

## RINGKASAN

Padi (*Oryza sativa* L.) merupakan komoditas tanaman pangan yang mempunyai peranan besar bagi penduduk Indonesia sebagai sumber bahan pangan pokok. Perubahan cuaca yang ekstrim, seperti suhu tinggi pada musim panas akan menyebabkan efek yang buruk pada pertumbuhan dan perkembangan tanaman. Padi gogo merupakan salah satu ragam padi yang penanamannya dapat dilakukan pada lahan sub optimal seperti lahan kering. Penelitian ini dilakukan dengan tujuan untuk (1) mengetahui pengaruh cekaman suhu tinggi terhadap pertumbuhan dan hasil beberapa varietas padi gogo dan (2) mengetahui varietas padi gogo yang memiliki potensi toleran cekaman suhu tinggi pada rata-rata suhu siang hari 41-43°C.

Penelitian ini dilakukan di Laboratorium Agroekologi, Laboratorium Agronomi dan Hortikultura, Laboratorium Ilmu Tanah dan Sumber Daya Lahan Universitas Jenderal Soedirman, serta *Screen House* Kebun Benih Tanaman Pangan Balai Benih Tanaman Pangan dan Hortikultura (BBTPH) yang terletak di Desa Bojongsari, Kecamatan Kembaran, Kabupaten Banyumas, Provinsi Jawa Tengah pada bulan April hingga Desember 2023. Rancangan percobaan yang digunakan adalah Rancangan petak terbagi (*split plot*) dengan 2 faktor petak utama (*main plot*) adalah cekaman suhu (T) dan anak petak (*sub plot*) adalah varietas padi (V). Faktor utama (*main plot*) adalah perlakuan cekaman suhu (T), yaitu T1 = Rata-rata suhu siang hari 38-40°C dan T2 = Rata-rata suhu siang hari 41-43°C. Faktor kedua (*sub plot*) yaitu varietas padi (V) yang terdiri atas V1 = Inpago 8, V2 = Inpago 9, V3 = Inpago 12 Agritan, V4 = Towuti, V5 = Situpatenggang, dan V6 = IPB 6R. Masing-masing faktor dikombinasikan sehingga diperoleh 12 kombinasi perlakuan yang dilakukan sebanyak 3 kali pengulangan, dimana pada masing-masing pengulangan terdapat 2 unit percobaan yang berisi 4 tanaman, sehingga total berjumlah 288 tanaman. Variabel yang diamati yaitu tinggi tanaman, jumlah daun, luas daun, kadar klorofil, kandungan prolin, jumlah anakan, jumlah anakan produktif, jumlah gabah total per malai, dan bobot gabah 1000 butir. Data kuantitatif yang diperoleh dari pengamatan dianalisis menggunakan analisis sidik ragam atau *Analysis of Variance* (Anova). Apabila hasil uji ragam menunjukkan perbedaan yang nyata diantara perlakuan, maka dilanjutkan dengan uji jarak berganda Duncan (*Duncan's Multiple Range Test/DMRT*) pada taraf kesalahan 5%.

Hasil penelitian menunjukkan cekaman suhu tinggi pada 41-43°C memberikan pengaruh terhadap penurunan tinggi tanaman 10 HST pada varietas menurunkan tinggi tanaman 10 HST pada varietas Inpago 8, menurunkan tinggi tanaman 24 HST pada varietas Inpago 8, menurunkan luas daun 22 HST pada varietas Inpago 8. Varietas Inpago 8 memiliki potensi toleran terhadap cekaman suhu tinggi karena unggul dalam tinggi tanaman, jumlah daun, kandungan prolin, jumlah anakan, jumlah anakan produktif, jumlah gabah total per malai, jumlah gabah isi per rumpun, dan bobot gabah per rumpun.

## SUMMARY

*Rice (Oryza sativa L.) is a food crop commodity that has a major role for the Indonesian population as a source of staple food. Extreme weather changes, such as high temperatures in summer will cause adverse effects on plant growth and development. Gogo rice is one of the varieties of rice whose cultivation can be done on sub-optimal land such as dry land. This study was conducted with the aim of (1) knowing the effect of high temperature stress on the growth and yield of several varieties of gogo rice and (2) knowing the varieties of gogo rice that have the potential to tolerate high temperature stress at an average daytime temperature of 41-43°C.*

*This research was conducted at the Agroecology Laboratory, Agronomy and Horticulture Laboratory, Soil Science and Land Resources Laboratory of Jenderal Soedirman University, and Screen House of the Food Crop Seed Garden of the Food Crops and Horticulture Seed Center (BBTPH) located in Bojongsari Village, Kembar District, Banyumas Regency, Central Java Province from April to December 2023. The experimental design used was a split plot design with 2 main plot factors (main plot) being temperature stress (T) and subplots (sub plot) being rice varieties (V). The main factor (main plot) is the treatment of temperature stress (T), namely T1 = Average daytime temperature 38-40°C and T2 = Average daytime temperature 41-43°C. The second factor (subplot) is the rice variety (V) consisting of V1 = Inpago 8, V2 = Inpago 9, V3 = Inpago 12 Agritan, V4 = Towuti, V5 = Situpatenggang, and V6 = IPB 6R. Each factor was combined so that 12 treatment combinations were obtained which were carried out as many as 3 repetitions, where in each repetition there were 2 experimental units containing 4 plants, for a total of 288 plants. The variables observed were plant height, number of leaves, leaf area, chlorophyll content, proline content, number of tillers, number of productive tillers, total grain count per panicle, and grain weight of 1000 grains. Quantitative data obtained from observations were analyzed using fingerprint analysis or Analysis of Variance (Anova). If the variance test results show a marked difference between treatments, Duncan's Multiple Range Test (DMRT) is followed by a 5% error level.*

*The results showed that high temperature stress at 41-43°C had an effect on reducing plant height by 10 HST in varieties, reducing plant height by 10 HST in Inpago 8 varieties, decreasing plant height by 24 HST in Inpago 8 varieties, decreasing leaf area by 22 HST in Inpago 8 varieties. The Inpago 8 variety has the potential to be tolerant of high temperature stress because it excels in plant height, number of leaves, proline content, number of tillers, number of productive tillers, total grain per panicle, number of grain contents per clump, and grain weight per clump.*