RINGKASAN

Stroberi (*Fragaria* sp.) merupakan jenis buah-buahan yang memiliki nilai ekonomi tinggi karena buahnya yang lezat, lembut dan bergizi. Penggunaan pupuk dan pestisida kimia secara terus menerus dan berlebihan dalam budidaya stroberi dapat mengakibatkan kerusakan kondisi tanah dan meningkatnya kadar logam. Peningkatan kadar logam Cd akan mengganggu pertumbuhan pada tanaman. Teknologi yang dimiliki N-ZEO-SR PLUS berpotensi dalam mengendalikan cemaran logam berat, serta dapat mengatasi permasalahan pemupukan N yang tidak efisien. Penelitian ini dilakukan untuk mengetahui pengaruh variasi konsentrasi Cd dan dosis pemupukan N-ZEO-SR PLUS terhadap pertumbuhan, hasil tanaman stroberi, kandungan Cd dalam buah dan tanah serta interaksi keduanya.

Penelitian dilaksanakan di *Screenhouse* Fakultas Pertanian, Unsoed dan Laboratorium Ilmu Tanah Unsoed Purwokerto pada bulan November 2023 sampai April 2024. Penelitian berupa Rancangan Acak Kelompok (RAK) yang terdiri atas 2 faktor. Faktor pertama adalah dosis Pupuk N-ZEO-SR PLUS dengan 4 taraf, yaitu 0 kg/ha (D0), 150 kg/ha (D1), 300 kg/ha (D2) dan 450 kg/ha (D3). Faktor kedua adalah konsentrasi kadmium (Cd) yang terdiri atas 3 taraf yaitu 0 ppm (K0), 2 ppm (K1) dan 4 ppm (K2). Setiap perlakuan dilakukan 3 kali ulangan, sehingga menghasilkan 36 unit percobaan. Variabel pengamatan antara lain: tinggi tanaman, jumlah daun, luas daun, umur berbunga, jumlah stolon, jumlah buah, bobot buah segar, kandungan klorofil daun, kandungan prolin, kadar kemanisan buah, kandungan Cd tanah. Data hasil pengamatan dianalisis dengan uji analisis ragam dan apabila terdapat beda nyata, dilanjutkan dengan *Duncan's Multiple Range Test* (DMRT) pada tingkat kesalahan 5%.

Pengaplikasian Cd konsentrasi 4 ppm dapat menurunkan bobot buah segar 24% dan meningkatkan kandungan Cd tanah 47% dibandingkan tanpa aplikasi logam Cd. Pengaplikasian pupuk N-ZEO-SR PLUS 450 kg/ha dapat meningkatkan tinggi tanaman 6 MST 12%, jumlah daun 8 MST 16%, jumlah buah 70%, bobot buah segar 58%, dan dapat menekan kandungan Cd tanah 20% dibandingkan tanpa pemupukan. Terdapat interaksi perlakuan dosis pupuk N-ZEO-SR PLUS dan aplikasi Cd terhadap kandungan Cd tanah dengan hasil terbaik yaitu 0,20 ppm pada dosis N-ZEO-SR PLUS 300 kg/ha dan Cd 2 ppm serta memberikan persentase penurunan Cd tanah terbesar yaitu 95% pada dosis N-ZEO-SR PLUS 450 kg/ha dan Cd 4 ppm.

SUMMARY

Strawberry (Fragaria sp.) is a type of fruit that has high economic value because of its delicious, soft and nutritious fruit. The continuous and excessive use of chemical fertilizers and pesticides in strawberry cultivation can result in damage to soil conditions and increased metal levels. Increased levels of Cd metal will interfere with plant growth. N-ZEO-SR PLUS technology has the potential to control heavy metal contamination, and can overcome the problem of inefficient N fertilization. This study was conducted to determine the effect of variations in Cd concentration and fertilization dose of N-ZEO-SR PLUS on the growth, yield of strawberry plants, Cd content in fruit and soil and the interaction between the two.

The research was conducted at the Screenhouse of the Faculty of Agriculture, Unsoed and the Laboratory of Soil Science Unsoed, Purwokerto from November 2023 to April 2024. The research was a Randomized Group Design (RAK) consisting of 2 factors. The first factor is the dose of N-ZEO-SR PLUS Fertilizer with 4 levels, namely 0 kg/ha (D0), 150 kg/ha (D1), 300 kg/ha (D2) and 450 kg/ha (D3). The second factor is cadmium (Cd) concentration which consists of 3 levels, namely 0 ppm (K0), 2 ppm (K1) and 4 ppm (K2). Each treatment was replicated 3 times, resulting in 36 experimental units. Observation variables included: plant height, number of leaves, leaf area, flowering age, number of stolons, number of fruits, fresh fruit weight, leaf chlorophyll content, proline content, fruit sweetness content, soil Cd content. Observation data were analyzed by analysis of variance test and if there were significant differences, followed by Duncan's Multiple Range Test (DMRT) at the 5% error level.

Application of Cd concentration of 4 ppm can reduce fresh fruit weight by 24% and increase soil Cd content by 47% compared to no Cd metal application. The application of 450 kg/ha N-ZEO-SR PLUS fertilizer can increase plant height 6 weeks after planting by 12%, number of leaves 8 weeks after planting by 16%, number of fruits by 70%, fresh fruit weight by 58%, and can reduce soil Cd content by 20% compared to without fertilization. There is an interaction of N-ZEO-SR PLUS fertilizer dose treatment and Cd application on soil Cd content with the best result of 0.20 ppm at a dose of N-ZEO-SR PLUS 300 kg/ha and Cd 2 ppm and provides the largest percentage of soil Cd reduction of 95% at a dose of N-ZEO-SR PLUS 450 kg/ha and Cd 4 ppm.