ANALISIS KARAKTER AGROFISIOLOGIS BEBERAPA GENOTIPE GANDUM (*Triticum aestivum* L.) DI DATARAN MENENGAH SUMATRA BARAT

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TESIS

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RINGKASAN

Meilani Rizki Andini. S. Analisis Karakter Agrofisiologis Beberapa Genotipe Gandum (*Triticum aestivum* L.) di Dataran Menengah Sumatra Barat. Dibimbing oleh Warnita dan Irfan Suliansyah.

Gandum (*Triticum aestivum* L.) merupakan salah satu komoditas pangan utama dunia yang dimanfaatkan sebagai bahan baku tepung terigu. Kebutuhan gandum di Indonesia hingga saat ini masih sepenuhnya dipenuhi melalui impor. Pengembangan gandum di dalam negeri masih menghadapi kendala karena tanaman ini tumbuh optimal di dataran tinggi, sementara pemanfaatan lahannya bersaing dengan komoditas hortikultura. Oleh karena itu, dataran menengah menjadi salah satu alternatif wilayah pengembangan budidaya gandum. Penelitian ini bertujuan untuk mengetahui perbedaan karakter agrofisiologis, variabilitas fenotipik, heritabilitas arti luas, korelasi antar karakter agrofisiologis, serta tingkat toleransi beberapa genotipe gandum di dataran menengah Sumatra Barat. Penelitian ini telah dilaksanakan di Jorong Labuah, Nagari Sungai Batang, Kecamatan Tanjung Raya, Kabupaten Agam dengan ketinggian ± 517 m di atas permukaan laut (mdpl), dari Juli hingga Desember 2025. Pengamatan dan analisis dilakukan di Laboratorium Agronomi Laboratorium Teknologi Benih Fakultas Pertanian Universitas Andalas, Laboratorium PT. Wiwiadi Bintang Sains Padang, serta Laboratorium Kimia, Biokimia Hasil Pertanian dan Gizi Pangan Fakultas Teknologi Pertanian Universitas Andalas. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) yang terdiri atas 14 genotipe gandum dengan tiga ulangan. Data iklim mikro dan sebagian karakter fisiologis dianalisis secara deskriptif, sedangkan karakter fisiologis lainnya, karakter pertumbuhan, dan karakter hasil dianalisis menggunakan uji F pada taraf nyata 5%, yang dilanjutkan dengan uji kontras ortogonal pada taraf nyata 5% menggunakan Microsoft Excel® 2021. Nilai variabilitas fenotipik dan heritabilitas arti luas dihitung untuk mengetahui besarnya kontribusi faktor genetik terhadap karakter yang diamati. Hubungan antar karakter agrofisiologis dianalisis menggunakan uji korelasi Pearson pada taraf nyata 5%. Karakter hasil per petak digunakan sebagai dasar dalam menentukan tingkat toleransi genotipe gandum di dataran menengah. Hasil dari penelitian ini menunjukkan bahwa terdapat perbedaan pada sebagian besar karakter agrofisiologis beberapa genotipe gandum di dataran menengah Sumatra Barat. Terdapat 12 karakter yang memiliki variabilitas luas, 11 karakter yang memiliki heritabilitas tinggi dan 22 korelasi antar karakter yang berbeda nyata, tetapi yang berkorelasi nyata dengan hasil per hektare hanya 2 karakter. Genotipe yang termasuk kategori toleransi tinggi berdasarkan karakter hasil adalah varietas nasional GURI 1, GURI 7 Agritan, GURI 2, Dewata dan satu galur persilangan konvergen CBF6-17 generasi ke-8.

SUMMARY

Meilani Rizki Andini. S. Agrophysiological Character Analysis of Several Wheat (*Triticum aestivum* L.) Genotypes in the Mid-Altitude Region of West Sumatra. Supervised by Warnita and Irfan Suliansyah.

Wheat (*Triticum aestivum* L.) is one of the world's major food crops and is widely used as the primary raw material for wheat flour production. Indonesia's wheat demand is still entirely met through imports. The development of wheat cultivation in Indonesia faces significant challenges because wheat grows optimally in highland areas, where land use competes with horticultural crops. Therefore, medium-altitude areas have become a potential alternative for wheat cultivation. This study aimed to evaluate the differences in agrophysiological characteristics, phenotypic variability, broad-sense heritability, correlations among agrophysiological traits, and the tolerance levels of several wheat genotypes grown in the medium-altitude areas of West Sumatra. The experiment was conducted in Jorong Labuah, Sungai Batang Village, Tanjung Raya District, Agam Regency, at an altitude of approximately 517 m above sea level, from July to December 2025. Observations and laboratory analyses were carried out at the Agronomy Laboratory and Seed Technology Laboratory, Faculty of Agriculture, Universitas Andalas; PT Wiwiadi Bintang Sains Laboratory, Padang; and the Laboratory of Chemistry, Agricultural Product Biochemistry, and Food Nutrition, Faculty of Agricultural Technology, Universitas Andalas. The experiment employed a Completely Randomized Design (CRD) consisting of 14 wheat genotypes with three replications. Microclimate data and several physiological traits were analyzed descriptively, whereas the remaining physiological, growth, and yield traits were subjected to analysis of variance (ANOVA) at the 5% significance level, followed by orthogonal contrast tests at the same significance level using Microsoft Excel® 2021. Phenotypic variability and broad-sense heritability were estimated to determine the contribution of genetic factors to the observed traits. Correlations among agrophysiological traits were analyzed using Pearson's correlation test at the 5% significance level. Plot yield was used as the basis for determining the tolerance level of wheat genotypes under medium-altitude conditions. The results showed that most agrophysiological traits differed significantly among the wheat genotypes evaluated under the medium-altitude conditions of West Sumatra. A total of 12 traits exhibited broad phenotypic variability, 11 traits showed high broad-sense heritability, and 22 pairs of traits were significantly correlated. However, only two traits were significantly correlated with grain yield per hectare. Based on plot yield, the wheat genotypes classified as highly tolerant under medium-altitude conditions were the national varieties GURI 1, GURI 7 Agritan, GURI 2, and Dewata, as well as the eighth-generation convergent breeding line CBF6-17.