

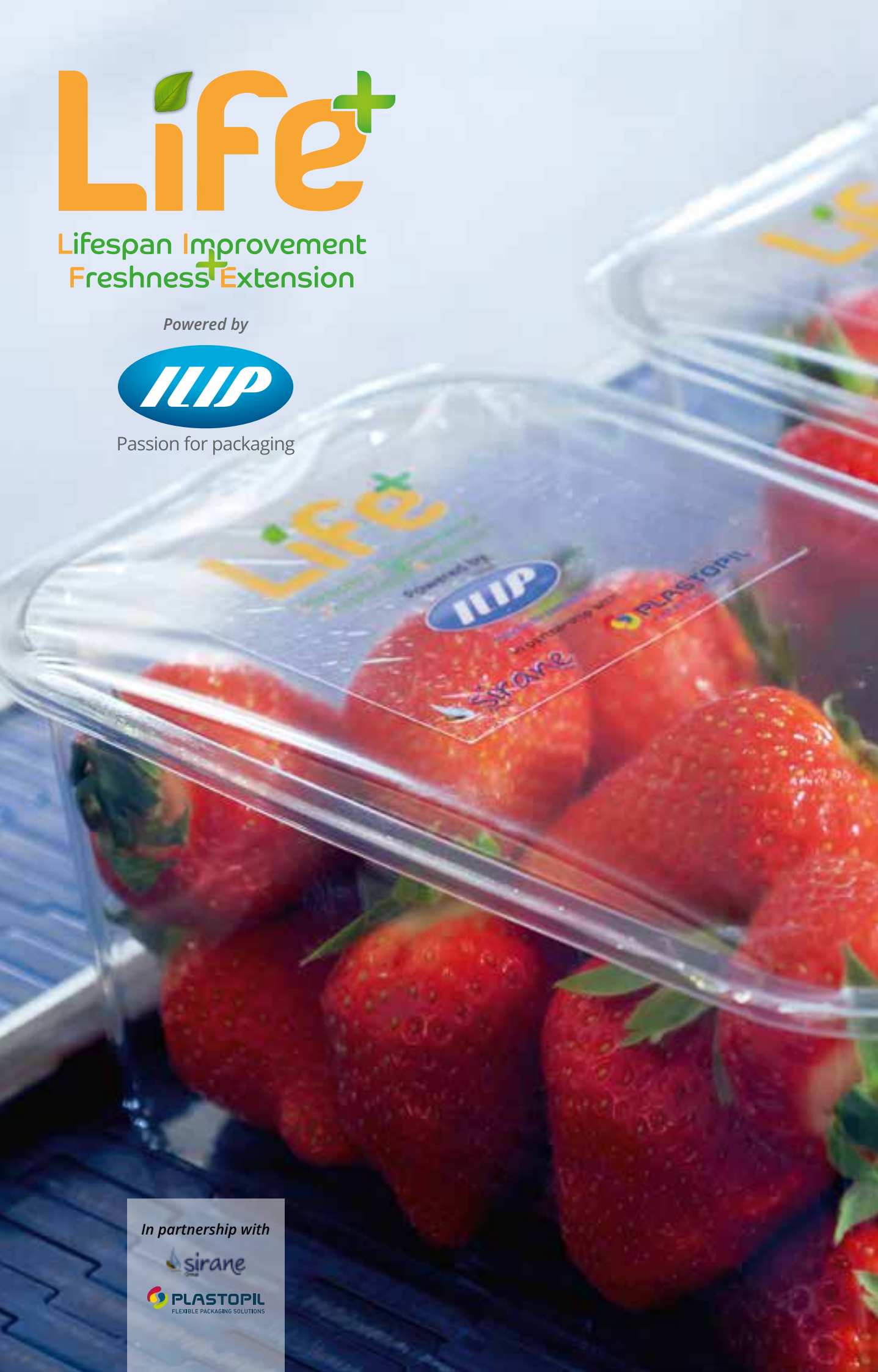
Life⁺

Lifespan Improvement
Freshness⁺ Extension

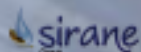
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Passion for packaging



In partnership with



Life+. Ground-breaking active packaging

Life+ (Lifespan Improvement + Freshness Extension) is the new packaging system that allows the products' freshness, weight and organoleptic properties to be maintained for longer. The Life+ system is based on the EMAP (equilibrium modified atmosphere packaging) concept, which ensures the presence of a specific gas blend inside the packaging thanks to the combined effect of three factors: Ilip's innovative anti-mist unvented heat-sealable punnet, an active absorbent pad, a heat-sealable laser perforated film specific for the application.

Anti-mist unvented heat-sealable punnet ①

The punnets have been designed to prevent air from entering and nullifying the effect of the active pads and change the specific EMAP. The punnets undergo a special anti-mist treatment in order to prevent fogging, thus giving greater visibility to the packaged product.

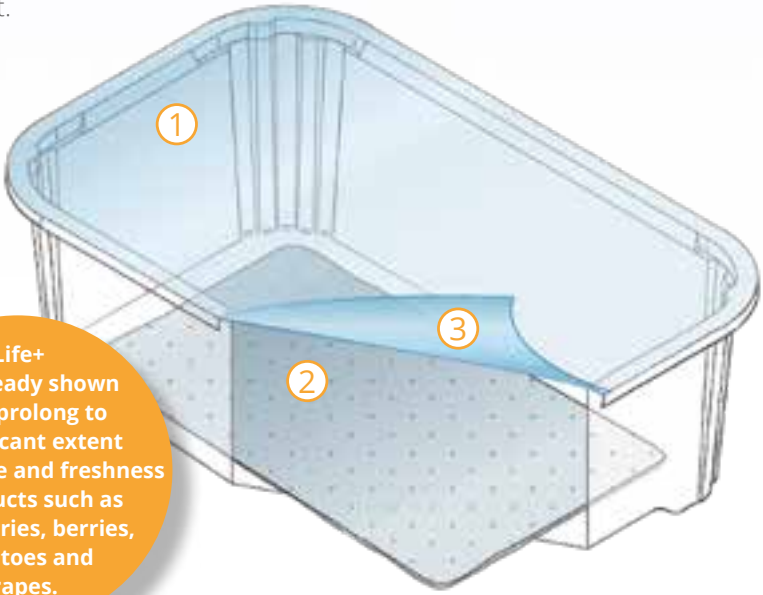
Active pad ②

The Life+ system can use two types of absorbent pads, both of them created in collaboration with the Sirane group. The ANTB (antimicrobial) active absorbent pad inhibits bacterial, mould and fungal growth; as an alternative, the ETHA active pad can absorb ethylene gas, slowing down the ripening process of packaged fruit.

Heat-sealable laser-perforated film ③

The packaging is closed by means of a heat-sealable film developed by Ilip in partnership with Plastopil. This film features microscopic laser perforations designed to ensure a specific gas exchange, while at the same time ensuring the appropriate environment for the natural metabolism of fruit, so as not to trigger fermentation.

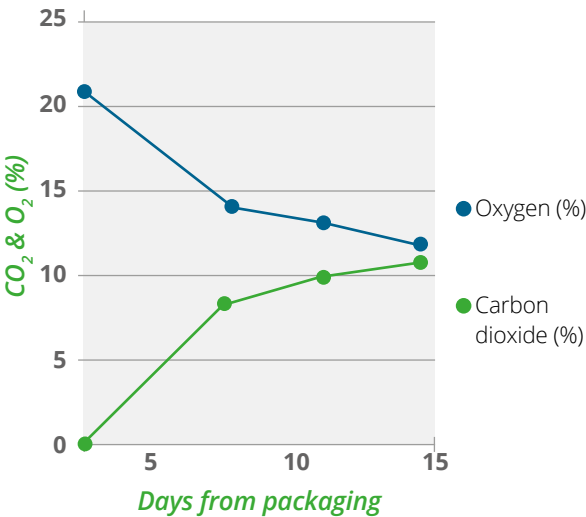
Life+ has already shown it can prolong to a significant extent the shelf life and freshness of products such as strawberries, berries, tomatoes and grapes.



PERFORATION MEDIATED EMAP-EQUILIBRIUM MODIFIED ATMOSPHERE PACKAGING

Gas permeability of most packaging materials is not sufficient to ensure a good gas exchange with the environment. EMAP makes it possible to prolong the shelf life of the products by ensuring the appropriate degree of permeability and thereby create the appropriate atmosphere inside the packaging. By slowing down respiration rate, product metabolism and ripening, adverse phenomena such as weight loss and dehydration can be significantly reduced, while at the same avoiding fermentation and off odour/flavour formation.

packagingLife+ soft fruits lab-test results
Head-space Gas evolution at temp. 1°C



system to reduce food waste

ACTIVE ABSORBENT PADS



Besides the normal properties of absorbent pads, i.e., absorbing shocks, the moisture released by fruit and condensate, ETHA pads preserve freshness and help soft fruits maintain its original colour and turgidity longer; ANT/ANTB pads help attenuate the deterioration caused by microbial attack, delay spoilage, prevent pigment oxidation.

ANT/ ANTB Antioxidant and antibacterial

Pads containing a mix of organic acids and natural plant pigments (bioflavonoids), which act as antioxidant and antibacterial agents.

Plant extracts enhance the natural defences of the tissues, enabling them to resist to the microbial attack. The function is activated by moisture.

ETHA Ethylene absorber

Pad containing a mineral that removes the ethylene gas released by the fruit from the headspace in the pack and in doing so slows down the ripening process.



LASER-PERFORATED SEALING FILM

Laser-perforated top films designed according to the specific fruit respiration rate ensure the proper gas exchange between the packaged product and the environment.

- **Top film with PET sealing layer with high “breathability” and selectivity index.**
- **High permeability to oxygen (O_2TR -2000 – 8000cc/m², 24h, 1 bar).**
- **Selectivity index (CO_2TR/O_2TR – 0.8-1.5).**
- **Sealing type: lock seal, easy peel.**
- **Perforation diameter: laser perforation ensures hole sizes of between 50 and 250 microns, thereby affecting gas selectivity.**

The perforations are arranged in a continuous track on the film. The Oxygen Transmission Rate (OTR) of the packaging depends primarily on the number of perforations and can be adjusted by changing the spacing (density) of the holes and/or modifying their diameter (area).

Permeability to aqueous vapour does not change compared to other non-perforated polymer-based films.



Long life to freshness. Long life on the shelves

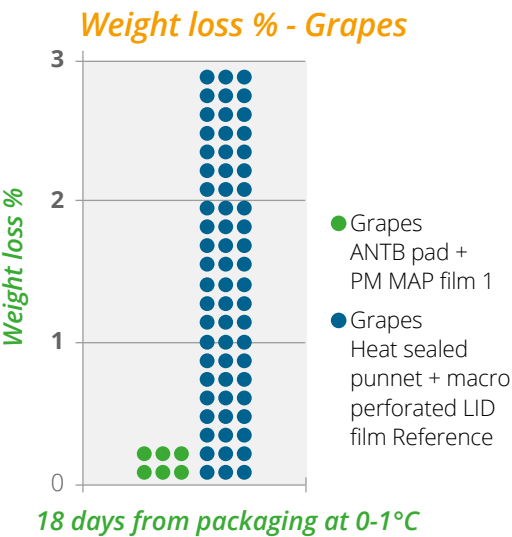
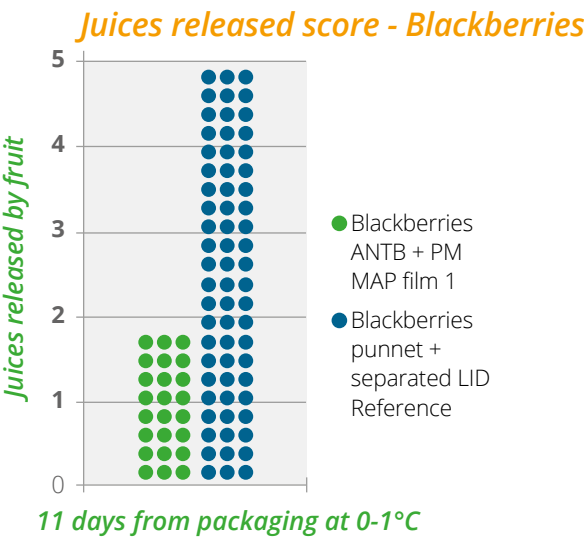
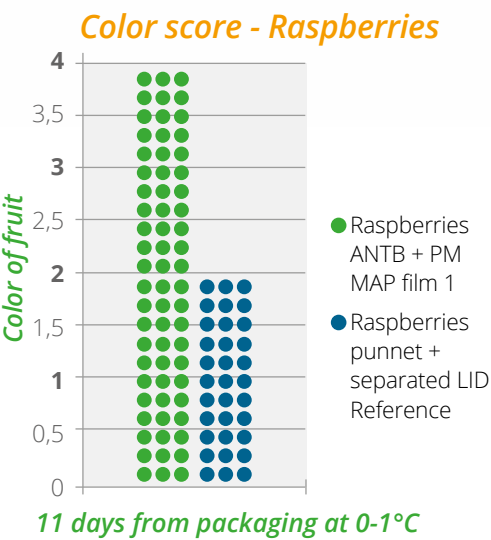
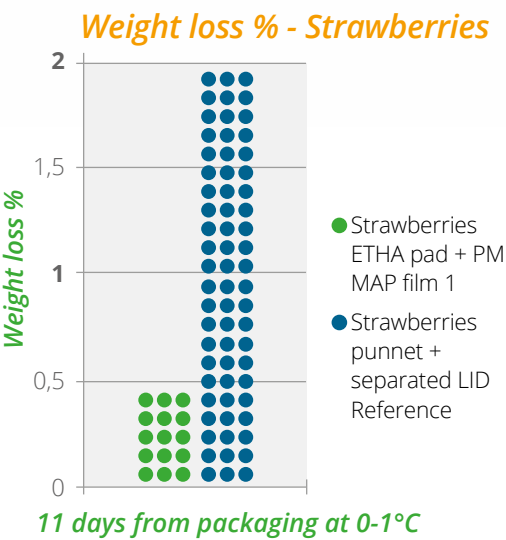
MAIN RESULTS OF SHELF LIFE EXTENSION

The extended shelf life obtained thanks to the innovative Life+ system yields many significant results:

- reduces wilting (no weight loss vs. 2-3% loss in reference samples at 1°C)
- reduces juice release from delicate fruit (blackberries, raspberries, strawberries)
- helps maintain freshness, colour and texture longer
- helps maintain the organoleptic properties of fruit and slows down ripening
- helps delay senescence process in fruit



Preservation status of raspberries after 11 days, with and without Life+.



BENEFITS FOR THE VALUE CHAIN

I vantaggi che Life+ offre all'intera filiera sono numerosi a partire dalla possibilità di beneficiare del know-how di Ilip e del suo supporto applicativo nella messa a punto di soluzioni su misura.

Differentiation from direct competitors, resulting in a competitive advantage and benefits for retailers and consumers.

Longer shelf life, while retaining freshness and the organoleptic and visual characteristics of the packaged product.

Wider export range for the products.

Reduced weight loss (*which means no compensation is required to maintain the weight stated on the label*).

Packaging costs optimization, making for an appreciable cost reduction in the medium term.

Reduced food waste, which, besides reducing costs, makes for reduced CO₂ emission and a positive impact on marketing communication.



We did not carry out a test, we carried out

Freshness degree holders. The University of Turin conducted as many as nine tests on Life+, which passed them all with flying colours. These are the results of the shelf life analyses carried out on nine types of fruit.



- Reduces wilting
- ANTB Helps delaying fungal growth
- ETHA slows down ripening
- Leaves stay green



- Reduces release of juices
- ANTB helps delaying fungal growth
- Keeps fruit texture
- Maintains berries colour



- Reduces berries softening
- ANTB helps delaying fungal growth
- Flavour is maintained

Reduction of moisture loss and weight loss

Expected shelf-life extension:
Up to 1-2 days



- No wilting and browning of the stalk that stays green
- ANTB helps delaying fungal growth
- Delay of the detachment of berries from stalk
- Flavour is maintained



- Gills stay closed
- ANTB results in a better overall whiteness
- Lower discoloration of cap
- Lower stalk elongation



- Colour of the stalk stays green
- ETHA slows down ripening.
- Delay of the detachment of berries from stalk
- ANTB helps delaying fungal growth on surface of berries and of stalk

Reduction of moisture loss and weight loss

Expected shelf-life extension:
up to 2-4 days

nine



Life+

Keeps fruit texture

ANTB helps delaying
fungal mold growth

Flavour and colour
maintained



Life+

Colour of the stalk
stays green

ANTB helps delaying
fungal growth

Delay detachment
of berries from stalk

Flavour is maintained

*Expected shelf-life extension:
Up to 7 days*



Life+

Reduces release of juices

Fruits (apple, melon, kiwi,
pineapple) maintain colour
and texture longer

Fruits maintain vitamin C
content

Better organoleptic quality



Passion for packaging

ILIP'S ADDED VALUE: A ONE-STOP-SHOPPING SOLUTION

Ilip supplies a complete system
and a team of food technologists
who can assist you with
the development of specific
Life+ projects.

Contact our team
to learn more.

lifeplus@ilip.it

Life⁺

Lifespan Improvement
Freshness⁺ Extension

Powered by



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