

ABSTRACT

THE EFFECT OF POPULATION ON THE GROWTH AND YIELD OF CASSAVA (*Manihot esculenta* Crantz) IN INTERCROPPING WITH SOYBENS (*Glycine max* [L.] Merrill)

By

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Cassava is commonly planted in monoculture system. To increase land productivity, cassava can be intercropped with another plant such as soybean, corn, sorghum, etc. This study aims to 1) evaluate the growth of cassava in several different populations, 2) evaluate the yield of cassava in several different populations, 3) evaluate land use efficiency (EPL) in several different populations. This research was conducted from June 2022 to February 2023 in the agricultural field of the Vegetable Seed Production Unit (UPBS) located in Sekincau District, West Lampung Regency, Lampung Province, 05°02'27" S 104°18'16" E at an altitude of 1173.1 m above sea level. Local waxy cassava clon and soybean varieties Dega-1 were used in this study. Single factor treatment with four treatment levels, namely monoculture cropping of 20,833 cassava plant/ha (P1), population of 16,667 cassava plants/ha and 166,667 soybean plants/ha (P2), population of 18,518 cassava plants/ha and 166,667 soybean plants (P3), population of 18,182 cassava plants/ha and 222,222 soybean plants/ha (P4). This experiment was arranged in randomized completely block design, with five replicates. The data were analyzed by using Minitab Ver.17 subjected to analysis of variance, DMRT, and Student's t-test at 5%. The variables observed were

components of growth and productivity of tubers. Growth components include a) plant height; b) number of leaves; c) above ground fresh weight (kg); and d) above ground dry weight (kg). While, yield components include; a) number of tubers per plant; b) fresh tuber weight per plant (kg); c) tuber circumference length per plant (cm); d) tuber length per plant (cm), e) tuber volume per plant (ml), d) fresh tuber weight per m² (kg). The experiment showed that the growth of cassava in several populations did not show any difference. The yield in monoculture was higher than in some treatments of cassava populations. Land Equivalent Ratio (LER)1.53 was achieved with population of 18,182 cassava plants with 222,222 soybean plants per hectar.

Keywords: *Monoculture, tubers, cassava, population, production*

ABSTRAK

PENGARUH POPULASI PADA PERTUMBUHAN DAN HASIL UBIKAYU (*Manihot esculenta* Crantz) DALAM TUMPANGSARI DENGAN KEDELAI (*Glycine max* [L.] Merrill)

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Ubikayu umumnya ditanam dengan sistem monokultur. Untuk meningkatkan produktivitas lahan, ubikayu dapat ditumpangsarikan dengan tanaman lain seperti kedelai, jagung, sorgum, dll. Penelitian ini bertujuan untuk 1) mengevaluasi pertumbuhan ubikayu pada beberapa populasi yang berbeda, 2) mengevaluasi hasil ubikayu pada beberapa populasi yang berbeda, 3) mengevaluasi efisiensi penggunaan lahan (EPL) di beberapa populasi yang berbeda. Penelitian ini dilaksanakan pada bulan Juni 2022 sampai dengan Februari 2023 di lahan pertanian Unit Produksi Benih Sayuran (UPBS) yang terletak di Kecamatan Sekincau, Kabupaten Lampung Barat, Provinsi Lampung 05^o02'27" LS 104^o18'16" BT pada ketinggian 1173,1 m DPL. Penelitian ini menggunakan ubikayu klon ketan lokal dan varietas kedelai Dega-1. Perlakuan faktor tunggal dengan empat taraf perlakuan yaitu pertanaman monokultur sebanyak 20.833 tanaman ubi/ha (P1), populasi 16.667 tanaman ubi kayu/ha dan 166.667 tanaman kedelai/ha (P2), populasi 18.518 tanaman ubi kayu/ha dan 166.667 tanaman kedelai (P3), populasi 18.182 tanaman ubikayu/ha dan 222.222 tanaman kedelai/ha (P4). Percobaan ini disusun dengan Rancangan Acak Kelompok

Lengkap (RAKL), dengan lima ulangan. Analisis data menggunakan Minitab Ver.17 dengan analisis varians, DMRT, dan uji t-Student dengan taraf 5%. Variabel yang diamati adalah komponen pertumbuhan dan produktivitas umbi. Komponen pertumbuhan meliputi a) tinggi tanaman (cm); b) jumlah daun; c) bobot segar tajuk (kg); dan d) bobot kering tajuk (kg). Sedangkan komponen hasil meliputi a) jumlah umbi per tanaman; b) bobot segar umbi per tanaman (kg); c) panjang lingkar umbi per tanaman (cm); d) panjang umbi per tanaman (cm); e) volume umbi per tanaman (ml); dan d) bobot segar umbi per m² (kg). Percobaan menunjukkan bahwa pertumbuhan ubikayu pada beberapa populasi tidak menunjukkan adanya perbedaan. Hasil dalam monokultur lebih tinggi daripada beberapa perlakuan populasi ubikayu. Efisiensi penggunaan lahan (EPL) 1,53 pada populasi ubikayu sebanyak 18.182 tanaman dan kedelai sebanyak 222.222 tanaman per hektar.

Kata kunci: Monokultur, umbi, ubikayu, populasi, produksi