The effect of Xtend® modified atmosphere (MAP) and modified humidity (MH) on prolonged storage and ripening of Avocado fruits (Hass and Ettlinger) was studied in two types of bags.

Laboratory experiments as well as semi-commercial and commercial trials have shown that the storage life (+5°C) of Ettlinger and Hass fruits can be extended to 45 and 60 days respectively in the AV-16 MAP, without significant chilling injury (CI) or other internal and/or external disorders. Normal fruit ripening occurred after removal from the bag at ambient temperature (20°C).

In AV-15 MAP, the storage life (at +5°C) of Hass Avocado was extended to 50 days. Shelf life at 20°C for 3-5 days allowed the fruit to ripen inside a sealed bag. Fruit ripening inside the bags was uniform, and with a significantly low incidence of internal and external disorders.

It appears that the Xtend® MAP AV-16 and AV-15 can be considered a reliable technology for successful, prolonged commercial storage of Avocado fruit (Ettlinger and Hass), and for fruit ripening inside the bags in the case of the Hass variety.

Results

The ripening process in the AV-16 and AV-15 bags (represented by firmness), and differences in O2/CO2 levels is clearly shown in figures 3 and 4. The consistent levels of MA gases created by the AV-16 at 5°C (fig. 3) maintained the stored Ettlinger fruits in a ‘stone hard’ condition (28 lbs) for 45 days (picture 3), while the control fruits already started to soften after 2 weeks in the cold storage.

Transferring the sealed AV-16 bags to ambient temperature caused a significant change in MA by reducing the O2 and doubling the CO2 levels. Keeping the fruit in this environment for longer than 60 hours (previous data) caused oxygen deficiency damage and prevented the normal softening/ripening process. Opening the bag within the first 24 hours in ambient conditions allowed a normal ripening process within 6-8 days (fig 1).

Conclusions

- Xtend® MAP AV-16 extends the life of Ettlinger and Hass fruit in cold storage conditions to 45 and 60 days respectively, and enables its normal ripening at 20°C only after removal from the bag.
- Xtend® MAP AV-15 extends the storage life of Hass avocado fruits to 50 days and allows a normal ripening process inside the bag after exposure to ambient temperature of 20°C.
- Both AV-16 and AV-15 MAP have been tested commercially with considerable success and offer a solution for extended cold storage with the ability to achieve high quality ripening with minimized produce handling.