

PENGARUH *MODIFIED ATMOSPHERE PACKAGING* DAN *VACUUM PACKAGING* TERHADAP UPAYA MEMPERTAHANKAN KUALITAS DAN ESTIMASI UMUR SIMPAN BENIH KEDELAI (*Glycine max* L. Merrill) VARIETAS ANJASMORO

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INTISARI

Kedelai merupakan salah satu komoditas yang menjadi program pemerintah untuk diswasembadkan namun mengalami produksi yang cenderung menurun dari tahun 2015-2021. Dalam programnya, pemerintah membagikan benih unggul dan bersertifikat kepada para petani. Namun, hal ini tidak sesuai dengan kondisi di lapangan dimana daya kecambah benih kedelai rendah yang menyebabkan produksi menurun. Salah satu permasalahannya yaitu penggunaan teknologi pengemasan konvensional yang menggunakan karung biasa. Penelitian ini bertujuan menganalisis pengaruh *Modified Atmosphere Packaging* (MAP) dan *vacuum packaging* terhadap parameter kualitas kadar air, daya kecambah, bobot sampel, dan daya hantar listrik dan mengestimasi umur simpan benih kedelai varietas anjasmoro yang diberikan perlakuan MAP dan *vacuum packaging* menggunakan pendekatan *Accelerated Shelf Life Testing* (ASLT) kadar air kritis.

Metodologi penelitian ini yaitu menggunakan metode Rancangan Acak Lengkap (RAL) terhadap 6 variabel kombinasi sampel. Digunakan beberapa kombinasi gas yaitu 90% CO₂ + 5% O₂ + 5% N₂ sebagai kombinasi gas 1, 70% CO₂ + 2% O₂ + 28% N₂ sebagai kombinasi gas 2, 8% CO₂ + 2% O₂ + 90% N₂ sebagai kombinasi gas 3, dan 40% CO₂ + 3% O₂ + 57% N₂ sebagai kombinasi gas 4, pengemasan vakum, dan pengemasan tanpa pemberian gas tambahan sebagai variabel kontrol. Untuk mengestimasi umur simpan, digunakan metode *Accelerated Shelf-Life Testing* (ASLT) model kadar air kritis dengan memberikan kelembaban ekstrim yaitu (90,5 ± 0,1)% menggunakan sirkulasi larutan garam KNO₃ di dalam inkubator dan suhu diatur menyerupai suhu ruang.

Hasil penelitian menunjukkan bahwa upaya mempertahankan kualitas benih kedelai yang diukur melalui parameter bobot, kadar air, daya kecambah, dan daya hantar listrik dipengaruhi oleh waktu penyimpanan dan teknik pengemasan yaitu *vacuum packaging* dan MAP. Variabel yang memiliki estimasi umur simpan terpanjang yaitu kemasan vakum selama 470 hari dan kemasan kombinasi gas 1 selama 345 hari.

Kata kunci: accelerated shelf life testing, benih kedelai, modified atmosphere packaging, kemasan vakum

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**THE EFFECT OF *MODIFIED ATMOSPHERE PACKAGING* DAN
VACUUM PACKAGING TO MAINTAIN THE QUALITY AND SHELF
LIFE ESTIMATION OF SOYBEAN SEED (*Glycine max* L. Merrill) ON
ANJASMORO VARIETY**

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ABSTRACT

Soybean is one of the commodities that has become a government program for self-sufficiency but has experienced a decline in production from 2015-2021. In its program the government distributes superior and certified seeds to farmers. However, this is not in accordance with the conditions in the field where soybean seed germination is low which causes decreased production. One of the problems is conventional packaging technology that uses ordinary sacks. This study aims to analyze the effect of MAP and vacuum packaging on changes in moisture content, germination, sample weight, and electrical conductivity and estimate the shelf life of soybean seeds of the Anjasmoro variety treated with MAP and vacuum packaging using the ASLT critical moisture content approach.

The methodology of this research is to use a Completely Randomized Design (CRD) method for 6 sample combination variables. Several gas combinations were used, namely 90% CO₂ + 5% O₂ + 5% N₂ as a gas combination 1, 70% CO₂ + 2% O₂ + 28% N₂ as a gas combination 2, 8% CO₂ + 2% O₂ + 90% N₂ as a combination gas 3, and 40% CO₂ + 3% O₂ + 57% N₂ as a combination of gas 4, vacuum packaging, and packaging without additional gas as a control variable. To estimate the shelf life of storage, the Accelerated Shelf-Life Testing (ASLT) method is used, a critical moisture content model by providing extreme humidity, namely (90.5 ± 0.1)% using circulating KNO₃ salt solution in an incubator and the temperature is adjusted to resemble room temperature.

The results showed that efforts to maintain the quality of soybean seeds as measured by the parameters of weight, moisture content, germination and electrical conductivity were influenced by storage time and packaging techniques, namely vacuum packaging and MAP. Variables that have the longest estimated shelf life are vacuum packaging for 470 days and package on gas combination 1 for 345 days.

Keywords: accelerated shelf life testing, modified atmosphere packaging, soybean seed, vacuum packaging

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