unsoed memiliki perbedaan warna gabah dibandingkan varietas pembanding Inpari 32 dan Ciherang. Galur GSR Unsoed menunjukkan hasil kualitas gabah dan mutu beras terbaik dibandingkan varietas Inpari 32 dan Ciherang. Respon GSR Unsoed pada ketiga kondisi air memiliki perbedaan yang stabil, sehingga menunjukkan dapat beradaptasi pada lingkungan optimal maupun suboptimal, sedangkan varietas pembanding Inpari 32 dan Ciherang mengalami penurunan pada kondisi kapasitas lapang (aerob).

SUMMARY

Climate change such as temperature changes, varying rainfall, drought, and reduced air sources have an impact on the stability of rice production. Aerobic cultivation systems have the potential to overcome the problems of air shortages and climate change that occur. Green Super Rice (GSR) is a rice genotype used for rice cultivation on suboptimal land. GSR has the advantage of being tolerant to drought, tolerant to biotic and abiotic examinations. GSR lines continue to be developed to optimize land use and improve the quality of harvest production. This study aims to 1.) determine the quality of grain and rice quality of the Green Super Rice (GSR) Unsoed rice line in aerobic and anaerobic treatments; and 2.) the difference in knowing the quality of grain and rice quality of the Green Super Rice (GSR) Unsoed rice line compared to two comparison varieties Inpari 32 and Ciherang.

The research was conducted in the screen house and the Plant Breeding and Biotechnology Laboratory of the Faculty of Agriculture, Jenderal Soedirman University. The research was conducted from July to December 2024. The research design used a Randomized Complete Block Design (RCBD). The treatments given in this study were rice genotypes and groundwater conditions. The treatment of rice genotypes used 3 rice genotypes, namely V1 = Green Super Rice (GSR) Unsoed, V2 = Inpari 32, and V3 = Ciherang. The treatment of groundwater conditions was divided into 3 conditions, namely K1 = stagnant groundwater conditions (anaerobic 1), K2 = optimum groundwater conditions (anaerobic 2), and K3 = field capacity groundwater conditions (aerobic). The data were analyzed using the F test of ANOVA analysis of variance, the results of the analysis that had a significant effect between the treatments tested were further tested using BNT at an error level of 5%. The research variables observed and measured were grain color, percentage of filled grain, weight of 1,000 grains of grain, grain length, grain width, rice length, rice width, rice shape, milled rice yield, head grains, broken grains, grits, and chalky grains.

The results showed that the rice genotypes showed a significant effect on the percentage of filled grain, 1,000-grain weight of grain, grain length, milled rice yield, head grains, broken grains, and grits. Groundwater conditions significantly affected the percentage of filled grain, 1,000-grain weight of grain, milled rice yield, head grains, broken grains, grits and chalky grains. The GSR Unsoed line of rice genotypes had different grain colors compared to the comparison varieties Inpari 32 and Ciherang. The GSR Unsoed line showed the best grain quality and rice quality compared to the Inpari 32 and Ciherang varieties. The response of GSR Unsoed to the three water conditions had stable differences, thus indicating that it could adapt to both optimal and suboptimal environments, while the comparison varieties Inpari 32 and Ciherang experienced a decrease in field capacity conditions (aerobic).