

RINGKASAN

Jagung manis mempunyai nilai ekonomis yang tinggi di pasaran dan masa produksinya relatif lebih cepat, namun kehadiran gulma dapat secara nyata menekan pertumbuhan dan produksi karena menjadi pesaing dalam memperebutkan unsur hara dan cahaya matahari. Salah satu alternatif dalam mengendalikan gulma yaitu pengendalian dengan menggunakan herbisida. Pemilihan bahan aktif yang terkandung dalam herbisida menjadi salah satu faktor yang menentukan keberhasilan pengendalian gulma. Pengujian lapang mengenai efektivitas dan selektivitas bahan aktif herbisida bertujuan untuk mengetahui tingkat efektivitas dan selektivitas dari herbisida berbahan aktif berbeda khususnya dalam mempengaruhi fisiologi, pertumbuhan dan hasil tanaman jagung manis.

Penelitian ini dilaksanakan di Laboratorium Agronomi dan Hortikultura, Fakultas Pertanian, Universitas Jenderal Soedirman dan lahan tanaman jagung manis Kelurahan Mersi, Purwokerto Timur. Kegiatan penelitian dilaksanakan selama 4 bulan, dimulai dari Juli 2023 hingga Oktober 2023. Penelitian ini merupakan penelitian *experimental* dengan Rancangan Acak Kelompok (RAK) satu faktor yaitu pengendalian gulma, terdiri atas 8 taraf dengan 4 ulangan. Variabel yang diamati yaitu meliputi identifikasi gulma pada fase sebelum tanam, 15 HST, 35 HST, luas daun, indeks luas daun, bobot basah tanaman, bobot kering tanaman, LAB, LPT, kandungan klorofil, kerapatan stomata, lebar bukaan stomata, tinggi tanaman, jumlah daun, kehijauan daun, panjang tongkol, diameter tongkol, jumlah biji tongkol, bobot tongkol, hasil panen per petak, hasil panen per hektar. Data hasil penelitian dianalisis menggunakan uji ANOVA, dan dilanjutkan Uji DMRT α 5% jika terdapat pengaruh perlakuan.

Hasil penelitian aplikasi herbisida glifosat dan parakuat menunjukkan komposisi gulma yang awalnya bersifat homogen berubah menjadi heterogen. Hal tersebut dapat dilihat dengan adanya jenis gulma baru yang teridentifikasi. Adapun setelah aplikasi herbisida atrazin, mesotrion dan nicosulfuron terjadi perubahan dominasi gulma. Aplikasi herbisida parakuat, atrazin dan mesotrion serta glifosat, atrazin, mesotrion dan nicosulfuron memberikan hasil terbaik pada variabel fisiologi, pertumbuhan dan hasil panen jagung manis yaitu bobot kering tanaman 65,70 gr (H₄), laju pertumbuhan tanaman 22,98 g/cm²/2 minggu (H₄), laju asimilasi bersih tanaman 0,09 g/cm²/2 minggu (H₄), tinggi tanaman 145,72 cm (H₄), bobot panen per petak 41,88 kg/petak (H₄), bobot panen per hektar 16,75 ton/ha (H₄), luas daun 358,88 cm² (H₇), indeks luas daun 0,202 cm²cm⁻² (H₇), bobot basah tanaman 175,66 gr (H₇), lebar bukaan stomata 2,44 μ m (H₇), dan total klorofil 5,08 mg/g (H₄). Adapun aplikasi herbisida glifosat, atrazin dan mesotrion memberikan hasil terbaik pada variabel pertumbuhan dan karakter hasil jagung manis yaitu jumlah daun 10,85 buah (H₅), kehijauan daun 52,15 unit (H₄), panjang tongkol jagung berkelobot 31,73 cm (H₅), panjang tongkol tanpa kelobot 21,92 cm (H₅), diameter tongkol berkelobot 65,705 mm (H₅), diameter tongkol tanpa kelobot 53,487 mm (H₅), bobot tongkol berkelobot 447,392 gr (H₅), bobot tongkol tanpa kelobot 312,839 gr (H₅).

SUMMARY

Sweet corn has high economic value in the market and its production period is relatively faster, however the presence of weeds can significantly suppress growth and production because they become competitors for nutrients and sunlight. One alternative for controlling weeds is controlling using herbicides. The choice of active ingredients contained in herbicides is one of the factors that determines the success of weed control. Field testing regarding the effectiveness and selectivity of active herbicide ingredients aims to determine the level of effectiveness and selectivity of herbicides with different active ingredients, especially in influencing the physiology, growth and yield of sweet corn plants.

This research was carried out at the Agronomy and Horticulture Laboratory, Faculty of Agriculture, Jenderal Soedirman University and the Mersi sweet corn plantation, East Purwokerto. Research activities were carried out for 4 months, starting from July 2023 to October 2023. This research is research experimental with a Randomized Block Design (RBD) with one factor, namely weed control, consisting of 8 levels with 4 replications. The variables observed included weed identification in the pre-planting phase, 15 HST, 35 HST, leaf area, leaf area index, plant wet weight, plant dry weight, LAB, LPT, chlorophyll content, stomata density, stomata opening width, plant height, number of leaves, leaf greenness, ear length, ear diameter, number of ear seeds, ear weight, harvest per plot, harvest per hectare. The research data were analyzed using the ANOVA test, and continued with the DMRT α 5% test if there was a treatment effect.

The results of research on the application of glyphosate and paraquat herbicides showed that the initially homogeneous composition of weeds changed to heterogeneous. This can be seen by the presence of new weed types identified. Meanwhile, after application of the herbicides atrazine, mesotrione and nicosulfuron, weed dominance decreased. Application of the herbicides paraquat, atrazine and mesotrione as well as glyphosate, atrazine, mesotrione and nicosulfuron gave the best results on physiological variables, growth and sweet corn yields, namely plant dry weight 65.70 gr (H_4), plant growth rate $g/cm^2/2$ weeks 22.98 (H_4), net assimilation rate of the plant is 0.09 $g/cm^2/2$ weeks, plant height 145.72 cm (H_4), harvest weight per plot 41.88 kg/plot (H_4), harvest weight per hectare 16.75 tonnes/ha (H_4), leaf area 358.88 cm^2 (H_7), leaf area index 0.202 cm^2/cm^2 (H_7), plant wet weight 175.66 gr (H_7), the stomatal aperture width 2.44 μm (H_7), and total chlorophyll 5.08 mg/g (H_4). The application of the herbicides glyphosate, atrazine and mesotrione gave the best results on the growth variables and yield characteristics of sweet corn, namely the number of leaves was 10.85 (H_5), leaf greenness 52.15 units (H_4), the length of the corn cob in husks is 31.73 cm (H_5), cob length without husks 21.92 cm (H_5), the diameter of the calyxed cob is 65.705 mm (H_5), cob diameter without husk 53.487 mm (H_5), the weight of the shelled cob is 447.392 gr (H_5), cob weight without husk 312.839 gr (H_5).