



Asian Market Overview- Trend of Non-GMO Development

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GMO Development Worldwide

Asian GMO Regulations

EU Traceability Impact on Chinese companies

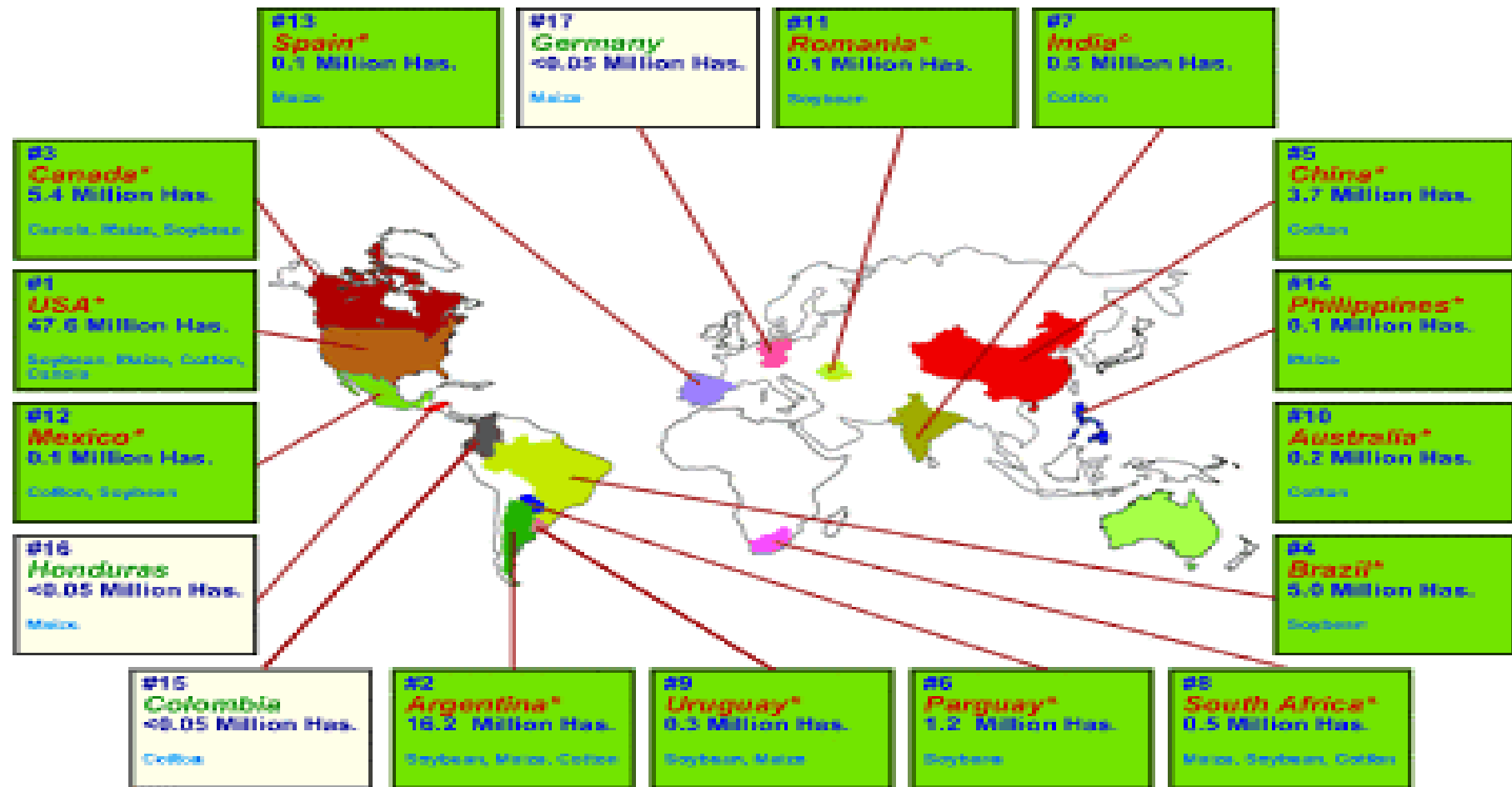
Factors driving non-GMO IP development in China

Trend of non-GMO Development

GeneScan IP Concept



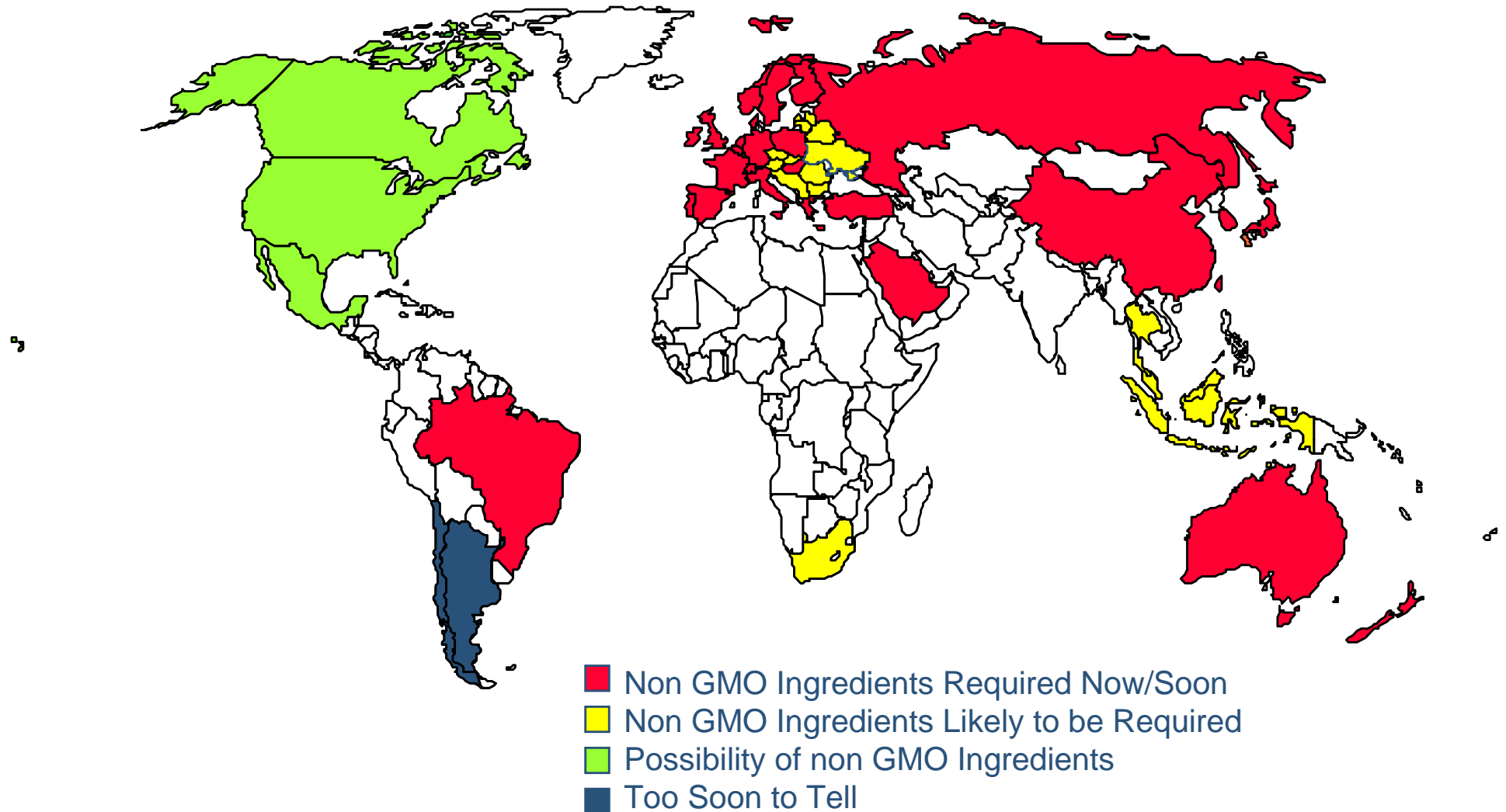
Biotech Crop Countries and Mega-Countries*, 2004



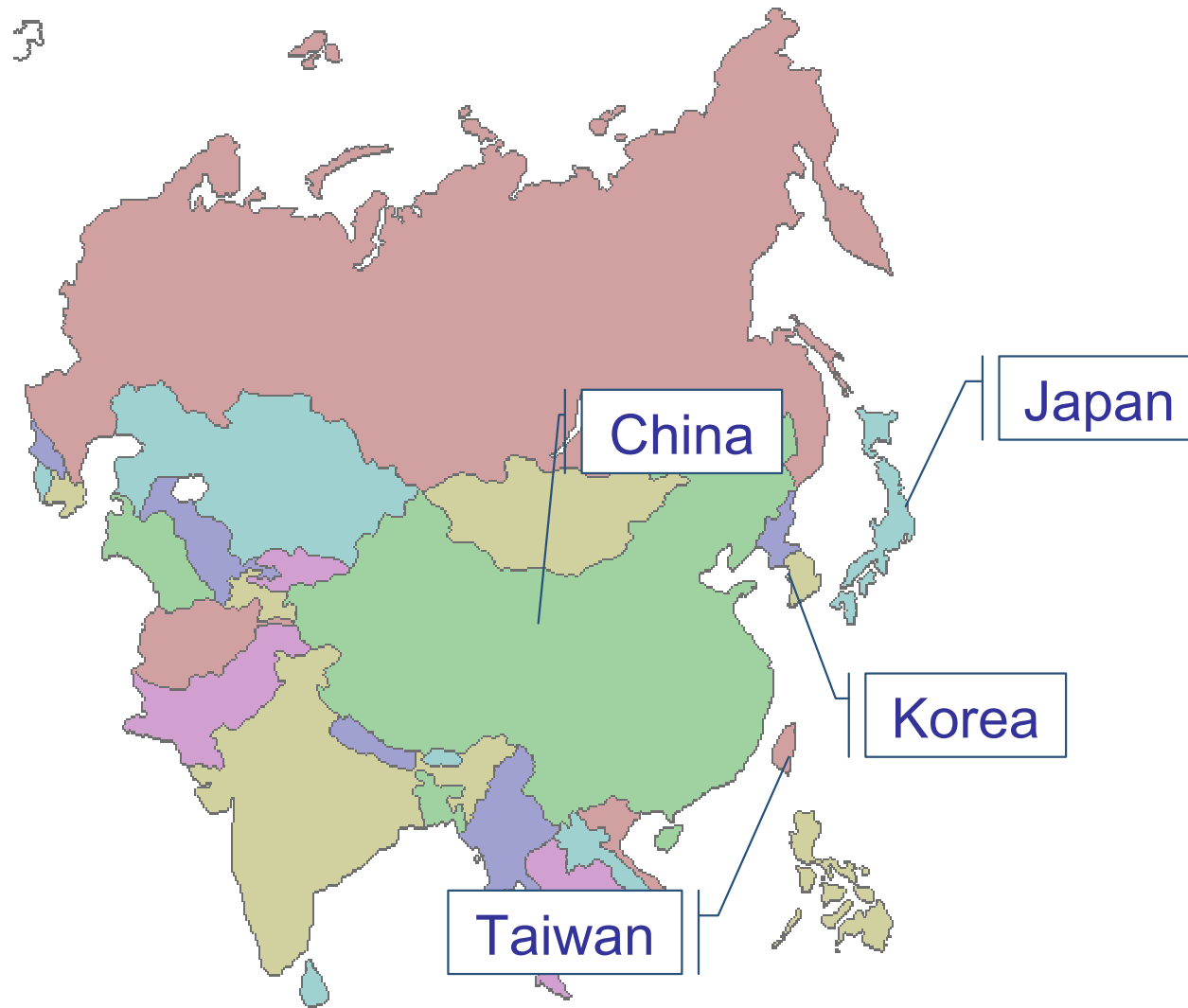
* 14 biotech mega-countries growing 50,000 hectares or more of biotech crops.

Source: Clive James, 2004

Spread of the GMO Ingredient Issue



Key Asian Markets with GMO Regulations



Japan: Labeling Policy on Biotech Products

Tolerance Threshold: **5%**
Type of Labeling: **Mandatory**
Products Requiring Labeling:

1. There are 30 foods currently subject to JAS labeling requirements.
2. If the biotech content of these foods exceeds 5%, they must be labeled with either the phrase “GM Ingredients Used” or “GM Ingredient Not Segregated.”
3. Processed foods are exempted if:
 - a. Recombinant DNA and protein are removed
 - b. It is not one of the three major ingredients in terms of weight or its proportion is not 5% or more by weight.
4. In order to be labeled “Non-GM”, the biotech content of foods must be less than 5%, and the processor must be able to show that all biotech ingredients were “identity-preserved” (IP) from production through processing.

Tetsuo Hamamoto, U.S. Embassy, Japan (USDA Foreign Agricultural Service)

Taiwan: Bioengineered Food Regulations



Tolerance Threshold: **5%**
Type of Labeling: **Mandatory**
Products Requiring Labeling:

1. Food products containing ingredient of genetically modified soybean or corn which is more than 5% by weight of finished product shall be labeled with the words “Genetically Modified” or “Containing Genetically Modified”.
2. Food products made of non-GM soybean or corn may be labeled with the words “Non-GM” or “Not GM”
3. Non-GM soybean or corn adventitiously or accidentally commingled with less than 5% of GM varieties during harvesting, storage, transporting, or other reasonable causes, still may be taken as Non-GM.
4. Soy sauce, soybean oil (salad oil), corn oil, and corn starch etc. made of GM soybean or corn are exempted from the GM labeling requirement.

Chiou Mey Perng, U.S Embassy (USDA Foreign Agricultural Service)

Korea: Mandatory Labeling Policy for GMOs

Tolerance Threshold: **3%**
Type of Labeling: **Mandatory**
Products Requiring Labeling:

1. **GMO commodities (soybean, bean sprout, corn, and potato) shall require labeling if 3% or more of the shipment contains a biotech-enhanced component.**
2. **Labeling is required for processed food products and unprocessed corn or soybeans used for further processing that contain 3% or higher GM corn or soybean content.**
3. **Processed food products shall be labeled when the primary ingredient is subject to MAF requirements, the GM ingredient is one of five major raw materials used in the product, and recombinant DNAs or foreign proteins are still present in the final product.**

Seung Ah Chung, U.S. Embassy (Korea, USDA Foreign Agricultural Service)

Korea: GMO Labeling Exemptions



Identity Preserved (IP) handling certification for raw corn or soybeans and certification for the finished product

Government-issued certification in lieu of IP handling certificates

Test certificates issued by either commercial or government laboratories

Seung Ah Chung, U.S. Embassy (Korea, USDA Foreign Agricultural Service)

China: Safety of GMO Imports



Tolerance Threshold: **0%**
Type of Labeling: **Mandatory**
Products Requiring Labeling:

1. **GM planting seeds, breeding livestock, poultry, fish fry, and microorganisms and products with genetically modified animal, plant or microbe ingredients shall be labeled:**
“Genetically Modified (product name)”
2. **Products made from Ag GMOs or materials with GM ingredients that no longer contain GM ingredients or the GM ingredients cannot be detected in the final products for sales shall be labeled:**
“This product is made from genetically modified (product name), but the product no longer contains genetically modified ingredients”
3. **Any listed GMO shall be labeled by the producer, packer, and individuals concerned. Any unlabeled and mislabeled Ag GMOs shall not be imported or sold.**

Ralph Gifford, Sun XiuFang, Adam Branson (USDA Foreign Agricultural Service)

1. **Market Demand** :The strategy of the world biggest retailers
 - Tesco, Asda, Sainsbury
 - Carrefour
 - Familla, Aldi
2. **Brand Protection, avoid risk:**
 - Kraft, Unilever, Nestle, Mc Donald's, P&G, Danone
3. **Value added**, increase product competitive advantages
4. **Compliance of Legislation of GMO / Non-GMO**
 - EU Traceability Rules, Japan, Korea, Taiwan etc.

Labelling of GM-Food and GM-Feed – Examples ¹⁴

Source: European Commission, Questions and Answers on the regulation of GMOs in the EU

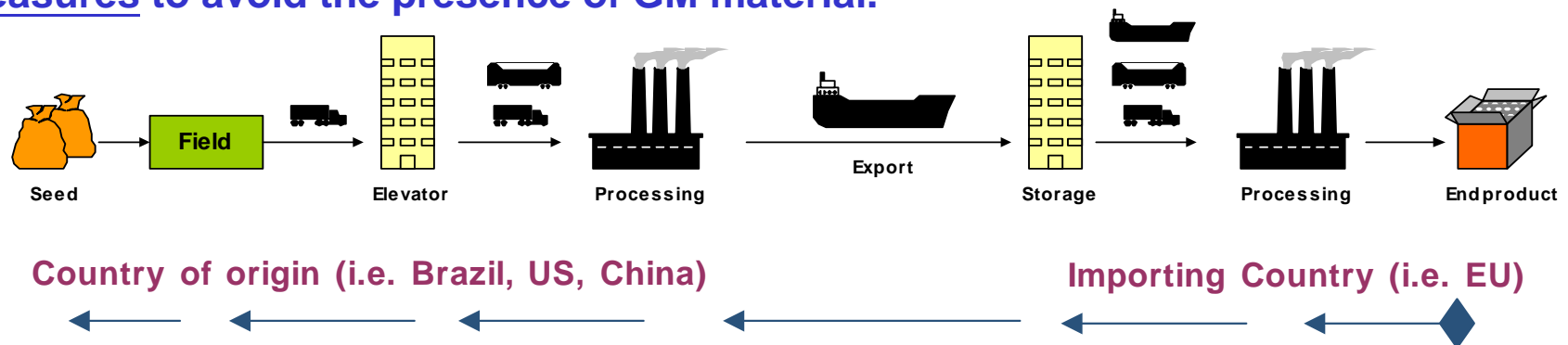
GMO-type	EXAMPLE	Labelling Required at present	Labelling required in future
GM plant	Chicory ¹⁵	Yes	Yes
GM seed	Maize seeds	Yes	Yes
GM food	Maize, Soybean sprouts, Tomato	Yes	Yes
Food produced from GMOs	Maize flour ¹⁶	Yes	Yes
	Highly refined maize oil, soybean oil, rape seed oil ¹⁷	No	Yes
	Glucose syrup produced from maize starch ¹⁷	No	Yes
Food from animals fed on GM feed	Eggs, meat, milk	No	No
Food produced with the help of a GM enzyme	bakery products produced with the help of amylase	No	No
Food additive/flavouring produced from GMOs	Highly filtered lecithin extracted from GM soybeans used in chocolate ¹⁷	No	Yes
GM Feed	Maize ¹⁸	Yes	Yes
Feed produced from a GMO	Corn gluten feed, Soybean meal	No	Yes
Feed additive produced from a GMO	Vitamin B2 (riboflavin)	No	Yes

EU Rules require to proof

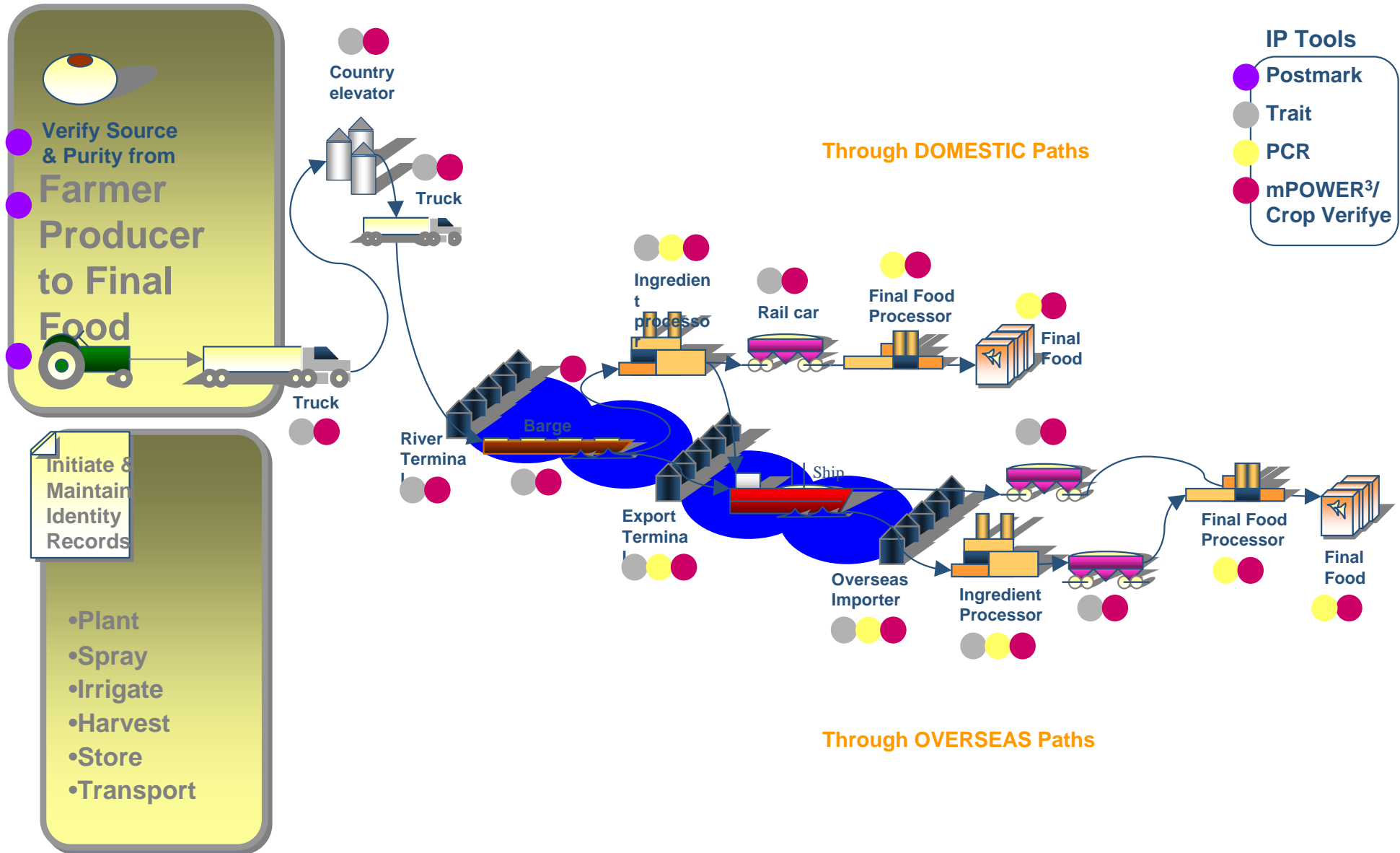
Adventitious or technically unavoidable presence of GM material in food and feed below the thresholds per ingredient of

- 0,9% for authorised GMOs
- 0,5% for unauthorised GMOs *

The operator has to supply evidence that he has taken appropriate measures to avoid the presence of GM material.



Supply Chain Control to meet EU Rules



Non-GMO Policy in Food Industry

Company with non-GMO Policy , annual sales revenues over 450 billion USD
Source: Innovest

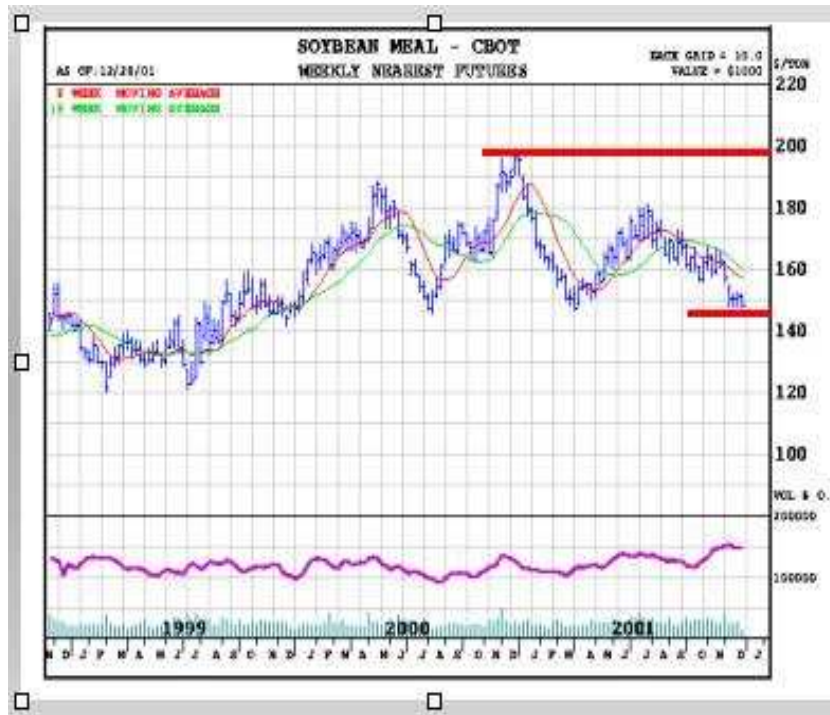
Aldi	Coca Cola	Findus	McDonald's	Superquinn
Alpro Soya	Colruyt	Friki	Migros	Tegel
Amadori	Coop	Fuji Oil	Nestlé	Tengelmann
Asahi	Corona	Gerber	Nutricia	Tesco
ASDA	Danone	Heinz	ParknShop	Trader Joe's
Barilla	Delhaize Le Lione	Hipp	Perdigao	Unilever
Ben&Jerry's	DUC	Kirin	Sadia	VitaSoy
BurgerKing	Edeka	Kraft Jacobs	Safeway	Waitrose
Cadbury's	Esselunga	Marks&Spencer	Soya Hellas	Wiesenhof
Carrefour	Ferrero	McCain	Spar	Wimpy Fast Foods

IP Values added to the Products

Price Comparison:

Conventional Lecithin: 0%,
 PCR -ve Lecithin: 20%,
IP Lecithin: 60- 100%

Soybean: 0%
IP Soybean: 5%
 Organic Soybean: 40%



Comparison of Cost Input in USA 2002

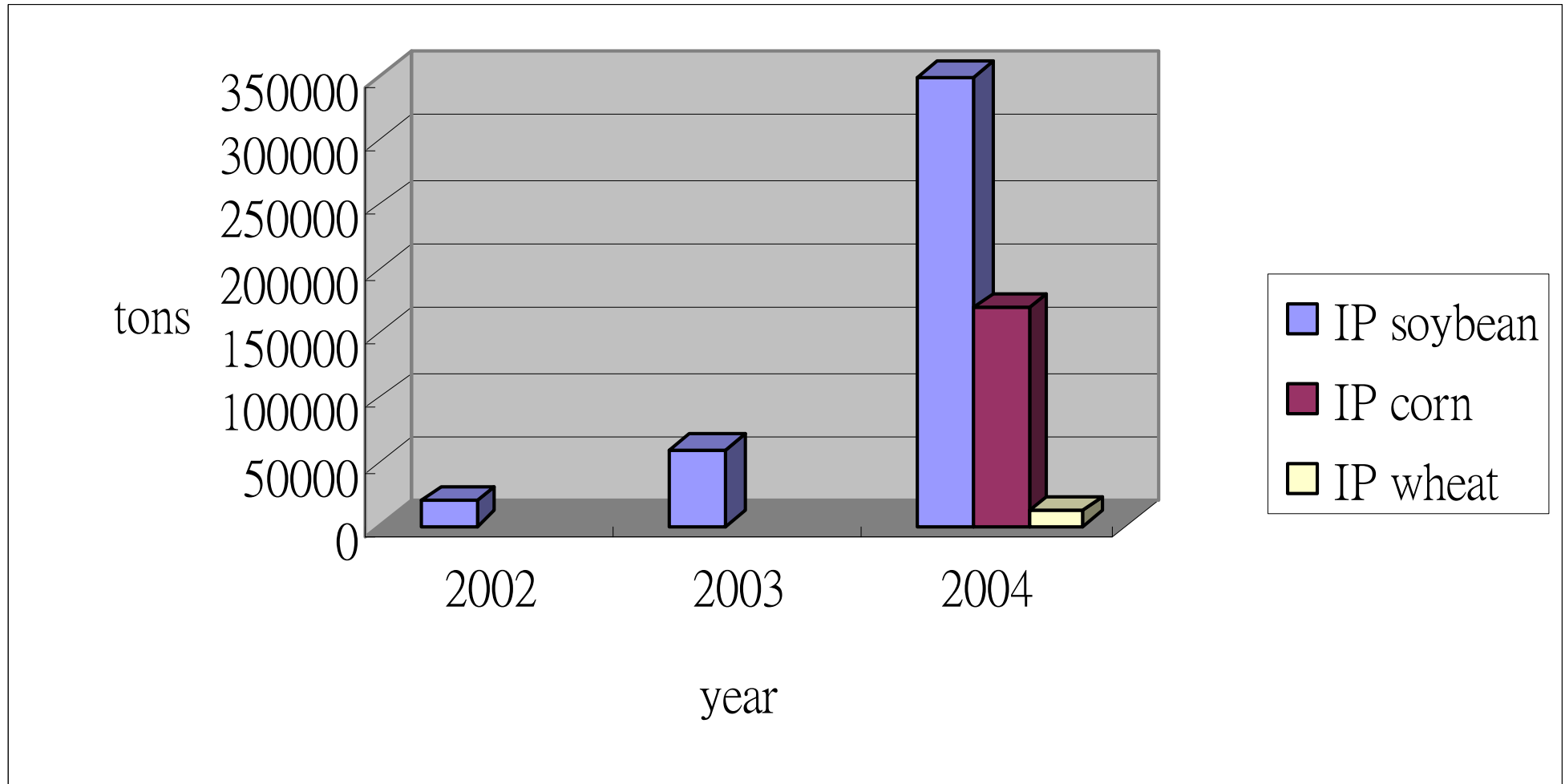
2002 Crop Budget	RR Soybeans	Conventional Soybeans	IP Soybeans
Seed	\$58.00	\$35.00	\$35.00
Fertilizer	\$20.00	\$20.00	\$20.00
Chemical	\$20.00	\$38.00	\$38.00
Total Inputs	\$98.00	\$93.00	\$93.00
Yield (bu./acre)	45	45	45
Price	\$7.00	\$7.00	\$8.00
Gross Return/acre	\$315.00	\$315.00	\$360.00
Net Return/acre	\$217.00	\$222.00	\$267.00
Advantage over Conventional	-\$5.00	\$ -	\$ 45.00

Driving Force of IP Certification in China

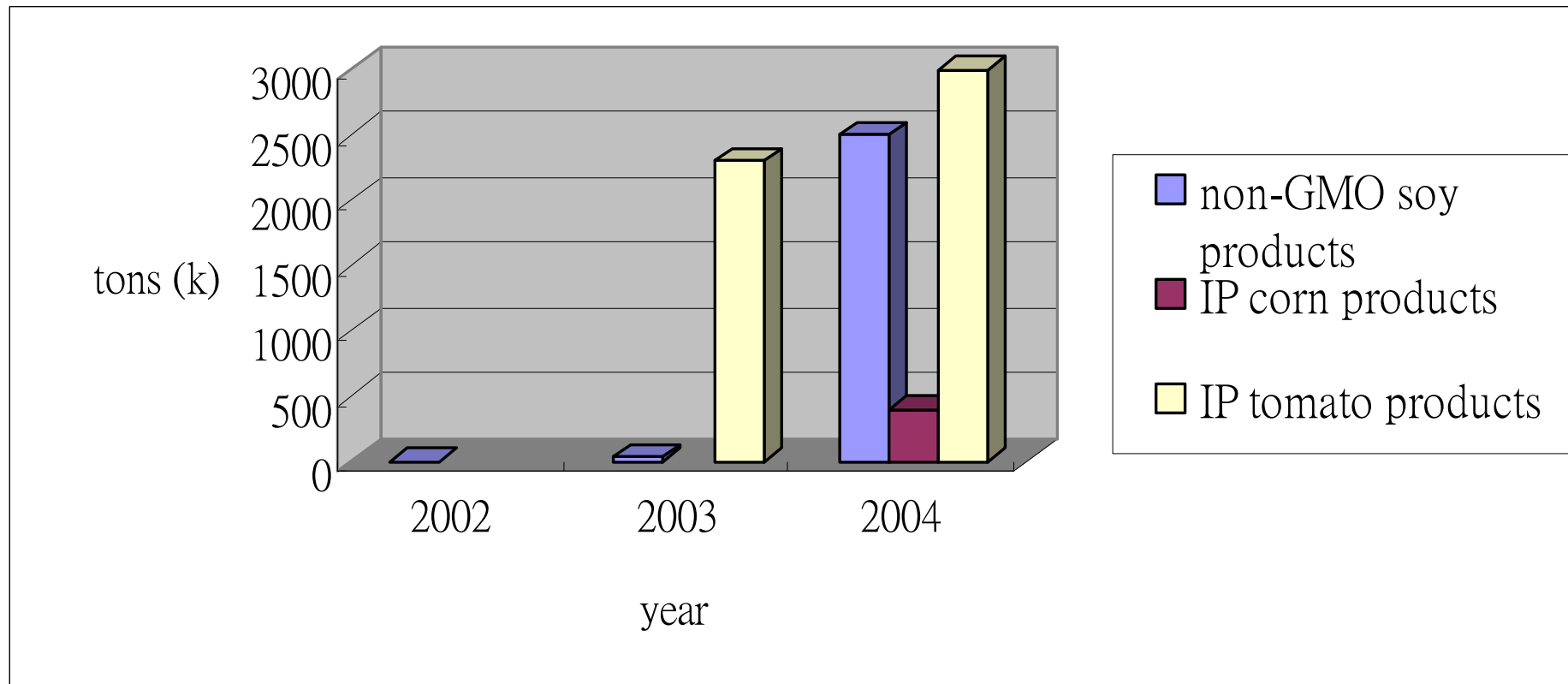
Cost / RMB	Conventional Crop*	IP Crop
IP certification	-	5
GMO testing	-	0.5
Segregation	-	0.2
System management	-	0.3
Total inputs	-	6
Price per ton	3000	3150
Premium	-	142

Conventional & IP Soybean per ton cost (RMB)

Conclusion: good premium price & market demand drive more farms to go for non-GMO IP Certification!



IP Development by products



non-GMO IP Products available in China

Soy products:

- ⇒ **Soybean, soymeal, soyflake, soymilk powder;**
- ⇒ **Soya oil, soy proteins,lecithin, soy sauce;**
- ⇒ **Vit E, Tocopherols, phytosterols, isoflavone;**

Corn products:

- ⇒ **Corn kernel, corn starch, Vit C, Vit B,citric acid, xylitol;**

Tomato products:

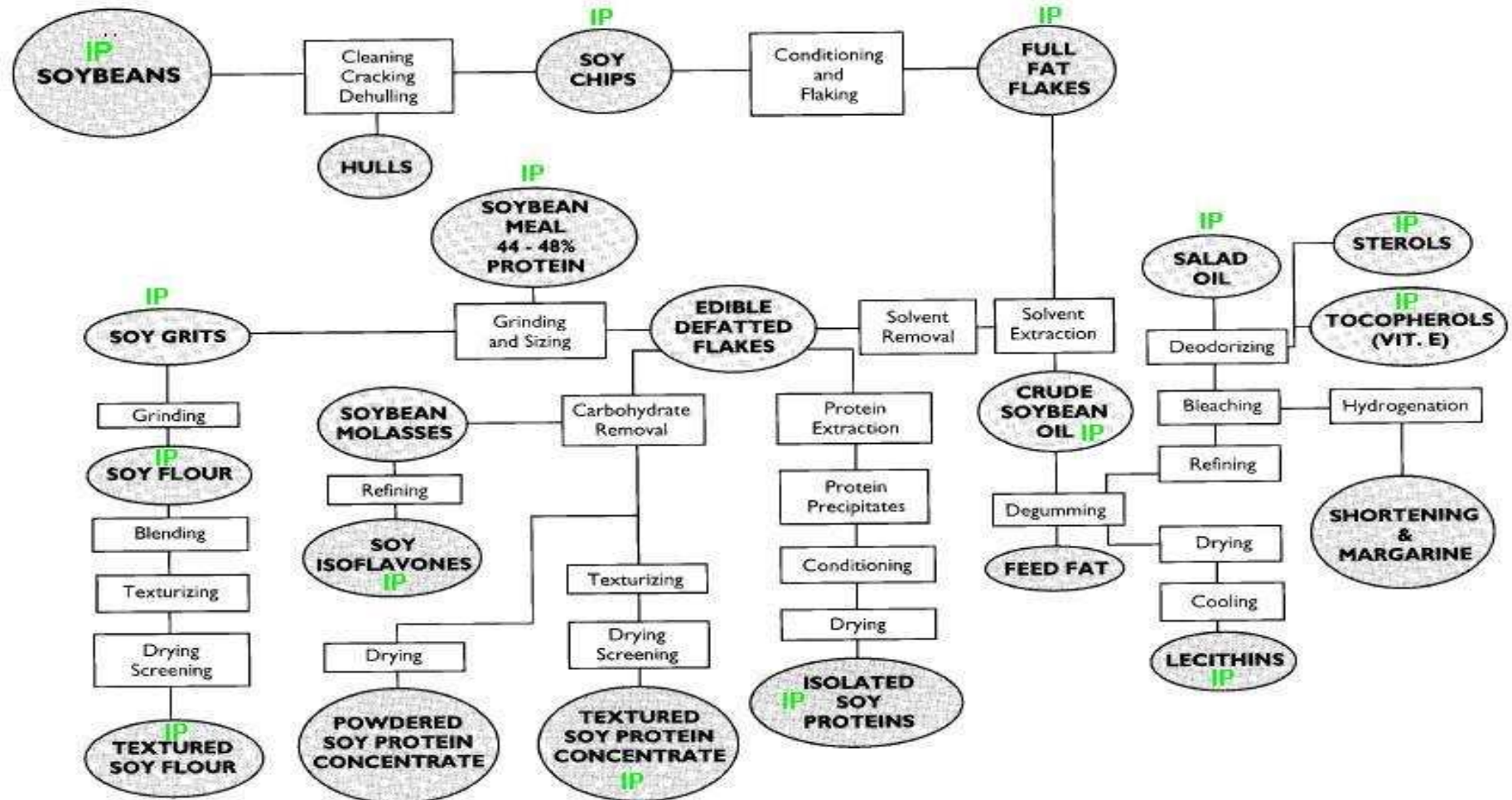
- ⇒ **Tomato ketchup, paste, concentrate;**

Wheat products:

- ⇒ **Wheat flour**

Soya Processing

with solvent extraction



The 1st IP Program in China (2002)

REGULATORY NEWS
FROM PAGE 5.

the production and distribution chains, are handling products that contain GMOs, they will have to provide this information to the next operator in the chain providing for traceability.

■ Operators will have to list the codes for individual GMOs, in accompanying documentation, that have been used to constitute the original raw material for products intended for food, feed, and processing.

■ A proposal from Denmark to require labeling of meat, milk, and egg products from animals raised on GM feed was rejected.

■ Thresholds for adventitious GM presence in seed must still be established. Proposed thresholds include 0.3 percent for rapeseed, 0.5 percent for maize, and 0.7 percent for soybeans.

NON-GMO MARKET NEWS

First non-GMO, IP soybean producer certified in China

Chinese soy producer Jilin Jinong Soybean Hi-Technology Development Co. Ltd. (JJS) recently became the first company in China to receive certification as a supplier of non-genetically modified, identity preserved (IP) soy. GeneScan Analytics GmbH, a Germany-based GMO testing lab, assisted JJS in establishing and implementing a control program designed to exclude genetically modified (GM) soy from JJS's supply chain.

The IP, non-GMO program covers all processes of the supply chain, beginning with testing the genetic identity of the seeds distributed to the farmers and ending with the delivery of the processed and packaged soybeans to the buyers. The program, which is based on a GeneScan standard for non-

China's non-GM corn exports increase 73 percent

China's exports of non-GM corn increased 73 percent in the first 10 months of 2002, reaching about 10 million tons. China is the world's second largest producer of corn behind the U.S. with annual output of 120 million tons. An official at the corn department of the China Cerolls Import and Export Corporation was quoted as saying that China does not produce GM corn and is still researching the impact of GM food on people and animals.

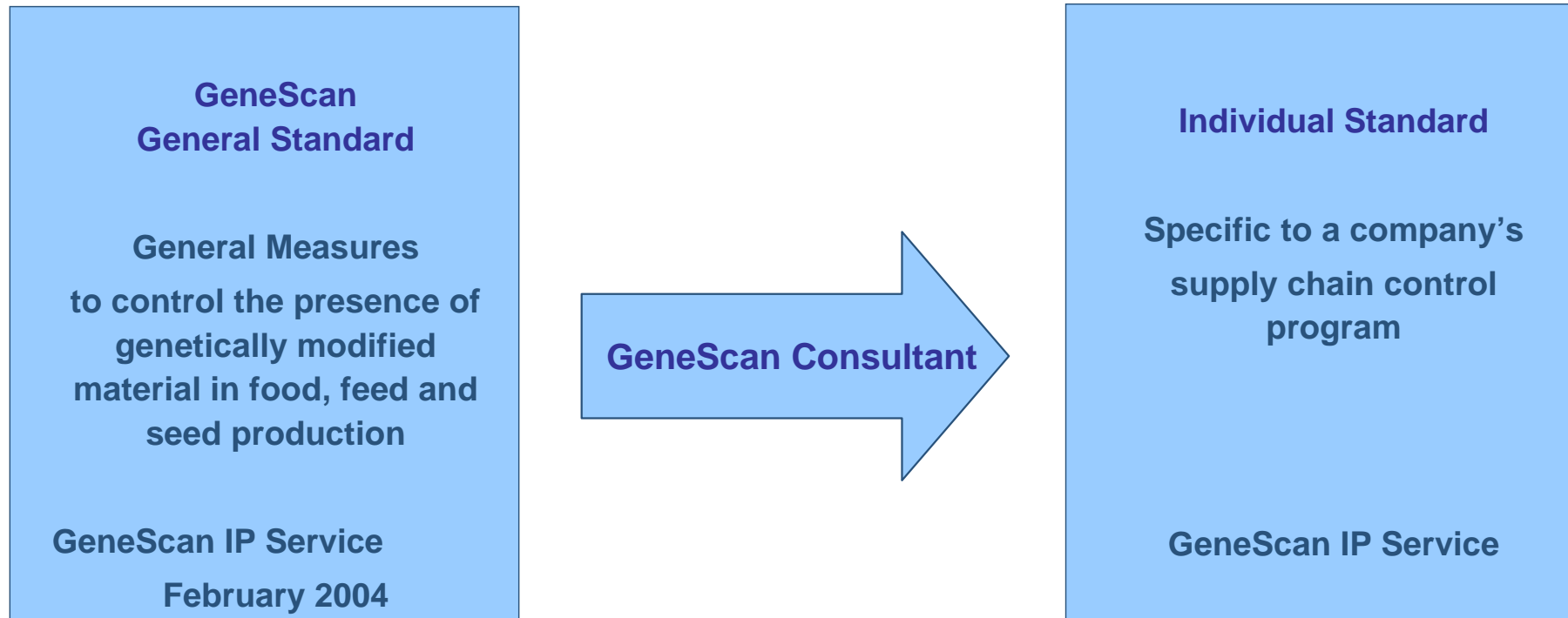
China recently reached an agreement with Brazil to supply non-GM corn to help meet



IP Product Development in China

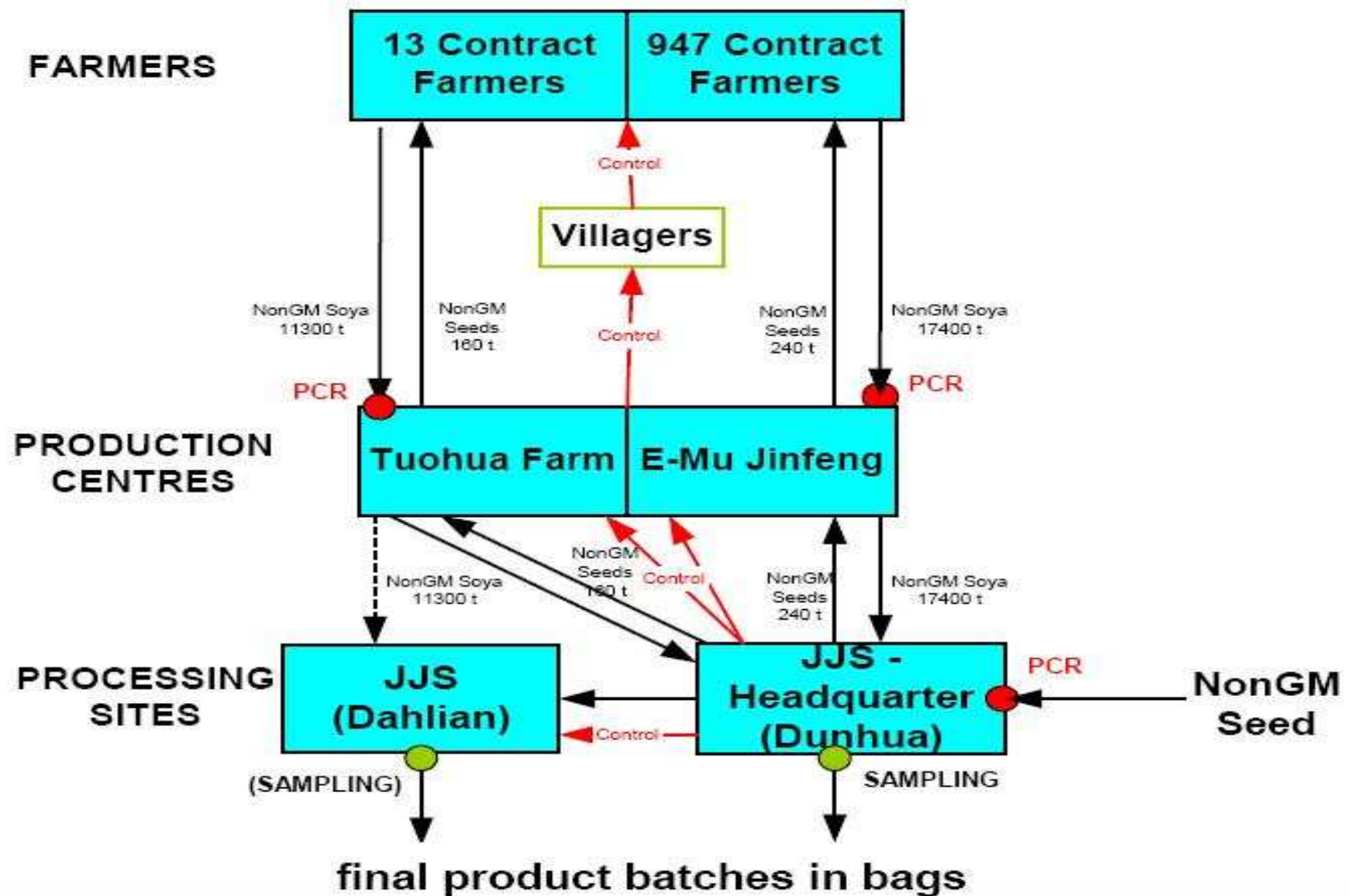
			soy sauces
			soymilk powder
			lecithin
			rice
		xylitol	xylitol
		Vit C	Vit C
		Vit B	Vit B
		citric acid	citric acid
		Isoflavone	Isoflavone
		Vit E	Vit E
		soy proteins	soy proteins
		soy oil	soy oil
		wheat	wheat
	xylitol	corn	corn
	tomato	tomato	tomato
soybean	soybean	soybean	soybean
2002	2003	2004	2005 (not complete)

GeneScan IP Concept for consulting and certification



- Definition of specific measures of program suitable to meet goal
- Continuous adjustment of Individual Standard according to ongoing assessment of risk and outcome data

Example: IP Soybean Supply Chain



GeneScan General Standard

Organisational Measures

- (0) Risk Assessment
- (1) Specification of goal and scope
- (2) Commitment and responsibilities
- (3) Documentation
- (4) Training
- (5) Adverse Event Management
- (6) Control
- (7) Verification of suppliers specifications

Physical Measures

- (8) Segregation
- (9) Traceability
- (10) Sampling
- (11) Analysis

Process of IP Certification

1. Consulting



2. Audit



3. Certification



Thank You!

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