KAJIAN KINETIKA PERUBAHAN MUTU BUAH TOMAT (*Lycopercium esculentum* Mill.) BERDASARKAN KETINGGIAN JATUH

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ABSTRAK

Tomat sebagai buah klimaterik sangat rentan terhadap kerusakan mekanis akibat benturan, yang dapat menurunkan mutu dan mempercepat kerusakan selama penyimpanan. Penelitian ini mengkaji kinetika perubahan mutu tomat (*Lycopersicon esculentum* Mill.) akibat benturan dari ketinggian 40 cm dan 60 cm pada suhu ruang. Parameter yang diamati meliputi energi tumbukan, kerusakan mekanis, susut bobot, TPT, dan kekerasan. Hasil menunjukkan bahwa semakin tinggi ketinggian jatuh, semakin besar energi tumbukan dan penurunan mutu. Meski tidak tampak memar, kerusakan internal paling parah terjadi pada perlakuan 60 cm. Perlakuan 60 cm menghasilkan susut bobot tertinggi (3,05%) dan penurunan kekerasan terbesar (21,91 N menjadi 14,19 N), sementara TPT tidak terpengaruh dengan perlakuan yang diberikan. Secara kinetika, susut bobot mengikuti orde nol, sedangkan TPT dan kekerasan mengikuti orde satu. Disimpulkan bahwa ketinggian jatuh mempengaruhi mutu tomat selama penyimpanan, sehingga perlu diminimalkan benturan fisik dalam penanganan pascapanen untuk menjaga kualitas buah.

Kata kunci: tomat, ketinggian jatuh, mutu, kinetika, penyimpanan

KINETIC STUDY OF QUALITY CHANGES IN TOMATO (*Lycopersicon esculentum* Mill.) BASED ON DROP HEIGHT

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ABSTRACT

Tomato, as a climacteric fruit, is highly susceptible to mechanical damage from impact, which can reduce quality and accelerate deterioration during storage. This study examines the kinetics of quality changes in tomatoes (*Lycopersicon esculentum* Mill.) due to impact from drop heights of 40 cm and 60 cm at room temperature. Observed parameters included impact energy, mechanical damage, weight loss, total soluble solids (TSS), and firmness. Results showed that higher drop heights led to greater impact energy and more significant quality degradation. Although no visible bruising was observed, internal damage was most severe in the 60 cm treatment. This treatment also resulted in the highest weight loss (3.05%) and the greatest firmness reduction (from 21.91 N to 14.19 N), while TSS was not significantly affected by drop height. Kinetically, weight loss followed a zero-order model, whereas TSS and firmness followed a first-order model. It is concluded that drop height affects tomato quality during storage, highlighting the need to minimize physical impact in postharvest handling to maintain fruit quality.

Key words: tomato, drop height, quality, kinetics, storage