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MAXIMISING SHELF-LIFE OF CHINESE WATERCHESTNUT [*ELEOCHARIS DULCIS* (BURM. F.) HENSCH]

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A traditional Chinese vegetable in Asia, Chinese waterchestnut [*Eleocharis dulcis* (Burm. f.) Hensch] is a new emerging primary industry with potential for export from the Australasian region. Postharvest storage protocols are sought by farmers to extend the shelf-life and thereby improve availability to markets over time. During 1997 to 1999, we studied the effects of open storage, two packing materials and two different storage temperatures on transpiration, respiration, and external and internal quality of waterchestnuts.

In contrast to open storage where corms lost about five percent of their fresh weight in one week, high-humidity storage in both materials [low-density polyethylene (LDPE) Snap-lock bags, and perforated high relative humidity (HRM) Long-life bags] reduced transpirational weight loss to about 0.5-2.5 percent within six months. Average weight loss across these materials was about 0.5-3.0 percent when stored at average 1° C and 9° C, respectively. Compared with other horticultural crops the measured respiration rate which did not exceed 1.2 ml CO₂ kg⁻¹ h⁻¹, can be considered low to very low. Therefore, vacuum packaging might be suitable for waterchestnuts. Higher storage temperature reduced loss in visual quality as indicated by discolouration of the internal flesh but increased infection by fungal microorganisms. In contrast to potato where loss of quality is associated with sweetening, high contents of total soluble solids (TSS) are an indicator of good internal quality in waterchestnut. TSS significantly increased over 3-4 months storage, particularly under the lower storage temperature. This might have been entirely due to low-temperature sweetening with a critical temperature above 9° C.

For maximising shelf life of Chinese waterchestnuts, we recommend high-humidity storage for 3-4 months at a low temperature but safely above freezing.