EU researchers have developed new techniques to boost antioxidant levels in raspberries. Their work will help farmers grow healthier raspberries, for your table, your picnic basket and for markets worldwide.

Something mothers have always known, scientists have now confirmed – that people who eat lots of fruits and vegetables are healthier.

Substances found in fruit and vegetables called antioxidants are now widely believed to be important factors contributing to better health. These are molecules that help protect the body against the potentially damaging effects of oxidation.

The EU-funded QUALIFIEDFRUITS project identified raspberry varieties with the most antioxidants, and then developed horticultural practices to further boost levels in these varieties. As part of the work, the researchers also drastically decreased the use of chemicals while maintaining production levels, further helping Europe’s farmers remain competitive.

"Raspberry is a high-value crop due to its unique flavour, and there is increasing competition between production areas worldwide," says QUALIFIEDFRUITS coordinator Gérard Brugal of France's Vitamib.

Through natural metabolic processes, we essentially ‘burn’ oxygen inside our bodies in order to live, but this oxidation can lead to the creation of harmful by-products that build up in cells and tissues and cause diseases.

Antioxidants such as ascorbic acid or polyphenols, which essentially sweep the body clean of harmful
oxidation by-products, are present in high amounts in foods like broccoli, spinach, carrots and red fruits. Wild raspberries are among the fruits with the highest antioxidant content.

Right now there are two common trends in all red fruit production, says Gérard Brugal. First, the market has promoted fruit with specific characteristics, including nice appearance, large size, long life, firmness and ease of harvesting, but without particular regard for antioxidant content and corresponding health-promoting properties.

Second, fruit producers have implemented agricultural practices that include the use of pesticides, fungicides and artificial fertilisers, but this approach does not promote the natural synthesis of antioxidants by raspberry plants.

Gérard Brugal says antioxidants are synthesized by the plants as a natural defence mechanism, but with so many 'unnatural' defences being employed by growers, the plants no longer need to produce them.

**From research to market**

QUALIREDFRUIDS’ researchers set out to develop new, competitive and economically viable raspberry production practices, avoiding the use of pesticides, fungicides and artificial fertilisers, and guaranteeing a high antioxidant content.

Researchers started by selecting raspberry varieties rich in antioxidant compounds and naturally resistant to fungal infections, which are the most threatening diseases for this plant.

The team identified and classified wild or cultivated raspberries with high antioxidant content, natural resistance to diseases, good flavour and high average yield. Because there was no single variety that maximised all of these properties, hybridisation of several varieties was required. The team devised a combination of crossings of 37 varieties having at least one trait of major interest, selected from among the 100 that were studied.

The plants’ defence mechanisms were further enhanced by treating the roots with a cocktail of fungi and bacteria, as well as treating the plants with natural and environment-friendly substances known as elicitors.

"We designed procedures to verify the health of plantlets, and genotyping techniques to identify the varieties and new freezing protocols," says Gérard Brugal. "A clear priority was to be able to maintain and certify the properties of the selected varieties through successive generations on a long-term basis."

Finally, he says, partners had to develop a market strategy, to transfer their scientific results into real economic benefits for European raspberry producers.

"We now expect to see new varieties of nice looking, tasty and healthy raspberry moving from research to the market in just a few short years," Brugal says. "They will be certified as free from noxious chemicals and produced according to environmentally friendly agricultural practices."

Brugal says the work carried out under the QUALIREDFRUIDS project goes toward the European goal of improving food safety.

"Today in the EU, about 100 000 tonnes of raspberries are sold on the regular market every year,
about 25 percent of world market, based on only 20 of the 200 raspberry varieties registered in plant collections,” he says. “It is likely that half of these varieties will be replaced within the next decade should the quality, health-promoting properties, safety and environment friendliness continue to improve under pressure from consumers."

See also:
CORDIS [2]

Project:
New agricultural practices for quality production of red fruits enriched in healthy compounds
Project Acronym:
QUALIFIEDFRUITS


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