

ABSTRACT

THE EFFECT OF SEED TUBER SIZE AND PACLOBUTRAZOL ON GROWTH, YIELD AND STORAGE QUALITY OF POTATO TUBERS (*Solanum tuberosum* L.)

By

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The key to effective potato production is the use of optimally sized seed tubers and disease-free varieties. Potato farmers often use improvised seeds from previous plantings without considering the quality of the seeds, resulting in suboptimal yield. The use of ZPT Paclobutrazol in the highlands is designed to increase the efficiency of potato seed tubers in order to produce small, high-quality seeds. Optimization of seed tuber size and paclobutrazol is needed to increase the production of seed potato tubers and commercial potato tubers. This study aims to determine the response of growth and yield, as well as the storage quality of potato plants grown in the highlands to differences in tuber size and Paclobutrazol concentration. The experiment was carried out at the Central Horticulture Seed Center (BBIH), Sekincau, West Lampung, and the University of Lampung. The study consisted of two experiments. Experiment 1 used a strip plot experimental design with three replications. The main plot was the size of the seed tubers, consisting of medium tubers (10.11 g) and large tubers (16.03 g). The subplots were Paclobutrazol concentrations, consisting of 0 ppm, 50 ppm, 100 ppm, and 150 ppm. The results of research on the growth and production of potato tubers showed that the application of paclobutrazol had a significant effect on the greenness of the leaves, which had a positive correlation with the rate of photosynthesis, decreased plant height, increased stomata density, leaf dry weight, and leaf specific weight, but had no significant effect on stem diameter. The seed tuber factor resulted in differences in the number of tubers and tuber class. Experiment 2 was carried out using a single-factor experimental design consisting of eight factors. In the analysis of the quality of potato tubers during the storage period, dormancy in stored tubers was broken after 3 weeks after storage (MSP). Paclobutrazol concentration and seed tuber size significantly affected the shoot length of potato tubers during the storage period, but the interaction between the two factors did not make a difference to the shoot length during the storage period. The appearance of starch granules was denser and larger based on SEM results on potato tubers due to residue from the application of Paclobutrazol at 28 MSP.

Keywords: *Potato, Paclobutrazol, seed tubers, starch granule*

ABSTRAK

PENGARUH UKURAN UMBI BIBIT DAN PACLOBUTRAZOL PADA PERTUMBUHAN DAN HASIL SERTA MUTU SIMPAN UMBI KENTANG (*Solanum tuberosum* L.)

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Produksi kentang menggunakan umbi bibit berukuran optimal dan varietas yang bebas penyakit merupakan prasyarat utama untuk keberhasilan produksi kentang. Para petani kentang sering menggunakan benih seadanya dari hasil pertanaman sebelumnya, tanpa mempertimbangkan mutu benih sehingga produksi yang dihasilkan tidak optimal. Pemanfaatan ZPT Paclobutrazol pada dataran tinggi ditujukan untuk mengefisiensikan produksi umbi bibit kentang, guna menghasilkan bibit-bibit berukuran kecil yang memiliki mutu baik. Optimalisasi ukuran umbi bibit dan Paclobutrazol diperlukan untuk meningkatkan produksi umbi bibit kentang dan umbi kentang komersil. Penelitian ini bertujuan untuk mengetahui respon pertumbuhan dan hasil, serta mutu simpan tanaman kentang yang ditanam di dataran tinggi terhadap perbedaan ukuran umbi dan Paclobutrazol. Percobaan dilaksanakan di Balai Benih Induk Hortikultura (BBIH), Sekincau, Lampung Barat, dan Universitas Lampung. Penelitian terdiri atas dua percobaan. Percobaan 1 menggunakan rancangan percobaan strip plot dengan tiga ulangan. Petak utama adalah ukuran umbi bibit, terdiri dari umbi sedang (10,11 g) dan umbi besar (16,03 g). Anak petak adalah konsentrasi Paclobutrazol, terdiri atas 0 ppm, 50 ppm, 100 ppm, dan 150 ppm. Hasil penelitian pada pertumbuhan dan produksi umbi kentang menunjukkan bahwa Aplikasi Paclobutrazol memberikan pengaruh nyata terhadap tingkat kehijauan pada daun yang berkolerasi positif dengan laju fotosintesis, penurunan tinggi tanaman, peningkatan kerapatan stomata, bobot kering daun, bobot daun khas, namun tidak berpengaruh nyata terhadap diameter batang. Faktor umbi bibit menghasilkan perbedaan pada jumlah umbi dan kelas umbi. Percobaan 2 dilakukan pengujian umbi-umbi hasil tanaman kentang asal Percobaan 1. Percobaan 2 dilakukan menggunakan rancangan percobaan faktor tunggal, terdiri atas 8 faktor. Pada analisis mutu umbi kentang selama masa penyimpanan, pecahnya dormansi pada umbi yang disimpan terjadi sejak 3 minggu setelah penyimpanan (MSP). Konsentrasi Paclobutrazol dan besar umbi bibit berpengaruh nyata terhadap panjang tunas dari umbi kentang selama masa penyimpanan, namun interaksi antar kedua faktor tersebut tidak memberikan perbedaan terhadap panjang tunas selama masa penyimpanan. Penampilan granula pati lebih padat dan lebih besar berdasarkan hasil SEM pada umbi kentang akibat residu dari aplikasi Paclobutrazol pada 28 MSP.

Kata kunci: Kentang, Paclobutrazol, umbi bibit, granula pati