

## **S2. Effect of Ethylene on Quality of Non-climacteric Fruit and Vegetables**

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Fruit and vegetables are perishable due to their active metabolism after harvest. It has been known for a long time that climacteric fruit that are harvested in a hard green condition are ripened by exposure to ethylene prior to marketing. More recently, it has been found that removal of ethylene from the storage atmosphere can extend the storage life of many fruits such as bananas, citrus and some apples. Thus the presence of ethylene in packages of many flowers, ornamentals, non-climacteric fruits and vegetables is nearly always detrious to cause deterioration in non-climacteric fruits and vegetables. But little is known about the minimum level of ethylene requires to cause deterioration in non-climacteric fruit and vegetables.

Extensive studies were carried out on the effect of low levels of ethylene on the following non-climacteric produce, strawberries, lettuce, Chinese cabbage and green bean, investigated 1) exposure of produce to a range of ethylene concentrations from 0.005 to  $10\mu\text{l/liter}$  at ambient and low temperatures, 2) mesurement of ethylene levels in boxes of produce held in commercial markets, and 3) extention in storage life with the inclusion of potassium permanganate absorbed onto an alumina support.

Reducing the ethylene level from  $10\mu\ell/\text{liter}$  to  $0.005\ \mu\ell/\text{liter}$  significantly extended storage life of all produce at ambient and low temperature by delaying mold development at  $20^{\circ}\text{C}$  and tissue collapse at  $0^{\circ}\text{C}$  in strawberries, browning at  $20^{\circ}\text{C}$  and  $0^{\circ}\text{C}$  in lettuce, leaf abscission and browning at  $20^{\circ}\text{C}$  and  $0^{\circ}\text{C}$  in chinese cabbage, and degreening at  $20^{\circ}\text{C}$  and sensitivity to chilling injury at  $5^{\circ}\text{C}$  and  $0^{\circ}\text{C}$  in green bean. The addition of potassium permanganate to punnets of strawberries, boxes and polyethylene bags of lettuce, and polyethylene bags of Chinese cabbage gave a significant reduction in ethylene to less than found in commercial situation. The treatment has commercial potential to markedly increase the storage life of non-climacteric produce.