ABSTRAK

FENOLOGI, PERTUMBUHAN, DAN PRODUKSI TANAMAN SORGUM (*Sorghum bicolor* [L.] Moench) DI DATARAN RENDAH DENGAN PENAMBAHAN BAHAN ORGANIK: STUDI ADAPTASI TANAMAN TERHADAP PERUBAHAN IKLIM

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Perubahan iklim yang dicirikan oleh peningkatan suhu udara, perubahan pola curah hujan, dan kejadian cuaca ekstrem menjadi ancaman bagi keberlanjutan produksi tanaman pangan. Sorgum (*Sorghum bicolor* [L.] Moench) merupakan tanaman serealia yang adaptif, sehingga berpotensi dikembangkan sebagai tanaman alternatif pada kondisi iklim ekstrem di dataran rendah. Penelitian ini bertujuan untuk mengetahui perbedaan fenologi, pertumbuhan, hasil produksi, dan menghitung nilai *Growing Degree Days* (GDD), serta mengetahui pengaruh media tanam dan varietas terhadap pertumbuhan dan produksi sorgum. Penelitian dilaksanakan pada Agustus hingga Desember 2025 di Rumah Kaca Laboratorium Terpadu *Smart Security* POLINELA, Bandar Lampung. Penelitian menggunakan Rancangan Strip-Plot dalam Rancangan Acak Kelompok (RAK) dengan dua faktor perlakuan, yaitu varietas sorgum (Mandau, Super-2, dan Numbu) dan media tanam (pupuk NPK dan pupuk NPK + bahan organik), dengan tiga ulangan. Hasil penelitian menunjukkan bahwa terdapat perbedaan nyata pada tahapan fenologi, laju pertumbuhan, dan hasil produksi ketiga varietas sorgum. Varietas Mandau mencapai matang fisiologis paling cepat dengan rata-rata 87,5 hari dan akumulasi GDD sebesar 1.656,06 DD, diikuti varietas Numbu dengan 103 hari dan GDD 1.951 DD, serta varietas Super-2 dengan waktu terlama yakni rata-rata 114 hari dengan GDD 2.159,48 DD. Hasil produksi varietas Mandau unggul pada panjang malai, bobot malai, dan bobot biji per malai, sedangkan varietas Super-2 unggul pada tinggi tanaman, jumlah daun, serta bobot segar dan kering brangkasan. Respons varietas dipengaruhi oleh perbedaan media tanam yang digunakan. Perbedaan respons tersebut terlihat pada bobot segar dan kering brangkasan, panjang malai, serta kadar air benih.

Kata kunci: *fenologi, Growing Degree Days, perubahan iklim, sorgum, dan dataran rendah.*

ABSTRACT

PHENOLOGY, GROWTH, AND PRODUCTION OF SORGHUM (*Sorghum bicolor* [L.] Moench) IN LOWLAND WITH ORGANIC MATTER ADDITION: A STUDY OF PLANT ADAPTATION TO CLIMATE CHANGE

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Climate change, characterized by rising air temperatures, shifting rainfall patterns, and extreme weather events, poses a significant threat to the sustainability of food crop production. Sorghum (*Sorghum bicolor* [L.] Moench) is an adaptive cereal crop with potential for development as an alternative crop under extreme climate conditions in lowland areas. This study aimed to determine differences in phenology, growth, and yield production, to calculate *Growing Degree Days* (GDD) values, and to assess the effects of growing media and variety on sorghum growth and production. The research was conducted from August to December 2025 at the Smart Security Integrated Laboratory Greenhouse of POLINELA, Bandar Lampung. A Strip-Plot design within a Randomized Complete Block Design was employed with two treatment factors: sorghum variety (Mandau, Super-2, and Numbu) and growing medium (NPK fertilizer and NPK + organic matter), with three replications. Results indicated significant differences in phenological stages, growth rates, and yield components among the three sorghum varieties. Mandau reached physiological maturity fastest at an average of 87.5 days with a GDD accumulation of 1,656.06 DD, followed by Numbu at 103 days with 1,951 DD, and Super-2 requiring the longest period at an average of 114 days with 2,159.48 DD. In terms of yield, Mandau excelled in panicle length, panicle weight, and grain weight per panicle, while Super-2 outperformed in plant height, leaf count, and fresh and dry stover weight. Varietal responses are influenced by differences in the growing media used. These differences are evident in the fresh and dry weight of the stalks, panicle length, and seed moisture content.

Keywords: phenology, Growing Degree Days, climate change, sorghum, lowlands.