

THIS ISSUE

- Water loss from pak choi
- Tatsoi descriptor

LIMITING LIMP LEAFYS

Trish Grant (Department of Primary Industries, Knoxfield, 03 9210 9222)

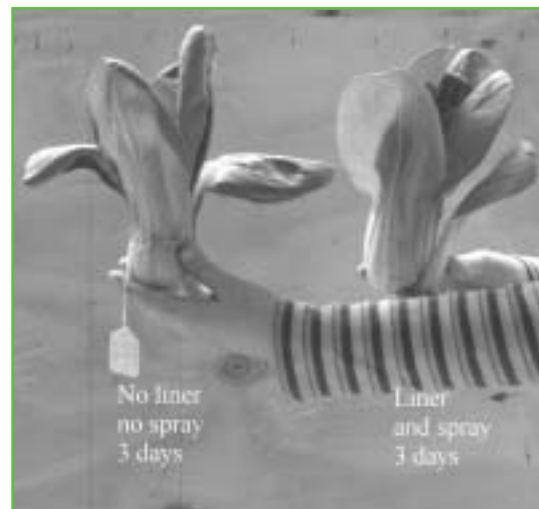
Whether or not leafy vegetables become limp depends in part on adopting good postharvest management practices that limit water loss after harvest.

Collaborative work between China and Australia recently investigated the postharvest handling chains of bunched pak choi both in China (Hangzhou Institute of Commerce and QDPI) and in Australia (QDPI and DPI Vic). In China, loss assessment indicated that wilting was one of the major causes of losses (21 to 25% of total postharvest losses – Xiangyang & Bagshaw, 2001). In China pak choi is harvested and transported to home, wholesale and retail markets in open baskets, and often by low-tech means such as open lorry or tricycle. Waiting periods are experienced at each transition and during this time water losses occur. It was suggested from this study that plastic liners and coverings could be used in baskets both to reduce water loss and to reduce mechanical damage.

The same does not occur in Australia where mechanical damage causes the greatest losses and water losses are minimised between harvest and retail by the use of refrigerated storage and transport (Thomson & Bagshaw, 2002). However, water loss does reduce quality during retail, especially in supermarkets where the cooling systems are not optimised for leafy produce.

Recent work conducted at Knoxfield, investigated the use of plastic carton liners as a low-tech solution to weight loss of pak choi at ambient temperatures. The work was initiated to further the recommendations of the Chinese handling assessment but has implications for the existing Australian industry.

Our results demonstrated clearly that plastic liners were very effective in reducing weight loss and prolonging shelf-life at ambient temperatures (between 15°C and 18°C). Liners were LDPE plastic (pear carton liner) with 2 x 2 mm holes in the bottom to prevent condensation pooling. They were loosely folded at the top to prevent development of a modified atmosphere. Liner treatments were combined with and without cold-water sprays immediately prior to packing.



Effect of liners on visual rating of pak choi after three days at ambient storage.

The use of carton liners minimised weight losses over the 3 to 4 days of the trial and resulted in produce that was easily of marketable quality (see photograph). Liners were effective without associated use of the cold-water spray. However, using the spray without a liner did not help to maintain quality.

These results indicate that carton liners could increase quality of pak choi in China by reducing postharvest weight loss at cooler ambient temperatures, and could also be used for lining baskets and reducing mechanical damage experienced during transport. Liners used at warmer ambient temperatures may lead to problems with rots (Tim O'Hare, *pers comm.*).

Carton liners could be of some advantage to the Australian pak choi industry in lowering weight loss during transport and by possibly reducing mechanical damage. However, plastic liners could have an even greater impact in reducing weight loss in retail situations. Retailers are averse to introducing barriers between produce and purchasers but with attractive, well designed (and lined!) display cases, and consumer education, we could all be enjoying our leafy greens less limp!

References

- Thomson, G. & Bagshaw, J. (2002) *Quality of Shanghai buk choy*. Access to Asian Vegetables Newsletter, Issue 53.
- Xiangyang, W. & Bagshaw, J. (2001) *Postharvest handling systems assessment of pak choi and Chinese cabbage in Eastern-Central China*. *Postharvest Handling of Fresh Vegetables*. Ed. O'Hare et al. ACIAR Proceedings. No. 105, pp. 22-25.

Tatsoi

Brassica rapa var. *rosularis*

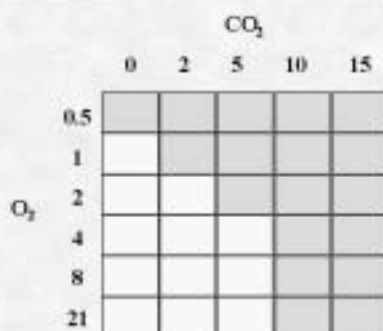


Other names

English: rosette pak choy, Chinese flat cabbage/
pak choi, flat black cabbage/
Chinese: wu ta cai, ta ge cai, ta gu cai, hei
cai, piao er cai, tai kao chay
Japanese: Tatsoi, tasai

Use

Leaves can be eaten raw or cooked. The leaves are tougher and stronger flavoured than standard pak choy and hence many prefer it cooked (stir-fried, steamed or in soups) rather than raw. Young leaves can be used in salad.



Quality characteristics

- leaves should be green & free of yellowing, holes & cuts
- leaf stalks should be free of bruises and attached to the central stem
- central stem should be compact with no sign of bolting
- overall appearance of leaf stalks & leaves should be fresh with no wilting caused by moisture loss
- base cut should be clean & free of rots

Postharvest handling

- Low temperature storage slows leaf yellowing & water loss. Cool to at least 5°C before packaging. Packaging reduces water loss & adds value through improved presentation.
- Wash in sanitised water before packing to minimise rots. Allow to air-dry before packing in plastic bags.
- Modified Atmosphere Packaging reduces respiration rate & therefore slows yellowing.
- Optimum combinations of oxygen and carbon dioxide are shown above (heavy shading = beneficial, light shading = no effect).

Compiled by Tim O'Hare and Lung Wong (DPI Gatton)



Queensland Government
Department of Primary Industries



DISCLAIMER: This publication may be of assistance to you but the State of Queensland and its employees do not guarantee that the publication is without flaw or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequences which may arise from you relying on any information in this publication.

Editors: Graeme Thomson and Wendy Morgan
☎ 03 9210 9222 Fax: 03 9800 3521
Department of Primary Industries, Knoxfield
Private Bag 15
Ferntree Gully Delivery Centre VIC 3156
Email: graeme.thomson@nre.vic.gov.au
Website: www.nre.vic.gov.au/trade/asiaveg
ISSN 1329-9174

DISCLAIMER: This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.