

## **FLEISHMAN-HILLARD**

### **The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004**

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#### **“Global Biotech 2004” Headlines**

##### **United States**

- 12/8/04, Aberdeen American News online, Biotech crops said on rise around world
- 12/8/04, Akron Beacon Journal online, Biotech crops take root outside U.S.
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- 12/8/04, Centre Daily Times online, Biotech Crops Said on Rise Around World
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- 12/8/04, Charleston Daily Mail online, Biotech crops take root outside U.S.
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**Plant Biotechnology Has Gone Global With Research and Production Underway in 63 Countries**

Wednesday December 8, 10:00 am ET

**Biotech Crops Generate \$27.5 Billion in Value in United States**

WASHINGTON, Dec. 8 /PRNewswire/ -- Less than a decade after the first biotech crop was commercialized in 1996, biotech crops are now being grown in 18 countries, and research and development is being conducted in another 45, according to a study by a leading U.S. food and trade policy analyst.

"The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world," said C. Ford Runge, director of the University of Minnesota's Center for International Food and Agricultural Policy and Distinguished McKnight University Professor of Applied Economics and Law. "Tens of thousands of lab, greenhouse or field trials have been conducted on about 57 food and fiber crops in countries on every continent."

The study, "The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004," reported the global commercial value of biotech crops grown in 2003-'04 crop year at US\$44 billion, 98 percent of that value came from five countries -- the United States, Argentina, China, Canada and Brazil -- growing one or more of four biotech-enhanced crops: soybeans, cotton, corn and canola.

To date, the United States is the leader in producing biotech crops, with \$27.5 billion in value in 2003-'04 from growing biotech-enhanced soybeans, corn, cotton and canola. The other top five countries in terms of current biotech production include:

- Argentina with \$8.9 billion in value from soybeans and corn
- China with \$3.9 billion in value from cotton
- Canada with \$2 billion in value from canola, corn and soybeans
- Brazil with \$1.6 billion in value from soybeans

In the next decade, as more developing countries grant approvals to these and other biotech crops in development, some studies estimate the global value of biotech crops will increase nearly fivefold to \$210 billion. Adoption of these crops in developing countries could raise the gross domestic product in those countries by 2 percent.

The United States is the leading adopter of biotech crops, approving 15 crops to date, including corn, cotton, canola, soybeans, chicory, cotton, flax, melon, papaya, potatoes, rice, squash, sugar beets, tobacco and tomatoes. Corn, cotton, soybeans, canola, squash, papaya and tobacco are the only crops with significant planted acreage. From 1991 to 2003, the United States conducted field trials, with traits being researched in 24 crops in 2003. Trials included research on fungal-resistant potatoes, peanuts, plums, bananas, rice, lettuce, salt-tolerant cucumbers, herbicide-tolerant peas, onions, tobacco and many others.

"We see continuing expansion of commercial and scientific possibilities for plant biotechnology in the next decade and beyond," said Runge. "Major expansions in biotech crop approvals and plantings are expected in Asia, Latin America and parts of Africa."

While North America is the epicenter for plant biotechnology research, more than half of the 63 countries engaged in biotech research, development and production are developing countries. Western Europe, China, Argentina, Brazil, South Africa, Australia and India are centers of influence that will help lead development into the future, the study finds.

China has emerged as a major center for biotech research. Its government has invested several hundred million dollars, ranking it second in the world in biotech research funding behind the United States.

According to the study, other regions also are investing heavily in biotech research to improve agricultural production and rural incomes:

- South Africa, which has already approved biotech varieties of corn, cotton and soybeans for planting, now ranks sixth in the world in the amount of acres planted with biotech varieties. The country is poised to lead the continent in development.
- India, where farmers grow and sell insect-resistant cotton, has at least 20 academic and research institutions involved in plant biotech research covering 16 crops. Many Indian scientists hope to usher in a second "Green Revolution" while adding another facet to its already-booming, knowledge-based economy.
- In Latin America and the Caribbean, five biotech crops are now approved, and field trials are being conducted on a variety of plants. Argentina leads the way, followed by Brazil.

While biotech research and development in Europe slowed significantly following the European Union's 1999 de facto moratorium on biotech crop approvals, which has since been lifted, Europe's stance on biotech crops can not prevent biotech adoption in the rest of the world.

"If the European Union continues to restrict activity in the sector, it will slow down this global diffusion, but it cannot stop it," said Runge. "If, on the other hand, the EU engaged plant biotechnology, it will encourage rapid international diffusion and adoption."

The study is available at <http://www.apec.umn.edu/faculty/frunge/globalbiotech04.pdf> . Support for the study was provided by the Council for Biotechnology Information, but the findings are entirely those of the researchers, based on published sources, government data, private sector reports and personal interviews. The findings are those of the authors alone and not the University of Minnesota.

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Source: Council for Biotechnology Information

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**Associated Press Pickup**

**Akron Beacon Journal online**  
**Arizona Republic**  
**AZ Central.com**  
**Billings Gazette online**  
**Biloxi Sun Herald online**  
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**Juneau Empire online**  
**KCRG-TV online**  
**Kiplinger.com**  
**KTAR Radio 620 online**  
**Lancaster online**  
**Las Vegas Sun online**  
**Lexington Herald-Leader online**  
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**Omaha World Herald online**  
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**Sacramento Bee online**  
**San Francisco Chronicle online**  
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**News-Sentinel**  
**Shawano Leader**  
**Record Stockman**  
**CNNMoney**  
**Modesto Bee online and print**

Biotech crops take root outside U.S.

By LIBBY QUAID

Associated Press Writer

12-08-2004 10:17

WASHINGTON (AP) \_ Biotech crops are flourishing in the United States, but they're also taking root across the globe, accounting for about \$44 billion in crops in five leading countries, according to a report Wednesday by an industry group.

Argentina has planted \$8.9 billion worth of genetically engineered soybeans and corn. In China, biotech cotton is worth \$3.9 billion. There are \$2 billion in genetically altered canola, corn and soybeans growing in Canada, and Brazil has biotech soybeans worth \$1.6 billion.

The United States eclipses them all with its nearly \$28 billion in biotech soybeans, corn, cotton and canola.

The report, by a University of Minnesota researcher for the industry's Council for Biotechnology Information, anticipates that growth of these gene-altered crops will soar, particularly in Asia, Latin America and parts of Africa.

"What I'm suggesting is that we are probably at the threshold of a much larger and more extensive adoption of plant biotechnology," said C. Ford Runge, director of Minnesota's Center for International Food and Agriculture Policy. "You can conclude there are many more crops in the pipeline than the four major ones that I mention."

The study found that more than half of the world's soybeans are now biotech varieties. Thirty percent of all cotton comes from biotech seeds, and 15 percent of corn and canola are genetically engineered, the study said.

Traditional plant breeding requires growing generation after generation of plants to develop a specific trait, such as corn that resists insects or potatoes that bruise less easily. Genetic engineering is like a high-tech shortcut; scientists transfer certain traits by attaching genes from one organism to another.

Even in Europe, where fears run high about the safety of gene-altered food, there has been substantial research and development of new crops. However, activity slowed dramatically in 1999, after the European Union placed a moratorium on biotech crops. Officials agreed to resume approvals earlier this year, but a political stalemate remains.

The study asserts that the EU can slow the global spread of biotech crops but cannot halt it. The study found that eight other countries are producing significant amounts of biotech crops. They are South Africa, Mexico, Australia, India, Romania, Spain, Philippines and Uruguay.

Greenhouse experiments and other research and development has been done in 63 countries, Runge found.

Activity isn't limited to traditional row crops. Many biotech vegetables and fruits \_ such as potatoes, tomatoes, squash, sweet peppers, papaya, melon, banana and apples \_ are in various phases of research or approval. And researchers in many countries are working on biotech tobacco, coffee, peanuts, mustard, cocoa and other crops.

In the United States, a recent report raised concerns about whether state governments have the legal and financial tools they need to oversee the fast-growing industry. The study by the Pew Initiative on Food and Biotechnology looked at 17 states working with federal officials to oversee biotech crops.

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On the Net:

Report: <http://www.apec.umn.edu/faculty/frunge/globalbiotech04.pdf>

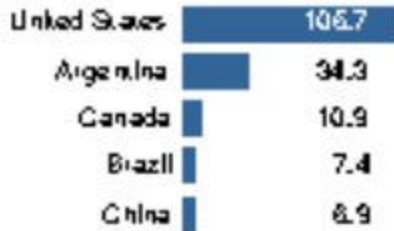
Council for Biotechnology Information: <http://www.whybiotech.com/>

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## Biotech crops

Five countries make up 98 percent of the world's biotech crop area, with the United States topping the list.

### Area in biotech crop production, in millions of acres



SOURCE: Council on Biotechnology Information AP



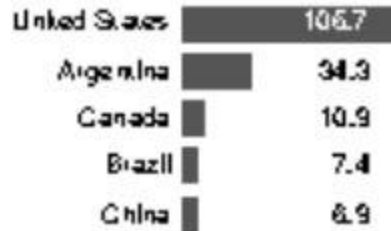
Editors note: It is mandatory to include all sources that accompany this graphic when repurposing or editing for publication.

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## Biotech crops

Five countries make up 98 percent of the world's biotech crop area, with the United States topping the list.

### Area in biotech crop production, in millions of acres



SOURCE: Council on Biotechnology Information AP

<AP> **BIOTECH CROPS 120804**: Chart shows countries with the most acres of biotech crops; with BC-Biotech Crops; 10 x 2 3/4 inches; 47 mm x 70 mm; RM; ETA 2 p.m. </AP>

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### Reuters Pickup

San Diego Union Tribune online

National Post online and print

Planet Ark online

CheckBiotech.org

Truth About Trade and Technology online

Randy Fabi

REUTERS

7:00 a.m. December 8, 2004

WASHINGTON – Half of China's farm fields may be growing genetically modified crops in 10 years, as Beijing invests hundreds of millions of dollars in the new technology, a biotech industry-sponsored report said Wednesday.

China increased its biotech cotton production for the fifth straight year in 2003/04, planting 2.8 million hectares or about 68 percent of its annual cotton crop, said Ford Runge, author of the study and an agricultural economist at the University of Minnesota.

"China's disposition to biotech might be characterized as aggressively engaged," Runge said.

China ranked second in the world in biotech research funding behind the United States, accounting for as much as one-third of global spending on plant biotechnology, the study said.

China is developing and testing a wide variety of gene-altered crops, such as corn, soybeans, rice, potatoes and tomatoes. A pioneer in developing biotech rice, Beijing could release its first variety as early as next year, according to other analysts.

Biotech crops typically have a special gene inserted to help a growing plant fight destructive insects, or to tolerate a herbicide used to kill a broad variety of weeds.

Critics, especially in Europe, say biotech crops pose too many risks to the environment and to human health.

The 121-page global biotech outlook report was funded by the Council for Biotechnology Information, which promotes the use of biotechnology.

Five countries produced 98 percent of the world's biotech crops – the United States, Argentina, Canada, Brazil and China.

The study said South Africa, Mexico, Australia, India, Romania, Spain, Philippines and Uruguay have begun to plant some biotech crops.

The United States remains by far the largest biotech producer, planting 42.8 million hectares in 2003/04

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## **Star Tribune**

### **High-tech food present in 63 countries**

Joy Powell,  
December 9, 2004

Biotech crops are gaining international acceptance surprisingly fast, according to a new study led by University of Minnesota agriculture expert C. Ford Runge.

Sixty-three countries now plant or are researching 57 varieties of high-tech food and fiber, and the global value of biotech crops has reached \$44 billion, Runge said. The United States remains the leader in the field, with Minnesota a hub both of research and planting of biotech-engineered crops.

The \$100,000 study was paid for by the Council of Biotechnology Information, which represents all major biotech companies. Runge and a University of Minnesota researcher, Barry Ryan, spent more than a year working on the report, which was released in Washington, D.C., on Wednesday.

Runge said the rapid acceptance of biotech worldwide is expanding beyond staple crops to other varieties, such as alfalfa, with China and Europe gaining ground fast on the United States in the use of genetically modified crops.

"Despite what is often reported as widespread European resistance to plant biotechnology," Runge said, "they have been extremely active in field trials and laboratory and greenhouse research for 10, 15 years."

The European Commission's Joint Research Center, for example, has reported 1,849 biotech field trials from 1991 to now.

If Europe can "straighten out" its regulatory processes and bring them in line with the rest of the world, the continent can easily emerge as another world leader in this technology, he said.

"The sense that we are going to face major barriers to U.S. export due to resistance to biotech is definitely dissipating," said Runge, an economist who directs the university's Center for International Food and Agriculture Policy.

The Chinese and their vast market also are poised to become major adopters of genetically modified soybeans, corn and rice, he said, though it's harder to read the direction of Chinese agriculture than those of free-market countries.

"They remain a state controlled economy in large part, and so their decisions on particular actions can occur without a lot of transparency," he said.

The lack of information about Chinese intentions also means growers there could convert millions of acres to biotech corn or soybeans more swiftly than other parts of the world, and without much warning.

"All of the evidence that we have suggests that the Chinese are aggressively engaged in plant biotechnology and are likely to convert tens of millions" of biotech acres in the near future, Runge said.

Plant biotechnology, which involves transferring and transforming genetic material, has provoked opposition from some consumers who brand the results as "Frankenfood."

Still, a fast-rising number of farmers have been won over by the managerial and cost benefits of biotech crops, statistics show. Soybeans, for example, account for more than half of the world's value of biotech crops, at \$23.5 billion, Runge said.

Five countries, led by the United States by far, account for 98 percent of the world value of biotech crops. The others are Argentina, China, Canada and Brazil. Emerging markets beginning to become a force in biotech crops include India, South Africa and western Europe.

The increasing global acceptance of biotech crops is good news for Minnesota farmers, and researchers.

Minnesota farmers depend heavily on exports, especially of corn and soybeans, Runge said.

"Going beyond the farm sector, Minnesota is the center of research and development in a lot of key areas of plant biotechnology," he said. "There's a lot of agribusiness activity in the Twin Cities and outstate Minnesota that is also favorably affected by these trends."

The University of Minnesota is one of the world's leading institutions in research on plant biotechnology. And in Golden Valley, Syngenta's Northrup King division is a world leader in biotech seeds.

Meanwhile, Americans remain relatively uninformed about how fast genetically modified foods are becoming part of the food supply, according to a new survey by the Pew Initiative on Food and Biotechnology.

Both support for and opposition to introducing genetically modified foods into the U.S. food supply remained mostly unchanged from September 2003 through September 2004, with 30 percent of consumers saying such foods are "basically safe," according to a Pew survey of 1,000 U.S. consumers.

Another 27 percent of those surveyed said they believed such food was "basically unsafe."

Told that more than half of the food now in stores is produced through some form of biotechnology or genetic modification, the percentage of respondents saying such foods are safe rose to 48 percent, according to Pew.

**Gazeta Mercantil Pickup**  
**Truth About Trade and Technology online**

**Brazil: Brazil joins select group of GM crop producers**

130 words

9 December 2004

English

(c) 2004. SABI - South American Business Information.

A report by the University of Minnesota shows that Brazil, US, Argentina, Canada and China are the leaders in GM crops. In the 2003/2004 crop the amount of the transgenic planting all over the world is estimated at US\$44bil and Brazil appears in the fifth position of the world's ranking, with a stake of 3.64% of such amount, with US\$1.6bil. The US hold the first position with US\$27.5bil, followed by Argentina with US\$8.9bil, China with US\$3.9bil and Canada with US\$2bil. Jointly, the five countries represented 98% of the world's transgenic planting. In Latin America, Argentina and Brazil are the principal countries to encourage others to boost growth.

**Gazeta Mercantil – SP – 12/09/2004**

**Brazil joins GMO's elite group**

Even without having defined the game's rules, the country appears among the five largest GMO producers. The Bio Safety Law still has not left the Congress, but the smuggling of transgenic soy and cotton seeds and the boldness of some producers are already turning Brazil into a leader in the cultivation and research of GMOs (genetically modified organisms) worldwide. The evaluation is part of a report developed by the University of Minnesota. Brazil, the United States, Argentina, Canada and China are considered the leaders when it comes to GMOs.

# Brasil entra para grupo de elite dos transgênicos

Alexandre Inacio de São Paulo

O Brasil faz parte do grupo de elite dos países produtores de transgênicos, ao lado de Estados Unidos, Canadá, Argentina e China, diz o americano Ford Runge, especialista da Universidade de Minnesota.

O País conquistou esse status embora a Lei de Biossegurança ainda não tenha sido aprovada. O cultivo se expandiu à força do contrabando de sementes de soja geneticamente modificada.

Lavouras transgênicas, que movimentam US\$ 44 bilhões no mundo, podem crescer para US\$ 210 bilhões em dez anos.

Página B-12

## AGRIBUSINESS

QUINTA-FEIRA, 9 DE DEZEMBRO DE 2004 — GAZETA MERCANTIL

### BIOTECNOLOGIA

# Brasil entra para grupo de elite dos transgênicos

Mesmo sem ter definido as regras do jogo, País aparece entre os cinco maiores produtores de OGMs do mundo

Alexandre Inacio de São Paulo

A Lei de Biossegurança ainda não saiu do Congresso, mas o contrabando de sementes transgênicas de soja e algodão e a chegada de alguns agricultores que dizem que o Brasil já dispõem com a dos híbridos no cultivo e pesquisa de organismos geneticamente modificados (OGMs) em todo o mundo. A avaliação faz parte de um relatório desenvolvido pela Universidade de Minnesota. Nele, Brasil, juntamente com Estados Unidos, Argentina, Canadá e China são considerados os líderes quando o assunto é transgênicos.

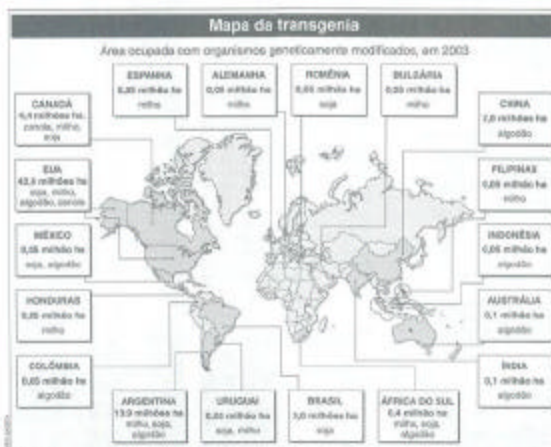
"O Brasil tem um potencial de crescimento muito grande. Apesar de a soja transgênica já ser utilizada há alguns anos, ela ainda tem um espaço grande para crescer juntamente com a cultura de algodão, que já ocupa sua primeira 'botânica'", afirma Ford Runge, diretor do Centro para Política Internacional de Alimentos e Agricultura da Universidade de Minnesota.

#### Valor das lavouras

No ano 2003/04, o valor das lavouras transgênicas no mundo é estimado em US\$ 44 bilhões, sendo que o Brasil ocupa a quarta colocação no ranking mundial, com uma área de 3,64% desse valor, com US\$ 1,6 bilhão. Os EUA ocupam a primeira posição, com um valor de US\$ 27,5 bilhões, seguidos pela Argentina com US\$ 8,9 bilhões, China com US\$ 3,9 bilhões e Canadá com US\$ 2 bilhões.

Juntos, os cinco países representam 98% do valor mundial das lavouras transgênicas", diz Runge.

Na primeira década, no mundo em que mais países em desenvolvimento aprovaram o cultivo de culturas transgênicas, as estimativas indicam que o valor global das lavouras geneticamente modifica-



Fonte: IISMA

das aumentam em quase cinco vezes, atingindo US\$ 210 bilhões. Mesmo de uma década depois da primeira colheita de lavouras transgênicas no planeta, o estudo indica que existem 18 países cultivando plantas geneticamente modificadas e outros 45 com trabalhos de pesquisa e desenvolvimento nessa área. "A adoção de técnicas de cultivo de organismos geneticamente modificados já ganhou proporções globais e irá continuar se disseminando nos próximos anos", afirma o pesquisador americano.

Os principais avanços no âmbito de

pesquisa e desenvolvimento estão acontecendo nos países de economia em ascensão. Segundo o relatório, na Ásia, a China tem investido bastante em trabalhos de dólares todos os anos em pesquisas para atender sua grande e crescente demanda consumidora. No Índia, existem pelo menos 20 instituições envolvidas em pesquisas desenvolvimento de culturas transgênicas. O estudo indica que a adoção destas culturas, nos países em desenvolvimento, poderá chegar a Produto Interno Bruto (PIB) dessas nações em 2%.

No América Latina, a Argenti-

na e o Brasil são os principais países a influenciar os demais a legitimar o crescimento. No continente africano, a África do Sul tem todas as condições para ser a principal potência em organismos geneticamente modificados do continente", afirma.

Apesar do avanço conquistado e do potencial de crescimento que os transgênicos ainda têm no mundo, a oposição da Europa tem recebido atenção especial. "Se a União Europeia continuar a restringir o comércio no setor, o desafio global terá seu ritmo reduzido, mas não poderá ser detido. Porém, se os europeus ado-

ptarem a biotecnologia haverá um rápido retorno à difusão e adoção internacional", diz Runge.

As tendências para o cultivo de organismos geneticamente modificados para os próximos dez anos são positivas, na avaliação do pesquisador. Em sua opinião, a expansão das lavouras transgênicas continuará em ascensão dada a escassez e o desenvolvimento das tecnologias. "Existe uma expectativa de crescimento significativo na Ásia, América Latina e África. Nos países dessas regiões, no entanto, a expansão ficará limitada ao tamanho dos investimentos e a serem realizados, o regulamentação do cultivo e da distribuição torna-se necessária", afirma Runge, ao lembrar que a América do Norte, o Leste Europeu, China, Brasil, Argentina, África do Sul, Austrália e Índia serão os principais centros de investimentos para o desenvolvimento das lavouras modificadas.

#### Crece área cultivada

De acordo com o último relatório do Serviço Internacional para a Aquisição de Aplicações em Agrobiotecnologia (Isaac), em 2003, houve um crescimento de 15% na área mundial plantada com transgênicos, representando 67,7 milhões de hectares.

O Isaac aponta que a soja continua sendo a cultura transgênica mais plantada em todo o mundo, com um aumento de 13% de área plantada e alcançando a marca de 41,4 milhões de hectares - 55% de área mundial. A adoção de novas variedades em alguns países levaram ao maior crescimento de área plantada com milho, com o crescimento de 25%, atingindo um total de 13,5 milhões de hectares - 19% no total. Quanto ao algodão, o Isaac aponta um crescimento de 8%, em um total de 7,2 milhões de hectares (23% da área mundial de algodão).

Valor Econômico – SP – 12/09/2004

## GMOs move US\$ 44 billion

The GMOs' global commercial value reached approximately US\$ 44 billion in the 2003/04 harvest, and 98% of this total came from transgenic crops of soy, cotton, corn and canola in the United States, Argentina, China, Canada and Brazil. The data was found by the The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004 study, conducted by C. Ford Runge, director of the Center of Applied Economy for International Food and Agriculture Policies at the University of Minnesota and Applied Economy and Law Professor at McKnight University.

# Transgênicos giram US\$ 44 bilhões

De São Paulo

O valor comercial global das culturas geneticamente modificadas alcançou cerca de US\$ 44 bilhões na safra 2003/04, e 98% desse total foi proveniente do plantio de soja, algodão, milho e canola transgênicos nos Estados Unidos, na Argentina, na China, no Canadá e no Brasil. Os dados constam do estudo "Difusão Global da Biotecnologia Vegetal: Adoção e Pesquisa Internacional em 2004", de autoria de C. Ford Runge, diretor do Centro para Política Internacional de Alimentação e Agricultura da Universidade de Minnesota e professor de Economia Aplicada e Direito da McKnight University.

Os EUA, que continuaram liderando a produção de transgênicos

na safra passada, responderam por US\$ 27,5 bilhões do valor comercial estimado. Os americanos plantaram as quatro culturas que fazem parte do estudo. A Argentina, com soja e milho geneticamente modificados, representou US\$ 8,9 bilhões, seguida pela China (algodão; US\$ 3,9 bilhões), Canadá (canola, milho e soja; US\$ 2 bilhões) e Brasil (soja; US\$ 1,6 bilhão). No total, os transgênicos foram cultivados em 18 países em 2003/04, e Runge destacou que outros 45 países já trabalham com pesquisas e desenvolvimento nesse setor.

Runge acredita que, dependendo do ritmo de aprovação dos transgênicos por parte de países em desenvolvimento, o valor comercial total dessas lavouras poderá alcançar US\$ 210 bilhões na

próxima década. Na divisão por culturas, a soja gerou US\$ 23,5 bilhões globalmente em 2003/04, seguida por milho (US\$ 11,2 bilhões), algodão (US\$ 7,8 bilhões) e canola (US\$ 1,4 bilhão), sempre conforme o estudo de Runge. Há, segundo ele, 57 organismos geneticamente modificados (OGMs) aptos para plantio no mundo, entre grãos, frutas e outros vegetais.

No caso da soja, as variedades transgênicas representaram 54%, ou 92,8 milhões de toneladas, da produção total dos cinco países destacados no estudo em 2003/04. No Brasil, onde o cultivo do grão geneticamente modificado foi liberado por meio de medida provisória, o percentual foi de 12%.

Ver mais em [www.apec.umn.edu](http://www.apec.umn.edu)

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**St. Louis Post-Dispatch Pickup**  
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**Kansas.com**  
**The Wichita Eagle online**  
**CheckBiotech.org**  
**Omaha World Herald**

## **Modified crops' use is spreading, new study says**

By Rachel Melcer

Of the Post-Dispatch

Wednesday, Dec. 08 2004

Despite regulatory blocks in Europe and political and economic barriers in developing nations, research and use of genetically modified crops is spreading around the world, a new study shows.

Opposition to biotech crops, particularly in Europe, has slowed their adoption, said lead researcher C. Ford Runge, director of the Center for International Food and Agricultural Policy at the University of Minnesota.

However, 57 genetically modified, or GM, crops - ranging from soybeans and corn to raspberries, squash and peanuts - have entered at least the earliest stages of development, his research found. The study, released Wednesday, was funded by an industry group, the Council for Biotechnology Information, drawing on published sources, government data, private-sector

reports and personal interviews.

Runge found that today, eight years after commercialization of the first GM crop, such plants are harvested in 18 countries - and they had a commercial value of \$44 billion in the 2003-04 growing season. Another 45 nations have tested biotech crops in laboratories, greenhouses or fields.

"I wouldn't say it's necessarily been a smooth, upward trajectory" toward development and adoption, Runge said. But looking at what has sometimes been an uneven process, "the trend is still upward."

Perhaps the biggest barrier has been those who fear GM plants will harm human health or the environment. Many Europeans, untrusting of their regulators and protective of a heritage of local and family farms, object to the technology. The European Union imposed a de facto freeze on approval of GM crops for nearly six years, which is just beginning to thaw.

Yet, Europeans are responsible for much of the research cited in Runge's report.

Thirteen countries in Western Europe collectively led the world in field trials of GM vegetables, testing 11 crops, including broccoli, lettuce, carrots and tomatoes. Eight nations in that region have held field trials of a total of 11 types of GM fruit - melons, plums and cantaloupe among them - again taking the global lead.

Much of that work was conducted before the European Union's regulatory moratorium on commercial approvals, Runge said. And all have stalled at that barrier.

"Nonetheless, there's a backlog of ... activity in the EU that suggests, if they can overcome the kind of regulatory constipation that has affected them, then things could move forward fairly quickly," he said.

The United States leads the world in producing commercial biotech crops, raising GM soybeans, cotton, corn and canola valued at \$27.5 billion in the 2003-04 growing season, the report said. In Hawaii, farmers grow biotech papaya worth about \$10 million, or half of the average annual papaya crop. Monsanto Co., based in Creve Coeur, is the world's leading producer of biotech seeds and crop traits.

North America "exercises a gravitational pull on global investment and human capital, drawing to it the best companies and researchers," in particular from Europe, the report said.

Yet even in the United States, the market has rejected GM table foods - including potatoes, melons, tomatoes, sugar beets and squash - that won approval from regulators. Worldwide, farmers who export to Europe do not grow biotech row crops.

However, Runge sees the global climate warming toward GM crop technology.

Many scientists believe it is key to feeding an expanding developing-world population with limited land and resources. That's because GM row crops generally have higher yields and

require less care than their conventional counterparts. And the next generation of biotech crops being developed by Monsanto and its competitors promises nutritional, quality, taste and processing benefits- which could spur acceptance and demand in developed countries.

"The past is the prologue for what is likely to happen over the next five to 10 years" with growing demand and use of GM crops, Runge said. "How big a multiple it's likely to be is anyone's guess."

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### **India emerging biotech power**

**New Delhi, Dec 9** Area under Bt cotton cultivation is reported to have increased to 526,102 hectare in 2004, up 5.8% against last year. This situation has led to several international experts projecting the country's position in the future global map for transgenic crops.

The US-based Council for Biotechnology Information (CBI), basing on the commercial value of transgenic crops, ongoing research and the government policies has projected that India alongwith Indonesia and Egypt as the emerging crop biotechnology power.

International Service for Agri-biotech Applications (ISAAA) South Asia coordinator Bhagirath Choudhary said, "The area under Bt cotton has increased phenomenally in the current year. This shows the growing acceptability of Bt cotton among farmers." He, however, admitted that the increased area of 526,102 hectare is a miniscule part of over nine million hectare under cotton crop in the country.

In 2003-04 the global commercial value of biotech crops has grown at \$98 billion. Over 98% of this value came from six countries viz. US, Argentina, China, Canada, Brazil and South Africa. In the next decade, as more developing countries grant approval to transgenic crops, the global value of biotech crops increase five-fold to \$210 billion.

The CBI study conducted by Dr C Ford Runge, director of the Minnesota University's centre for

international food and agriculture policy said that India is soon likely to emerge as agri-biotech power as “many Indian scientists hope to usher in a second Green Revolution, while adding another facet to its already-booming knowledge-based economy.”

Dr Runge who was briefing the media through tele-conferencing on Thursday, however said “the area coverage under Bt cotton in India in 2004 is still under review. Our study is based on the global market for transgenic crops and the on-going researches in countries. We have collected data from UN FAO, World Bank, European Commission and other public databases.”

URL: [http://www.financialexpress.com/fe\\_full\\_story.php?content\\_id=76526](http://www.financialexpress.com/fe_full_story.php?content_id=76526)

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**WebIndia123.com**

**Domain-b.com**

**Indiastat.com**

**The Navhind Times online**

### **Biotech crops to be grown in 63 countries: US Study**

New Delhi, Dec 9 In less than a decade after the first biotech crop was commercialised in 1996, biotech crops are now being grown in 18 countries, and research and development is being conducted in another 45, according to a study by a leading US food and trade policy analyst.

"The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world," said Mr C Ford Runge, Director of the University of Minnesota's Center for International Food and Agricultural Policy and Distinguished McKnight University Professor of Applied Economics and Law.

"Tens of thousands of lab, greenhouse or field trials have been conducted on about 57 food and fiber crops in countries on every continent." The study, "The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004," reported the global commercial value of biotech crops grown in 2003-04 crop year at 44 billion dollars, 98 per cent of that value came from five countries -- the United States, Argentina, China, Canada and Brazil - growing one or more of four biotech-enhanced crops: soybeans, cotton, corn and canola.

To date, the United States is the leader in producing biotech crops, with 27.5 billion dollars in value in 2003-04 from growing biotech-enhanced soybeans, corn, cotton and canola.

The other top five countries in terms of current biotech production include Argentina with 8.9 billion dollars in value from soybeans and corn, China with 3.9 billion dollars in value from cotton, Canada with two billion dollars in value from canola, corn and soybeans and Brazil with 1.6 billion dollars in value from soybeans.

In the next decade, as more developing countries grant approvals to these and other biotech crops in development, some studies estimate the global value of biotech crops will increase nearly

fivefold to 210 billion dollars.

Adoption of these crops in developing countries could raise the gross domestic product in those countries by 2 per cent.

While India has commercially approved insect-resistant cotton, researchers also have conducted field trials on drought-tolerant canola, insect-resistant cotton and tobacco.

Further experimental research has been conducted on cabbage, potatoes, rice and tomatoes.

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## **The Economic Times, Mumbai**

**10 December 2004**

### **Global GM food to bloom in local labs**

#### **Body:**

NEW DELHI: India is emerging as a significant player in the \$44bn global genetically modified (GM) crop business and is set to become a “centre of influence” that will help lead development, says a new study.

Since the first commercialisation of GM crops in 1996, these are being grown in 18 countries while 45 others are engaged in research and development, according to a study, ‘The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004’.

“The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world,” said C Ford Runge, author of the study and director of the University of Minnesota’s Centre for International Food.

Of the global trade in GM crop, 98% is from five countries — the US, Argentina, China, Canada and Brazil — growing one or more of four biotech-enhanced crops: soybeans, cotton, corn and canola.

The US leads with \$27.5bn worth of GM crops like soybeans, corn, cotton and canola. Argentina ranks second, handling \$8.9bn worth of soybeans and corn, followed by China with \$3.9bn worth cotton, Canada with \$2bn worth canola, corn and soybeans, and Brazil with \$1.6bn worth soybeans.

India has only approved commercial cultivation of insect-resistant cotton, though researchers have conducted field trials on drought-tolerant canola, insect-resistant cotton and tobacco. Further experimental research is being conducted on cabbage, potatoes, rice and tomatoes in India.

“We see continuing expansion of commercial and scientific possibilities for plant biotechnology in the next decade and beyond,” said Runge. “Major expansions in biotech crop approvals and plantings are expected in Asia, Latin America and parts of Africa.”

While North America is the epicentre for plant biotechnology research, more than half of the 63 countries engaged in biotech research, development and production are developing countries, the study pointed out. “Western Europe, China, Argentina, Brazil, South Africa, Australia and India are centres of influence that will help lead development into the future,” said Runge.

Besides China, which ranks second after the US in research funding, several other regions are investing heavily in biotech research to improve agricultural production and rural incomes, the study stated.

South Africa, which has already approved GM varieties of corn, cotton and soybeans for planting, now ranks sixth in the world in terms of acres planted with biotech varieties.

“India, where farmers grow and sell insect-resistant cotton, has at least 20 academic and research institutions involved in plant biotech research covering 16 crops,” the study said.

In fact, the study highlighted that many Indian scientists hoped to usher in a second green revolution using its knowledge based economy, with GM crops playing a pivotal role.



DECEMBER 10, 2004

## COMMODITIES

Another take on companies in markets

# Global GM crop valued at \$44bn

OUR AGRICULTURE EDITOR  
New Delhi, 9 December

**T**he commercial value of the total global production of genetically engineered crops in 2003-04 is reckoned at \$44 billion.

Nearly 98 per cent of this is accounted for by five countries - the US, Argentina, China, Canada and Brazil. Bulk of the volume is from four crops - soyabean, cotton, corn and rapeseed.

These estimates have been made in a study entitled "Global diffusion of plant biotechnology: international adop-

tion and research in 2004" conducted by C. Ford Runge, director of the University of Minnesota's Centre for international food and agricultural policy.

The study reveals that the US accounts for over half of the biotech crop output in value terms, roughly around \$27.5 billion.

Argentina comes next with \$8.9 billion, followed by China with \$3.9 billion, Canada with \$2 billion and Brazil with \$1.6 billion.

India has begun commercial cultivation of only genetically engineered cotton.

Field trials and experiments are underway in the country on several other biotech crops, including cabbage, potatoes, rice and tomato.

North America is the epicentre for plant biotechnology research.

Over half of the 63 nations engaged in research, development and production of such crops are developing countries.

"Western Europe, China, Argentina, Brazil, South Africa, Australia and India are centres of influence that will help lead development in-

to the future," the study maintains.

China has invested heavily in biotech research, making the country second in the world in biotech research funding behind the US.

In India, at least 20 academic and research institutions are involved in plant biotech research.

"Many Indian scientists hope to usher in the second green revolution while adding another facet to its already booming knowledge-based economy," the study points out.

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### Las cosechas biotécnicas se multiplican por todo el mundo

Argentina - 10/12/2004 - El Zonda On Line ( San Juan )

Las cosechas de vegetales con genes modificados se extienden más allá de Estados Unidos y han cobrado ya fuerza en Argentina, Brasil, China y Canadá, entre otros países, según un grupo de la industria.

En total, los cinco países mencionados producen alrededor de 44.000 millones de dólares anuales en cosechas biotécnicas.

Argentina ha sembrado cosechas de soya y maíz con genes modificados por un total de 8.900 millones de dólares. En China, el algodón biotécnico produce unos 3.900 millones de dólares al año. Brasil tiene siembras de granos de soya por 1.600 millones de dólares. Y Canadá ha sembrado parcelas de maíz, soya y canola por un total de 2.000 millones.

Los Estados Unidos los eclipsa a todos con casi 28.000 millones en soja, maíz, algodón y canola.

El estudio, realizado por un investigador de la Universidad de Minnesota para el Consejo de Información Biotecnológica, anticipa que el volumen de esas cosechas aumentará inmensamente, particularmente en América Latina, Asia y África.

"Pienso que estamos probablemente en el umbral de un cultivo mucho más prolongado y extenso de biotecnología vegetal", dijo el investigador C. Ford Runge, director del Centro de Política Internacional para Alimentos y Agricultura. "Uno puede concluir que hay muchas cosechas más en preparación que las... que he mencionado".

El estudio halló que más de la mitad de la producción de granos de soja del mundo corresponde ya a variedades modificadas genéticamente, que un 30% del algodón proviene de semillas modificadas y que un 15% del maíz y la canola que se cultivan actualmente son producto de ingeniería genética.

El cultivo tradicional requiere varias generaciones de plantas para desarrollar un aspecto específico de una nueva variedad que sea, por ejemplo, resistente a los insectos o produzca mejores papas. En cambio, en la ingeniería genética, los científicos transfieren ciertos genes de una planta a otra para desarrollar las variedades que desean. El estudio afirma que México, Uruguay y otros seis países producen ya volúmenes significativos de cosechas biotécnicas, y que se han realizado investigaciones al respecto en 63 países.

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### **Brasil entra para grupo de elite dos transgênicos 09/12 - 08:20**

#### **Brasil - 09/12/2004 - Invest News (Brasil)**

São Paulo, 9 de Dezembro de 2004 - Mesmo sem ter definido as regras do jogo, País aparece entre os cinco maiores produtores de OGMs do mundo. A Lei de Biossegurança ainda nem saiu do Congresso, mas o contrabando de sementes transgênicas de soja e algodão e a ousadia de alguns agricultores está fazendo com que o Brasil já desponte como um dos líderes no cultivo e pesquisas de organismos geneticamente modificados

(OGMs) em todo o mundo. A avaliação faz parte de um relatório desenvolvido pela Universidade de Minnesota. Nele, Brasil, juntamente com Estados Unidos, Argentina, Canadá e China são considerados os líderes quando o assunto é transgênicos.

"O Brasil tem um potencial de crescimento muito grande. Apesar de a soja transgênica já ser cultivada há alguns anos, ela ainda tem um espaço grande para crescer juntamente com a cultura de algodão, que já ocupa seus primeiros hectares", afirma Ford Runge, diretor do Centro para Política Internacional de Alimentação e Agricultura da Universidade de Minnesota.

## Valor das lavouras

Na safra 2003/04, o valor das lavouras transgênicas ao redor do mundo é estimado em US\$ 44 bilhões, sendo que o Brasil ocupa a quinta colocação no ranking mundial, com uma fatia de 3,64% desse valor, com US\$ 1,6 bilhão. Os EUA ocupam a primeira posição, com um valor de US\$ 27,5 bilhões, seguidos pela Argentina com US\$ 8,9 bilhões, China com US\$ 3,9 bilhões e Canadá com US\$ 2 bilhões. "Juntos, os cinco países representam 98% do valor mundial das lavouras transgênicas", diz Runge.

Na próxima década, na medida em que mais países em desenvolvimento aprovarem o cultivo de culturas transgênicas, as estimativas indicam que o valor global das lavouras geneticamente modificadas aumentará em quase cinco vezes, atingindo US\$ 210 bilhões. Menos de uma década depois da primeira colheita de lavouras transgênicas no planeta, o estudo indica que existem 18 países cultivando plantas geneticamente modificadas e outros 45 com trabalhos de pesquisa e desenvolvimento nessa área. "A adoção de técnicas de cultivo de organismos geneticamente modificados já ganhou proporções globais e irá continuar se disseminando nos próximos anos", afirma o pesquisador americano.

Os principais avanços na área de pesquisa e desenvolvimento estão acontecendo nos países de economia em evolução. Segundo o relatório, na Ásia, a China tem investindo centenas de milhares de dólares todos os anos em pesquisa para atender seu grande e crescente mercado consumidor. Na Índia, existem pelo menos 20 instituições envolvidas em pesquisa e desenvolvimento de culturas transgênicas. O estudo indica que a adoção destas culturas, nos países em desenvolvimento, poderá elevar o Produto Interno Bruto (PIB) dessas nações em 2%.

"Na América Latina, a Argentina e o Brasil são os principais países a influenciar os demais a impulsionar o crescimento. No continente africano, a África do Sul tem todas as condições para ser a principal potência em organismos modificados do continente", afirma. Apesar dos avanços conseguidos e do potencial de crescimento que os transgênicos ainda têm no mundo, a oposição da Europa tem recebido atenção especial. "Se a União Européia continuar a restringir a atividade no setor, a difusão global terá seu ritmo reduzido, mas não poderá ser detida. Porém, se os europeus adotarem a biotecnologia haverá um rápido estímulo à difusão e adoção internacional", diz Runge.

As tendências para o cultivo de organismos geneticamente modificados para os próximos dez anos são positivas, na avaliação do pesquisador. Em sua opinião, a expansão das lavouras transgênicas continuará em ascensão dado o avanço e o desenvolvimento das tecnologias. "Existe uma expectativa de crescimento significativo na Ásia, América Latina e África. Nos países dessas regiões, no entanto, a expansão ficará limitada ao tamanho dos investimentos a serem realizados, da regulamentação do cultivo e da assistência técnica fornecida", afirma Runge, ao lembrar que a América do Norte, o Leste Europeu, China, Brasil, Argentina, África do Sul, Austrália e Índia serão os principais centros de influência para o desenvolvimento das lavouras modificadas.

Cresce área cultivada De acordo com o último relatório do Serviço Internacional para a Aquisição de Aplicações em Agrobiotecnologia (Isaaa), em 2003, houve um crescimento de

15% na área mundial plantada com transgênicos, representando 67,7 milhões de hectares. O Isaaa aponta que a soja continua sendo a cultura transgênica mais plantada em todo o mundo, com um aumento de 13% de área plantada e alcançando a marca de 41,4 milhões de hectares ? 55% da soja mundial. A adoção de novas variedades em alguns países levaram ao maior crescimento de área plantada com milho, cerca de 25%, atingindo um total de 15,5 milhões de hectares ? 11% do total. Quanto ao algodão, o Isaaa aponta um crescimento de 6%, em um total de 7,2 milhões de hectares (21% da área mundial de algodão).  
(Gazeta Mercantil)(Alexandre Inacio)

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## **Contrabando faz do Brasil o 5º plantador de transgênicos**

**Brasil - 09/12/2004 - Invertia.com (Brasil)**

Quinta, 9 de Dezembro de 2004, 14h10  
Fonte: Gazeta Mercantil

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Os principais avanços na área de pesquisa e desenvolvimento estão acontecendo nos países de economia em evolução. Segundo o relatório, na Ásia, a China tem investindo centenas de milhares de dólares todos os anos em pesquisa para atender seu grande e crescente mercado consumidor. Na Índia, existem pelo menos 20 instituições envolvidas em pesquisa e desenvolvimento de culturas transgênicas. O estudo indica que a adoção destas culturas, nos países em desenvolvimento, poderá elevar o Produto Interno Bruto (PIB) dessas nações em 2%. "Na América Latina, a Argentina e o Brasil são os principais países a influenciar os demais a impulsionar o crescimento. No continente africano, a África do Sul tem todas as condições para ser a principal potência em organismos modificados do continente", afirma.

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Cresce a área cultivada

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QUER SABER MAIS NOTÍCIAS DE ECONOMIA? ENTÃO CLIQUE AQUI.

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**Las cosechas biotécnicas se multiplican por todo el mundo**

**Regional - 10/12/2004 - IBL News (Regional)**

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En total, los cinco países mencionados producen alrededor de 44.000 millones de dólares anuales en cosechas biotécnicas.

Argentina ha sembrado cosechas de soya y maíz con genes modificados por un total de 8.900 millones de dólares. En China, el algodón biotécnico produce unos 3.900 millones de dólares al año. Brasil tiene siembras de granos de soya por 1.600 millones de dólares. Y Canadá ha sembrado parcelas de maíz, soya y canola por un total de 2.000 millones.

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## **Business Standard**

### **Global GM Crop Valued At \$44bn ; The Commercial Value Of The Total Global Production Of Genetically...**

*Business Standard* - 10-Dec-2004 - P. 15 - Our Agriculture Editor New Delhi

The commercial value of the total global production of genetically engineered crops in 2003-04 is reckoned at \$44 billion.

Nearly 98 per cent of this is accounted for by five countries - the US, Argentina, China, Canada and Brazil. Bulk of the volume is from four crops - soyabean, cotton, corn and rapeseed.

These estimates have been made in a study entitled "Global diffusion of plant biotechnology: international adoption and research in 2004" conducted by C. Ford Runge, director of the University of Minnesota's Centre for international food and agricultural policy.

The study reveals that the US accounts for over half of the biotech crop output in value terms, roughly around \$27.5 billion.

Argentina comes next with \$ 8.9 billion, followed by China with \$ 3.9 billion, Canada with \$ 2 billion and Brazil with \$ 1.6 billion.

India has begun commercial cultivation of only genetically engineered cotton.

Field trials and experiments are underway in the country on several other biotech crops, including cabbage, potatoes, rice and tomato.

North America is the epicentre for plant biotechnology research.

Over half of the 63 nations engaged in research, development and production of such crops are developing countries.

"Western Europe, China, Argentina, Brazil, South Africa, Australia and India are centres of influence that will help lead development into the future," the study maintains.

China has invested heavily in biotech research, making the country second in the world in biotech research funding behind the US.

In India, at least 20 academic and research institutions are involved in plant biotech research.

"Many Indian scientists hope to usher in the second green revolution while adding another facet to its already booming knowledge-based economy," the study points out.

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**Newscast: Business Is Booming In The Genetically Engineered Food Industry**

**Minnesota Public Radio: Marketplace Morning Report - 09-Dec-2004**

KAI RYSSDAL, anchor:

If you are a food label reader, you probably know how many things in your cupboard contain

corn syrup or some other corn product. Here's what you may not know. There's a good chance that corn was genetically modified, and a new study from the biotech industry says business is booming. MARKETPLACE's Scott Tong reports.

SCOTT TONG reporting:

Forty percent of US corn crops are genetically modified. They're bred with genes to fight off bugs and bug sprays. Seventy percent of cotton is also biotech. The new report says the industry's gone global. This year, Argentina planted \$9 billion of biotech crops; China, \$4 billion. But just because you plant it, will they come? The EU has resisted what some call Frankenfood. Japan and South Korea aren't so sure either. Economist Robert Wisner of Iowa State University.

Mr. ROBERT WISNER (Iowa State University): These products have been cleared for food safety, but consumer perceptions in these other markets are the driving forces rather than scientific conclusions.

TONG: Wisner says consumers may convert if there's a must-have product; maybe the new vegetable oil on the way that cuts out those bad trans-fats. I'm Scott Tong for MARKETPLACE.

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## **Fiber 2 Fashion online**

### **India : Govt actively reviewing Bt cotton approval**

11th December 2004

The transgenic cotton seed from Monsanto has been in the news for quite some time. The patented Bt cotton crop has been under review by the government for its performance developed by Mahyco-Monsanto for extending the period of its approval for the next three years.

Earlier, Bt cotton was given conditional approval for three years in March 2002.

The Bt cotton crop is said to be cultivated in several states where the crop is in for a bumper harvest.

Even traders predict that the large arrivals at Mandis and mill ginneries has led to decline in cotton prices, has been attributed to this famed variety of cotton.

Currently, India is reported cultivation of Bt cotton up 526,102 hectare in 2004, a 5.8% increase over last year, and experts say that the phenomenal increase in area under Bt cotton displays growing acceptability amongst farmers.

Meanwhile, the US-based Council for Biotechnology Information (CBI), on the basis of the commercial value of transgenic crops, ongoing research and the government policies, has

projected India along with Indonesia and Egypt as the “emerging crop biotechnology power.”

In a CBI study conducted by Dr C Ford Runge, Director of the Minnesota University’s Centre for International Food and Agriculture Policy, said, “In 2003-04 the global commercial value of biotech crops has grown to \$98 billion. Over 98% of this value came from six countries namely the US, Argentina, China, Canada, Brazil and to some extent South Africa.

In the next decade, as more developing countries grant approval to transgenic crops, the global value of biotech crops could increase five-fold to \$210 billion. The developing countries would be able to raise their GDP by 2%.”

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**Page :** 17  
**Date :** Tuesday, 14 Dec 2004

**BUSINESSWORLD**  
 Edited by Cris V. Paraso / TECHNOLOGY / 17

**18 countries  
growing biotech  
crops since '96  
commercial use**

Less than a decade after the first biotech crop was commercialized in 1996, biotech crops are now being grown in 18 countries, and research and development is being conducted in another 45, according to a study by a leading United States food and trade policy analyst.

"The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world," said C. Ford Runge, director of the University of Minnesota's Center for International Food and Agricultural Policy and Distinguished McKnight University Professor of Applied Economics and Law.

"Tens of thousands of lab, greenhouse or field trials have been conducted on about 57 food and fiber crops in countries on every continent."

The study, entitled "The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004," reported the global commercial value of biotech crops grown in 2003-2004 crop year at \$44 billion, 98% of that value came from five countries — the United States, Argentina, China, Canada and Brazil — growing one or more of four biotech-enhanced crops: soybeans, cotton, corn and canola.

To date, the United States is the leader in producing biotech crops, with \$27.5 billion in value in 2003-2004 from growing biotech-enhanced soybeans, corn, cotton and canola.

The other top five countries in terms of current biotech production include:

- Argentina with \$8.9 billion in value from soybeans and corn;
- China with \$3.9 billion in value from cotton;
- Canada with \$2 billion in value from canola, corn and soybeans, and
- Brazil with \$1.6 billion in value from soybeans.

**DEVELOPING COUNTRIES**

In the next decade, as more developing countries grant approvals to these and other biotech crops in development, some studies estimate the global value of biotech crops will increase nearly fivefold to \$210 billion.

Adoption of these crops in developing countries could raise the gross domestic product in those countries by 2%.

In the Philippines, insect-resistant maize has been approved and planted. Additionally, field trials have been conducted on virus-resistant bananas and other varieties of insect-resistant maize. Testing has been conducted on coconut, mangoes, papaya, rice and tomatoes have been the subject of laboratory or greenhouse experiments.

"We see continuing expansion of commercial and scientific possibilities for plant biotechnology in the next decade and beyond," said Mr. Runge.

"Major expansions in biotech crop approvals and plantings are expected in Asia, Latin America and parts of Africa."

While North America is the epicenter for plant biotechnology research, more than half of the 63 countries engaged in biotech research, development and production are developing countries.

Western Europe, China, Argentina, Brazil, South Africa, Australia and India are centers of influence that will help lead development into the future, the study finds.

China has emerged as a major center for biotech research. Its government has invested several hundred million dollars, ranking it second in the world in biotech research funding behind the United States.

**OTHER REGIONS**

According to the study, other regions also are investing heavily in biotech research to improve agricultural production and rural incomes:

- South Africa, which has already approved biotech varieties of corn, cotton and soybeans for planting, now ranks sixth in the world in the amount of acres planted with biotech varieties. The country is poised to lead the continent in development.
- India, where farmers grow and sell insect-resistant cotton, has at least

20 academic and research institutions involved in plant biotech research covering 16 crops. Many Indian scientists hope to usher in a second "Green Revolution," while adding another facet to its already-booming knowledge-based economy.

•In Latin America and the Caribbean, five biotech crops are now approved, and field trials are being conducted on a variety of plants. Argentina leads the way, followed by Brazil.

While biotech research and development in Europe slowed significantly following the European Union's 1999 de facto moratorium on biotech crop approvals, which has since been lifted, Europe's stance on biotech crops can not prevent biotech adoption in the rest of the world.

"If the European Union continues to restrict activity in the sector, it will slow down this global diffusion, but it cannot stop it," said Runge. "If, on the other hand, the EU [European Union] engaged plant biotechnology, it will encourage rapid international diffusion and adoption."

The study is available at <<http://www.apec.umn.edu/faculty/frunge/globalbiotech04.pdf>>.

Support for the study was provided by the Council for Biotechnology Information, but the findings are entirely those of the researchers, based on published sources, government data, private sector reports and personal interviews.

The findings are those of the authors alone and not the University of Minnesota.

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BusinessWeek print and online

12/10/04



**AGRICULTURE**  
**BIOTECH CROPS PUT DOWN  
GLOBAL ROOTS**

**GENETICALLY ENGINEERED** crops may be controversial, but they're well entrenched around the world. Only eight years after the first biotech crops were commercialized, they are now grown in 18 countries and are the target of research in an additional 45, according to a new report. Titled "The Global Diffusion of Plant Biotechnology," the report was funded by the industry group Council for Biotechnology Information.

Worldwide, biotech crops

are now worth about \$44 billion a year. While the U.S. accounts for half of the total, the fastest growing adopters are developing nations. China, for example, is second only to the U.S. in supporting biotech crop research.

In addition to popular target crops maize, cotton, soybeans, and canola, some 57 other engineered crops are under development. Asia, Latin America, and parts of Africa are expected to increase plantings in coming years.

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Charleston Sunday Gazette Mail

12/12/04

OPPOSITION to genetically engineered foods has softened since 2001, but Americans are no better informed on the subject than they were three years ago, according to a survey by the Pew Initiative on Food and Biotechnology.

That's unfortunate, because the field continues to advance, offering both great promise and perhaps possible dangers for the future.

The Pew findings also suggest that Americans don't know what they are eating. The United States leads the world in growing genetically modified crops, with 105.8 million acres, according to a recent issue of *Barron's*. While the Pew survey found that 92 percent of Americans think genetically modified foods should be labeled, already about 70 percent of U.S. processed foods contain such ingredients, according to the *Sacramento Bee*.

The *St. Louis Post-Dispatch* reported: "Eight years after commercialization of the first genetically modified crop, such plants are harvested in 18 countries, and they had a commercial value of \$44 billion in the 2003-04 growing season. Another 45 nations have tested biotech crops in laboratories, greenhouses or fields."

DNA-altered crops are gaining support in places where they had not been welcomed previously. The European Union relaxed rules earlier this year that had banned such organisms from the continent. A specific variety of Monsanto's designer-gene corn was still turned down recently, but several nations voted for it.

Fans of genetically modified crops are impressive, including the Bush administration, the Vatican and the United Nations. No wonder. The new and improved varieties promise to feed more people with fewer herbicides, pesticides and less need for irrigation. Indeed, according to the *Barron's* article, in 10 or 20 years they might yield new medicines, lawns that need to be mowed only twice a year, non-addictive tobacco and quick-growing trees for high-quality paper. Who wouldn't want that?

Nor is the idea entirely new. Without realizing it, humans altered the DNA of plants and animals for thousands of years through selective fertilization. Sweet corn did not spring unaided from the Earth. Native peoples of South America cultivated grains to develop the maize that people further refined into big, tender roasting ears. More recently, growers have crossed breeds of fruits, vegetables and grains in an effort to make them bigger, sweeter, seedless, shippable, drought-resistant, pest-resistant or just prettier.

But in genetically modified food, scientists don't simply cross tomatoes with other tomatoes — they insert genetic material from another plant, or a bacterium, or even from an animal, into the DNA genome of the plant they are changing. Results have been crops that resist bugs and blights, that thrive on less water or in less arable soils. Some Monsanto crops can be sprayed with the company's weed-killer RoundUp. The weeds die, but the crops are unharmed.

However, nature sometimes follows unpredictable courses. If humans make a crop that is immune to a certain bug, nature might develop a better bug, perhaps one that causes even more

devastation or requires even more chemicals to fight. If a nation or a continent becomes dependent on a food source and something wipes it out, unexpected famines might occur.

Other concerns also deserve attention. Pollen from modified crops might spread to other plants, creating vulnerabilities or crowding out varieties that have evolved on their own.

Genetically modified foods may yet prove to be the savior promised by their promoters. Americans are willing to accept them. The Pew survey found that only 36 percent of people believed the foods should be prohibited.

But the survey also found that most Americans prefer more commonsense precautions than the government is taking. Not only did most people want the foods to be labeled, but 81 percent say the U.S. Food and Drug Administration should confirm the safety of modified foods before they reach the market, even if that causes substantial delays.

Americans live in a specialized society. Most never think about the source of their food. Given the biotech threshold that the world is stepping over and its implications for the future, people should pay more attention to the path that food takes to their tables.

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## **Cosechas biotecnológicas se multiplican por todo el mundo**

**Argentina - 11/12/2004 - EmpresasNews**

Las cosechas de vegetales con genes modificados se extienden más allá de Estados Unidos y han cobrado ya fuerza en Argentina, Brasil, China y Canadá, entre otros países, según un estudio de la industria. En total, los cinco países mencionados producen alrededor de US\$ 44.000 millones anuales en cosechas biotécnicas.

Argentina ha sembrado cosechas de soja y maíz con genes modificados por un total de US\$ 8.900 millones. En China, el algodón biotécnico produce unos US\$ 3.900 millones al año. Brasil, tras una reciente autorización gubernamental, ya tiene siembras de granos de soja por US\$ 1.600 millones. Y Canadá ha sembrado parcelas de maíz, soja y canola por un total de US\$ 2.000 millones. Estados Unidos los eclipsa a todos con casi US\$ 28.000 millones en soja, maíz, algodón y canola. El estudio, realizado por un investigador de la Universidad de Minnesota para el Consejo de Información Biotecnológica, anticipa que el volumen de esas cosechas aumentará inmensamente, particularmente en América Latina, Asia y África. "Pienso que estamos probablemente en el umbral de un cultivo mucho más prolongado y extenso de biotecnología vegetal", dijo el investigador C. Ford Runge, director del Centro de Política Internacional para Alimentos y Agricultura. "Uno puede concluir que hay muchas cosechas más en preparación que las (...) que he mencionado". El estudio halló que más de la mitad de la producción de granos de soja del mundo corresponde ya a variedades modificadas genéticamente, que un 30% del algodón proviene de semillas modificadas y que un 15% del maíz y la canola que se cultivan actualmente

son producto de ingeniería genética. El estudio afirma que México, Uruguay y otros seis países producen ya volúmenes significativos de cosechas biotécnicas, y que se han realizado investigaciones al respecto en otros 63 países.

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## **Ministro prevê superávit de US\$ 33 bilhões no agronegócio**

**Brasil - 10/12/2004 - BSB News**

O saldo da balança comercial do agronegócio somou US\$ 31,578 bilhões no acumulado do ano até novembro, valor recorde. Com base nesse número, o ministro da Agricultura, Roberto Rodrigues, estimou que o superávit comercial no ano deve ser de US\$ 33 bilhões. Em 2003, o superávit foi de US\$ 25,848 bilhões. A informação foi divulgada pela assessoria de imprensa do ministro. Os dados mostram que o agronegócio foi responsável por 41,3% das exportações totais do país no acumulado dos 11 primeiros meses de 2004.

Entre janeiro e novembro, os técnicos do ministério destacaram o incremento nas vendas de produtos agrícolas para o Mercosul (20,7%), para a União Européia (22,5%), Ásia, com exceção do Oriente Médio, (39,9%), Oriente Médio (38,9%) e África (52,9%).

No período, a União Européia absorveu 34,5% das exportações totais do agronegócio. A participação da Ásia cresceu de 18,5% em 2003 para 20% em 2004.

No período dos últimos 12 meses - que vai de dezembro de 2003 a novembro de 2004 - as exportações agrícolas somaram US\$ 38,787 bilhões.

O valor é 29,9% superior ao registrado no período anterior, de dezembro de 2002 a novembro de 2003, que foi de US\$ 29,865 bilhões.

No período, as importações cresceram 2,6% para US\$ 4,878 bilhões.

O saldo comercial foi de US\$ 33,909 bilhões, 35% acima do resultado do período anterior.

### **Soja transgênica**

A produção mundial de soja transgênica superou a de soja convencional e gerou US\$ 23,5 bilhões na safra 2003/04.

A avaliação é do diretor do Centro Internacional de Regulamentação Agrícola e Alimentícia da Universidade de Minnesota, C. Ford Runge. Economista especializado em regulamentação agrícola e alimentícia, Runge divulgou ontem, por teleconferência, os resultados do trabalho "A Difusão Global da Biotecnologia Vegetal: Adoção e Pesquisa Internacional em 2004".

Utilizando-se de dados das Nações Unidas, USDA e do Conselho para Informações em Biotecnologia dos EUA, Runge contabilizou em US\$ 44 bilhões o valor de mercado da

produção agrícola transgênica em 2003/04.

Segundo ele, quatro culturas contabilizam quase 100% da produção transgênica.

Em primeiro lugar vem a soja, com US\$ 23,5 bilhões. Mais de 50% da soja produzida na safra passada foi transgênica. No caso do milho, mais de 30% da produção mundial foi geneticamente modificada, com valor de US\$ 11,2 bilhões; no caso do algodão, a produção, com valor de US\$ 7,8 bilhões, superou 15% do montante de 2003/04; a canola transgênica também superou os 15%, gerando valor de US\$ 1,4 bilhão.

Runge afirmou que 98% da receita com a produção transgênica em 2003/04 foi gerada em cinco países.

Os EUA, epicentro da pesquisa, produção e consumo, liderou o ranking, com US\$ 27,5 bilhões.

O país produz milho, soja, algodão e canola. A Argentina, que produz milho e soja, ficou em segundo lugar, com US\$ 8,9 bilhões. Em seguida vieram a China, produtora de algodão transgênico, com US\$ 3,9 bilhões; Canadá, produtor de canola, milho e soja, com US\$ 2 bilhões; e o Brasil, produtor de soja, com US\$ 1,6 bilhão.

Segundo Runge, a China tem condições de logo ultrapassar a Argentina e tomar a segunda colocação. O país está investindo centenas de milhões de dólares em pesquisas com biotecnologia, e tem condições imediatas de adotar a transgenia para o milho e a soja. "Se metade da produção de milho e de soja da China fosse geneticamente modificada, isso geraria um valor de US\$ 2,5 bilhões. Em 2003/04, o país produziu 16,2 milhões de toneladas de soja e 114 milhões de toneladas de milho.

O economista acredita, entretanto, que Argentina e Brasil devem ter também um crescimento rápido na adoção da biotecnologia. Para tanto, cita os esforços em pesquisa e desenvolvimento dos dois países.

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## **Minda News online**

### **RPs agri biotech program among leading works in Asia, study says**

Allen V. Estabillo / Mindanews / 11 December 2004

GENERAL SANTOS CITY - An international biotechnology research organization has cited the country's agricultural biotechnology initiatives as among the leading national programs in at least 12 countries in Asia and the Pacific.

In a study entitled "The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004" released this month by Washington-based Council for Biotechnology Information (CBI), the Philippines' adoption of the genetically-engineered crops, especially on

research and technology development, was placed along those of Australia, China, India and Indonesia.

The study was made by Dr. C. Ford Runge, director of the University of Minnesota's Center for International Food and Agricultural Policy, described to be a leading food and trade policy analyst in the United States.

In his study, Runge cited that the Philippines's biotechnology activities were considered more extensive than those done by Bangladesh, Japan, Malaysia, Pakistan, Korea and Thailand.

"(In the) Asia-Pacific region, Australia planted 100,000 hectares or 59 percent of its cotton area in biotech varieties in 2003/04. The Philippines planted Bt corn for the first time on 20,000 hectares. India grew Bt cotton on 100,000 hectares and Indonesia had unconfirmed reports of Bt cotton production," he said.

Runge said that in the Philippines, which approved for commercialization in 2002 Monsanto's insect resistant *Bacillus Thuriangiensis* (Bt) corn, resulted in yield gains averaging 40 percent in nine field trials.

Monsanto Philippines, which introduced Bt corn in the country, had identified the major corn-producing provinces of Bukidnon, South Cotabato and Sultan Kudarat and this city as bases for its research and commercial production programs.

Aside from Bt corn, Runge said field trials are also underway for biotech bananas (virus resistant) and maize (insect resistant) while experimental studies have been conducted on coconut (lauric acid content), mangoes (delayed ripening), papaya (delayed ripening and

virus resistant), rice (resistant to fungi, insects and bacteria and salt tolerance), and tomatoes (delayed ripening).

"Four leading multinational firms Monsanto, Syngenta, Pioneer-Hybrid and Bayer are seeking licenses for commercial production of biotech soybeans, cotton, maize, canola, potatoes and sugar beets," the study cited.

He said those responsible for biotechnology research in agriculture are the Department of Agriculture (DA), Department of Science and Technology, the Council for Agriculture, Forestry and Natural Resources Research and Development and the Council for Aquatic and Marine Research and Development.

The research on the environmental aspect of biotechnology is done by Department of Environment and Natural Resources while DA regulates biotechnology research policy as provided for in the Agriculture and Fisheries Modernization Act, Runge noted in the study.

In the Asia-Pacific region, Runge foresees the continuing advancement of the biotechnology sector, especially the expansion of the program aside from the current 12 nations that are actively involved.

"Perhaps, the most significant single potential actor in Asia is China, which is aggressively engaged in biotech adoption and research. India has at least 20 academic and research institutions engaged in biotech research covering 16 crops," he said.

Runge said China has emerged as a major center for biotech research with its government investing over hundred million dollars, ranking second in the world in biotech research funding behind the United States.

He also cited as major contributors the biotechnology research and developments in Australia, Indonesia and the Philippines.

Globally, Runge said in his study, biotech crops are now being grown in 18 countries and research and development is being conducted in another 45, less than a decade after the first biotech crop was commercialized in 1996.

More than half of the 63 countries engaged in biotech research, development and production are developing countries, he said.

"The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world," Runge said. "Tens of thousands of lab, greenhouse or field trials have been conducted on about 57 food and fiber crops in countries on every continent," he added.

The study reported the global commercial value of biotech crops grown in the 2003-2004 crop year at US\$44 billion. "But by the next decade, as more developing countries grant approval to grow these and other biotech crops in development, the global value of biotech crops is expected to increase to \$210 billion. Adoption of these crops in developing countries could raise the gross domestic product in developing countries by 2 percent," he added.

The Catholic Bishops Conference of the Philippines' National Secretariat for Social Action, Justice and Peace (CBCP-NASSA), has repeatedly stressed that GMO's "subvert people's right to food."

In an earlier statement, it said it "stands by its conviction that GMOs subvert people's right to food. This human rights violation arises from the patenting of GMOs as mandated by the World Trade Organization. Subjected to policies driven by rich countries, genetic engineering may boost agricultural productivity but will never ensure food security."

In March last year, one of the resolutions adopted during the 1st General Assembly of Sustainable Agriculture Network, was the campaign against the commercial release of Bt corn.

A covenant formulated by the participants, said "the approval of the commercialization of the Bt corn will lead to genetic erosion, displace the local varieties of corn, contaminate fields not planted with Bt corn due to cross pollination, undermine farmer's control of the basic means of production - the seed, and threaten the environment. Farmers are apprehensive because of the

many unresolved biosafety issues on GMOs and the lack of transparency of the government's approval process."

"Commercial planting of Bt corn will further tighten the control of the multinational corporations (MNCs) on corn farming, as the technology is patented and not in the farmers' hands. The campaign seeks to counter the widespread use of Bt corn seeds in the country and to offer open-pollinated seed varieties as alternative," it added.

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## **Crop Biotech Update**

**12/17/04**

### **BIOTECH CROP PLANTINGS SEEING GREATER EXPANSION IN DEVELOPING COUNTRIES**

The direction of global plant biotechnology suggests that major expansion in biotech crop plantings will occur in developing countries, particularly in Asia, Latin America, and parts of Africa, according to a new study, *The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004*, conducted by C. Ford Runge, director of the Center for International Food and Agricultural Policy, University of Minnesota.

Apart from this expansion, the range of biotech crops approved commercially will continue to grow, resulting in new markets and opportunities, especially in developing countries.

Biotech crops are now being grown in 18 countries, while another 45 countries are into research and development and field testing.

Twelve countries in the Asia-Pacific region are involved in some aspect of plant biotech research and development. The leading national programs are in Australia, China, India, Indonesia, and the Philippines. More modest plant biotech research activities are underway in Bangladesh, Japan, Malaysia, Pakistan, Korea, and Thailand.

"Perhaps the most significant single potential actor in Asia is China, which is aggressively engaged in biotech adoption and research. There is reason to expect China to emerge as an influential force in plant biotech in the years to come", the study says. The study foresees that in the next 10 years, about half of China's fields will be planted to biotech crops.

Countries with biotech crop research in Africa include South Africa, Kenya, Zimbabwe, Morocco, Tunisia, and Egypt. South Africa is taking the lead with commercial production of biotech maize, soybean, and cotton, all valued at \$146.9 million.

Countries in Latin America and the Caribbean are aggressively adopting biotech crops and are poised to move to adopt more varieties in the near future. The adoption process is led by

Argentina, with nearly 14 million hectares planted to biotech soybean, maize, and cotton. Brazil has 3 million hectares planted to biotech soybean.

The study is available at <http://www.apec.umn.edu/faculty/frunge/globalbiotech04.pdf>.

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## **La biotecnología avanza en el mundo**

**Argentina - 18/12/2004 - InfoBAE - Pag.17/Infocampo**

**YA SON 63 LOS PAÍSES QUE DESARROLLAN O PRODUCEN OGM'S:** En la Argentina, los organismos genéticamente mejorados (OGM) generan unos u\$s 8,9 mil M. "La adopción se ha expandido globalmente y está lista para transformar el desarrollo en todo el mundo", afirmó el economista norteamericano C. Ford Runge.

A menos de una década después de la comercialización del primer cultivo transgénico en 1996, ya son 18 los países que cultivan variedades genéticamente modificadas, y otros 45 realizan trabajos de investigación y ensayos a campo. Así lo demuestra el estudio realizado por C. Ford Runge, importante analista económico de los Estados Unidos. "La adopción y difusión de los cultivos transgénicos se ha expandido globalmente y está lista para transformar la producción y el desarrollo en todo el mundo", señaló el director del Centro para la Política Agrícola y Alimentaria Internacional de la Universidad de Minnesota y profesor distinguido de Economía y Derecho Aplicados de la Universidad McKnight. "Decenas de miles de ensayos de laboratorio, en invernadero y a campo se están realizando sobre 57 cultivos en países de todos los continentes". El estudio, denominado "La difusión global de la biotecnología vegetal: investigación y adopción en 2004", muestra un valor comercial de u\$s 44 mil M para los cultivos transgénicos en las campañas 2003/2004. El 98% de este valor se concentró en cinco países: Estados Unidos, Argentina, China, Canadá y Brasil, y en cuatro cultivos: soja, algodón, maíz y canola. Hasta hoy, Estados Unidos lidera la producción de cultivos transgénicos con u\$s 27,5 mil M, provenientes de variedades de soja, maíz, algodón y canola. Lo secunda Argentina, con u\$s 8,9 mil M, originados a partir de cultivos transgénicos de soja, maíz y algodón. Le siguen, en tercero, cuarto y quinto lugar, China (algodón), Canadá (soja, maíz y canola) y Brasil (soja), con u\$s 3,9, u\$s 2,0 y u\$s 1,6 mil M, respectivamente. Algunos estudios estiman que en la próxima década, y a medida que se asignen más subsidios a la investigación y al desarrollo y se aprueben muchos de los eventos transgénicos que hoy se están ensayando en el campo, el valor global de cultivos genéticamente modificados se quintuplicará, alcanzando los u\$s 210 mil M.

Por último, Ford Runge explica que mientras Norteamérica es el epicentro de la investigación científica, más de la mitad de los 63 países comprometidos con la investigación y la producción en agrobiotecnología, son países en desarrollo. El estudio señala a China, Argentina, Brasil, Sudáfrica, Australia, India y Europa del Este como centros de influencia que impulsarán el desarrollo de la biotecnología en el futuro.

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**Navhind Times.com - India**  
**17 December 2004**

### **Biotech crops make progress in India**

Mumbai Dec 16: Less than a decade after the first biotech crop was commercialised in 1996, biotech crops are now being grown in 18 countries, and research and development is being conducted in another 45 countries, according to a study by a leading United States food and trade policy analyst.

The study titled, "The global diffusion of plant biotechnology: international adoption and research in 2004" reported the global commercial value of biotech crops grown in 2003-04 at \$ 44 billion, 98 per cent of that value came from five countries "the United States, Argentina, China, Canada and Brazil" growing one or more of four biotech-enhanced crops: soybean, cotton, corn and canola.

While India has commercially approved insect-resistant cotton, researchers also have conducted field trials on drought-tolerant canola, insect-resistant cotton and tobacco. Further experimental research has been conducted on cabbage, potatoes, rice and tomatoes.

"The international adoption and diffusion of biotech crops has gone global and is poised to transform production and development around the world," said Mr C Ford Runge, director of the University of Minnesota Center for International Food and Agricultural Policy. To date, the United States is the leader in producing crops, with \$27.5 billion in value in 2003-04 from growing biotech-enhanced soybeans, corn, cotton and canola.

"We see continuing expansion of commercial and scientific possibilities for plant biotechnology in the next decade and beyond," said Mr Runge. "Major expansions in biotech crop approvals and plantings are expected in Asia, Latin America and parts of Africa."

India, where farmers grow and sell insect-resistant cotton, has at least 20 academic and research institutions involved in plant biotech research covering 16 crops. Many Indian scientists hope to usher in a second green revolution while adding another facet to its already-booming, knowledge-based economy.

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### **La Argentina genera más de 20% de la agricultura transgénica mundial**

**Argentina - 28/12/2004 - El Cronista - Pag.7/Sección: Economía & Política**

EN 2004, LAS VARIETADES GENÉTICAMENTE MODIFICADAS SUMARON U\$S 8.900 MILLONES: Un informe elaborado por la Universidad de Minnesota destaca al país como el segundo productor de cultivos genéticamente modificados y como polo de investigación

FRANCISCO OCHOA Buenos Aires

La producción agrícola transgénica de la Argentina durante 2004 alcanzó un valor comercial de u\$s 8.900 millones, ubicándose en el segundo lugar a nivel mundial, sólo por debajo de la de Estados Unidos. Gracias a cultivos como soja, maíz y algodón, el país mantuvo en este año su papel protagónico en el uso y en la investigación de organismos genéticamente modificados (OGM), concentrando el 20% de los u\$s 44.000 millones en que está valuada la producción transgénica global.

El balance anual sobre transgénicos elaborado por Carlisle Ford Runge, un importante experto de la Universidad de Minnesota, volvió a colocar al país como un pionero no sólo en el uso de biotecnología sino también en la investigación de nuevas variedades. En el año que termina, cinco países cultivaron 67,5 millones de hectáreas con maíz, soja, algodón y canola. La Argentina contribuyó con 13,9 millones de hectáreas, la mayor superficie en Sudamérica y la segunda más importante del mundo.

El informe describe a Latinoamérica como la región que más agresivamente está adoptando y experimentando nuevas variedades transgénicas. "Este proceso de adopción es liderado por la Argentina, que posee una de las más fértiles y productivas tierras del planeta", destaca. Según explica Ford Runge, en particular los productores argentinos de soja son altamente competitivos en los mercados mundiales. "En los últimos siete años, la soja transgénica ha ganado espacio, impulsada por ahorros de entre u\$s 35 y 55 por hectárea, gracias a la reducción de costos en el uso de químicos y por rendimientos más estables". En el país, cerca del 100% de la soja sembrada es tolerante a herbicidas mientras que el 40% del maíz es resistente a insectos. El investigador estadounidense también destaca que la Argentina se haya convertido en los últimos años en un polo de investigación en biotecnología, "a pesar de su reciente crisis económica". Entre otros, menciona el trabajo que realizan algunos organismos como el Instituto Nacional de Tecnología Agropecuaria (INTA), el Instituto de Investigaciones Fisiológicas y Ecológicas Vinculadas a la Agricultura de la Universidad de Buenos Aires, y la Asociación Argentina de Consorcios Regionales de Experimentación Agrícola (Aacrea). Hasta ahora, en el país se realizaron pruebas de campo de nuevas variedades de cultivos como alfalfa, algodón, maíz, papa, soja, tomate, girasol y remolacha. También se hicieron pruebas de laboratorio de alfalfa, cebada, papa y caña de azúcar. "La Argentina se ha movido a la vanguardia del resto de los países del Mercosur en el desarrollo de un proceso de aprobación comercial que incluye pruebas de campo, cálculos de toxicidad y análisis de impacto en los mercados de exportación", explica el reporte anual.

Otros actores

A pesar del papel destacado de la Argentina, el informe asegura que Brasil podría convertirse rápidamente en líder regional en el uso de transgénicos, si continúa extendiendo el uso de OGM al ritmo actual. Los cultivos transgénicos ocupan el 12% de la superficie total sembrada y están valuados en u\$s 1.600 millones, destacándose ampliamente la soja sobre el resto. Sin embargo, Ford Runge cree probable que las 3 millones de hectáreas con transgénicos que



## **Cosechas biotécnicas se multiplican por todo el mundo**

**Bolivia - 23/12/2004 - Hoy Bolivia**

En total, los cinco países mencionados producen alrededor de 44.000 millones de dólares anuales en cosechas biotécnicas.

Argentina ha sembrado cosechas de soya y maíz con genes modificados por un total de 8.900 millones de dólares. En China, el algodón biotécnico produce unos 3.900 millones de dólares al año. Brasil tiene siembras de granos de soya por 1.600 millones de dólares. Y Canadá ha sembrado parcelas de maíz, soya y canola por un total de 2.000 millones.

Los Estados Unidos los eclipsa a todos con casi 28.000 millones en soya, maíz, algodón y canola.

El estudio, realizado por un investigador de la Universidad de Minnesota para el Consejo de Información Biotecnológica, anticipa que el volumen de esas cosechas aumentará inmensamente, particularmente en América Latina, Asia y África.

"Pienso que estamos probablemente en el umbral de un cultivo mucho más prolongado y extenso de biotecnología vegetal", dijo el investigador C. Ford Runge, director del Centro de Política Internacional para Alimentos y Agricultura. "Uno puede concluir que hay muchas cosechas más en preparación que las... que he mencionado".

El estudio halló que más de la mitad de la producción de granos de soya del mundo corresponde ya a variedades modificadas genéticamente, que un 30% del algodón proviene de semillas modificadas y que un 15% del maíz y la canola que se cultivan actualmente son producto de ingeniería genética.

El cultivo tradicional requiere varias generaciones de plantas para desarrollar un aspecto específico de una nueva variedad que sea, por ejemplo, resistente a los insectos o produzca mejores papas. En cambio, en la ingeniería genética, los científicos transfieren ciertos genes de una planta a otra para desarrollar las variedades que desean.

El estudio afirma que México, Uruguay y otros seis países producen ya volúmenes significativos de cosechas biotécnicas, y que se han realizado investigaciones al respecto en 63 países.

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## **País é o 4º em produção de transgênico**

**Brasil - 22/12/2004 - Folha de São Paulo**

DE NOVA YORK

O Brasil é o quarto maior produtor mundial de transgênicos em termos de área plantada e o

quinto em valor de mercado, mostrou um estudo divulgado na última semana pela Universidade de Minnesota, nos EUA. Juntos, os cinco principais produtores respondem por 98% do total mundial.

Segundo o relatório "The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004" (A difusão global da biotecnologia agrícola: adoção internacional e pesquisa em 2004), a soja geneticamente modificada produzida no país durante o biênio 2003-2004 representa US\$ 1,6 bilhão dos US\$ 44 bilhões em transgênicos gerados no mundo nesse período.

Além disso, ficam no Brasil 3 milhões dos 67,5 milhões de hectares plantados com sementes geneticamente modificadas (para efeito de comparação, nos EUA há 42,8 milhões de hectares; na Argentina, 14,2 milhões).

O relatório, no entanto, considera a possibilidade de haver distorções no que diz respeito aos dados sobre a soja transgênica brasileira, devido à falta de transparência motivada pela oposição da União Européia a alimentos transgênicos.

"O Brasil tem a segunda maior plantação de soja transgênica, mas devido a uma baixa taxa oficial de adoção do produto, ela representa apenas US\$ 1,6 bilhão em valor de mercado. Alguns relatórios sugerem que a verdadeira proporção de soja transgênica no país em relação ao total seja de 30%, o que significaria um valor de mercado mais do que duas vezes maior", afirma o texto. "Comercialmente, apenas as sementes que toleram herbicidas produzidas pela Monsanto foram aprovadas no Brasil, mas 27 estudos de campo com outras plantações foram conduzidos no país."

#### Pesquisa disseminada

Embora a produção ainda esteja concentrada nesses cinco países, diz o estudo, pesquisas sobre os transgênicos estão sendo conduzidas em 63 países.

"Menos de uma década após a primeira comercialização [de transgênicos], a adoção internacional e a difusão de plantações biotecnológicas se globalizou, sobretudo em países em desenvolvimento.

Embora muita da atenção da imprensa estrangeira tenha focado a oposição à biotecnologia, principalmente na Europa, houve um aumento na adoção e na difusão dessas plantações, além de aumento das pesquisas em partes do mundo como a Ásia, a América Latina e algumas regiões da África", diz o relatório organizado por C. Ford Runge.

As três regiões são apontadas como aquelas que devem passar pelo maior avanço na produção de transgênicos. Nos países desenvolvidos, diz o documento, a produção de alimentos geneticamente modificados deve aumentar em até 2% o PIB (Produto Interno Bruto) até 2015. "Na América Latina e no Caribe, o processo de adoção foi liderado pela Argentina, mas o Brasil deve rapidamente emergir também como líder. O Chile tem um potencial importante, e a Colômbia acaba de adotar o algodão transgênico. O México também tem um setor comercial e científico ativos nessa área", diz o texto. "Prevemos que as possibilidades comerciais e

científicas da biotecnologia agrícola continuem a se expandir na próxima década."

Segundo os dados compilados no relatório -a partir de informações vindas dos governos e da FAO (braço agrícola da ONU)-, os países que lideraram a colheita de transgênicos no biênio foram os EUA (US\$ 27,5 bilhões), a Argentina (US\$ 8,9 bilhões), a China (US\$ 3,9 bilhões), o Canadá (US\$ 2 bilhões) e o Brasil (US\$ 1,6 bilhão).

Os produtos mais plantados -que respondem por quase toda a produção- foram soja, algodão, milho e canola.

O relatório cita ainda um estudo promovido pelo Burô de Agricultura da Austrália para prever que em 2015 a receita da produção de transgênicos chegará a US\$ 254 bilhões caso os países europeus que vetam a importação de transgênicos relaxem suas medidas. Em um cenário onde isso não ocorre, o ganho seria limitado a US\$ 87 bilhões.

Texto Anterior:

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## **La biotecnología avanza en el mundo**

### **Argentina - 18/12/2004 - InfoBAE - Pag.17/Infocampo**

YA SON 63 LOS PAÍSES QUE DESARROLLAN O PRODUCEN OGM'S: En la Argentina, los organismos genéticamente mejorados (OGM) generan unos u\$s 8,9 mil M. "La adopción se ha expandido globalmente y está lista para transformar el desarrollo en todo el mundo", afirmó el economista norteamericano C. Ford Runge.

A menos de una década después de la comercialización del primer cultivo transgénico en 1996, ya son 18 los países que cultivan variedades genéticamente modificadas, y otros 45 realizan trabajos de investigación y ensayos a campo. Así lo demuestra el estudio realizado por C. Ford Runge, importante analista económico de los Estados Unidos. "La adopción y difusión de los cultivos transgénicos se ha expandido globalmente y está lista para transformar la producción y el desarrollo en todo el mundo", señaló el director del Centro para la Política Agrícola y Alimentaria Internacional de la Universidad de Minnesota y profesor distinguido de Economía y Derecho Aplicados de la Universidad McKnight. "Decenas de miles de ensayos de laboratorio, en invernadero y a campo se están realizando sobre 57 cultivos en países de todos los continentes". El estudio, denominado "La difusión global de la biotecnología vegetal: investigación y adopción en 2004", muestra un valor comercial de u\$s 44 mil M para los cultivos transgénicos en las campañas 2003/2004. El 98% de este valor se concentró en cinco países: Estados Unidos, Argentina, China, Canadá y Brasil, y en cuatro cultivos: soja, algodón, maíz y canola. Hasta hoy, Estados Unidos lidera la producción de cultivos transgénicos con u\$s 27,5 mil M, provenientes de variedades de soja, maíz, algodón y canola. Lo segunda Argentina, con u\$s 8,9 mil M, originados a partir de cultivos transgénicos de soja, maíz y algodón. Le siguen, en tercero, cuarto y quinto lugar, China (algodón), Canadá (soja, maíz y canola) y Brasil

(soja), con u\$s 3,9, u\$s 2,0 y u\$s 1,6 mil M, respectivamente. Algunos estudios estiman que en la próxima década, y a medida que se asignen más subsidios a la investigación y al desarrollo y se aprueben muchos de los eventos transgénicos que hoy se están ensayando en el campo, el valor global de cultivos genéticamente modificados se quintuplicará, alcanzando los u\$s 210 mil M.

Por último, Ford Runge explica que mientras Norteamérica es el epicentro de la investigación científica, más de la mitad de los 63 países comprometidos con la investigación y la producción en agrobiotecnología, son países en desarrollo. El estudio señala a China, Argentina, Brasil, Sudáfrica, Australia, India y Europa del Este como centros de influencia que impulsarán el desarrollo de la biotecnología en el futuro.

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**Avanza en todo el mundo la biotecnología vegetal**  
**Argentina - 08/01/2005 - La Nación - Pag.2/Campo**

**Internacional: Son 63 los países que hoy desarrollan, ensayan o producen cultivos transgénicos**

WASHINGTON.- A menos de una década de la comercialización del primer cultivo transgénico en 1996, ya son 18 los países que cultivan variedades genéticamente modificadas y otros 45 realizan trabajos de investigación y ensayos a campo. Así lo demuestra el estudio realizado por C. Ford Runge, analista económico de los Estados Unidos.

"La adopción y difusión de los cultivos transgénicos se ha expandido globalmente y está lista para transformar la producción y el desarrollo en todo el mundo", señaló Ford Runge, director del Centro para la Política Agrícola y Alimentaria Internacional de la Universidad de Minnesota y profesor de Economía y Derecho Aplicados de la Universidad McKnight.

Decenas de miles de ensayos de laboratorio, en invernadero y a campo se están realizando sobre 57 cultivos en países de todos los continentes. El estudio muestra un valor comercial de 44.000 millones de dólares para los cultivos transgénicos en las campañas 2003-2004.

El 98% de este valor se concentró en los Estados Unidos, la Argentina, China, Canadá y Brasil, y en cuatro cultivos: soja, algodón, maíz y canola.

Hasta hoy los Estados Unidos lideran la producción de cultivos transgénicos con 27,5 mil millones de dólares en 2003-2004, provenientes de variedades de soja, maíz, algodón y canola. Lo secunda la Argentina, con 8,9 mil millones, originados a partir de cultivos transgénicos de soja, maíz y algodón. Le siguen, en tercero, cuarto y quinto lugar, China (algodón), Canadá (soja, maíz y canola) y Brasil (soja), con 3,9, 2,0 y 1,6 mil millones de dólares, respectivamente. Algunos estudios estiman que en la próxima década, y a medida que se asignen más subsidios a la investigación y al desarrollo y se aprueben muchos de los eventos transgénicos que hoy se

están ensayando en el campo, el valor global de cultivos genéticamente modificados se quintuplicará, alcanzando los 210 mil millones de dólares.

La Argentina lidera la adopción en América latina, con 13,9 millones de hectáreas en 2003 de soja, maíz y algodón transgénicos. Para estos tres cultivos ha aprobado ocho eventos, que incorporan las características de tolerancia a herbicida o resistencia a insectos.

La Argentina es también líder en investigación y desarrollo y en ensayos a campo en la región, con soja, maíz, algodón, papa, alfalfa, girasol, arroz y trigo.

En expansión

"Vemos una continua expansión de las posibilidades científicas y comerciales de la biotecnología vegetal para la próxima década", dijo Runge, quien agregó que la mayor expansión, en términos de nuevas aprobaciones y cultivos comerciales, se verá probablemente en Asia, América latina y parte de Africa.

Mientras América del Norte es el centro de la investigación científica, más de la mitad de los 63 países comprometidos con la investigación y la producción en agrobiotecnología, son países en desarrollo.

El estudio señala a China, la Argentina, Brasil, Sudáfrica, Australia, India y Europa del Este como centros de influencia que impulsarán el desarrollo en el futuro.

En Europa, la investigación y el desarrollo de la biotecnología vegetal avanza mucho más lentamente debido a la moratoria de facto impuesta por la Unión Europea (UE) para la aprobación de nuevos cultivos transgénicos en 1999 y levantada recientemente.

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**Associated Press Pickup**  
**Columbia Daily Tribune**  
**Kansas City Star online**

### **Monsanto reaps fruits of biotech boom**

ST. LOUIS (AP) - The way last year was unfolding, Monsanto Co. might have had a tough time even getting sour about an analyst downgrading the agribusiness titan's stock.

In lowering Monsanto's rating from buy to neutral last month, UBS AG merely suggested that perhaps the stock needed some cooling.

"Our action occurs despite our expectation of more good news on top of the recent stream of cheer," the broker said then.

Monsanto shares went on to close out the year up a whopping 93 percent for 2004, helped along by a weak dollar that boosted global revenue for agricultural products overseas.

That share price spike followed a 49 percent jump in 2003 for a company expecting more big things in 2005. Others think likewise: Jon Markman, a Pinnacle Investment Advisors senior strategist and publisher of an independent weekly investment newsletter, predicted in a recent column that Monsanto's shares should rise another 60 percent this year.

With competition continuing to erode Monsanto's dominance in herbicides, the maker of Roundup has been a company in transition, staking more of its future on - and profiting nicely from - seeds that include genetically modified ones able to withstand weeds, insects and disease.

That push comes as biotech crops are flourishing in the United States and taking root overseas, accounting for several tens of billions of dollars in crops in five leading countries despite European resistance to the technology.

More than half of the world's soybeans now are biotech varieties, while 30 percent of all cotton comes from biotech seeds, a University of Minnesota researcher for the industry's Council for Biotechnology Information reported last month. Ford Runge also found that 15 percent of corn and canola are genetically engineered.

His prediction: Growth of such gene-altered crops will soar, notably in Asia, Latin America and parts of Africa.

That's good news for Monsanto, which in announcing its first-quarter earnings Wednesday said sales of genetic seeds and traits - genetic modifications it sells to seed companies - during the three-month period grew by 20 percent, to \$461 million from \$385 million.

Monsanto, shifting its earning mix away from chemicals, also said it has a number of new traits in the pipeline and expects more strong growth for a company that reportedly spends \$1.5 million a day on research.

In reiterating a buy rating on Monsanto last month, Bank of America Securities said it expects biotechnology to contribute 63 percent of Monsanto's earnings per share in this fledgling fiscal year versus 48 percent the previous year and 31 percent in fiscal 2003.

Hugh Grant, Monsanto's president, chairman and chief executive, on Wednesday called the first quarter "a good start to the fiscal year, yet the most significant part of our annual business cycle is still to come."

Seventy percent of Monsanto's annual sales come in the first half, and early orders indicate a strong December-February period, at least for now.

"As we are managing for momentum and acceleration, I can assure you we're not taking anything for granted," Grant told analysts in a conference call. "It is our job to raise the bar on our success."

Added Terry Crews, the company's chief financial officer: "The signs so far indicate we are advancing as we'd hoped. The first quarter is a great start in the right direction."

For the first quarter ending Nov. 30, Monsanto reported a narrower loss - \$40 million, compared with a loss of \$97 million a year earlier - saying increased sales were offset by a \$284 million pretax legal reserve for costs tied to the bankruptcy case of spinoff Solutia Inc.

Excluding such special items, Monsanto's earnings of 13 cents per share mirrored the estimate of analysts surveyed by Thomson First Call.

Hours after reporting those numbers, Monsanto's shares fell \$1.34, or 2.6 percent, to close at \$51 on the New York Stock Exchange, with some analysts attributing the decline to profit-taking after the generous 2004 and perhaps disappointment the results weren't stronger.

While finding little surprising about Monsanto's first-quarter performance, Fulcrum Global Partners analyst Frank Mitsch noted that "with continuous improvement in seeds and genomics, we expect that Monsanto will have significant improvement" in the unfolding December-February period.

"While we are favorably inclined toward Monsanto, given the growth prospects, we are currently on the sidelines," Mitsch said in maintaining his "neutral" rating on the stock.

Beyond the earnings, Monsanto is riding high after a string of favorable court rulings last year in everything from patent-related disputes with rivals to the close of a seven-year, closely watched legal saga involving Canadian farmer Percy Schmeiser.

Canada's Supreme Court ruled in May that Schmeiser violated Monsanto's patent by planting herbicide-resistant "Roundup Ready" canola seed without paying the licensing fee.

Schmeiser argued that the seed arrived in his field by accident, either from blowing off a passing truck or by cross-pollination from neighboring fields.

A ruling against Monsanto could have boosted the anti-biotech movement trying to stop the spread of genetically engineered plants and animals until more comprehensive studies ensure the technology is safe.

Again this year, Monsanto is at the mercy of courts.

In announcing last month its formation of the Solutia-related legal reserve - \$181 million after taxes - Monsanto gave its first peek at its potential environmental and legal liabilities related to the entity Monsanto spun off in 1997.

St. Louis-based Solutia sought Chapter 11 bankruptcy protection in December 2003, citing its struggles under heavy financial obligations assigned to it when spun off. Since then, Solutia has been on the hook for retiree benefits, environmental and litigation costs accrued by Monsanto and Pharmacia.

Monsanto has said it would not take on any obligations that are not its legal responsibility during Solutia's bankruptcy, barring a court order.

Still, Monsanto awaits a court ruling over whether it is on the hook for any post-retirement health-care costs tied to Solutia.

"I'd like nothing better than to tell you that we know everything we need to know," Crews told analysts Wednesday.

"While we're not done, we're on the way to bringing resolution to an issue that has been an overhang for us for some time."