

## ABSTRAK

### PENGARUH WARNA *SHADING NET* TERHADAP KUALITAS DAN UMUR PANEN BUAH NANAS (*Ananas comosus* L. Merr.) MD-2

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Permintaan buah nanas segar di pasar global saat ini didominasi oleh varietas MD2, hal ini berkaitan dengan rasa yang lebih manis, warna daging kuning keemasan, keasaman rendah dan umur simpan yang lebih panjang dibandingkan kultivar sebelumnya. *Sunburn* merupakan salah satu kerusakan fisiologis yang dapat menyebabkan kerusakan dan kehilangan hasil produk. Penelitian ini dirancang untuk mengevaluasi efektivitas aplikasi *shading net* berwarna sebagai perlakuan pra-panen dalam memodifikasi iklim mikro di sekitar buah, dengan tujuan menurunkan kejadian *sunburn* sekaligus mempertahankan kualitas fisik dan kimia nanas klon MD-2. Rancangan percobaan menggunakan rancangan acak lengkap dengan tujuh perlakuan, yaitu kontrol (tanpa penutup), *bagging* kertas daur ulang yang lazim digunakan industri, serta lima warna *shading net* (hitam, putih, merah, hijau, dan biru) yang diaplikasikan pada umur buah 78 hari setelah *forcing* dan dievaluasi saat buah mencapai tingkat kematangan 10-20% atau *shell color* 2 (SC2). Parameter yang diamati meliputi intensitas *sunburn*, umur panen, atribut fisik (bobot, panjang, diameter, panjang *crown*), warna daging buah, kekerasan daging buah, total padatan terlarut ( $^{\circ}$ Brix), total asam tertitrasi (acidity), dan kandungan vitamin C. Semua perlakuan pelindung secara signifikan ( $p < 0,05$ ) mengurangi insiden *sunburn* dibandingkan kontrol. *Shading net* biru dan hijau sangat efektif (reduksi hingga 96,5%) serta meningkatkan kadar vitamin C sebesar 17–23% dibanding kontrol, sehingga meningkatkan penampilan visual dan nilai nutrisi. Perlakuan ini meminimalkan kerusakan fisiologis, mempertahankan antioksidan, serta meningkatkan kualitas pasca-panen, stabilitas penyimpanan, dan daya saing pasar. *Shading net* hitam meningkatkan ukuran buah 33,06% tanpa mengurangi  $^{\circ}$ Brix atau acidity, menjaga keseimbangan rasa dan meningkatkan produksi. Hasil ini menegaskan peran *Shading net* hijau, biru, dan hitam dalam optimalisasi kualitas fisiokimia dan performa pasca-panen, sebagai alternatif pra-panen yang efisien dibandingkan *bagging* untuk produksi MD2 kelas ekspor.

**Kata kunci:** Industri, intensitas cahaya, sifat fisikokimia, pra-panen, kerugian pasca-panen.

## ABSTRACT

### EFFECT OF SHADING NET COLOR ON FRUIT QUALITY AND HARVEST AGE OF MD2 PINEAPPLE (*Ananas comosus* L. Merr.)

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Global fresh pineapple market is dominated by MD2 cultivar due to superior sweetness, golden yellow flesh color, lower acidity, and longer shelf life compared with earlier cultivars. Despite the advantages, sunburn causes significant surface damage and yield loss. Therefore, this research aimed to evaluate the effectiveness of colored shading net application as a preharvest treatment to modify the fruit microclimate and reduce sunburn incidence. The experiment was arranged in a completely randomized design with seven treatments. These included a control without cover, recycled paper bagging, and five shading nets of different colors, namely black, white, red, green, and blue. Treatments were applied at 78 days after forcing, and evaluations were made when fruits were at the 10–20% stage of maturity or shell color 2 (SC2). The parameters included the extent of sunburn, age at harvest, physical characteristics (weight, length, diameter, and length of the crown), and attributes of fruits, color of the flesh, firmness, total soluble solids (°Brix), titratable acidity, and vitamin C levels. The results showed that all protective treatments significantly reduced sunburn compared with the control. Blue and green shading nets provided the most effective protection against sunburn (up to 96.5%) and increased vitamin C content by 17–23% compared to the control, directly enhancing the visual appearance and nutritional value of the fruit. By minimizing physiological damage and preserving antioxidant content, these treatments contribute to improved postharvest quality, greater storage stability, and higher market acceptance. Meanwhile, the black shading net increased fruit size by 33.06% without reducing °Brix or acidity, showing that sweetness and flavor balance were maintained with yield improvement. Collectively, these results report the significant role of green, blue, and black shading nets in improving overall food quality and postharvest performance, while offering a simpler and more efficient preharvest alternative to bagging for export-grade MD2 fruit production.

Keywords: Industry, light intensity, physicochemical, preharvest, postharvest losses.