

RINGKASAN

Stevia (Stevia rebaudiana Bertonii) merupakan salah satu komoditas prospektif sebagai alternatif sumber bahan pemanis alami rendah kalori mendampingi tebu yang aman dikonsumsi. Namun, *Stevia* hingga saat ini hanya dibudidayakan secara terbatas di dataran tinggi wilayah tropis. Keterbatasan jumlah lahan produktif tersedia di dataran tinggi wilayah tropis seperti di Indonesia seringkali diiringi dengan ketidakpastian kondisi alam akibat terjadinya perubahan iklim maupun cuaca sehingga menciptakan tantangan tersendiri dalam mendukung pencapaian swasembada bahan pemanis alami. Aktivitas pertanian di lahan dataran tinggi juga dihadapkan pada berbagai faktor pembatas seperti lereng yang curam, curah hujan yang relatif lebih tinggi, kepekaan tanah terhadap longsor dan erosi, kerusakan akibat erupsi serta masifnya konversi lahan pertanian produktif menjadi penggunaan lain. Salah satu strategi yang dapat ditempuh dalam upaya peningkatan produksi *stevia* adalah pengembangan budidaya yang diarahkan ke dataran rendah (esktensifikasi). Penanaman *stevia* di dataran rendah tropis secara konvensional jarang sekali dilakukan karena diperlukan penanganan secara khusus. Sehubungan dengan kondisi tersebut penelitian ini dilakukan bertujuan untuk mengkaji (1) Dosis pupuk kalium yang paling baik pada tanaman *stevia* di dataran rendah. (2) Mendapatkan tingkat naungan terbaik pada beberapa tingkat naungan sebagai alternatif penanganan dalam budidaya tanaman *stevia* di dataran rendah. (3) Mendapatkan kombinasi perlakuan terbaik untuk meningkatkan pertumbuhan dan kualitas hasil tanaman *stevia* di dataran rendah.

Penelitian ini dilaksanakan bulan Oktober 2021-Januari 2022 di *Screen house* A23 Kebun Percobaan Fakultas Pertanian dan Laboratorium Agronomi & hortikultura Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto. Penelitian ini merupakan percobaan polibag menggunakan Rancangan Petak Terbagi (*Split plot*) pola faktorial dengan Rancangan Acak Kelompok Lengkap (RAKL) dan diulang 3 kali. Faktor pertama yaitu tingkat naungan (*main plot*) terdiri atas 0 % (terbuka, N0); 50% (N1); dan 75% (N2) sedangkan faktor kedua adalah dosis pupuk kalium (*sub plot*) terdiri atas: 0 % (tanpa pupuk, P0); 50 % (100 kg/ha

setara 0,625 g/tanaman, P1); 100% (200 kg/ha setara 1,250 g/tanaman, P2); 150 % (300 kg/ha setara 1,875 g/tanaman, P3). Variabel yang diamati yaitu jumlah daun, luas daun, bobot akar segar, bobot tajuk segar, bobot tanaman segar, bobot tanaman kering, dan serapan K. Data yang diperoleh dianalisis menggunakan uji F, dilanjutkan dengan uji *Duncan Multiple Range Test* (DMRT) taraf 5%. Hasil penelitian menunjukkan bahwa pemupukan kalium dapat meningkatkan produksi dan tingkat kemanisan tanaman stevia. Intensitas cahaya matahari (tingkat naungan 50%) dapat meningkatkan produksi dan tingkat kemanisan tanaman stevia. Kombinasi pemupukan kalium pada lahan yang ternaungi 50% dapat meningkatkan produksi dan tingkat kemanisan tanaman stevia di dataran rendah.



SUMMARY

Stevia (Stevia rebaudiana Bertonii) is one of the prospective commodities as an alternative source of low-calorie natural sweetener accompanying sugarcane that is safe for consumption. However, until now, stevia has only been cultivated in a limited way in the highlands of the tropics. The limited amount of available productive land in tropical highlands such as Indonesia is often accompanied by uncertain natural conditions due to climate and weather changes, thus creating challenges in supporting the achievement of self-sufficiency in natural sweeteners. Agricultural activities in the highlands are also faced with various limiting factors, such as steep slopes, relatively higher rainfall, the sensitivity of the soil to landslides and erosion, damage from eruptions, and the massive conversion of productive agricultural land to other uses. One of the strategies that can be taken in an effort to increase stevia production is the development of cultivation directed to the lowlands (extensification). Conventional cultivation of stevia in the tropical lowlands is rarely done because it requires special handling. In connection with these conditions, the aim of this study was to examine (1) the best dose of potassium fertilizer for stevia plants in the lowlands. (2) Obtaining the best shade level at several shade levels as an alternative treatment in stevia cultivation in the lowlands (3) Get the best combination of treatments to increase the growth and yield quality of stevia plants in the lowlands.

This research was conducted from October 2021 until January 2022 at the *Screen house* A23 of the Experimental Garden of the Faculty of Agriculture and the Agronomy and Horticulture Laboratory of the Faculty of Agriculture, Jenderal Soedirman University, Purwokerto. This research was a polybag experiment using a factorial split plot design with a randomized complete block design (RCBD) and repeated three times. The first factor was the level of shade (main plot), consisting of 0% (open, N0); 50% (N1); and 75% (N2), while the second factor was the dose of potassium fertilizer (sub plot), consisting of: 0% (without fertilizer, P0); 50% (100 kg/ha equivalent to 0.625 g/plant, P1); 100% (200 kg/ha equivalent to 1.25 g/plant, P2); and 15% (300 kg/ha equivalent to 1.875 g/plant, P3). The variables

observed were the number of leaves, leaf area, fresh root weight, fresh crown weight, fresh plant weight, dry plant weight, and K uptake. The data obtained were analyzed using the F test, followed by the Duncan Multiple Range Test (DMRT). level of 5%. The results showed that potassium fertilization can increase the production and sweetness level of stevia plants. The intensity of sunlight (shade level 50%) can increase the production and sweetness level of stevia plants. The combination of potassium fertilization on 50% shaded land can increase the production and sweetness level of stevia plants in the lowlands.

