

**PEMODELAN LAJU RESPIRASI DAN PERUBAHAN SIFAT FISIK  
BAWANG MERAH (*Allium ascalonicum* L.) PADA BERBAGAI SUHU  
PENYIMPANAN**

**ABSTRAK**

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Bawang merah adalah salah satu komoditas yang banyak dimanfaatkan di Indonesia. Produksi dan konsumsi bawang merah di Indonesia terus mengalami peningkatan. Namun, ketersediaan bawang merah sangat bergantung dari musim tanamnya. Penanganan pascapanen berupa penyimpanan pada suhu dingin telah banyak diteliti untuk mempertahankan ketersediaan bawang merah. Selama penyimpanan bawang merah akan terus mengalami metabolisme salah satunya respirasi dan menyebabkan terjadinya penurunan mutu. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh suhu penyimpanan terhadap laju respirasi dan kualitas fisik bawang merah.

Pengamatan bawang merah dilakukan dengan menyimpan sebanyak 70 gram bawang disimpan dalam *chamber* tertutup selama 8 hari, dengan perlakuan suhu ruang (28°C), 23°C, 12°C, dan 6°C dan RH 11,2 – 44,3%. Laju respirasi dianalisis menggunakan metode Kinetika Kimia dan Kinetika Enzimatis. Parameter kualitas yang diamati adalah susut bobot, kekerasan, dan warna. Hasil perbandingan observasi dan prediksi terhadap waktu model kinetika kimia lebih baik dibanding model kinetika enzimatis dalam memprediksi laju konsumsi O<sub>2</sub> bawang merah. Semakin rendah suhu, laju respirasi semakin lambat. Hasil penelitian menunjukkan semakin rendah suhu penyimpanan, perubahan susut bobot, kekerasan, dan warna makin kecil. Perubahan yang terjadi pada suhu 28°C, 23°C, 12°, dan 6°C secara berurutan yaitu; susut bobot sebesar 9,3450%; 8,1750%; ; 4,0400%; dan 2,6950% kekerasan akhir penyimpanan sebesar 4,4750; 5,2112; 5,2500; dan 5,5415; dan total perubahan warna sebesar 8,9175; 5,7050; 3,906; dan 3,6900.

Kata kunci : bawang merah, pemodelan laju respirasi, kualitas, suhu

## MODELING OF RESPIRATION RATE AND CHANGES OF PHYSICAL PROPERTIES ON SHALLOTS (*Allium ascalonicum* L.) AT VARIOUS STORAGE TEMPERATURES

### ABSTRACT

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Shallots are one of the commodities that are widely used in Indonesia. The production and consumption of shallots in Indonesia continues to increase. However, the availability of shallots is highly dependent on the growing season. Post-harvest handling such as cold storage has been widely studied to maintain the availability of shallots. During storage, shallots will continue to undergo metabolism, one of which is respiration and cause a decrease in quality. The purpose of this study was to determine the effect of storage temperature on respiration rate and physical quality of shallots.

The method used for the observation was 70 grams of shallots were stored in a closed chamber for 8 days at temperature 28°C, 23°C, 12°C, and 6°C with 11,2 – 44,3% of relative humidity. The respiration rate were analyzed by using the chemical kinetic and enzyme kinetic method. The quality parameters observed were weight loss, hardness, and color. The results of the comparison of observations and predictions against time show that the chemical kinetics model is better than the enzymatic kinetic model in predicting the rate of O<sub>2</sub> consumption of shallots. The respiration rate decrease along with the decrease of storage temperature. The results showed that the lower the storage temperature, the smaller the changes in weight loss, hardness, and color. Changes that occur at temperatures of 28oC, 23oC, 12o, and 6oC respectively; weight loss of 9.3450%; 8.1750%; ; 4.0400%; and 2.6950% final storage hardness of 4.4750; 5.2112; 5,2500; and 5.5415; and the total color change is 8.9175; 5.7050; 3,906; and 3,6900

Keywords : shallots, respiration rate model, quality, temperatur