



# MANAGING PUBLIC DEBATE ON GMOs IN NIGERIA

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AT

SHERATON HOTEL AND TOWERS, ABUJA

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# OUTLINE

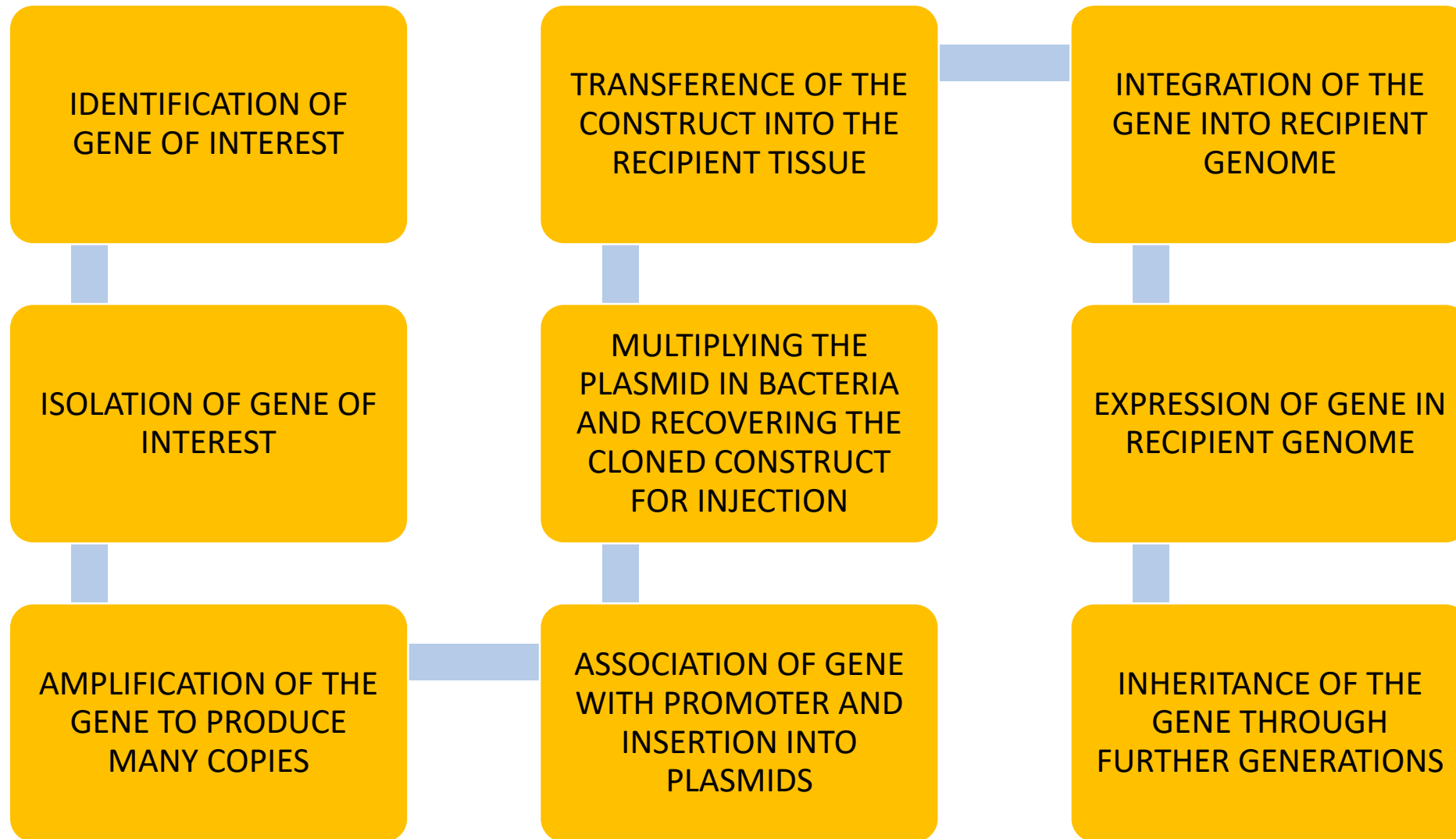
- What are GMOs
- Promise/Benefits
- Debates/Concerns Around GMOs
- Nigeria's debate
- Managing Public Debates/Expectations of GMOs
- Conclusion
-

# What are Genetically Modified Organisms (GMOs)?

Genetically Modified Organisms (**GMOs**) are Plants/ Animals / Microorganisms or their products derived from modern biotechnology processes. They are organisms that have added genes or deleted genes for value addition.

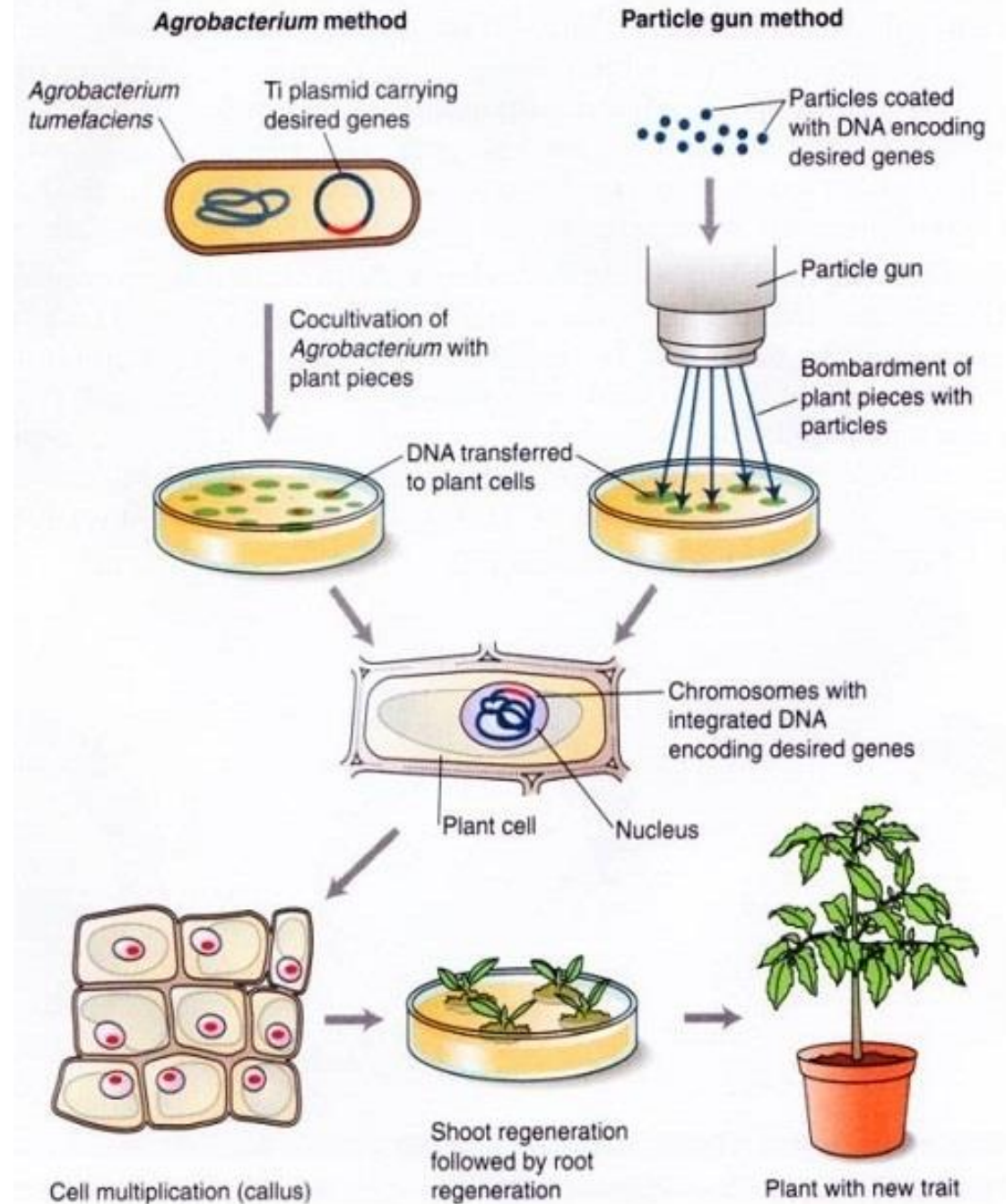


# THE BASIC PROCESS OF GENETIC MODIFICATION



# GENETIC MODIFICATION OF PLANTS, MIRKOV 2003

- The process of genetic modification is the same for all organisms;
- Summarily, it involves splicing/cutting, genes from one organism, such as a bacterium and inserting them into a recipient organism, such as a plant, so that the **recipient** is now able to express new traits provided by the **donor** genes.
- The genetic material known as transgene is inserted into the nucleus of a plant cell where it integrates into the plant DNA. If integration of the DNA is successful, the new plant cell or transgenic cell, divides and grows into a genetically modified plant, also described as **transgenic plant**.



# SOME GENETICALLY MODIFIED CROPS AND THE EVENTS

Crop	Relevant genetic element(s)	Characteristic			Event
		Herbicide tolerance	Insect resistance	Drought tolerance	
<b>Corn</b>	Cry1Ab, pat	√	√		Bt11
	modified epsps	√			GA21
	Modified Cry3A		√		MIR604
	Cry1Ab		√		MON810
	Cry3Bb1		√		MON863
	CP4 epsps	√			NK603
	pat	√			T25
	Cry1f, pat	√	√		TC1507
	vip3A		√		MIR162
	Cry34/35Ab1, pat	√	√		DAS59122-7
	Cry3Bb1, CP4 epsps	√	√		MON88017
	Cry1A.105, Cry2Ab2		√		MON89034
CspB			√	MON87460	
<b>Soybean</b>	CP4 epsps	√			GTS(MON) 40-3-2
	pat	√			A2704-12
	CP4 epsps	√			MON89788

# PUBLIC DEBATE

DEBATE IS **CONTENTION** IN ARGUMENT; STRIFE; QUARELLING;  
**CONTROVERSY**; ESPECIALLY A **FORMAL DISCUSSION OF SUBJECTS**

- BEFORE A PUBLIC ASSEMBLY OR LEGISLATURE IN PERLIAMENT OR IN ANY DELIBERATIVE ASSEMBLY

DEBATE IS A METHOD OF FORMALLY PRESENTING AN ARGUMENT

- IN A DISCIPLINED MANNER

# DEBATE

## EXPECTATIONS

CONTENTION

CONTROVERSY

FORMAL DISCUSSION



# DEBATE ON GENETICALLY MODIFIED ORGANISMS!



CONTENTION/CONTROVERSY?  
INTIMIDATION/FEAR



FORMAL DISCUSSION?  
KNOWLEDGE/SCIENCE/FACTS  
& FIGURE



# The PROs: WHAT THEY SAY ABOUT GMOs

- Based on:
  - Knowledge
  - Science
  - Facts and Figures
  - Reality

## Promise/Benefits: Farmers

## Biotechnology offers:

- Pest and Insect resistant crops;
- Higher yields, leading to more bountiful harvest;
- Drought tolerant crops;
- Climate change stable varieties of food crops;
- Cleaner environment due to the development of bacteria that biodegrade recalcitrant pollutants; and
- More arable land.



# Promise/Benefits: Farmers Cont'd

- Using less land;
- Less water;
- Less energy;
- Fewer chemicals;
- Less land tillage;
- Less waste;
- More stable yields; and
- Better means of livelihood



## Promise/Benefits: The Consumer



- Food availability even in the face of adverse weather/economic conditions
- Lower costs of production helping to control the net costs of foods
- Increased food supply for all
- Longer shelf life of vegetables e.g. tomatoes
- Nutritionally enhanced food products
- All season food availability

# Promise/Benefits: The Nation

- Reduced Poverty;
- Enhanced food security;
- Strengthened rural economies;
- Increase in International trade competitiveness;
- Increased GDP;
- Conservation of foreign exchange;
- Industrialization;
- Job/wealth creation; and
- Environmental sustainability.

# SOME OF THE GM FOODS ALREADY COMMERCIALIZED

## GMO Foods

### Tomato



Tomatoes have been genetically modified, but they are not being grown commercially at this time

### Rice



GMO rice has been approved but is not yet being used commercially

### Sweet Corn



More than 70 percent of corn grown in the United States has been genetically engineered

### Summer Squash



Farmers don't like GMO squash but some experts say GM squash have blended with wild squash

### Canola Oil



87% of canola grown commercially, and 80% of wild canola is GMO

### Yeast



GMO yeast for wine has been approved

### Alfalfa



GMO alfalfa is contaminating non GMO alfalfa crops at a rapid rate

### Salmon



GMO salmon has not been approved by the FDA, but it will be very soon

### Wheat



Unapproved GMO has contaminated wheat fields, and we don't yet know the extent of it

### Sugar Beets



90% of Sugar Beets (used to make 50% of our sugar) are GMO

### Soy



More than 93% of soybeans the United States produces are genetically modified

### Peas



Peas have been genetically modified but are not approved or available

### Hawaiian Papaya



Most Hawaiian papaya is GMO, even many organic crops are contaminated

### Cotton



At least half of cotton grown in the world is GMO

organic lifestyle  
MAGAZINE



# NEW DISCOVERIES AND THE SOCIETY

- Many of the technologies developed by scientists worldwide are now part of our every day living.
- The purpose of scientific discoveries and innovations is to:
  - Increase human life span;
  - Enhance work-play balance;
  - Improve the quality of life;
- Ironically, before they were eventually accepted, they had to undergo different degrees of **scepticism, uncertainty, resistance and fear** which may persist even after the adoption.

# CONCERNS ABOUT MODERN BIOTECHNOLOGY AND GMOS



- ARE THEY SAFE-HEALTHWISE?
- ENVIRONMENTALLY SUSTAINABLE?
- ARE THE SEEDS PATENTATABLE?
- WHO ARE THE BENEFICIARIES?
- SHOULD THEY BE LABELLED?

# THE NAYS: WHAT THEY SAY ABOUT GMOs

- Based on:
  - Perception;
  - Fear;
  - Hear-say;
  - Research; and sometimes distorted interpretation of data

**SAY NO TO  
GENETICALLY  
ENGINEERED  
FOODS!**



**CHOOSE ORGANIC**

peaceproject.com 888-822-7075 (MS#1174)

DO YOU KNOW WHAT  
THIS STUFF CAN DO  
TO YOU?

YES, HELP KEEP  
ME ALIVE.





# SOMETIMES RESEARCH FINDINGS ARE MISINTERPRETATED

## A GMO IS:

the direct human manipulation of an organism's DNA in a laboratory environment.

# GMO?

Genetically Modified Organism

## A GMO IS NOT:

Plants and animals that are traditionally bred to achieve specific characteristics such as breeding dogs or cross-pollination of plants



## SCIENCE OF GMOS

Genetic modification may include the ADDITION OF DNA from species that would NOT BREED in nature.

Genetic modification may also involve REMOVING SPECIFIC STRANDS OF DNA.

Cross-species—or transgenic—genetic manipulation has gone so far as to **COMBINE FISH DNA WITH STRAWBERRIES** and tomatoes.



GMO foods have only existed in groceries since the late 1990's.

GMO life can be patented

GMO varieties of corn and potatoes are engineered to **PRODUCE THEIR OWN PESTICIDES**.

## STUDIES OF GMOS

### NO LONG-TERM TESTING.

It took decades for the dangers of Trans-Fats (another artificial food) to become understood.

Mice fed GM pesticide-producing corn over four generations showed **ABNORMAL** structural and chemical changes to various organs and significantly reduced fertility.



Pesticide-producing GMO crops have led to **RESISTANCE IN INSECTS**.

herbicide-resistant crops can cross-pollinate to create **HERBICIDE-RESISTANT WEEDS**.



TRANSGENIC DNA HAS BEEN FOUND IN **80% OF WILD CANOLA** IN NORTH DAKOTA

SOURCES: <http://peeltheorange.com/presroom/gmofactsheet.php>

## PREVALENCE OF GMOS

You probably eat GMOs **EVERY DAY**.



# 30,000

different GMOs exist on grocery store shelves (largely because of how many processed foods contain soy.)

### PERCENT OF GMOS IN TOTAL CROP PRODUCTION 2011 (USA)



## PUBLIC OPINION OF GMOS

Polls consistently show that a significant majority of North Americans would **LIKE TO BE ABLE TO TELL** if the food they're purchasing contains GMOs.

### OUT OF A CBS NEWS POLL:



**87%** want GMOs labelled



**53%** would not buy genetically modified food

### NATIONAL OPINIONS OF GMOS:

The USA is the **largest** producer of GMO crops and **does not mandate** labels for GMO food.



In 30 other countries there are bans or restrictions on the production of GMOs, because they are **not considered proven safe**.



DESIGN BY: MCKENZIE LONG AT CARDINAL INNOVATIVE

# ARE GMOs SAFE?





# HERBICIDE TOLERANCE/GLYPHOSATE

## PRO

Donna Farmer, Ph.D. (Toxicologist) says glyphosate is safe on environment and for humans and animals

### Benefits:

- Less soil erosion and fuel consumption: herbicide tolerant soybeans are promoting sustainable cultivation methods
- Glyphosate removes 90% of weeds, an important tool to produce clean seed beds and protect the top soil.
- Reduces green house gases, e.g. Carbon dioxide
- Glyphosate containing herbicides are not only used in fields with GM crops.
- They also allow conventional farmers to sow directly into stubble fields without ploughing.
- Glyphosate has replaced mechanical weed control in many crops and has had an important impact on agricultural practices and crop yields in Europe over the past few decades.

Source: European Glyphosate Task Force – gmo-compass.org

## NAY

- The most popular weed killer in the world may cause:
  - Gastro-intestinal diseases
  - Immunological disorders/Endocrine disruptor
  - Bt toxins produce some allergens, which damage micro-villi
  - 93% of pregnant women have Bt toxin in their blood; possibly gotten from milk and meat fed on Bt
  - Genes are destroyed during digestion: Test of Round-up Ready soy beans- 7 human volunteers had lower intestine removed. Fed them –

Source: Jeffrey Smith Lecture at Hippocrates Health Institute



# ABOUT LABELLING OF GMOs!



# TODAY'S DEBATE

- **TOPIC: why Nigeria must never accept GMOs by an international environmentalist and agriculturist, Dr. Vandana Shiva**

# REASONS WHY NIGERIA MUST NEVER ACCEPT GMOs

## **NAY**

- Introduction of GMOs into Nigeria, is another means Monsanto and other food corporations from the West want to use to make huge profits out of Africa and enslave farmers at the expense of their well-being;
- GMOs are not the best Science and Technology for food production and survival of Africans, rather the approach is deadly to the soil and human existence;

## **PRO: MAJORITY RESPONSE**

# REASONS WHY NIGERIA MUST NEVER ACCEPT GMOs

## **NAY**

- Many farmers are now indebted to Monsanto, because they owe to get seeds and this has trapped farmers in dependency and debt, and some farmers, out of frustration of huge debts have committed suicide;
- The pressure on Africa to adopt uniform seed laws such as those promoted under African Regional Intellectual Property Organizations (ARIPO) is aimed at seed colonization of Africa;
- Nigeria's Biosafety bill signed into law is weak;
- Recently, Burkina Faso stopped planting BT Cotton

## **PRO: MAJORITY RESPONSE**

# REASONS WHY NIGERIA MUST NEVER ACCEPT GMOs

## NAY

- GMOs have destroyed our soils and trapped our farmers in dependency and debt;
- The adoption of genetically engineered seeds and organisms, and chemical fertilizers by African nations has been described as suicidal as they do not deliver on any of their promises but rather have yielded a harvest of pains, deprivation and deaths
- Bassey also urged the government to be careful with certain technologies that will not help the agricultural sector, and avoid the devastation done by oil companies on the land and waters of Niger Delta region

## PRO: MAJORITY RESPONSE



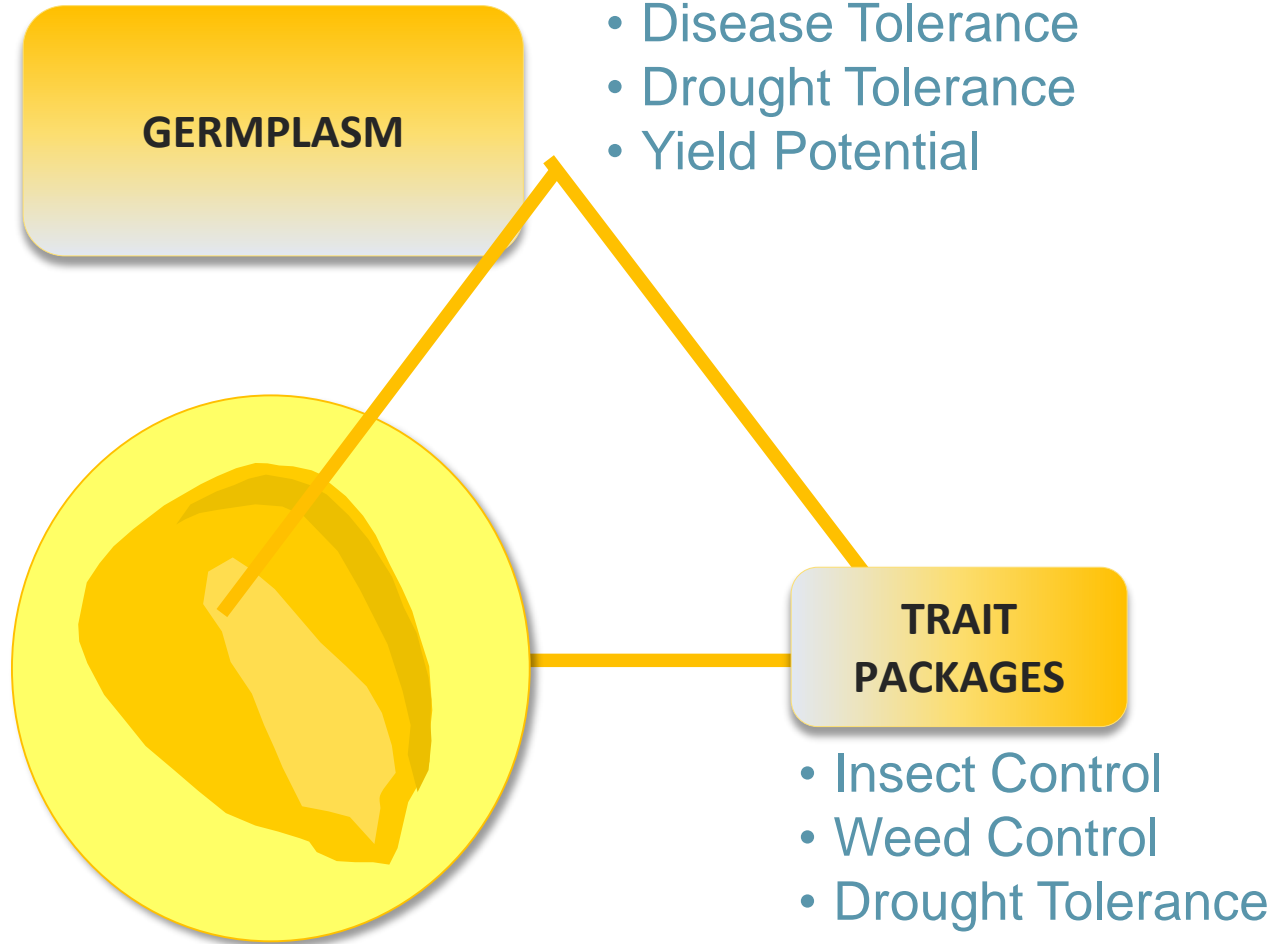
**HOW DO WE  
MANAGE  
THESE PUBLIC  
CONCERNS?**

# MANAGING PUBLIC CONCERN/DEBATE

- Transparency of Interests
  - There is need to make our valuations explicit and our interests transparent. Assessing the contribution of genetic engineering to fighting hunger in developing countries is not simply an academic task involving facts and figures and rational evaluation. The interpretation of data is subject to the interests and value judgments of a variety of stakeholders.

# MANAGING PUBLIC CONCERN/DEBATE

## ENCOURAGEMENT OF INTEGRATED SYSTEM APPROACH



- Adequate communication among various stakeholders with coherent messaging is important
- Adequate training of farmers (the end users of this technology) on various agronomic practices while growing this GM seeds to avoid failure or poor production is emphasized.



# MANAGING PUBLIC CONCERN/DEBATE CONT'D

- Scientists in the Research Institutions and the Universities should be given communication trainings and updated information materials;
- Encouraging and training members of the different stakeholder groups to use web sites. This could possibly lead to better management of public expectations on GMOs.

# MANAGING PUBLIC CONCERN/DEBATE

- I. Newsletters, pamphlets, and brochures should be continuously used to disseminate information on GMOs. Publications like these can be printed in the dialects to reach more audiences.
- II. Communication materials should focus more on providing correct and more accurate information about GMOs.

# CONCLUSION



- In managing public debate:
  - Acquire the necessary skill and knowledge about the subject;
  - Share balanced and unbiased information;
  - Be sincere and transparent in dealing with other stakeholders;
  - Respect other stakeholders' opinion;
  - Encourage individuals to make informed decision;
  - Avoid being confrontational or offensive

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THANK YOU