Thai/Australian Dialogue

GM Sugarcane

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BSES Limited

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Sugarcane for the future

BSES QCANES
Varieties for your future

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Growing your bottom line

Overview

- Global developments
- Technical issues
  - Australian perspective
- Other issues
- Questions/discussion

Global development

- GM crop adoption continues to climb

Country	Area (million hectares)	GM Crop
USA	64	Soybean, corn, cotton, canola, squash, papaya, alfalfa (lucerne), sugar beet
Brazil	21.4	Soybean, corn, cotton
Argentina	21.3	Soybean, corn, cotton
India	8.4	Cotton
Canada	8.2	Canola, corn, soybean, sugar beet
China	3.7	Cotton, tomato, poplar, papaya, sweet pepper
Paraguay	2.2	Soybean
South Africa	2.1	Corn, soybean, cotton
Uruguay	0.8	Soybean, corn
Bolivia	0.8	Soybean
Philippines	0.5	Corn
Australia	0.2	Cotton, canola
TOTAL	**133.6**	

Source: ISAAA, 2010

Summary of GM internationally, 2009

- In 2009 134 m ha of GM crops were planted in 25 countries
- Grown by 14 m farmers
  - 13 m in developing countries
- 77% of (90 m ha) of soybean were GM
- 49% of cotton is GM
- 26% (of 158 m ha) of corn is GM
- 21% (of 31 m ha) of canola is GM

Summary of GM internationally, 2009

- Herbicide tolerance is the dominant trait
  - Rapid expansion of varieties with more than one trait ('stacked')
- Brazil increased GM plantings by 5.1 m ha in 2009, total now 21.4 m ha
- GM varieties of rice and wheat are in the pipeline

GM in sugarcane

- At a previous meeting of this group I discussed the following broader aspects of Biotechnology:
  - Tissue culture
  - Guided germplasm improvement
    - Markers
    - Cytogenetics
  - GM sugarcane

GM in sugarcane

- In today's discussion we are focusing on GM sugarcane and the associated issues
  - Progress has been made in aspects of tissue culture and marker technology
  - I am happy to discuss these non GM aspects of biotechnology if you wish

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GM in sugarcane *cont…*

A major challenge is apparent for sugarcane industries:

- Surge in sugarcane biotech and GM R&D
- Big $$$ being spent in Brazil
  - Major interest by multinational agribusiness (Monsanto, Syngenta, Dow, DuPont)
- How will this impact on Australia and Thailand?
- What can, and should we do?

GM in sugarcane *cont…*

BSES commissioned an expert panel to investigate and concluded:

- GM sugarcane is coming
  - It will have impacts on costs of production and productivity
  - Brazil in the major market (Australia is small)
  - Most traits owned by agribusiness
- Australia's competitiveness will decline without GM

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BSES options

- Stay as we are (ignore the GM is coming issue)
- Import farm ready technology when available
- Form a Strategic Alliance with multinational to access and commercialise the technology

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BSES decision

- We are forming a Strategic Alliance with DuPont to access and commercialise GM traits in sugarcane
- The Alliance is still being negotiated, it is not expected that GM sugarcane varieties would be available until the latter half of this decade

Technical issues – Australian perspective

- Significant Technical issues need to be overcome
  - Sugarcane transformation creates new and different issues than experienced in other crops
  - Do the traits already inserted into other crops function in sugarcane?
  - Does the complexity of the sugarcane genome pose any specific challenges?
  - Once insertion and function established will the benefits exceed the costs?

Other issues

- In addition to the Technical Issues, a range of other critical factors will also need to be addressed:
  - Market access
    - Customer acceptance for sugar derived for GM sugarcane will need to be achieved
  - A royalty collection method will need to be implemented for trait owners (PBR?)
  - A possible segregation issue as well as how to collect any license fee from GM varieties vs. conventional ones
  - Regulatory approval from Gene, Food and Chemical regulators will be required
    - Will be expensive
    - Will need to address the regulators in the importing country as well

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Questions
Discussion