

PRESENTATION 2: OVERVIEW OF THE
STRENGTHS AND LIMITATIONS OF DETECTION
METHODS AND HOW THE AVAILABLE TOOLS AND
TECHNIQUES CAN BE USED TO FULFIL THE
NEEDS OF POLICY MAKERS

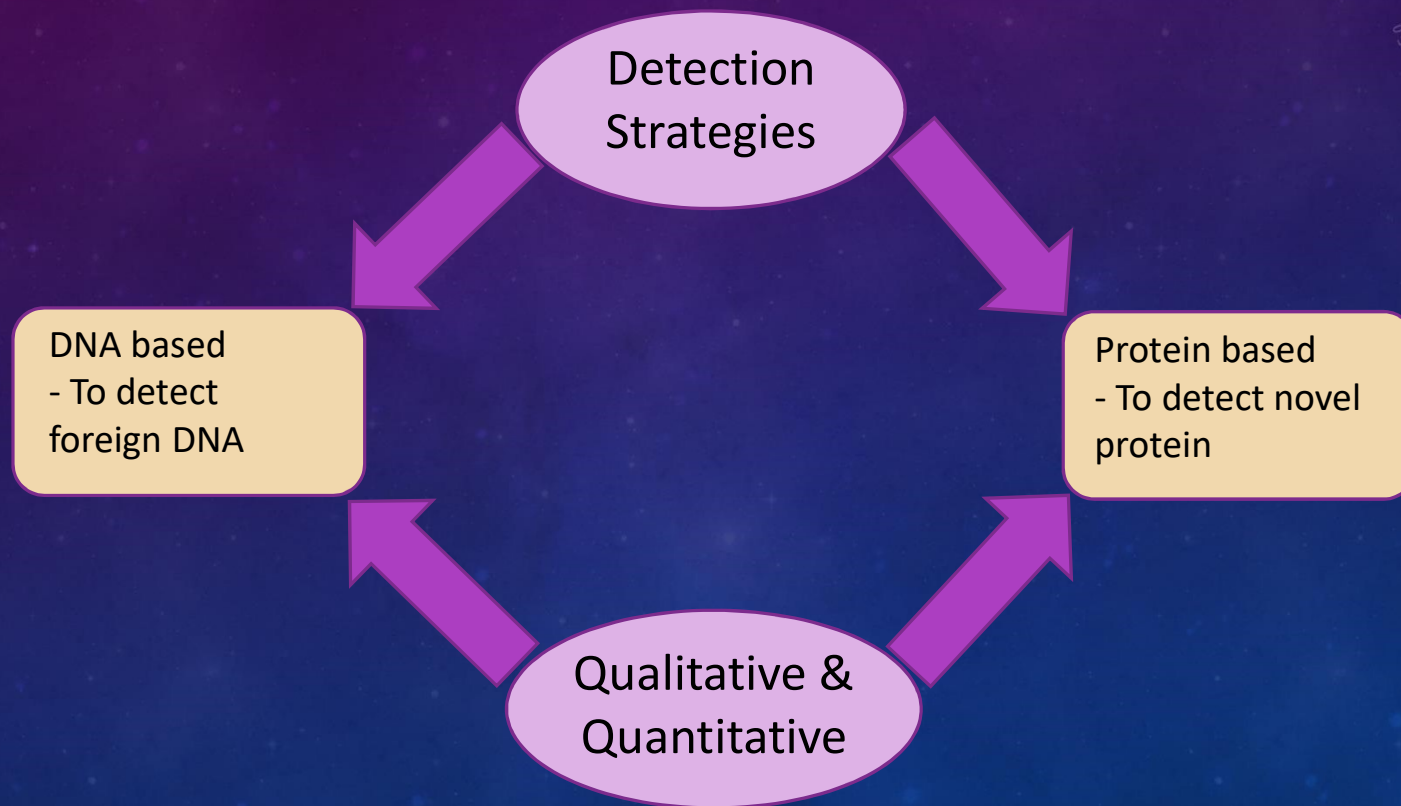
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OVERVIEW OF DETECTION METHODS

- Basis of detection is to exploit differences between unmodified variety and transgenic plant



DETECTION METHODS AVAILABLE

1. PROTEIN BASED METHOD

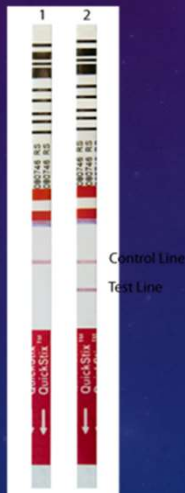


Advantages:

- 1) Low cost per sample
- 2) Handles large number of samples
- 3) Can be automated
- 4) Commercial Detection kits available

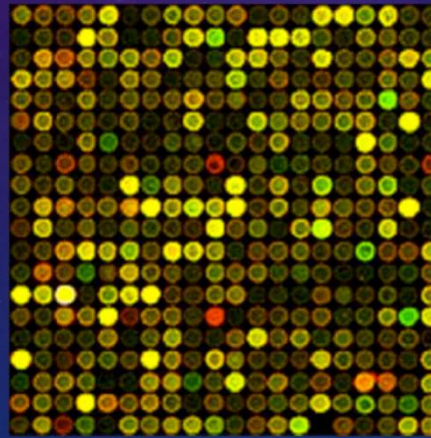
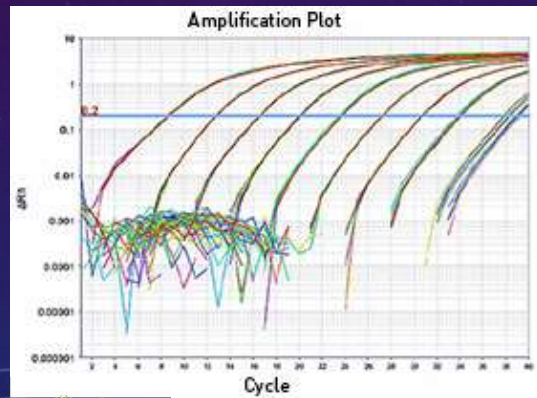
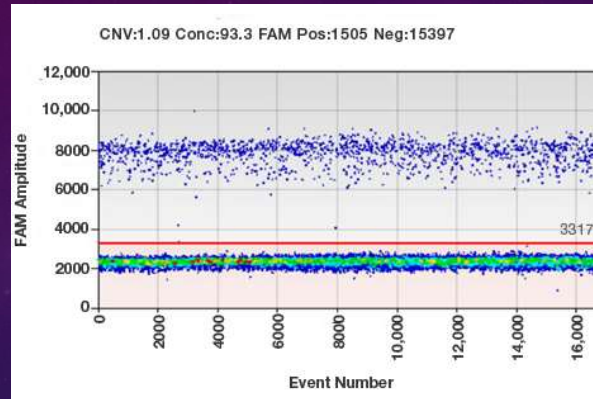
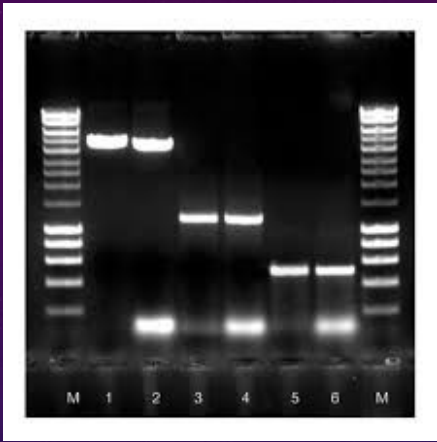
Disadvantages:

- 1) Not suitable for processed foods: Proteins are denatured
- 2) Selective expression of proteins



Sample 1: Non-GMO Soybean Sample 2: GMO Soybean

2. DNA BASED METHOD



Advantages:

- 1) Highly sensitive
- 2) Versatile – work with most product types
- 3) Can be multiplexed

Disadvantages:

- 1) Requires highly skilled personnel & laboratory analysis
- 2) More expensive than Protein based methods
- 3) Not suitable for unknown GM

Shortcomings of current detection methods

- 1) Presence of unexpected or unknown GMOs are unlikely to be detected – matrix approach
- 2) Not cost effective
- 3) Time consuming to develop and validate new methods
- 4) Need CRMs
- 5) Methods need to be updated – increasing number of GMOs
- 6) Increasing number of Stacked traits



NEEDS OF POLICY MAKERS – A MALAYSIAN PERSPECTIVE

- 1) Methods & techniques used are sensitive, specific, accurate & reliable
- 2) To identify approved and unapproved GMOs
- 3) Develop & validate new detection methods
- 4) Quantify GM events in Food (Food Act 1983)



1) METHODS & TECHNIQUES USED ARE SENSITIVE, SPECIFIC, ACCURATE & RELIABLE

- a) Use DNA based methods
- b) New Methods are validated and verified
- c) Adopt EU-RL GMFF validated methods
- d) Methods and techniques are accredited by MS ISO 17025
- e) PT schemes at least 1 per year

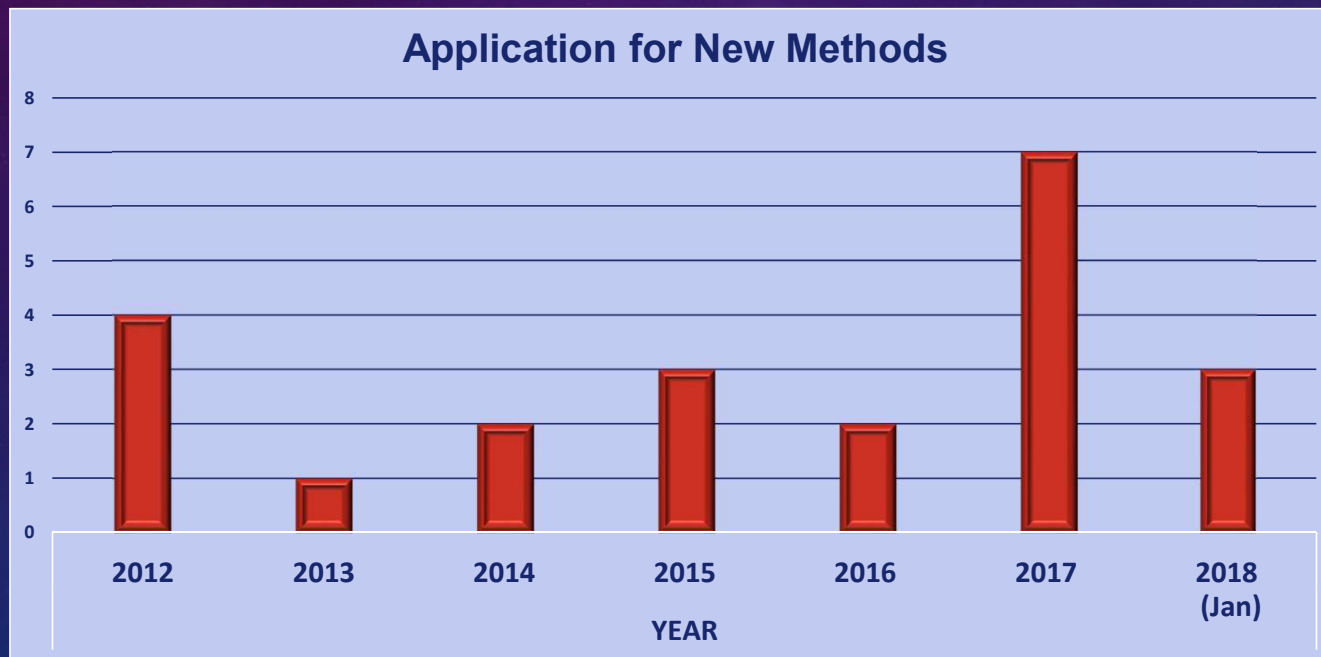


2) TO IDENTIFY APPROVED AND UNAPPROVED GMOS

- a) All release and import of LMOs are required approval from the Ministry of Natural Resources and Environment (MNRE).
- b) Department of Chemistry (DOC) under the Ministry of Science, Technology and Innovation Malaysia (MOSTI) carry out GMO analysis to identify approved and unapproved GMOs based on requests from MNRE
- c) Methods used are validated, verified and accredited prior to sample analysis
- d) Use of Real Time PCR with for sensitive and accurate results

3) DEVELOP & VALIDATE NEW DETECTION METHODS

- a) Request from client to develop new methods on the rise
- b) Rise in New methods developed by developers



4) QUANTIFY GM EVENTS (FOOD ACT 1983)

- a) Food Regulations 1985 – Guidelines on labelling of Foods and Food Ingredients Obtained Through Modern Biotechnology
- b) Labelling requirements for foods which contains, consists of or produced from GMO in a proportion of **more than** 3%
- c) Developing methods using Droplet Digital PCR for quantification

Word cloud of "Thank You" in various languages:

- danke
- 謝謝
- ngiyabonga
- tesekkür ederim
- спасибо
- Баярлалаа
- рахмат
- merci
- kia ora
- barka
- welalin
- tack
- spas
- vinaka
- спасиби
- blagodaram
- dank je
- misaotra
- matondo
- paldies
- grazzi
- malalo
- tapadh leat
- hвала
- asante
- manana
- obrigada
- tenki
- chokrane
- murakoze
- bedankt
- nanni
- nandri
- kiitos
- dankie
- dhanyavad
- hvala
- mauruuru
- koszönöm
- akun
- dankon
- aciū
- gracias
- djiere dieuf
- tau
- mochchakkeram
- mamnun
- go raibh maith agat
- chnorakaloutioun
- gratias ago
- grācijas
- sulpáy
- go raibh maith agat
- dziękuje
- sobodi
- dėkuji
- məsi
- diidi madloba
- sagolun
- najis tuke
- kam sah hamnida
- rahmat
- sukriya
- ありがとう
- tanemirt
- rahmet
- grazie
- arigatō
- takk
- dakujem
- trugarez
- terima kasih
- merci
- dhanyavadagalu
- shukriya
- merce
- merci
- ευχαριστώ
- diolch
- xiexie
- 감사합니다
- তোমাকে ধন্যবাদ