



Press Release - Science

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Flemish researchers develop revolutionary technology for use in plant breeding

Ghent, Belgium – In collaboration with researchers at VIB-UGent and The University of Antwerp (UA), scientists at the BioScience business group of Bayer CropScience AG in Gent have developed a technology that can significantly increase crop yields as well as make them more resistant to unfavorable growing conditions. It is based on selecting plants that make more efficient use of energy.

One of the greatest challenges of this century is making the food supply secure in a world that finds itself under increasing pressure from the growing population, changing food patterns and changing climate. The use of new molecular technologies for plant breeding is essential to increase both yield and stress tolerance in our crops.

The new technology is based on insights in epigenetics. The 'epigenetic' component is like an extra dimension on top of the genetic code of a living organism that is affected by the environment and in turn changes the activity of the genes. The efficiency of energy production is strongly related to its epigenetic code. By using a 'smart' selection adapting the epigenetic code, Bayer BioScience's hope is to use the technology in breeding and to develop improved yield varieties.

Using this method in rapeseed it has been proved that rapeseed varieties can be selected yielding between 8% and 20% more than the common varieties. With the help of researchers at VIB-UGent and UA, the underlying mechanism was unraveled and the technology further developed. The result is a very efficient technology based on mechanisms such as energy metabolism and epigenetic regulation, which occur in all plants. The applicability of the selection system is also confirmed in rice, but should in principle be applicable to all crops and should provide the possibility to make selection processes more efficient. Another quite important advantage is that the more energy-efficient varieties do not require more water or fertilizer to produce higher yields.

Relevant scientific publication

The results of the research are published in the leading journal *Proceedings of the National Academy of Sciences* (Hauben *et al.*, Energy use efficiency is characterized by an epigenetic component that can be directed through artificial selection to increase yield).

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(For more information, click on

<http://www.vib.be/Research/EN/Research+Departments/Department+of+Plant+Systems+Biology/Frank+Van+Breusegem/>)

Financing

This research was financed by IWT Flanders (Institute for the Promotion of Innovation by Science and Technology in Flanders) and the BioScience business group of Bayer CropScience AG in Gent.

Mention both VIB and the university

When reporting this research, please always mention VIB as well as the university concerned.



Note to the editor

VIB

VIB is a non-profit research institute in life sciences. About 1200 scientists conduct strategic basic research on the molecular mechanisms that are responsible for the functioning of the human body, plants, and micro-organisms. Through a close partnership with four Flemish universities – UGent, K.U.Leuven, University of Antwerp, and Vrije Universiteit Brussel – and a solid funding program, VIB unites the forces of 70 research groups in a single institute. The goal of the research is to extend the boundaries of our knowledge profoundly. Through its technology transfer activities, VIB strives to convert the research results into products for the benefit of consumers and patients. VIB develops and disseminates a wide range of scientifically substantiated information about all aspects of biotechnology. For more information, please visit www.vib.be.

Ghent University

After more than twenty years of uninterrupted growth, Ghent University is now one of the most important institutions of higher education and research in the Low Countries. Ghent University yearly attracts over 30,000 students, with a foreign student population of over 2,200 EU and non-EU citizens. Ghent University offers a broad range of study programmes in all academic and scientific branches. With a view to cooperation in research and community service, numerous research groups, centres and institutes have been founded over the years. More info www.UGent.be

The University of Antwerp (UA)

The University of Antwerp was founded in 2003, following a merger between three formerly independent universities: RUCA, UFSIA and UIA. The latter institutions date back to 1852. UA has approximately 11,000 students, which makes it the third largest university in Flanders.

UA offers a high-level academic program in the pursuit of internationally competitive research and entrepreneurship. The fact that UA is among the leading European universities, based on a comparison of scientific impact scores for natural and biomedical sciences ("EU Science and Technology Indicators" 2003), is proof of its elevated quality standards for scientific research.

The permanent academic staff has approximately 850 members, while there are some 700 researchers that are paid from external research funds and projects. Annually, over 3,000 original research papers are published. The important Faculty of Sciences includes the Departments of Physics, Chemistry, Biology, Bioengineering Sciences, Mathematics, and Information. For more information, please visit www.ua.ac.be.

For more information

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