

ANALISIS PERTUMBUHAN TANAMAN PADI (*Oryza sativa* L.) METODE SYSTEM OF RICE INTENSIFICATION (SRI) DI LAHAN IKLIM KERING

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INTISARI

Permasalahan yang kerap ditemukan pada budidaya padi di Indonesia adalah ketersediaan air karena kawasan beriklim kering. Salah satu usaha yang dapat dilakukan terhadap masalah tersebut adalah dengan menerapkan sistem budidaya *System of Rice Intensification* (SRI) yang dikenal juga sebagai sistem budidaya padi hemat air. Oleh karena itu, penelitian kali ini ditujukan untuk melihat pertumbuhan tanaman padi dengan metode SRI di lahan iklim kering. Penelitian dilaksanakan pada 20 Mei-27 Agustus 2021 di Kecamatan Pandawai, Sumba Timur NTT. Penelitian kali dilakukan pada tiga petak lahan; 1) Lahan A, ditanami padi dengan metode SRI dan jarak tanam yang sesuai yakni 30×30 , 2) Lahan B, ditanami padi dengan metode SRI pula namun dengan jarak tanam jajar legowo (jarwo) 2:1, dan 3) Lahan C, ditanami padi dengan metode konvensional sesuai kebiasaan petani setempat. Analisis klasifikasi iklim lahan dilakukan dengan memperoleh data sekunder curah hujan tahun 2011-2020 dari stasiun hujan BMKG lokal. Analisis iklim mikro dilakukan serta satu *cloud data logger* yang merekam data iklim mikro secara *real-time*. Sedangkan analisis pertumbuhan tanaman dilakukan dengan mengukur tinggi tanaman dan jumlah anakan di masing-masing lahan setiap 10 hari. Hasil menunjukkan lokasi penelitian yang termasuk dalam wilayah Sumba Timur memiliki tipe iklim E4 berdasar sistem klasifikasi Oldeman. Selanjutnya, hasil menunjukkan bahwa iklim mikro di lahan budidaya padi lokasi penelitian cukup fluktuatif selama masa tanam dan masih dapat dikatakan sesuai untuk tanaman padi kecuali curah hujan yang tergolong sangat rendah selama masa tanam. Tanaman padi yang di tanam di lahan iklim kering dengan metode SRI menunjukkan hasil yang lebih tinggi pada tinggi tanaman dan jumlah anakan jika dibandingkan dengan tanaman padi dengan metode konvensional. Tanaman padi metode SRI mengalami fase vegetatif selama 67 hari, fase generatif selama 25 hari, dan fase pematangan selama 15 hari. Sedangkan tanaman padi metode konvensional mengalami fase vegetatif selama 75 hari, fase generatif selama 25 hari, dan fase pematangan selama 7 hari. Model matematika berhasil dikembangkan terhadap pertumbuhan tinggi dan jumlah anakan tanaman padi yang ditanam dengan metode SRI di lahan iklim kering. Model matematika tinggi tanaman dibuat berdasarkan fungsi logistik sedangkan model matematika jumlah anakan dibuat mengikuti fungsi eksponensial polinomial orde kedua.

Kata kunci: SRI, lahan iklim kering, iklim mikro, model matematika, fisiologi tanaman

GROWTH ANALYSIS OF RICE PLANT (*Oryza sativa* L.) BY SYSTEM OF RICE INTENSIFICATION (SRI) METHOD IN DRY-CLIMATE LAND

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ABSTRACT

Common problem on rice cultivation in Indonesia is the water availability due to dry climate. One way to face such a struggle is by applying the System of Rice Intensification (SRI) method that is known to be able to minimize the water use in the land. Therefore, this research is aimed at overviewing the growth of rice plants under the SRI method on a dry-climate land. This research was conducted on May 20th-August 27th, 2023, in Pandawai District, Sumba Timur, NTT. Rice plants are cultivated in three different lands; 1) Land A, rice planted under SRI method with 30×30 planting pattern, 2) Land B, rice planted under SRI method with *jajar legowo* (*jarwo*) 2:1 planting pattern, and 3) Land C, rice planted under conventional system or the custom method by local farmers. Climate classification analysis uses rainfall data from 2011-2020 that is collected from local BMKG rain station. Daily micro-climate analysis is done by using an automatic weather station with four sensors and a cloud data logger that records the data in real-time. While that, the height and tiller number of the rice plants on each land is calculated every 10 days to do the rice plants growth analysis. The results show that the research location which is in the East Sumba region has an E4 climate type based on the Oldeman classification system. Furthermore, the results showed that the microclimate in the rice cultivation area of the study site fluctuated during the planting period and was still suitable for rice cultivation in general except for the rainfall that is very low during the planting period. Rice plants planted in dry climates with the SRI method showed higher yields in plant height and number of tillers when compared to rice plants with the conventional method. The SRI method of rice plants underwent a vegetative phase for 67 days, a generative phase for 25 days, and a ripening phase for 15 days. While the conventional method of rice plants experienced a vegetative phase for 75 days, a generative phase for 25 days, and a ripening phase for 7 days. Mathematical models have been successfully developed for the growth in height and number of tillers of rice plants planted using the SRI method in dry climates. The mathematical model of plant height is made based on the logistic function while the mathematical model of the number of tillers is made according to the second order polynomial exponential function.

Keywords: SRI, dry-climate land, micro-climate, mathematical model, plant physiology