

Scent on demand: Scientists enhance the scent of flowers

October 6 2008

A team of scientists at the Hebrew University of Jerusalem has found a way to genetically enhance the scent of flowers and implant a scent in those that don't have one.

Smell plays an important role in our lives: It influences the way in which we choose fruit and vegetables, perfume, and even a partner. And yet, smell is not just what we smell with our noses, it's also what we taste, explains Prof. Alexander Vainstein, who is heading the team at the Robert H. Smith Faculty of Agriculture, Food and Environment. "Aroma is of major importance for defining the taste of food."

Scent in flowers and plants is used to attract pollinating insects like bees and beetles that pass on the pollen and help in the reproduction and creation of fruit. The intensity of the scent that the flower emanates is influenced by the time of day, depending on weather, age of the flower and the species.

In research that was published recently in the *Plant Biotechnology Journal*, Prof. Vainstein and his research assistant Michal Moyal Ben-Tzvi succeeded, together with other researchers, to find a way of enhancing the scent of a flower by ten-fold and cause it to emit a scent during day and night - irrespective of the natural rhythm of scent production .

The development, which has been patented by Yissum, the Hebrew University's technology transfer company, is intended to be applied to

other agricultural produce.

Utilizing natural components will increase and change not only the smell of fruit and vegetables, but also influence the commercial appeal of a wide array of produce.

The flower industry will also be interested in this development, explains Prof. Vainstein. "Many flowers lost their scent over many years of breeding. Recent developments will help to create flowers with increased scent as well as producing new scent components in the flowers."

Over a third of participants in Flowers and Plants Association surveys stated that scent influenced their choice of flower purchase. Floral scents are also one of the most popular smells and the perfume industry expends a great deal of effort trying to reproduce the authentic fragrance of fresh flowers.

Prof. Vainstein's lab is the only one in the world that researches both the scent and color of flowers. His greenhouse at the Hebrew University's Rehovot campus is full of genetically engineered flowers whose architecture, color and scent the researchers are trying to alter.

Israel is the Middle East's flower-producing superpower. Its flower, plant and propagation material exports bring upwards of \$200 million into the economy annually. Israel is third only to the Netherlands and Kenya in supplying the EU with flowers. Each year, 1.5 billion stems are exported - twice as many as 10 years ago.

Source: The Hebrew University of Jerusalem

24 April 2024 from <https://phys.org/news/2008-10-scent-demand-scientists.html>

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