

Abstract

Modified atmosphere packaging (MAP) has considerable potential to extend fresh produce postharvest life. Physiological properties of produce (e.g. variety, respiration rate, mold resistance), storage temperature, and film permeability are keys to success. While appearance may be good, off-odors from mold or anaerobiosis may limit quality of MAP produce.

Four CRYOVAC films (PD940, PD941, PD955 and PD961), one microperforated film (Stepac XTEND120), and two controls: perforated bags (eight 6 mm holes) and bulk boxes were evaluated at two temperatures for passively creating MAP to extend storage life/quality of green beans, sweet corn and cauliflower. Five bean and two sweet corn varieties in MAP were evaluated for genetic factors on storage quality.

PD941 was most effective, followed by PD961 compared to other films in retaining green bean storage quality at 5°C, and sweet corn and cauliflower at 0°C. XTEND120 film and vented controls had twice the weight loss of other films. Control green beans retained good quality for 7 days, whereas PD941 film had good quality after 21 days at 5°C. 'Hialeah' and 'Prosperity' were superior to 'Bronco', 'Derby' and '91G' green beans in PD941 at 5°C for 21 days.

Sweet corn in PD941 film retained quality (sweetness) for two weeks. While sugars decreased during storage, values were still high after 14 days in both 'Sugar Buns' and 'Supersweet Jubilee'. Packages and temperature had little effect on sugars in 'Sugar Buns' sweet corn (se), but 'Supersweet Jubilee' sweet corn (sh2) was significantly affected by film type and temperature and had higher sugar concentration. Off-odors were detected in XTEND 120 packaged 'Sugar Buns' stored 14 days at 0° or 5°C, but none in 'Supersweet Jubilee'.

Cauliflower retained quality longer in PD941 film at 0°C than other treatments, and no off-odors were detected up to 21 days. Cauliflower packed in PD955, PD961 and vented controls had off-odors 7 days at 5°C storage, but none at 0°C. Controls showed decay after 14 days storage at 0° and 5°C.