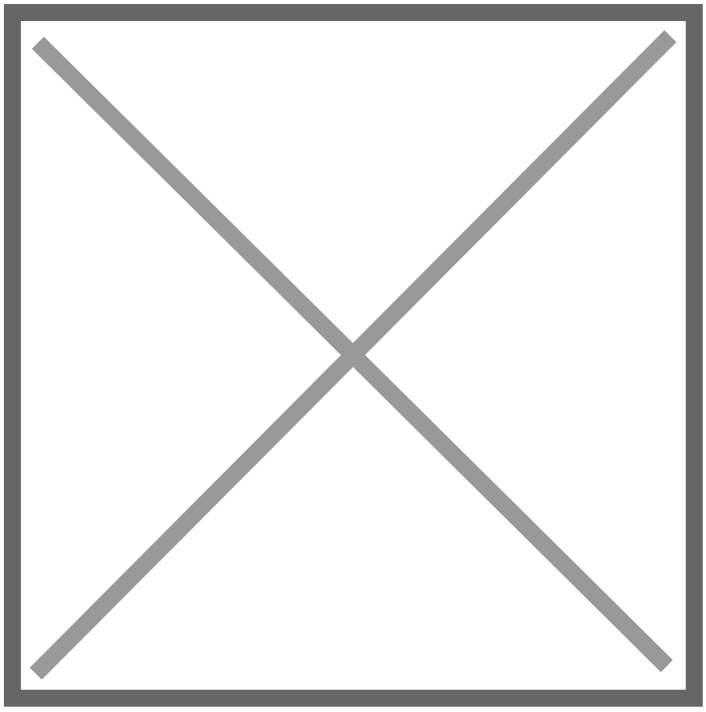
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Europe looks for a future with plants

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Genetically-modified foods and products have been a red rag to most Europeans. Belatedly, however, the 15-member European Union has woken up to the need to tap bio resources as it readies to face the competition not just from across the Atlantic but the rest of the world too.

What better way than producing a document, " Plants for the future: a 2025 vision for European plant biotechnology." A senior EU official outlined the document's contents at the BIO meeting in Philadelphia. Two days after BIO ended, it was unveiled in Brussels on June 24.

A biochemical shakes up US energy sector

With the petroleum pricing touching a global record price of $60 per barrel, the world is looking seriously at alternative products to replace the fossil fuel based economy. Anything that can minimize the use of petroleum products is bound to have a major impact on the global economy.

In this context, two biotech majors, Codexis and Cargill, have announced a breakthrough in developing a novel microbial process that will convert corn sugar to a chemical intermediate. This process is an important milestone in the development of a new renewable chemical platform.

When fully commercialized, the industrial biotech process will convert dextrose derived from corn to a chemical intermediate known as 3, hydroxyproprionic acid (3HP).

"With natural gas and crude oil prices going through the roof, the commercialization of this renewable chemical platform should be great news for the chemical industry. The chemical industry needs new feedstocks to stay competitive, and this chemical platform will be based on corn, not foreign oil. Furthermore, the biobased economy that is evolving is about more than just ethanol," Brent Erickson, BIO's executive VP (industiral and environemnt) announced.

The new process will utilize very low-cost, clean agricultural feedstocks instead of petroleum to produce 3HP. 3HP is a key intermediate for several commercially important chemicals. The chemicals that can be produced from 3HP include acrylic acid, acrylamide and 1,3 propanediol. Acrylic acid and its derivatives are used to create a wide range of polymer-based consumer and industrial products, such as adhesives, paints, polishes, protective coatings, and sealants. This new process is cheaper and more environmental friendly than the old process that uses petroleum as a feedstock.

Industrial biotechnology converges seamlessly with other scientific disciplines and is a powerful source of innovation for new products and processes, stated Erickson.

"The global acrylic acid market is worth over $4 billion. This breakthrough is going to shake up the chemical industry and it will help US companies that adopt it to be more competitive in the global marketplace," he said.

"The interface between industrial biotechnology and agricultural production provides the ability to produce inexpensive, natural raw materials such as sugars and lipids for manufacturing biobased products. Sugars and lipids from agricultural crops can be used in many products, replacing increasingly expensive oil and natural gas, which are currently the main feedstocks of the chemical industry," Erickson added.

"As the world's population will grow from 6 to 9 billion over the next 50 years, and fossil resources will diminish, the need for food, bio-fuels and bio-materials from renewable, plant-based resources will increase," said the EU official.

Leading representatives from research, the food and biotech industry, the farming community and consumer organizations presented to European Research Commissioner Philippe Busquin a long-term vision for European plant biotechnology towards 2025.

The paper identifies three priorities: to produce more affordable, healthy and better quality food products; encourage environmental and agricultural sustainability; and enhance competitiveness in European agriculture, industry and forestry.

Stakeholders and policymakers will participate in the new technology platform on plant biotechnology to deliver a strategic research agenda by the end of the year.

"Despite Europe having been at the forefront of plant science and biotechnology, its leading position has drastically deteriorated in recent years, due to public concerns over the impact of these technologies, insufficient communication of the benefits of this technology to the public, and lack of strategic research programs as compared to our competitors," said Philippe Busquin. "This is alarming in view of the challenges Europe is facing: providing a growing world population with more healthy foodstuffs in a sustainable way and replacing fossil-based materials with new, environmentally sound bio-materials made from renewable plant resources".

Lagging behind
While US biotech firms spend $650 million a year on R&D, their EU counterparts invest only $400 million. Last year, the American government launched a National Plant Genome Initiative with a total budget of $1.1 billion from 2003 to 2008. EU-15 support is estimated to be around $80 million annually.

Towards a sustainable bio-economy
Agricultural production accounts for 17 million farms in Europe and eight percent of the EU-25 workforce, while the agro-food industry has a $600 billion annual turnover. The vision paper highlights the role biotechnology and genomics can play in helping the EU move to a knowledge based bio-economy that uses renewable plant resources.

New stress-resistant plants will be capable of increased agricultural productivity, despite increased seasonal instabilities and climate change, while also requiring less fertilizer, pesticide and water. The research agenda can also increase genetic diversity of plant crops, and boost the development of "green" materials, including bio-fuels.

The vision
The vision paper calls for a European technology platform on plant biotechnology research aimed at:

- Developing a strategic research agenda covering genomics, physiology, agronomy, ecology, bioinformatics and other emerging skills
- Boosting public and private R&D investment and enhancing research transparency
- Strengthening industry support for the platform's research agenda
- Promoting societal consensus through mutual understanding and communication.