Around one third of all food for human consumption is lost or wasted along the supply chain according to the United Nations Food and Agriculture Organisation (FAO). A European Union (EU)-funded research project, NovelQ, has developed new processing technologies to keep food fresh over a longer period of time, potentially saving the billion tonnes of meat, fish, fruit and vegetables that might end up being thrown away each year.

The research team set up new products and processes to extend freshness and storage life, mainly for plant-based products like carrots, tomatoes, strawberries, apples and broccoli. Researchers looked at existing — but not yet widely applied — novel technologies such as high pressure, pulsed electrical fields, cold plasma, advanced heating technologies and new packaging concepts, which are sustainable and eco-friendly.

According to the project coordinator, Ariette Matser, a senior scientist at Wageningen University in the Netherlands, “the project has obvious potential in helping improve food quality, enhance shelf-life and preserve freshness.” Moreover, the new processing technologies are expected to also contribute to more sustainable food processing. “They achieve this by decreasing the energy and water use, reducing food waste through enhancing shelf-life, as well as making efficient use of packaging materials,” explains Matser.

The NovelQ project focused on every stage of the food chain, including safety, quality, food-packaging interaction and equipment. The team built a database offering insights in areas like food texture, food chemistry, microbial inactivation mechanisms, potential bio-chemical side-effects and risks and possible allergies. The results fed into a list of best practices sent out to industry, government, consumer organisations and research and education centres.

In parallel, the project team examined consumer perceptions of the novel processing technologies and discovered, among other findings, that consumers prefer pulsed electric field (PEF) and high...
pressure (HP) fruit juice to pasteurised juice. The team also found that consumers prefer the new term ‘micro pulse’ to the more ominous-sounding ‘pulsed electric field’ term.

Key to the project’s success was the Industry Advisory Platform (IAP), created to engage industrial stakeholders that were not part of the project team, which gathered about 89 food producers, equipment suppliers and other interested parties.

So which processing and packaging techniques emerged on top? In the words of Matser “although the various technologies are in different stages of progress, the NovelQ team brought them a step further in their development.” For example, although HP for pasteurisation is now widely applied in European industry, with over 200 products on the market, HP for sterilisation is some years away. “NovelQ project provided the science basis of high pressure for sterilisation technology to prove the safety and the effects on product quality,” adds Matser.

The project team also helped in the development of other industrial applications, including a new Mediterranean vegetable dish being marketed in France based on Ohmic heating technology (an advanced thermal processing method where food is heated by passing electricity through it) and a new range of fruit and vegetable products that are now produced with the help of high pressure processing in the Benelux countries.


**See also:**
CORDIS [4]

**Project:**
Novel Processing Methods for the Production and Distribution of High-Quality and Safe Foods

**Project Acronym:**
NOVELQ

**Project website:**
http://www.novelq.org/ [2]

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