



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health & Indigenous Medical Services

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Genetically Modified Foods

Background

Genetically Modified Foods are the food products that are produced by using Genetically Modified Organisms (GMOs). Genetically Modified Organisms can be defined as organisms (Plants, Animals, or Microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination. The technology was used in this process is called as “modern biotechnology”, “gene technology”, “recombinant DNA technology” or as “genetic engineering”. In this process the selected individual genes have to be transferred from one organism to another between non-related species.

Advantages of Genetically Modified Foods

- Genetically Modified Foods are the products with a lower price, greater benefit (in terms of durability, or nutritional value) or both.
- The GM crops currently on the market are mainly aimed at an increased level of crop protection through the introduction of resistance against plant diseases caused by insects or viruses or through increased tolerance towards herbicides.
- GM crops that inherently produce the toxin which is currently used as a conventional insecticide in agriculture are safe for human consumption and which have been shown to require lower quantities of insecticides in specific situations.

Safety Assessment of Genetically Modified Foods

During the safety assessment of GM foods, Following are the concerns

- Direct health effects (toxicity)
- Potential to provoke allergic reaction (allergenicity)

- Specific components thought to have nutritional or toxic properties
- The stability of the inserted gene
- Nutritional effects associated with genetic modification
- Any unintended effects which could result from the gene insertion

Adverse Effects of GM foods

Allergenicity

Usually, the transfer of genes from commonly allergenic organisms to non-allergic organisms is discouraged unless it can be demonstrated that the protein product of the transferred gene is not allergenic. Generally, during the food developing process by using the traditional breeding method are not tested for allergenicity

Gene transfer

Gene transfer from GM foods to cells of the body or to bacteria in the gastrointestinal tract would cause concern if the transferred genetic material adversely affects human health. This would be particularly relevant if antibiotic resistance genes used as markers when creating GMOs. However, the gene transfer technology is not encouraging among the antibiotic-resistant genes though the gene transfer prevalence is low.

Outcrossing

The Outcrossing is referred to as the migration of genes from GM plants into conventional crops or related species in the wild. And also the mixing of crops derived from conventional seeds with GM crops may have an indirect effect on food

Contents

	Page
1. Leading Article – Genetically Modified Foods	1
2. Summary of selected notifiable diseases reported (30 th – 05 th June 2020)	3
3. Surveillance of vaccine preventable diseases & AFP (30 th – 05 th June 2020)	4

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safety and food security. Therefore, several countries have adopted strategies to reduce mixing, including a clear separation of the fields within which GM crops and conventional crops are grown.

The Environmental risk assessment

The process of the risk assessment includes the evaluation of the characteristics of GMOs and its effects. And also it includes the assessment of the stability in the environment combined with ecological characteristics of the environment as well as unintended effects which could result from the insertion of the new gene.

Issues of concern for the environment

- The capability of the GMO to escape and potentially introduce the engineered genes into wild populations
- The persistence of the gene after the GMO has been harvested; the susceptibility of non-target organisms (e.g. insects which are not pests) to the gene product
- The stability of the gene; the reduction in the spectrum of other plants including loss of biodiversity
- The increased use of chemicals in agriculture

Safety of the GM foods

It was very difficult to give a general statement regarding the safety of GM foods as the different GM organisms include different genes inserted in different ways. This means that individual GM foods and their safety should be assessed on a case-by-case basis. GM foods currently available on the international market have passed safety assessments and are not likely to present risks for human health

Regulations of GM foods

The governments have regulated GM foods in different ways in various countries. In some countries, GM foods are not yet regulated. Countries that have legislation in place focus primarily on assessment of risks for consumer health. Countries that have regulatory provisions for GM foods usually also regulate GMOs as taking into account health and environmental risks, as well as control and trade-related issues (such as potential testing and labeling regimes).

Regulations regarding GM foods in Sri Lanka according to Food Act No. 26 of 1980

- 1) No person shall, import, store, transport, distribute, sell or offer for sale -
 - (a) Any genetically modified organism as food for human consumption;
 - (b) Any food containing or consisting of genetically modified organisms;
 - (c) Any food produced from or containing ingredients produced from genetically modified organisms without the approval of the Chief Food Authority (hereinafter referred to as the "Authority")

2) The label on or attached to a package of genetically modified food or food ingredients used in the preparation of food must include the statement 'genetically modified' in conjunction with the name of that food or ingredients used in the preparation of food, or processing aid irrespective of the size of the label or package.

3) Where genetically modified food is displayed for retail sale other than in a package, any information that would have been required.

4) Food which contains or has genetically modified organisms less than nought decimal five per centum (0.5%), are exempted from the provisions of these regulations

Provided that the presence of such genetically modified organisms are considered technically unavoidable and the organisms have been subjected to a scientific risk assessment and considered to be safe

5) Where new information or a reassessment of the existing information reveals that the use of food or genetically modified food approved by these regulations endangers human health, the Authority shall immediately suspend the sale of such food.

The Authority shall require the person who applied for approval to import, store, transport, distribute or sell such food, as the case may be, to withdraw the product from the market and such person shall immediately comply with the requirement

References

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 30th-05th June 2020 (23rd Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		WRCD		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**	
Colombo	81	2995	0	13	0	5	0	4	0	14	7	117	0	0	0	0	2	0	0	4	165	1	20	0	1	58	100
Gampaha	31	1752	0	5	0	0	0	4	0	19	5	80	0	1	1	3	0	0	3	205	0	9	0	17	46	95	
Kalutara	53	1131	0	6	0	4	0	3	0	4	35	335	0	11	0	2	0	0	8	222	1	16	0	0	51	100	
Kandy	65	1409	0	8	0	1	0	7	0	9	7	74	1	54	0	3	0	0	1	122	0	17	2	38	62	100	
Matale	5	467	0	5	0	2	0	1	1	6	3	45	0	3	0	3	0	1	0	44	1	2	2	158	64	100	
NuwaraEliya	2	126	2	14	0	1	0	0	0	0	4	30	3	57	1	3	0	0	2	62	2	9	0	0	22	100	
Galle	10	1083	0	13	0	8	0	2	0	12	4	224	0	24	0	2	0	0	0	209	0	19	0	2	55	70	
Hambantota	2	277	0	4	0	1	0	2	0	37	6	99	1	17	0	2	0	0	28	140	0	14	18	278	64	100	
Matara	0	352	0	9	0	3	0	0	0	0	0	100	0	4	0	6	0	0	0	68	0	5	0	117	46	45	
Jaffna	23	1878	1	46	0	0	0	18	0	19	2	14	6	455	0	0	0	1	0	81	0	6	0	0	33	93	
Kilinochchi	3	108	1	28	0	2	1	8	1	6	1	10	0	23	0	1	0	0	0	10	0	8	0	5	65	100	
Mannar	1	120	0	0	0	0	0	1	0	0	1	5	0	1	0	0	0	0	0	2	0	3	0	0	39	100	
Vavuniya	0	235	1	7	0	0	0	5	0	2	1	35	0	1	0	0	0	0	0	26	0	4	0	1	64	100	
Mullaitivu	0	65	0	5	0	0	0	5	0	1	0	13	0	6	0	1	0	1	0	4	0	4	0	5	44	81	
Batticaloa	13	2143	1	46	0	2	0	0	30	42	1	19	0	0	0	1	0	1	0	72	1	15	0	1	53	100	
Ampara	0	288	0	10	0	2	0	0	0	0	3	68	0	0	0	1	0	0	0	90	1	12	0	4	66	100	
Trincomalee	3	2224	4	8	0	0	0	0	0	2	0	21	0	2	0	0	0	0	0	75	2	7	0	0	46	90	
Kurunegala	6	681	0	9	0	4	0	2	0	29	13	85	0	11	0	2	0	1	4	259	0	11	4	188	46	97	
Puttalam	6	378	0	7	0	2	0	3	0	1	1	28	2	12	0	0	0	1	2	67	5	26	0	2	57	100	
Anuradhapur	4	335	1	15	0	1	0	3	0	22	3	142	0	13	0	3	0	1	2	145	0	23	2	96	43	96	
Polonnaruwa	2	192	1	5	0	0	0	0	2	5	12	94	0	0	1	13	0	1	3	101	0	10	4	119	66	93	
Badulla	1	379	1	10	0	3	0	3	0	3	4	163	4	44	0	7	0	0	1	118	0	23	0	7	58	100	
Monaragala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Ratnapura	81	922	2	46	1	14	0	3	3	19	69	766	2	18	0	13	0	0	5	140	4	52	1	44	47	100	
Kegalle	24	470	2	11	0	4	0	2	0	14	12	188	1	23	0	6	0	0	1	125	0	20	0	11	59	100	
Kalmune	2	840	0	32	0	2	0	0	0	1	1	11	0	2	1	1	0	0	8	258	2	27	0	0	70	100	
SRILANKA	418	20850	17	362	1	61	1	76	37	267	19	2766	20	782	4	75	0	8	72	2810	20	362	33	1094	53	91	

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 05th June, 2020 Total number of reporting units 356 Number of reporting units data provided for the current week; 299 C**=Completeness

Table 2: Vaccine-Preventable Diseases & AFP

30th–05th June 2020 (23rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2020	Number of cases during same week in 2019	Total number of cases to date in 2020	Total number of cases to date in 2019	Difference between the number of cases to date in 2020 & 2019
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	01	00	00	01	00	00	00	02	03	15	38	- 60.5 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	01	00	00	00	01	00	00	00	02	04	02	81	170	- 52.3 %
Measles	00	00	00	00	00	00	00	00	00	00	10	28	153	- 81.6 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	03	08	- 50 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	01	00	00	01	00	00	01	03	00	13	09	30.7 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	05	31	- 83.8 %
Tuberculosis	00	25	18	03	07	00	00	02	05	60	144	2006	3756	- 46.5 %

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
RDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,
Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis
CRS** =Congenital Rubella Syndrome

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them free of water collection.

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@sltnet.lk. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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