Priority of GM and Non GM BIOTECHNOLOGY IN VIETNAM AGRICULTURE AND RURAL AREA

Department of Science and Technology
Ministry of Agriculture & Rural Development

INTRODUCTION

Bio technology: Industry-scale use of living organisms or their components for products or services

Aims of Biotechnology:
- Higher yield, quality and better productivity
- Cleaner & sustainable environment
- Safe to human/animal and environment

Opinion on the Biotech development
- Not a “silver bullet” solution for all problems
- It is still in developmental stages and has a long way to go
- Only technology with tangible benefits & reasonable and manageable risks should be adopted
- No technology is totally risk free

INTRODUCTION

BIOTECHNOLOGY IN THE PAST: Achievements

1. Establishing a systems for Biotech research and development located in different institutions and universities in whole country.
2. News crop varieties and animal breeds are selected by using biotechnological techniques
3. New biological products are developed and applied in the agriculture (bio fertilizers, bio pesticides, vaccine…)
4. Some biotech are transferred for production in locations (micro propagation factories, bio fertilizer, bio control for crops and animal)

INTRODUCTION

BIOTECHNOLOGY IN THE PAST: Main Constraints

1. Manpower and skill workers
2. Fund for the research and development
3. Techniques and technologies
4. System of research and development
5. Commercialization
6. Regulation and policies

INTRODUCTION

VIETNAM POLICY ON THE BIOTECHNOLOGY

"Directive No. 50-CT/TW of the Party Central Committee’s Secretariat on March 4, 2005: Accelerating the biotechnology for the industrialization and modernization"
"Decision No. 188/2005/QĐ-TTg of Prime Minister of SR Vietnam on July 22, 2005: Promulgating the Government’s program of action for the implementation of Directive No. 50-CT/TW"
"Decision No.11/2006/QĐ-TTg of Prime Minister of SR Vietnam on January 12, 2006: Key program on the research and application of biotechnology in agriculture and rural development"
"Decision No. 14/2007/QĐ-TTg of Prime Minister of SR Vietnam on January 25, 2006: Key program on the development and application of biotechnology in industrial processing"

THE KEY PROGRAM OF BIOTECHNOLOGY IN AGRICULTURE AND RURAL AREAS (AGRO BIOTECH PROGRAM)

The general objective

• To produce the new plant varieties, animal breeds, microorganisms and biological products with high yields, high quality and highly economic efficiency
• To develop national capacity in research, development and application of biotechnology in agriculture & rural areas
AGRO BIOTECH PROGRAM

Detailed Objectives

- **Period of 2006 – 2010**
  - To establish and/or import modern biotechnologies and apply successfully in agricultural production in Vietnam
  - To establish and step by step develop the biotech industry of important products with high quality and competition to meet the demand of in country consumption and exports
  - To create new plant varieties, animal breeds by application of DNA recombiant technology. To select and create the transgenic plants in laboratories and in greenhouse conditions;
  - To improve significantly infrastructure for biotechnology, including qualification, education of manpower, complete and set up the biotech key laboratories and continuing the improvement of laboratory system for research and application of biotechnology.

- **Period of 2011 – 2015**
  - To apply intensively the modern biotechnologies, especially gene technology, bioinformatics, proteomics, nano technology in agro-biotech, ECT...
  - To have highly qualified human resources and modernization of biotech laboratories comparable to regional standards.
  - To release some transgenic crops for production and successfully application of animal cloning.
  - To develop agro biotech industry and create favorable conditions for marketing of agricultural bio products
  - Biotechnology will share 20-30% of contribution of science and technology to agricultural growing value.

AGRO BIOTECH PROGRAM

Outlook to 2020

- Agriculture Biotechnology in Vietnam will achieve level of advanced countries in the region and in some important fields.
- Biotech crops will be 70% of total new crop varieties used in agriculture, in which transgenic crops will share 30-50% of growing area. 70% demand of pathogen free seedlings will be covered by micro propagation. 80% area of fruit and vegetable are supplied with bio fertilizer and bio pesticides. Main demand on animal vaccine will be covered.
- Biotechnology will share over 50% of contribution of science and technology to agricultural growing value.

AGRO BIOTECH PROGRAM

Priority of the GM Biotechnology

- Base research on gene technologies to clarify the scientific background for the selection and creating the transgenic crops.
- Applied research in biotech to create new transgenic varieties with the high advances to traditional varieties (tolerance to biotic, biotic stressors, high yield, quality...).
- Up to 2011 some transgenic plants will be grow on the field
- Application of DNA technology to create new breeds (chicken, pig, and cows) with high productivity, quality, and tolerance to biotic and biotic stressors.

AGRO BIOTECH PROGRAM

Priority of the Non GM Biotechnology for agricultural crops

- Research on gene and cell technologies to clarify the scientific background for the selection and creating the new crop varieties. Up to 2010 ten new rice and maize varieties as results of cell technologies will be applied in production.
- Application and development of propagation industry in whole country to meet the demand of high quality and pathogen free seedlings.
- Applied research on the biotech for plant disease diagnosis
- Using the finger printing in the evaluation, characterization and utilization of plant genetic recourses for better use and conservation of local plant genetics recourses.
AGRO BIOTECH PROGRAM

Priority of the Non GM Biotechnology for forestry trees

- Applied research using the molecular marker to create new trees with the high advances to traditional varieties. 2-4 new eucalyptus trees with fast growing, high wood quality and high resistance to diseases will be created. DNA germ bank of forestry and indigenous trees will be established.
- Application of cell technology for selection and multiplication of forestry trees with the high advances to traditional varieties. Propagation industry will be developed to meet the demand on the forestry seedling in 2015.
- Application of biotechnology to develop the bio products used as bio fertilizer and bio control in the forestry. Industrial production of those preparations will be done in 2015.

AGRO BIOTECH PROGRAM

Priority of the Non GM Biotechnology in microbiology

- Research, development and production of microbial preparations for plant protection with high economical efficiency in pilot and industrial scale.
- Research on the exploitation of microbial soil ecosystem for the reclamation, stabilization and improvement of soil fertility.
- Research and development of biotech for the post harvesting, food, feed processing and conservation
- Research and application of biotech for treatment of waste and water in rural development, husbandry and processing of food, feed or industrial products.

AGRO BIOTECH PROGRAM: Solutions

Establish and development of biotech industry
- Establish the biotech industry and motivated all companies to invest in the biotechnology transfer and application to produce, service and commercial the biotech products for in country consumption and export.
- Conducting and development of branch of agro biotech industry and market to motivate the companies to invest in industrial scale production of agro biotech. Industrial scale production, service and commercialization of the agro biotech products in some important field like seed, seedling, bio fertilizer, bio pesticide, animal vaccines, breeds, diseases diagnosis materials, post harvesting and preservation of agricultural products will be improved.

AGRO BIOTECH PROGRAM

Priority of the Non GM Biotechnology for husbandry

- create new breeds (chicken, pig, and cows) with high productivity, quality, and tolerance to biotic and biotic stressors by Using the molecular marker.
- Improvement of domestic animal reproduction by using new technologies in fertilization.
- Research and development of vaccines and functional feeds to meet the demand in the year of 2015.

AGRO BIOTECH PROGRAM: Solutions

Biotechnology Research and development
- Carry out projects of RD on the agro biotech, projects on production of bio preparations in pilot and industrial scale as well as projects of international cooperation on the agro biotech.
- Transfer new biotechnologies from abroad
- Create the biotech market and establish the biotech industry

Capacity building
Manpower improvement
- Short time qualification of scientists in overseas
- Program of Master and PhD study in foreign country having high development in biotech.
- Graduated and post graduated program at Vietnam universities
- Training and education of technical assistance for agro biotech industry
**AGRO BIOTECH PROGRAM**

**Solutions**

- **Capacity building**
  - Technical constructions improvement and modernization of biotech laboratories
  - Strengthening the technical construction to improve the system of research and education in biotechnology; modernization of laboratories to enhancing the capability of those system
  - Complete the key biotech laboratories in the North and conduct the new biotech laboratory in the South
  - Establish the national center for biotech information and library to supply and share all up dates in agro biotech.

**AGRO BIOTECH PROGRAM:**

**Solutions**

- Improvement the policies and regulation on the biotechnology and biosafety
  - Preparing and issue the policy of priority for biotechnology
  - Carry out the intellectual property rights and technology transfer
  - Preparing and issue the regulation on the biosafety management
- Public communication and education on the biotechnology
- International cooperation on the biotech research, development and application

Thanks for the attention