

RINGKASAN

Tanaman padi, merupakan komoditas pangan utama di Indonesia. Meskipun Indonesia adalah produsen beras terbesar ketiga di dunia, produksi padi mengalami penurunan, sehingga menjadi tantangan bagi Indonesia untuk meningkatkan produktivitas, mengingat pertumbuhan populasi yang terus meningkat. Diperlukan pemupukan yang efektif agar mendapatkan hasil yang baik. Penggunaan pupuk mikroba fosfat telah terbukti efektif dalam meningkatkan serapan fosfor dan pertumbuhan tanaman pada penelitian sebelumnya. Penelitian ini menggunakan empat genotip padi protein tinggi dengan dosis pemupukan mikroba fosfat sebagai faktor utama. Tujuan dari penelitian ini yaitu: (1) Mengetahui perlakuan terbaik antara dosis Pupuk Mikroba Fosfat (MF) dan genotip padi protein tinggi dalam meningkatkan hasil dan pertumbuhan genotip padi protein tinggi; (2) Mengetahui perlakuan terbaik antara dosis Pupuk Mikroba Fosfat (MF) dan genotip padi protein tinggi terhadap kandungan protein genotip padi protein tinggi; (3) Mendapatkan dosis Pupuk Mikroba Fosfat (MF) terbaik pada hasil tanaman genotip padi protein tinggi

Penelitian ini berlangsung dari Oktober 2022 hingga Maret 2023 di desa Banjarsari, kecamatan Sumbang, kabupaten Banyumas, Jawa Tengah. Penelitian ini membutuhkan benih genotip padi protein tinggi, pupuk mikroba fosfat (MF), urea, SP-36, KCl, dan alat pertanian. Rancangan acak kelompok *nested design* digunakan dengan dua faktor: dosis pemupukan dan genotip padi protein tinggi. Dosis pemupukan digunakan dosis 0 L/ha, 4,5 L/ha, 5 L/ha, dan 5,5 L/ha, sedangkan genotip melibatkan empat varietas padi protein tinggi. Data penelitian dianalisis dengan analisis ragam (ANOVA) dan dilanjutkan uji lanjut DMRT (*Duncan Multiple Range Test*) pada taraf kesalahan 5%.

Hasil penelitian menunjukkan faktor pupuk mikroba fosfat berpengaruh pada tinggi tanaman, umur berbunga, serapan N, serapan P, jumlah gabah total, jumlah gabah isi, bobot gabah kering giling, dan kandungan protein. Faktor genotip pada pupuk mikroba fosfat berpengaruh pada tinggi tanaman, panjang malai, serapan N, serapan P, jumlah gabah total, jumlah gabah isi, bobot 1000 butir gabah, bobot gabah kering panen, bobot gabah kering giling, dan kandungan protein.

SUMMARY

Rice cultivation is a primary food commodity in Indonesia. Despite being the third-largest rice producer globally, Indonesia faces a decline in rice production, posing a challenge to enhance productivity amidst a growing population. Limited phosphorus availability in the soil necessitates effective fertilization for optimal yields. The use of phosphate microbial fertilizers has proven effective in enhancing phosphorus uptake and plant growth in previous studies. This research involves four genotypes of high-protein rice, with microbial phosphate fertilization dosage as a primary factor, aiming to contribute novel insights into rice productivity improvement. The objectives of this research are as follows: (1) To determine the best treatment among Microbial Phosphate Fertilizer (MF) doses and high-protein rice genotypes in improving the yield and growth of high-protein rice genotypes; (2) To identify the optimal treatment among Microbial Phosphate Fertilizer (MF) doses and high-protein rice genotypes regarding the protein content of high-protein rice genotypes; (3) To obtain the best dose of Microbial Phosphate Fertilizer (MF) for the yield of high-protein rice genotypes.

The research took place from October 2022 to March 2023 in Banjarsari, Sumbang, Banyumas, Central Java. Using high-protein rice genotype seeds, phosphate microbial fertilizer (MF), urea, SP-36, KCl, and agricultural tools. A nested group randomized design was employed, considering two factors: fertilization dosage and high-protein rice genotype. Fertilization dosages used dosage of 0 L/ha, 4.5 L/ha, 5 L/ha, and 5.5 L/ha, while genotypes involved four high-protein rice varieties. The research data were analyzed using an ANOVA and followed by Duncan's Multiple Range Test (DMRT) at a 5% error level.

The results of the study indicate that the microbial phosphate fertilizer factor significantly affects plant height, flowering age, nitrogen uptake, phosphorus uptake, total grain count, filled grain count, weight of dry milled grains, and protein content. The genotype factor in microbial phosphate fertilizer influences plant height, panicle length, nitrogen uptake, phosphorus uptake, total grain count, filled grain count, weight of 1000 grains, weight of harvested grains, weight of dry milled grains, and protein content.