

Summary

- ✓ Packing bell peppers in micro perforated film will enhance the shelf life period in comparison with macro perforated film.
- ✓ The experimental data with the Perfotec system, comprising of a Perfotec Fast Respiration Meter, AMAP website and Perfotec laser with automatic OTR control, has shown this.
- ✓ Optimal oxygen concentration for the storage of packed bell peppers at ambient temperature to prevent softening is 8 -10 %O₂. The shelf life was more than doubled from 6 to 14 days.
- ✓ Per bell pepper variety and color optimal O₂ and CO₂ conditions vary.
- ✓ Because of the large variations year round, from variety to variety, regular measurements of the respiration rate is required to optimize the perforation of the film.
- ✓ The potential of the Perfotec system on shelf life improvement of bell peppers has been proven

Bell Peppers

Perfotec empirical evidence

Results of an empirical study of the Perfotec system: Fast Respiration Meter, AMAP website and Perfotec laser with automatic OTR control



Want to know more?

If you are interested into more details like the list of references please feel free to contact us at amap@top-bv.nl
More information on the technology can be found at: www.topwiki.nl



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Experimental data

Experimental set up

Goal: Expanding the shelf life
Product: Bell pepper (3 colors; red, yellow and green)
Bell pepper (red; 3 pieces)
Bell pepper strips (red; 10 mm)
Chain temp: Ambient (18°C),
Strips: 7°C

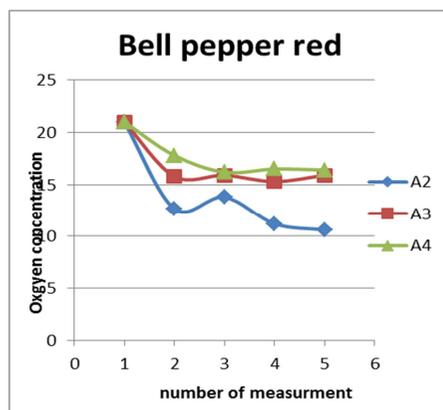
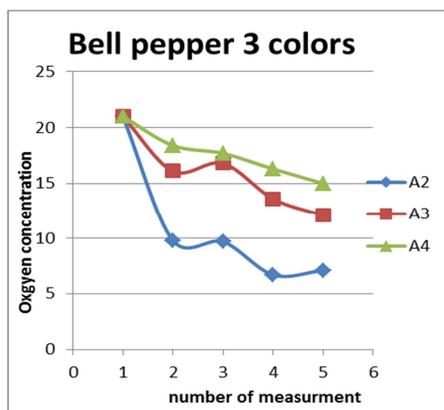
Method:

- ✓ Respiration rate of the three different products at three different days with Perfotec Fast Respiration Meter measured.
- ✓ Current quality determining ingredient is the green bell pepper
- ✓ Optimal target O₂ range for the bell peppers selected from literature and historical data.
- ✓ Required transmission per bag for target oxygen (O₂) values of 8, 10 and 12 % O₂ with AMAP website calculated.
- ✓ Perforation of flexible film with the calculated transmission values per bag
- ✓ Produce packed at selected packaging conditions. 10 bags per type of packaging, including current macro perforated bags.

Analysis procedure:

- ✓ Visual inspection on color, moisture, hardness and general appearance.
- ✓ O₂ and CO₂ measurements

Oxygen concentration in the micro perforated packing



Results

Bell pepper (red, yellow and green) at 18°C

- ✓ Standard macro perforated packing; within 6 day the green bell pepper was too soft to deliver to the customers.
- ✓ Micro perforated packing after 10 days all the bell peppers are hard enough to deliver to the customers.
- ✓ In all the micro perforated film the yellow bell pepper is the determining ingredient.
- ✓ Micro perforated packing (A2) with the lowest oxygen level gives the best result.
- ✓ Additional color changes of the green bell pepper in the micro perforated packing have not been observed.
- ✓ There was no moisture present in the micro perforated packing.



Bell pepper after 13 day

Bell pepper (red; 3 pieces) at 18°C

- ✓ Standard macro perforated packing; within 6 days the hardness is less than the micro perforated packing.
- ✓ Micro perforated packing; after 13 days all the bell peppers are hard enough to deliver to the customers.
- ✓ Micro perforated packing (A2) with the lowest oxygen level gives the best result.



Bell pepper after 13 day

Bell pepper strips at 7°C

- ✓ After 6 days the O₂ concentration in the standard closed packing is around 0%, the CO₂ are around 15% and a lot of moisture.
- ✓ After 10 days the CO₂ concentration in the standard closed packing is above 25%, leading to micro biological spoiling and a lot of moisture in the package.
- ✓ The micro perforated packing is still ok after 6 days; there is no big difference between the 3 types of micro perforated films.