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**Keragaman Fenotipe Populasi Kentang (Solanum tuberosum L.) G0 Hasil True Potato Seed Berdasarkan
Karakter Umbi dan Vegetatif untuk Seleksi Klonal Awal**
Yunita, Rizky Pasthika Kirana; Rani Agustina Wulandari
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Produktivitas kentang di Indonesia masih jauh di bawah potensinya, salah satu penyebabnya adalah mutu benih yang terus menurun (degenerasi) akibat perbanyakan umbi secara vegetatif yang berulang. *True Potato Seed* (TPS) ditawarkan sebagai alternatif sumber benih karena bebas patogen dan lebih praktis, namun menghasilkan populasi umbi G0 yang sangat beragam secara genetik sehingga perlu diseleksi sebelum dijadikan benih klonal. Penelitian ini bertujuan untuk mendeskripsikan keragaman morfologi umbi G0 hasil TPS pada fase pratanam, menganalisis ekspresi keragaman karakter vegetatif menggunakan Analisis Komponen Utama (PCA) pada dua lingkungan tanam (*screenhouse* dan lahan terbuka), serta mengidentifikasi karakter morfologi yang paling berpotensi sebagai dasar seleksi klonal awal. Penelitian dilaksanakan di Dataran Tinggi Dieng, Jawa Tengah (1.842 mdpl) pada September 2025–Maret 2026, menggunakan rancangan RCBD terhadap enam progeni hasil persilangan (LM, LG, NM, NG) dan *selfing* (GS, MS) dengan empat ulangan. Data dianalisis menggunakan statistik deskriptif, koefisien variasi (CV), uji Kruskal-Wallis, serta PCA terpisah untuk karakter kuantitatif dan kualitatif. Hasil menunjukkan progeni persilangan memiliki ukuran dan bobot umbi pratanam yang jauh lebih besar dibanding progeni *selfing* (sekitar 2.2 kali), mengindikasikan adanya efek heterosis. Nilai CV yang tinggi menunjukkan keragaman genetik yang luas sebagai modal seleksi klonal. Pada fase vegetatif, pola keunggulan progeni persilangan berlanjut konsisten di kedua lingkungan. Struktur PCA karakter kuantitatif lebih terorganisir (PC1+PC2 = 80%) dibanding karakter kualitatif (PC1+PC2 = 48%). Jumlah Tangkai Daun dan Batang (JB) terbukti sebagai karakter kuantitatif dengan peran ganda yang paling konsisten lintas lingkungan, berkontribusi pada dua dimensi PCA sekaligus. Susunan Daun (SDn) dan Bentuk Anak Daun (BADn) menjadi penciri kualitatif yang konsisten antar progeni dan lingkungan. Karakter yang direkomendasikan sebagai kriteria seleksi klonal awal meliputi panjang umbi, diameter umbi, jumlah dan panjang mata tunas (fase pratanam), serta Jumlah Batang, Jumlah Tangkai Daun, Susunan Daun, dan Bentuk Anak Daun (fase vegetatif).

Kata kunci: PCA, TPS, seleksi klonal, umbi G0.

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ABSTRACT

Potato productivity in Indonesia remains far below its potential, largely due to declining seed quality (degeneration) caused by repeated vegetative tuber propagation. *True Potato Seed* (TPS) is offered as an alternative seed source because it is pathogen-free and more practical; however, it produces a highly genetically diverse G0 tuber population that requires selection before being used as clonal seed. This study aimed to describe the morphological diversity of G0 tubers from TPS during the pre-planting phase, analyze the expression of vegetative character diversity using Principal Component Analysis (PCA) across two growing environments (*screenhouse* and open field), and identify the most promising morphological characters as a basis for early clonal selection. The research was conducted in the Dieng Highlands, Central Java, Indonesia (1,842 masl) from September 2025 to March 2026, using a Randomized Complete Block Design (RCBD) with six progenies from crosses (LM, LG, NM, NG) and selfings (GS, MS) with four replications. Data were analyzed using descriptive statistics, coefficient of variation (CV), Kruskal-Wallis test, and separate PCA for quantitative and qualitative characters. Results showed that crossbred progenies had significantly larger pre-planting tuber size and weight than selfed progenies (approximately 2.2 times greater), indicating a heterosis effect. High CV values reflected broad genetic variability as a foundation for early clonal selection. During the vegetative phase, the superiority of crossbred progenies remained consistent across both environments. The PCA structure of quantitative characters was more organized (PC1+PC2 =80%) than that of qualitative characters (PC1+PC2 =48%). Number of Petioles (JTD) and Number of Stems (JB) proved to be the quantitative character with the most consistent dual-role contribution across environments, contributing to two PCA dimensions simultaneously. Leaf Arrangement (SDn) and Leaflet Shape (BADn) were consistent qualitative markers across progenies and environments. The characters recommended as criteria for early clonal selection include tuber length, tuber diameter, sprout number, and sprout length (pre-planting phase), as well as Number of Petioles, Number of Stems, Leaf Arrangement, and Leaflet Shape (vegetative phase).

***Keywords*:** PCA, TPS, clonal selection, G0 tuber.