



BIOTHAI



Thai-PAN



The truth about GM crops Current situation in Thailand

Miss PROKCHOL OUSAP

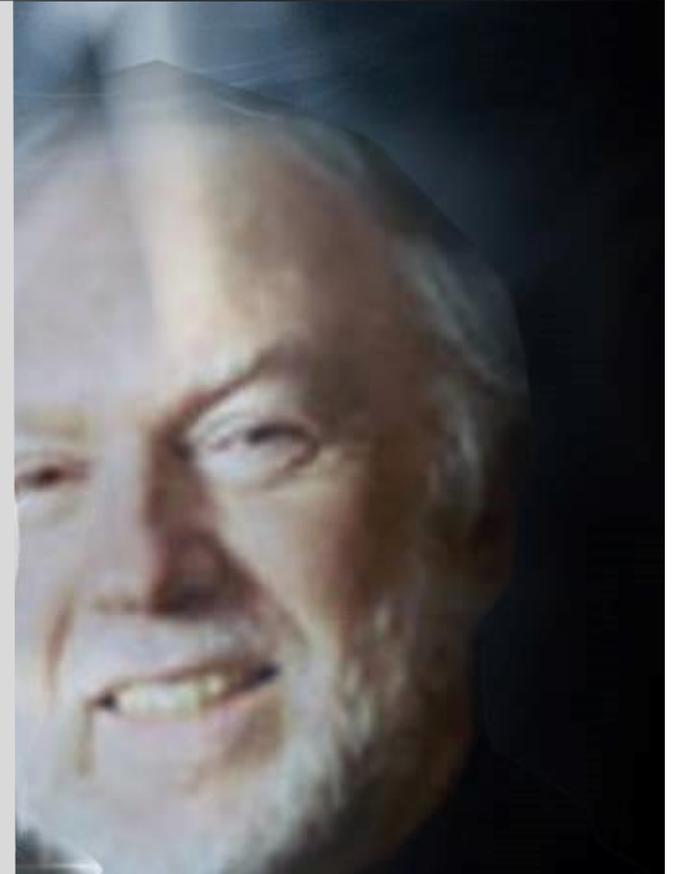
What are GMOs?

“An organism in which the genetic material has been changed through gene technology in a way that does not occur naturally by multiplication and/or any natural recombination ”

CODEX, May 2000

The illusion of safe GMOs

- GM research can be classified into three groups
 - 1 GM are as safe as, or safer than conventional crops
 - 2 GM risks exist, further long-term studies are needed over many generations
 - 3 certain types of GMOs are not safe
- There are 26 scientific studies which have found that GM foods have impacts on laboratory animals
- Society must place importance on studies that found GMOs aren't safe, not place greater weight on the group that has more studies. If we compare with the airline industry, irregularities in just 5 out of a 100 test flights could lead us ultimately to disaster



Professor Sheldon Krinsky
School of Medicine, Tufts University



เดวิด ซูซูกิ(David Suzuki)

นักพันธุศาสตร์ผู้เขียน An Introduction to Genetic Analysis
ตำราที่ใช้แพร่หลายมากที่สุดเล่มหนึ่งในสหรัฐอเมริกา

Any Scientist who tells you that GMOs are safe or that there is nothing to worry about, either they do not have a sophisticated knowledge of scientific history, or they are intentionally lying. In fact, no one knows what the long term impacts of GMOs will be.



After I retired from being a government official that promoted GMOs, I had time to study and learn that GM crops allow increasing use of chemicals, led to genetic contamination, and risks for consumers

Dr.Thierry Vrain, scientist formerly of Ministry of Agriculture, Canada, currently a farmer practising organic agriculture

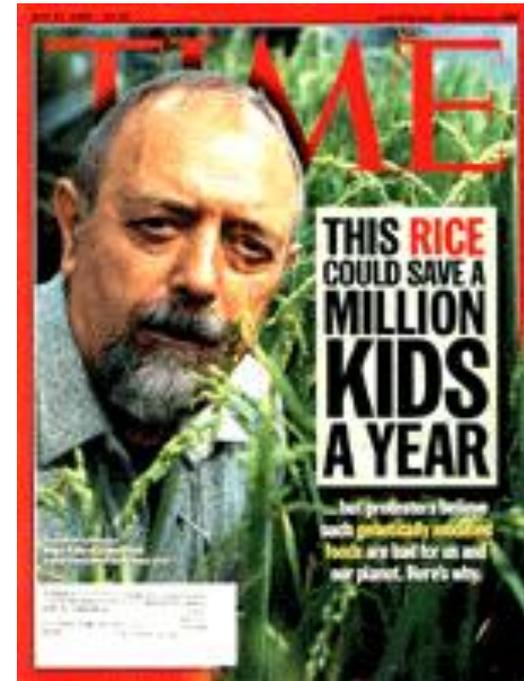
Illusions

"This rice could save a million kids a year"

Time 12 Feb 2001

The reality is that, if children were to eat rice to prevent blindness, they would have to eat up to 5.6 kg of GM rice per day or pregnant mothers would have to eat 18 kg/day of GM rice.

35 companies have over 72 patents for the production of GM rice.



The IAASTD do not agree that the safety and impacts of GMOs should be off-limits to researchers



IAASTD

International Assessment of
Agricultural Knowledge, Science
and Technology for Development



“The impacts of transgenic plants, animals and microorganisms are currently less understood. This situation calls for broad stakeholder participation in decision making as well as more public domain research on potential risks.”
(Global Summary, p. 20).

“Assessment of modern biotechnology is lagging behind development; information can be anecdotal and contradictory, and uncertainty on benefits and harms is unavoidable. There is a wide range of perspectives on the environmental, human health and economic risks and benefits of modern biotechnology, many of which are as yet unknown.”
(SR Summary, p. 14)

“Biosafety policies that [must] assure the avoidance of genetic contamination in centers of origin and diversity. (...) At the discretion of each country, the regulatory framework could include the possibility of preventing the use in the centers of origin and genetic diversity.” (Summary of the regional report LAC, p20)

“In regions or countries that choose to produce GMOs, the regulation should be based on the precautionary principle and the right of consumers to have an informed choice, for example through labeling.”
(Summary of the regional report LAC, p20)



US Dept of Agriculture Report – after 15 years of cultivating GMOs

GM crops do not increase yields. They use a massively increased amount of

herbicide. 14 types of weeds have evolved to resist the chemicals.

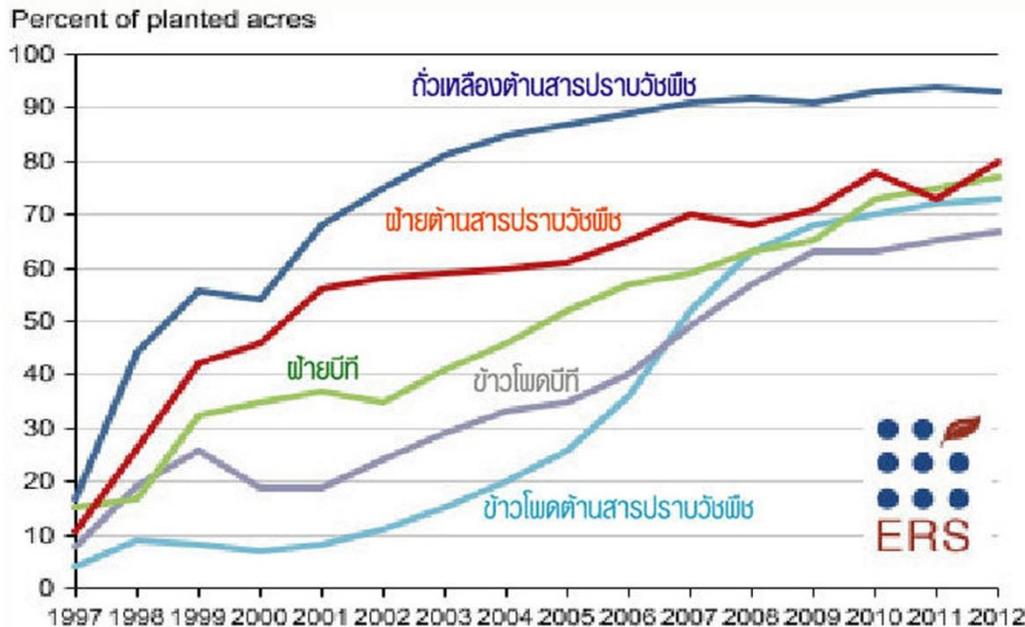
The use of insecticides has been reduced a little

ERS - USDA does not say that GM are “good” or “bad”.

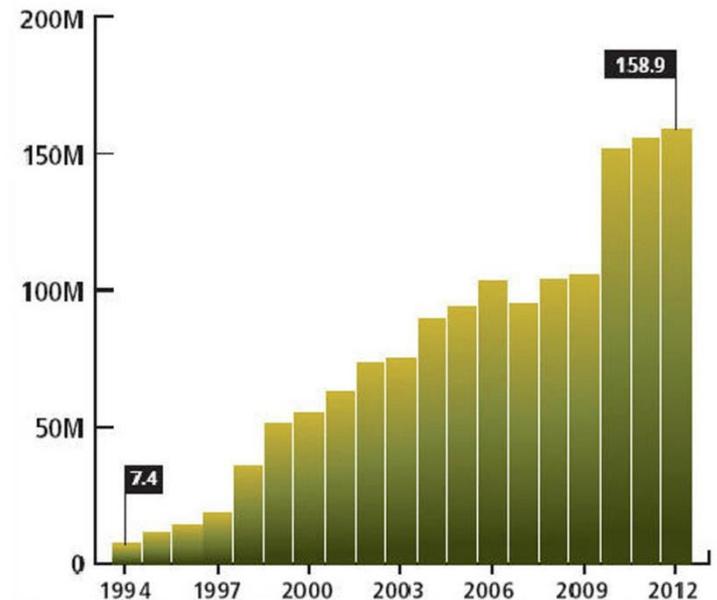
We only have a duty to provide information.

GMO have used **10** times more herbicides

Area cultivating GMOs in US, percent



Increasing use of Glyphosate



The latest study, published on **1 July 2013**, by Food and Water Watch found that in GM crop cultivation in the US there was a 10-fold increase in use of herbicides from 15 m pounds in 1996 -159 m pounds in 2012 and there has been a 26% increase in the use of insecticides from 2001 to 2010. <http://www.foodandwaterwatch.org/reports/superweeds/>

Glyphosate danger

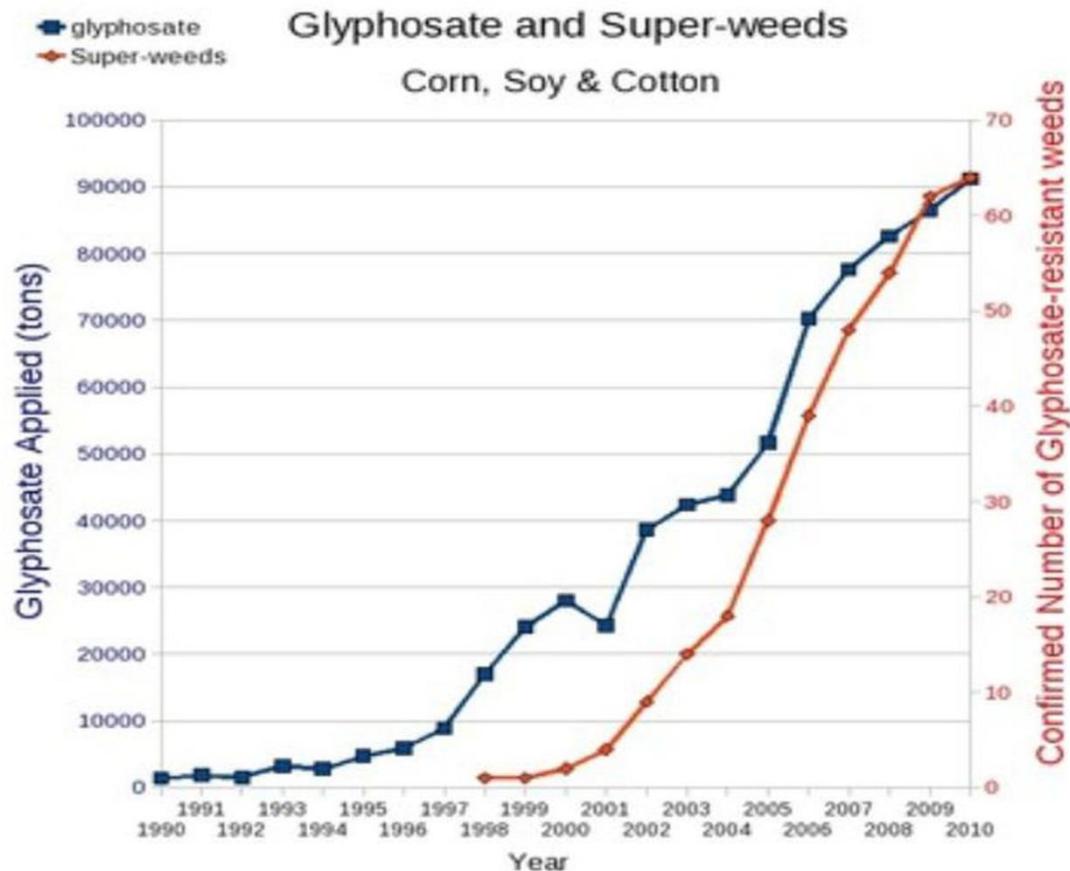
Statements that GM crops are safe are just claims by corporations after they found that growing GM crops led to higher use of chemicals

Recent studies have found that Glyphosate :

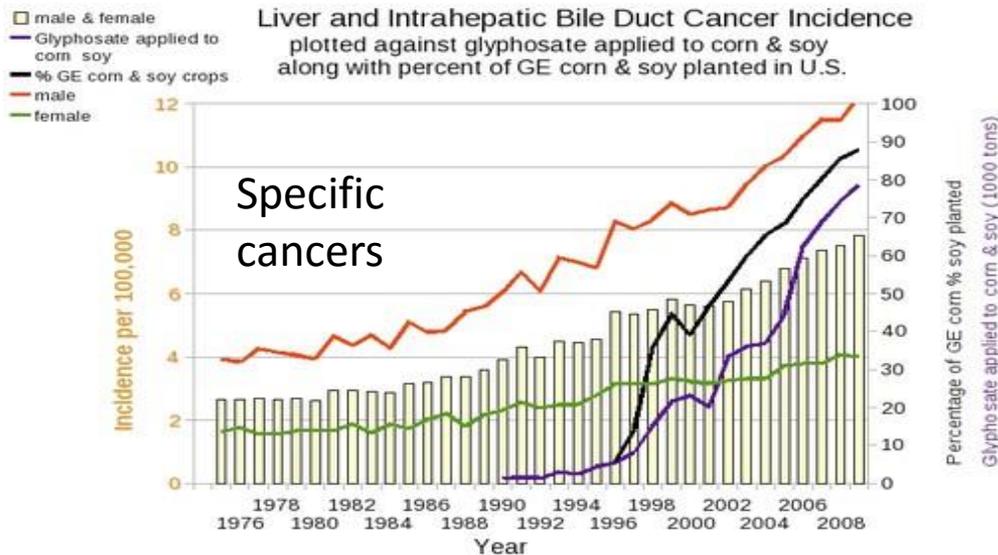
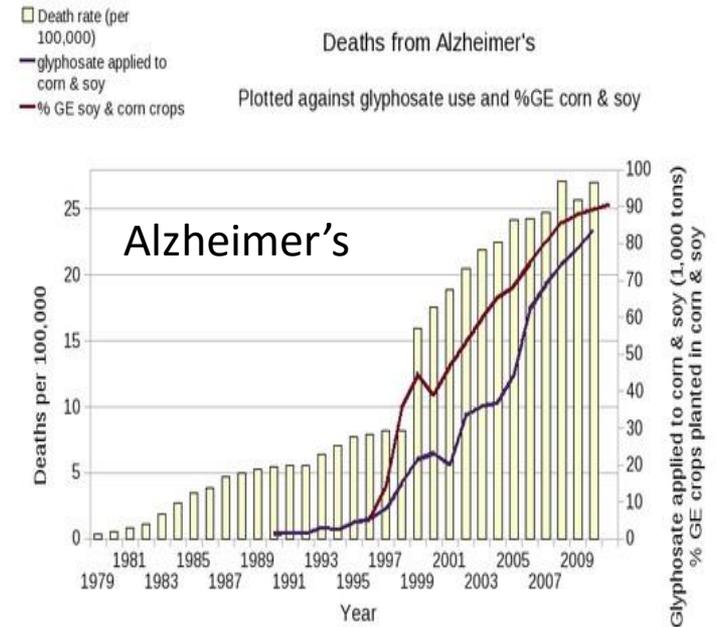
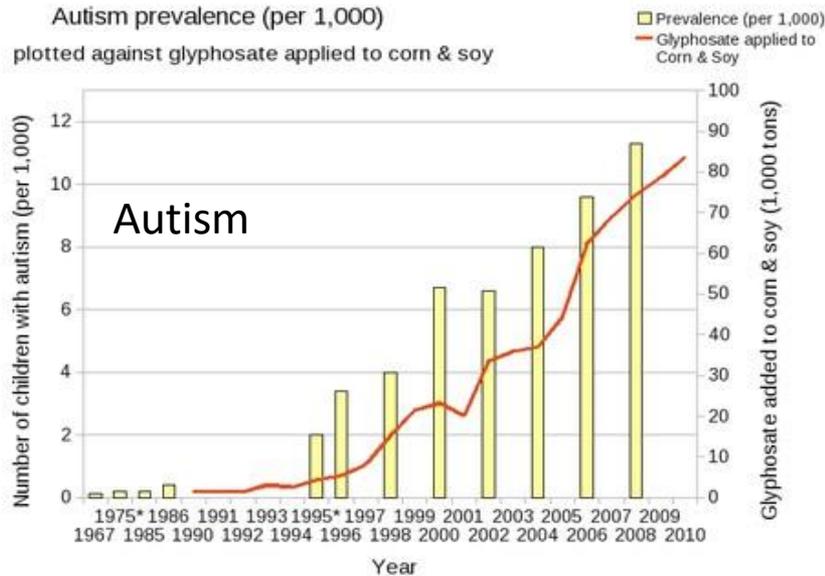
- Affects enzymes and endocrine system
- Is associated with cancer gene mutation
- Affects the brain and nervous system
- Alzheimer's
- Combines with metals in soil, over time causes chronic kidney disease
- Many countries are in the process of banning or controlling its use

GMOs create weeds that can't be

The cultivation of GMOs, most of which are herbicide tolerant, in the US in the 1990s led to the creation of many varieties of “superweeds” that are resistant to chemicals. The concerns of environmentalists 20 years ago have become true. These are the main reasons why the use of herbicides is increasing in the US.



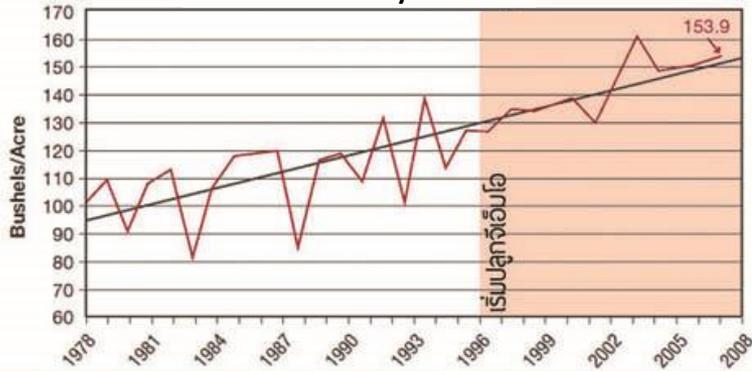
คว Links between Glyphosate and disease เสท



GMOs have not increased potential

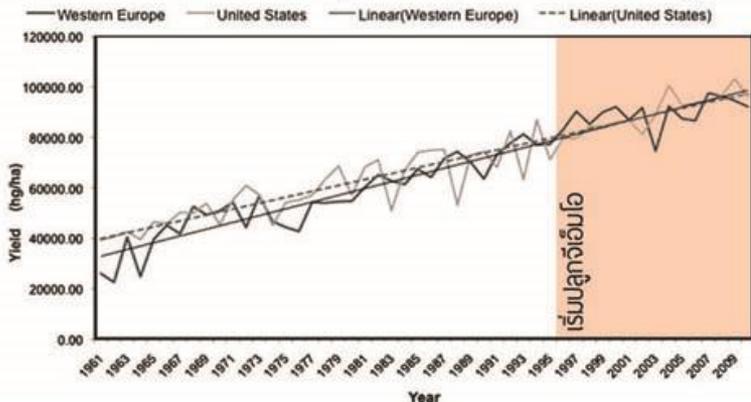
Conventional crops in EU have higher yields than GM in the US

US maize yields



The increase in US maize yields after GM was introduced is lower than the period prior to that ... Contrary to myths about the superiority of GE crop yields, most yield gains in recent years are due to traditional breeding or improvement of other agricultural practices.: Union of Concerned Scientists-2009

EU maize yields compared with US



Conventional non-GM crops in Western Europe have higher yields than GM crops in the US

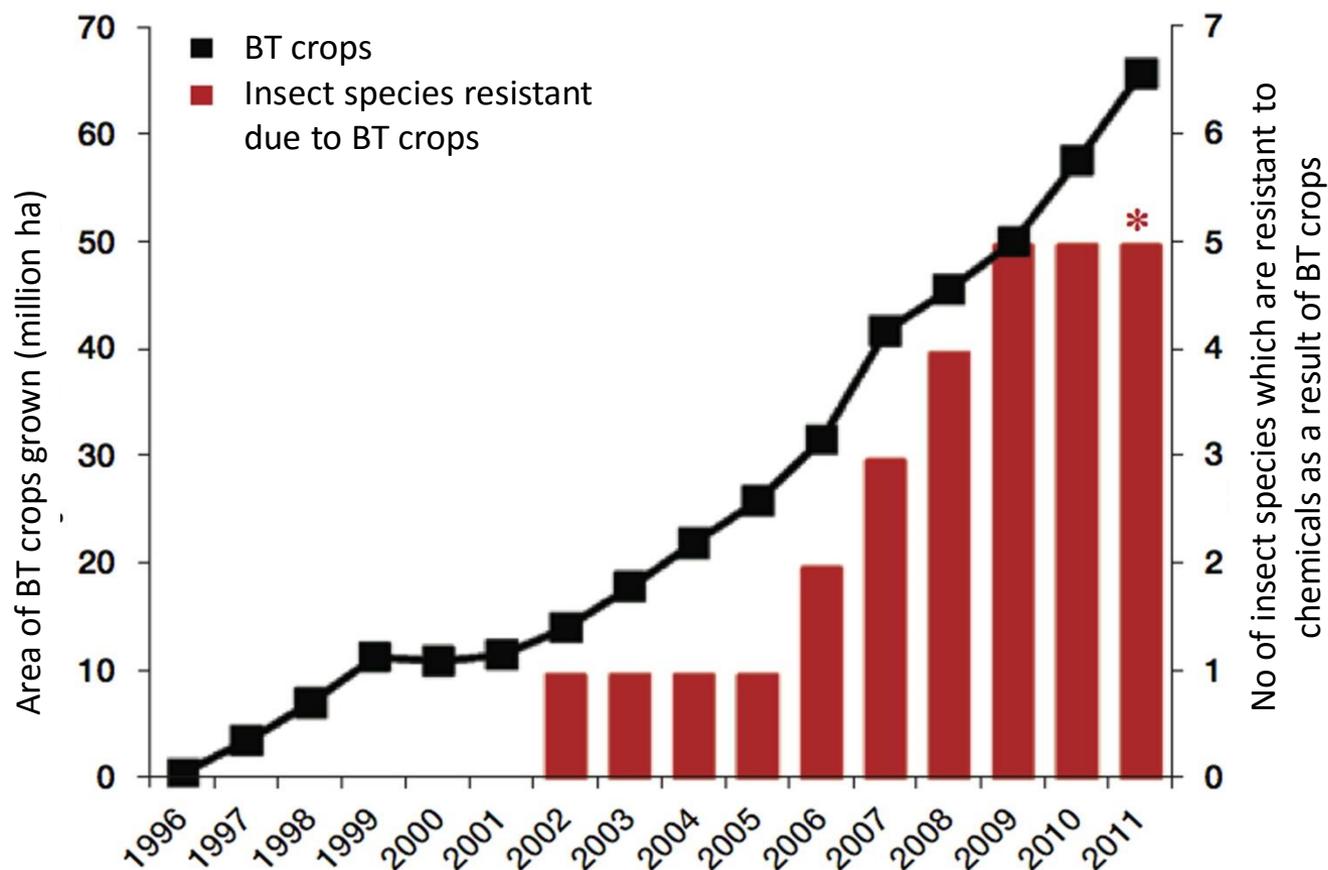
Jack A. Heinemann(2013)-University of Canterbury

A recent report by the US Department of Agriculture (2014) found that in the last 15 years GM crops have not increased production capacity. In many cases, production was lower than conventional crops.

GE Crops in the United States ERS/USDA-2014

BT crops (GMOs) have created insects that can't be

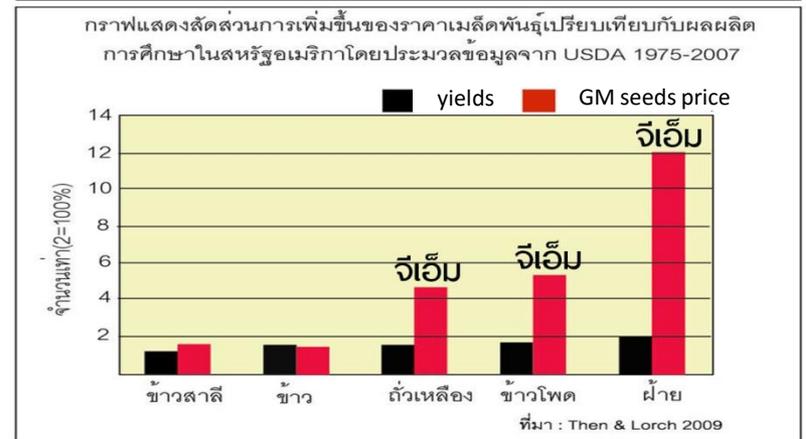
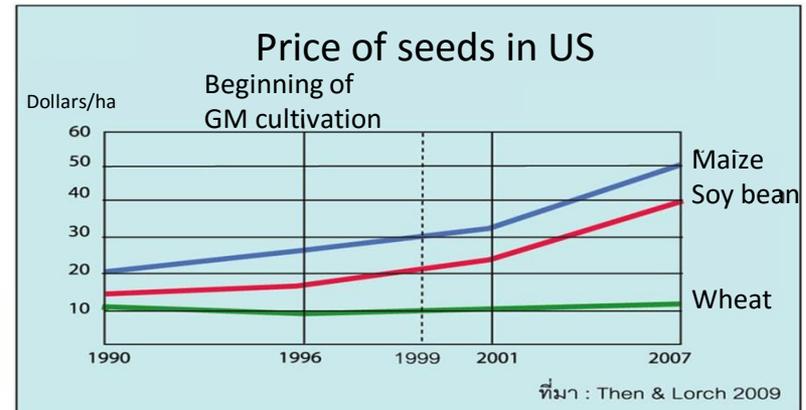
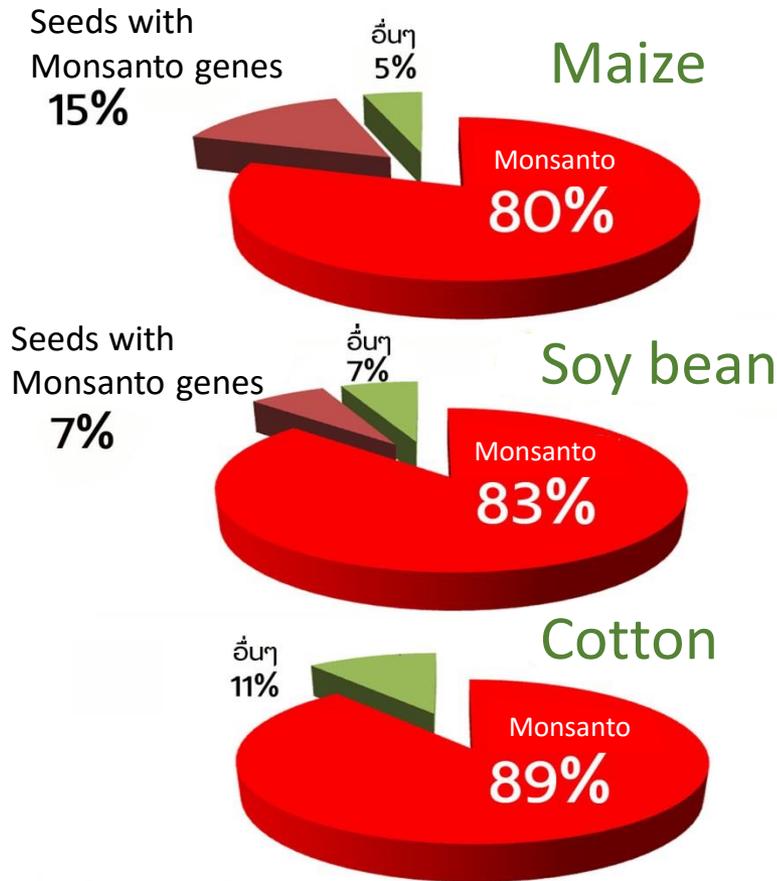
The Journal Nature Biotechnology has published research showing that insects have very quickly evolved to resistance to chemicals as a result of GMOs. In 2005, only 1 such species was found, in 2010, another 5 had been identified. This is one reason why farmers have to rely on GM crop varieties developed by the companies. This is likely to lead to an increase in the use of insecticides in future



GMOs monopolies and food security

More than 90% of maize, cotton and soy bean in the US is monopolised by Monsanto. American farmers use expensive seeds, increasing substantially in price, despite only a small increase in yields.

Authorisation of commercial cultivation of GMOs will be the start of a decline of smallholder farming and national food security.



90-95%

of patents for GM Crops in the US are owned by Monsanto

- Of these, 90% of them are modified to resist Monsanto's Glyphosate, farmers must only use this type of herbicide
- Farmers must sign contract allowing the company to enter their fields. Ban on experiments by independent scientists
- The price of seeds has increased 259-325%. Monsanto has sued at least 500 US farmers who have collected seeds for replanting, or buying patented seeds from other sources
- The patents for BT cotton, GM papaya and Glyphosate-tolerant maize NK603 which will be produced in experimental plots in Thailand are owned by the corporation



Contamination that can't be controlled

GM maize pollen can be distributed as far as 4.5 km

The latest study to assess the problems of cross contamination of maize cultivated for over 10 years. They found that conventional maize fields need to be several kilometres away to avoid contamination

Pollen count

20,000



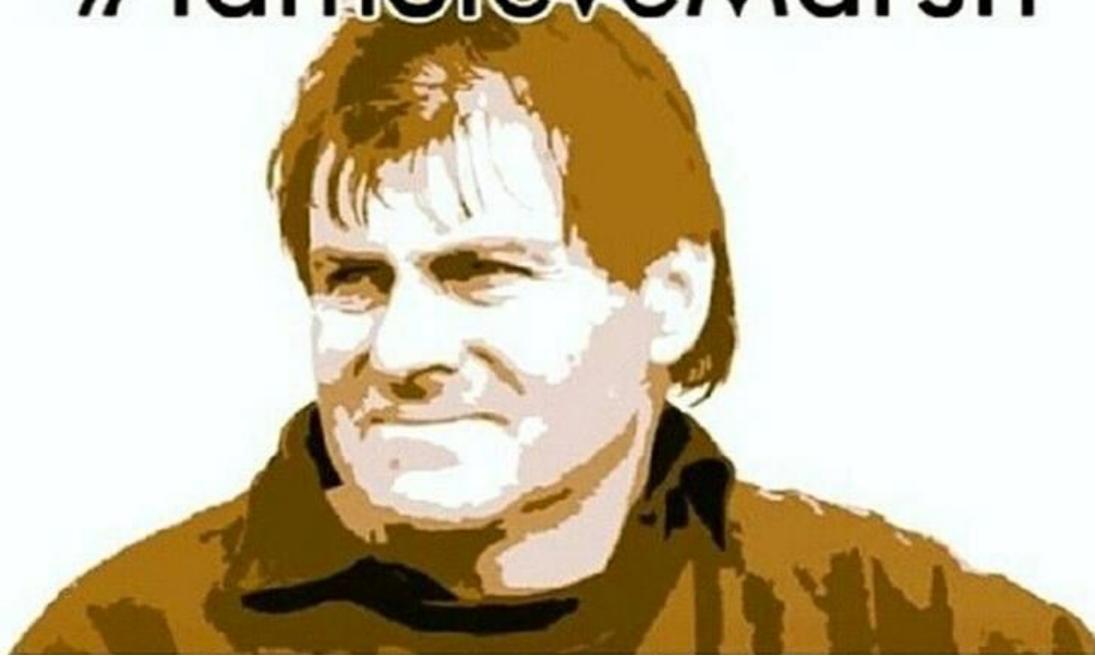
Pollen count

10,000



Stop the GMO Bill!

#IamSteveMarsh

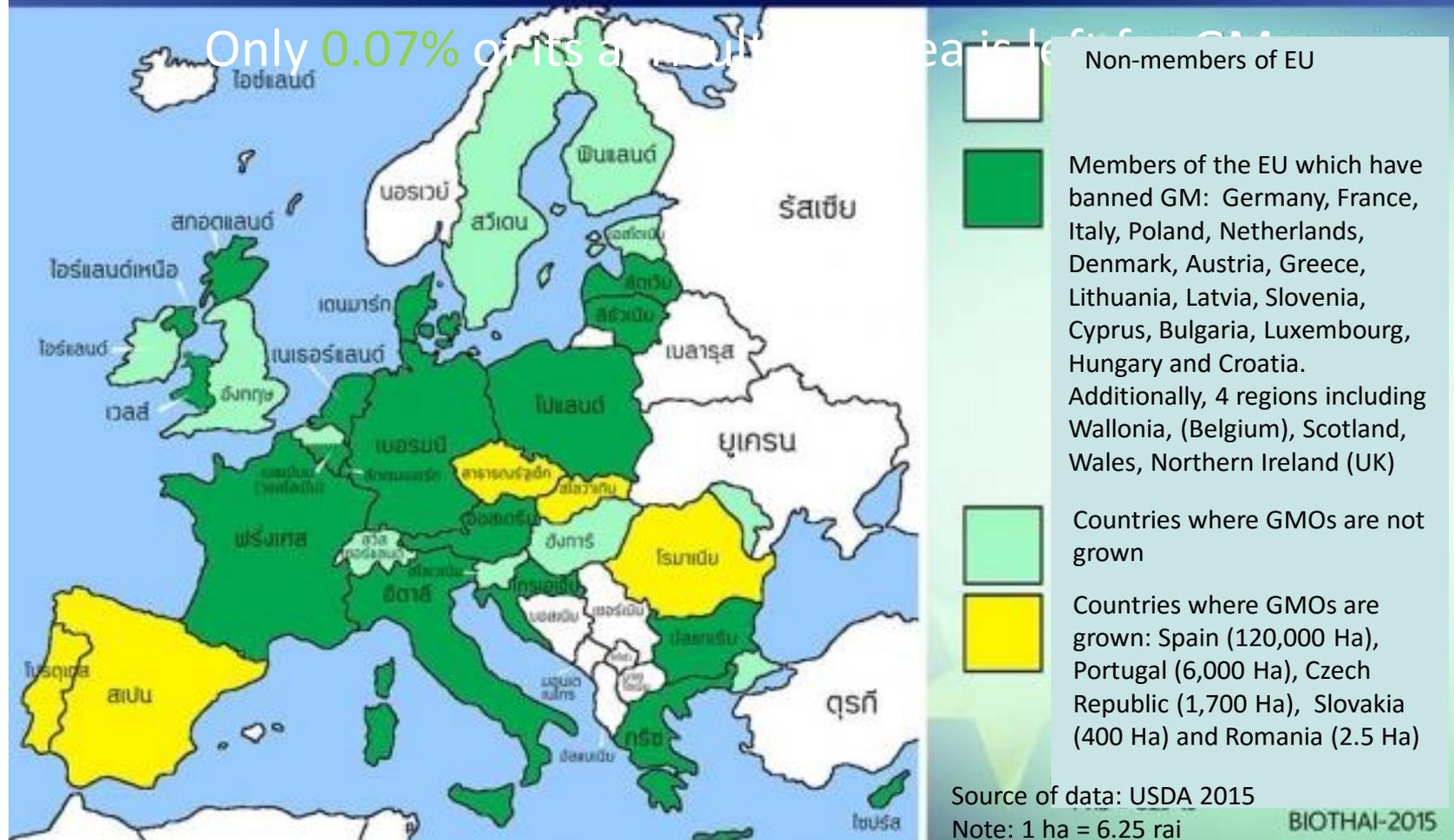


Steve Marsh, an organic farmer in the small town of Konjonup in Western Australia, lost income because of contamination by GM crops grown by his neighbour **Michael Baxter**, who had planted **Monsanto** varieties. Steve sued his neighbour to protect his rights. But he lost his case in the Supreme court of Australia in May 2014

Whether you are an organic farmer or grow crops conventionally “**We are Steve Marsh**” if the **GMO Bill** is passed.

16 EU countries ban GMOs

Only 0.07% of its agricultural area is left for GM



64 Countries require labelling of GM foods

3 US states, Maine, Connecticut and Vermont were the first to require GM labelling



New generation of Americans...

**SAY NO TO
GMOs**



61%
48%

View that organic farming is better than conventional farming
View that GMOs are harmful to health compared with other produce



57%
41%

Organic farming is better
GMOs are bad for your health



52%
39%

Organic farming is better
GMOs are bad for your health



45%
29%

Organic farming is better
GMOs are bad for your health

Opposition in the US



BIOTHAI-2013

Global Day of action against Monsanto

A major rally against Monsanto and GMOs was held on 25 November 2013 in 436 cities around the world, in 52 countries, involving 2 million people. This was stimulated by:

- 1 Many studies found that GM foods carry risks for health example cysts, cancers
- 2 GM crops affect bees and the ecosystem
- 3 Former Monsanto executive went to work for FDA, responsible for food safety
- 4 US passed a "Monsanto Protection Act" which allowed Monsanto to sell GM seeds, despite a court ruling that they are not safe.
- 5 Monsanto sued 410 farmers in over 140 cases, mostly because they used GM seeds for replanting



- Neil Young
- Danny DeVito
- Susan Sarandon
- Daryl Hannah
- Michael J Fox
- Elijah Wood
- Jeremy Irons
- Maroon 5
- James Kaitlin Olson
- Taylor Swift
- Bill Maher
- Dave Matthews
- Chevy Chase
- Roseanne Barr
- Kristin Bauer
- Kimberly Elise
- Mariel Hemingway
- Bianca Jagger
- VV Westwood
- Bill Pullman
- Amy Smart
- Sara Gilbert
- Ed Begley Jr
- Anne Heche
- Frances Fisher
- Rashida Jones
- Kimberly Elise
- Ziggy Marley

US artists against GMOs

Thai pathway of

GMO

2014

2557

อียูและญี่ปุ่น ตีกลับมะละกอ จีเอ็มโอที่ส่งออก จากไทยเป็น จำนวนมาก

กรมส่งเสริมการเกษตร ภายใต้การผลักดันของ บริษัทมอนซานโต้และอุตสาหกรรมอาหารสัตว์ ซึ่งมี.เจริญโภคภัณฑ์ที่อยู่เบื้องหลังเตรียมเสนอให้ รัฐบาลพลเอกประยุทธ์ จันทร์โอชา อนุมัติให้มีการปลูกพืชจีเอ็มโอในประเทศไทย หลังจาก ไม่ประสบผลสำเร็จมาเกือบ 20 ปี

กรมวิชาการเกษตร อนุมัติให้มอนซานโต้ นำฝ้ายจีเอ็มโอเข้ามา ทดลองในประเทศไทย

2538
1995

สหรัฐปลูกถั่วเหลือง จีเอ็มโอเชิงพาณิชย์ เป็นครั้งแรก

2539
1996

ไบโอไทยและเครือข่าย เกษตรกรรมทางเลือก พบฝ้ายจีเอ็มโอปนเปื้อน ในพื้นที่เกษตร จ.เลย

2542

1999

กรม.มีมติ วันที่ 3 เม.ย. 2544 ห้ามการ ทดลองจีเอ็มโอใน ระดับไร่นาและให้มีการร่าง กฎหมายความปลอดภัยทาง ชีวภาพ

2544

2001

2004

2547

กรีนพีซพบมะละกอจีเอ็มโอหลุด ออกไปจากแปลงทดลองที่สถานี วิจัยพืชสวนท่าพระ จ.ขอนแก่น

2007

2550

ไบโอไทยพบข้าวโพดจีเอ็มโอ ปนเปื้อนในพื้นที่ใกล้ที่ทำการ ของบริษัทมอนซานโต้ภาคสนาม ที่จ.พิษณุโลก

2556

2013

มอนซานโต้และ ม.นเรศวรเคลื่อนไหวก เพื่อให้มีการทดลองข้าวโพด จีเอ็มโอ NK603 โดยให้ การสนับสนุนเงินการ ทดลองหลายล้านบาท

ประชาชนในสหรัฐและหลายประเทศทั่วโลก มากกว่า 2 ล้านคน ทรนรงค์ต่อต้านจีเอ็มโอ และต่อต้านมอนซานโต้

กรม.มีมติวันที่ 25 ธ.ค. 2550 มิให้มีการปลูก จีเอ็มโอในพื้นที่เปิด ยกเว้นทดลองในพื้นที่ของรัฐ โดยต้องประเมินผลกระทบต่อสุขภาพและสิ่งแวดล้อม รับฟังความคิดเห็นของประชาชนในพื้นที่ นักวิชาการอิสระและ องค์การสาธารณประโยชน์ และต้องขออนุมัติเป็นกรณีๆเท่านั้น

GMO pathway



1995 The Department of Agriculture authorised Monsanto to bring in GM cotton for experimentation Thailand

1996 US grow GM soybeans commercially for the first time

1999 Biothai and the Alternative Agriculture Network found GM cotton contamination in farming areas of Leuy province

2001 A cabinet resolution on 3 May 2001 prohibited the experimentation of GMOs in farm fields and began drafting a biosafety bill

2004 Greenpeace found GM papaya had escaped from a state experimental plot in Tha Phra KhonKaen.

2007 Biothai found GM maize contamination in an area close to the Monsanto field offices in Phitsanuloke

A cabinet resolution on 25 December 2007 banned the planting of GM always in open fields. Exemptions were plantations in areas on Penn State, a health and environmental impact assessment is needed along with consultation of the local public, independent researchers and NGOs, and must ask for prior authorization.

2013 more than 2 million people in the US and other countries and world campaign against GMOs and Monsanto.

Monsanto and Naresuan University lobbied to allow experimentation of GM maize NK 603, providing many millions of baht in support.

2014 the Department of agricultural promotion, influenced by Monsanto Co and the animal feed industry, in which CP is a major player, proposed that the government of Prayuth Chan-ocha should authorise GM crops in Thailand, after failing for almost 20 years.

EU and Japan sent back many shipments with GM papayas from Thailand

Processing of biological resources as company property

the case of GM papaya

1995-1997



Khaek dam and *Khaek Nual* papayas
biological resources Thailand



Ringspot virus,
biological resource of Thailand

Thailand's Dept of Agriculture brought both the papaya and the virus to the research project on virus resistant GM papaya, which used labs and technology from Cornell University

2004

during tests, papaya was planted in outside fields, some of which contaminated other papaya trees

Dennis Gonsalves, Head of Cornell University's GM papaya research project, said in an interview that both the GMO papayas and cross-fertilised crops are the property of Cornell.

2005



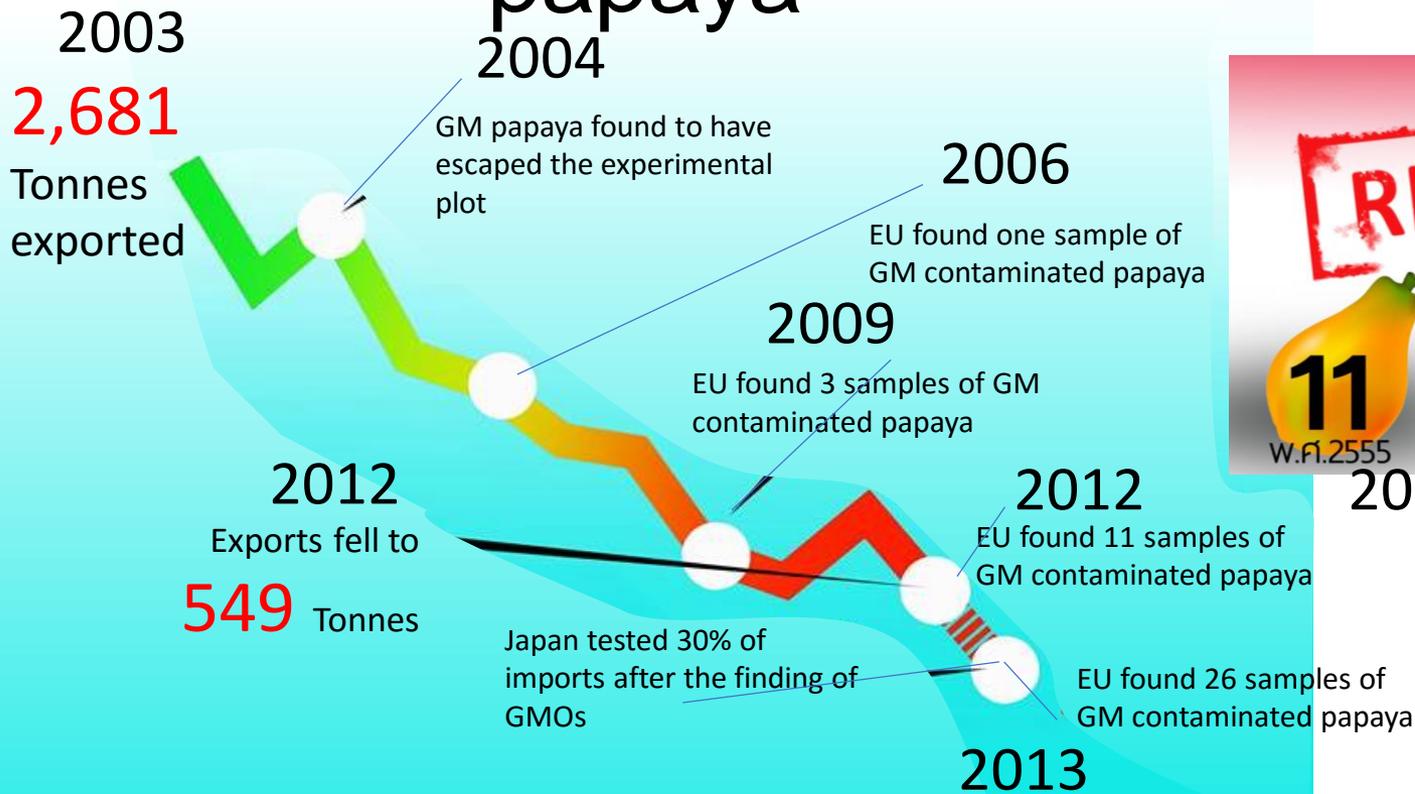
2006

Cornell registered patents on the Thai ringspot virus

GMO papaya contamination - impacts

Lessons learned from GM

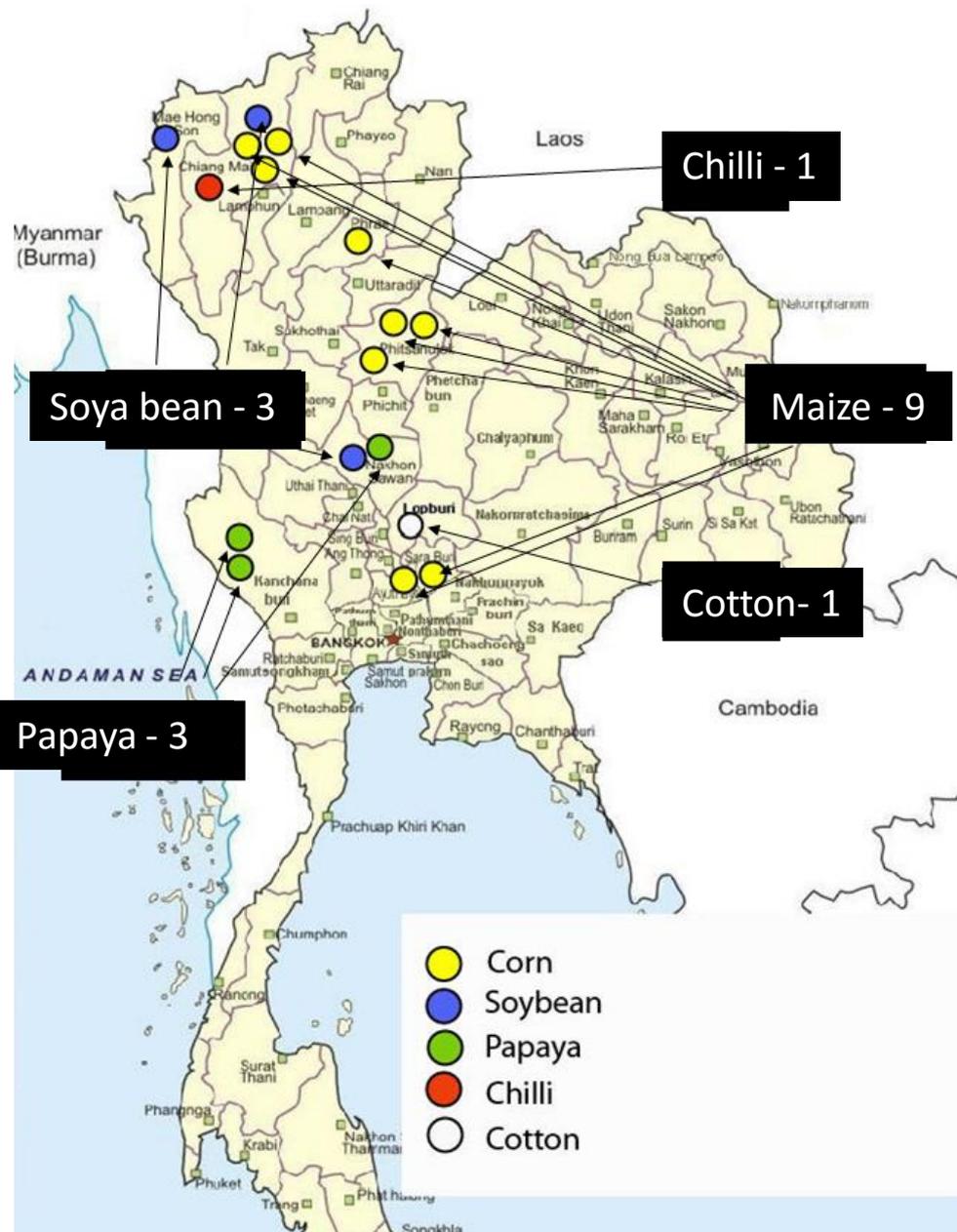
papaya



Contamination statistics: EU RASFF

Statistics and graph of papaya exports: FAO

BIOTHAI-2015



Areas where GM contamination was found, 2009

Biothai carried out a random sampling of crops seven years ago, and found that plantations of papaya, cotton, maize, soybean, and chillies have been contaminated with GMOs in the North and Central of Thailand.

Losses from GM contamination

The case of Starling maize, of the Aventis company. In 2001, starling protein Cry9C was only authorised for use in animal feed, because of risks of creating allergies in humans. At the end of that year, contamination was found in 350 flour processing factories throughout the United States. It was mixed in more than 300 products. This caused over US\$100 million worth of damages, or £32 billion baht.

The case of contamination of rice liberty link. In August 2006, the US Department of agriculture issued a short announcement that US rice yields had been contaminated by the LL601 (liberty link) which was a genetically engineered variety reduced by the Bayer crop science copy. This rice and not being given specific authorisation as food. American farmers sued Bayer for 24 billion baht in 2011.

Lately, on 14 September 2014, the Cargill company sued Syngenta for allowing US farmers to grow the Viptera GM maize variety. This variety had not been authorised for use in China. However it was present in the US agriculture and trade system. China had previously imported 44.4 million tonnes of maize, however since November 2013, China returned 1 million tonnes of shipments of US maize. The US National Grain And Feed Association estimated that the systemic damages were around 14 billion baht.

4.4 ล้านตัน แต่ตั้งแต่เดือนพฤศจิกายน 2556 เป็นต้นมา ทางกรีนตี
อสังค์ว่าพอสค์รับว่าถึง 1 ล้านตัน The National Grain and Feed

Why oppose the GM Bill?

พ.ศ. 2542
1999

Monsanto's GM cotton escape from the experimental fields and was eagerly planted in Leuy and Petchabun.

พ.ศ. 2544
2001

The government held public consultations on the "Biosafety Bill" to protect biodiversity and farmers and consumers rights. All sectors were able to participate.

พ.ศ. 2547
2004

The drafting committee for the bill was dismissed and the new committee established. Proponents of GMOs and International Seed Association played a central role. Many government officials involved in the drafting, have now gone to work for transnational companies and business associations supported by these companies.

พ.ศ. 2558
2015

The draft bill which serves the interests of the corporations is being considered by the Cabinet and the NCPO who have refused to hold public consultations.

Stop the GM Bill!



This draft bill is not consistent with the international laws on Biosafety. For example, it only specifies responsibility for releasing GMOs into the environment. It does not address socio-economic impacts. It also lacks people's participation.

Dr Somchai Rattanachuesakul
Law professor, University of Thai Chamber of Commerce



This draft bill :

- 1 does not follow the Precautionary Principle
- 2 does not consider the socio-economic impacts
- 3 in principle is intended to open the way for GMOs
- 4 does not require an environmental or health impact assessment
- 5 does not require that registration as environmentally safe requires an assessment of health impacts
- 6 does not specify who will take responsibility for damages which arise from GM registered as environmental safe
- 7 does not have a section on protection farmers was the other contaminated with GM
- 8 does not specify financial guarantees for cases where GMOs cause damage
- 9 severely lacks participation from the Thai people

Concerns of the NESDC / Ministry of commerce

On the Biosafety Bill



National Economic and Social Development Council (NESDC)



Ministry of Commerce

ที่มา <http://www.greennewstv.com>

- There should be a clear section prohibiting the production, import, export of GMOs, unless a prior exemption is made
- Impacts on organic farming and many sectors
- Promoting GMOs will reduce market opportunities
They will not benefit country and farmers in all aspects
- Where damages arise, business operators must take responsibility and must have measures to protect farmers
- There may be environmental contamination, impacts on food, crops, and biodiversity
The damages may be incalculable
- There will be impacts on Thai exports and organic products
- It will be very difficult to enforce controls on GMOs, unless the approach to enforcement is very clearly set out

เดินหน้า GMO!

ทำลายเกษตรกร/อุตสาหกรรมข้าวโพดหวาน

“I used to support GMOs, but recently I have found that only the giant corporations benefit. GM crops may be beneficial for American farmers who plant tens of thousands of rai, but it would not benefit Thai farmers.

Philippines is the only country in ASEAN which grows GM maize. At present, all their small companies have gone out of business”



Dr Taweesak Phulam
Key scientist involved in developing GM maize in
Thailand, sweetcorn producing company

Monsanto gets a Thai food group blocks GM!

The Thai Food processors Association is concerned about experimentation given previous experience with papaya. While GM papaya was still in the research and study phase, it got out and could not be controlled. We are concerned how we will prevent contamination and cross-fertilisation between maize for animal feed and sweet corn. **At the moment, customers do not accept GMOs.**

The Thai Tapioca Starch Association believes GM technology should only be used in crops where strictly necessary. Government agencies should confirm there will be no impact on the cassava flour industry or other crops. **Our selling point is that we are not GM.** The use of GM technology must not affect importing countries. The government must consult with all industries affected.



Open petition from international researchers in the light of lobbying for GM cultivation

“Thailand is a food exporting country high in biodiversity

We would like to support the mobilisation of various organisations in Thailand to block the cultivation of GM crops in open fields until there is a law on biological safety.

We recommend consideration of effective alternative technologies, example, marker- assisted breeding methods and agroecological farming.

9 November 2014





46+ provinces
จังหวัด

115+ CSOs and
NGOs

Opposed the GM Bill on 9 Sept 2015

9/11/2558



“I never thought that Thailand would have GMOs. Whoever thought that must be crazy”

“สิ่งไปว่าจะทำได้ตรงไหน เพื่อที่จะรับประกันความ ชัดแย้งเข้าไปได้ด้วย นำไป แก้ไขในหลักการและเหตุผล ให้อีกข้างขึ้น ครอบครัวสิ่ง ที่เขาเรียกร้องมา จะได้เอา ทั้งหมดไปพิจารณาร่วม ด้วย เพราะเดิมหากเขียน แค่นี้จะไปแปรญัตติอย่างอื่น ไม่ได้”

Gen. Prayuth Chan-ocha
9 December 2015

10 major reasons why Thailand doesn't need GMOs

1. GMOs do not increase crop yields
2. GMOs lead to higher pesticide use, increase resistance of weeds and insects
3. GMOs cannot coexist with conventional or organic crops
4. The rate of increase of GM cultivation area is falling. Only 12% of the agricultural area of the world is under GM crops.
5. Concerned Scientists cannot yet confirm that GM will be safe in the long-term
6. Everyday, more and more, people in Europe and America are opposing GMOs
7. Thai produce has been rejected from major trading partners. Management costs have systematically increased.
8. Giant corporations monopolise the seeds market, price of seeds is increasing, and food system is controlled by corporations.
9. Farmers have been sued by corporations. Biological resources have been contaminated by GM.
10. There are better alternatives, for example: ecological restoration to make use of biodiversity; traditional methods of breeding and development of organic farming; emphasising quality over quantity.