RINGKASAN

Padi (Oryza sativa L.) merupakan komoditas pangan utama bagi sebagian besar penduduk dunia dan menjadi tulang punggung ketahanan pangan nasional, termasuk di Indonesia. Namun, tantangan seperti alih fungsi lahan sawah, pertambahan penduduk, dan perubahan iklim mengancam produktivitas padi. Oleh karena itu, pengembangan padi gogo di lahan kering menjadi solusi alternatif untuk meningkatkan produksi beras nasional. Upaya peningkatan hasil padi gogo memerlukan pendekatan agronomis yang tepat, antara lain melalui penggunaan mulsa jerami padi dan aplikasi sumber nitrogen (N) yang efisien.

Penelitian ini dilaksanakan di Lahan Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Medan, dengan ketinggian ±25 mdpl dan topografi datar, berlangsung dari September 2024. Rancangan percobaan menggunakan Rancangan Acak Kelompok (RAK) faktorial 2×4 dengan dua faktor: (1) Mulsa jerami (M0: tanpa mulsa; M1: 30 ton/ha) dan (2) Sumber nitrogen (N0: tanpa N; N1: urea; N2: ZA; N3: KNO_3). Parameter yang diamati meliputi tinggi tanaman, luas daun, jumlah anakan, bobot gabah, serta indikator fisiologis seperti laju asimilasi bersih (LAB) dan panjang akar.

Hasil penelitian menunjukkan bahwa aplikasi mulsa jerami (M1) secara signifikan meningkatkan pertumbuhan vegetatif padi, seperti tinggi tanaman dan luas daun, karena kemampuannya mempertahankan kelembaban tanah. Sumber nitrogen terbaik adalah urea (N1), yang memberikan pengaruh nyata pada bobot gabah dan parameter fisiologis seperti LAB. Kombinasi mulsa jerami dan urea (M1N1) menghasilkan performa tertinggi, menunjukkan sinergi antara perbaikan kondisi tanah oleh mulsa dan ketersediaan nitrogen dari urea.

Penelitian ini membuktikan bahwa mulsa jerami padi dan pupuk urea efektif meningkatkan produktivitas padi gogo Sigambiri Merah. Kombinasi keduanya (M1N1) memberikan hasil terbaik pada sifat agronomis dan produksi tanaman. Temuan ini mendukung strategi budidaya padi gogo di lahan kering untuk mendukung ketahanan pangan.

Kata Kunci : Padi gogo Sigambiri Merah, mulsa jerami padi, nitrogen, sifat agronomis, produksi tanaman.

SUMMARY

Rice (Oryza sativa L.) is a major food commodity for most of the world's population and is the backbone of national food security, including in Indonesia. However, challenges such as land conversion, population growth, and climate change threaten rice productivity. Therefore, the development of upland rice on dry land has emerged as an alternative solution to boost national rice production. Efforts to increase upland rice yields require appropriate agronomic approaches, including the use of rice straw mulch and efficient application of nitrogen (N) sources.

This study was conducted at the Experimental Field of the Faculty of Agriculture, University of Islam Sumatera Utara, Medan, at an elevation of approximately 25 meters above sea level and on flat terrain, from September 2024. The experimental design used a 2×4 factorial Randomized Block Design (RBD) with two factors: (1) Rice straw mulch (M0: no mulch; M1: 30 tons/ha) and (2) Nitrogen source (N0: no N; N1: urea; N2: ZA; N3: KNO_3). The observed parameters included plant height, leaf area, number of tillers, grain weight, and physiological indicators such as net assimilation rate (NAR) and root length.

The results showed that straw mulching (M1) significantly improved rice vegetative growth, such as plant height and leaf area, due to its ability to retain soil moisture. The best nitrogen source was urea (N1), which had a significant effect on grain weight and physiological parameters such as NAA. The combination of rice straw mulch and urea (M1N1) yielded the highest performance, demonstrating synergy between soil condition improvement by mulch and nitrogen availability from urea.

This study demonstrates that rice straw mulch and urea fertilizer effectively enhance the productivity of Sigambiri Merah upland rice. The combination of both (M1N1) yields the best results in agronomic traits and crop production. These findings support rice cultivation strategies in dryland areas to enhance food security.

***Keywords**: Sigambiri Merah upland rice, rice straw mulch, nitrogen, agronomic traits, crop production.*