

*implementation of Directive No. 50-CT/TW of March 4, 2005, of the Party Central Committee's Secretariat, on accelerating biotechnology development and application in service of national industrialization and modernization;*

*Pursuant to Resolution No. 09/2005/NQ-CP of August 3, 2005, on the Government's July 2005 regular meeting;*

*At the proposal of the Minister of Agriculture and Rural Development,*

#### **DECIDES:**

#### **DECISION No. 11/2006/QĐ-TTg OF JANUARY 12, 2006, APPROVING THE KEY PROGRAM ON BIOTECHNOLOGY DEVELOPMENT AND APPLICATION IN THE DOMAIN OF AGRICULTURE AND RURAL DEVELOPMENT UP TO 2020**

#### **THE PRIME MINISTER**

*Pursuant to the Law on Organization of the Government of December 25, 2001;*

*Pursuant to the Resolution of the fifth plenum of the Party Central Committee, the IX<sup>th</sup> Congress, on accelerating agricultural and rural industrialization and modernization in the 2001-2010 period;*

*Pursuant to Directive No. 50-CT/TW of March 4, 2005, of the Party Central Committee's Secretariat on accelerating biotechnology development and application in service of national industrialization and modernization;*

*Pursuant to the Prime Minister's Decision No. 188/2005/QĐ-TTg of July 22, 2005, promulgating the Government's program of action for the*

**Article 1.-** To approve the "key program on biotechnology development and application in the domain of agriculture and rural development up to 2020" (hereinafter called the program for short), with the following principal contents:

#### **I. OBJECTIVES:**

##### **1. General objectives:**

To create new plant varieties, livestock breeds, microorganism strains, and products of high yield, high quality and economic benefits based on agro-biotechnology in best service of economic restructuring in the domain of agriculture and rural development. To raise the quality and competitiveness of commodity farm produce and quickly increase the proportion of processed agricultural, forestry and aquatic products to meet consumption and export demands.

##### **2. Specific targets for each period:**

###### **a/ The 2006-2010 period:**

- To create or receive and master a number of modern biotechnologies and effectively apply them to production in compatibility with specific conditions of Vietnam's agriculture.

- To form and step by step develop an agro-biological industry for industrial production of key and essential products and goods of high quality and competitiveness in service of consumption and export.

- To select and create by molecular biotechniques a number of plant varieties and livestock breeds and use them for production; to select and create a number of genetically modified plant strains in laboratories and test them on fields.

- To achieve a basic step in developing the potential for agro-biotechnology through training specialized biotechnological staff of high professional qualifications and quality for a number of main domains; to provide universal training for staff engaged in biotechnology application in production establishments; to complete the construction and commission of a system of key and modern laboratories; to continue investing in, upgrading and extending the network of ordinary laboratories for agro-biotechnology application.

b/ The 2011-2015 period:

- To strongly develop modern biotechnologies, focusing on gene technologies; to approach new sciences such as genomics, bio-informatics, proteomics and nanotechnology in agro-biotechnology; to develop our country's agro-biotechnology to reach the advanced level in the region.

- To train specialized human resources for a number of new biotechnological domains; to invest in upgrading and modernizing a number of agro-biotechnological laboratories to reach the world's advanced level.

- To put some genetically modified plant varieties to production; to achieve success in animal cloning.

- To strongly develop the agro-biological industry, create a favorable market to boost the production of, trading in, and provision of services related to,

key and essential products and goods turned out by agro-biotechnology in service of consumption and export.

- Agro-biotechnology shall account for 20-30% of the total contribution of science and technology to the increase of agriculture's added value.

c/ Vision towards 2020:

- Agro-biotechnology in our country shall reach the level of the most developed ASEAN countries, and in some domains, the world's advanced level.

- The land for cultivation of new plant varieties created by biotechnological techniques shall account for more than 70% of total area, of which 30-50% shall be for cultivation of genetically modified varieties; the micropropagation industry shall be able to satisfy over 70% of demands for disease-free plant varieties; biological fertilizers and plant protection drugs shall be used for over 80% of areas under vegetable and fruit trees; and the demands for livestock vaccines shall be basically satisfied.

- Agro-biotechnology shall account for more than 50% of the total contribution of science and technology to the increase of agriculture's added value.

## II. MAJOR TASKS:

1. Basic research, applied research, scientific research and technological development (R-D) and trial production (P) for agro-biotechnological development:

a/ Agricultural trees:

- To conduct basic research into gene technology and cell technology: making gene maps, genome, gene extraction, research into the expression of the characteristics of transformed genes by different gene transfer technologies in order to create scientific grounds for the selection

and creation of genetically modified plant varieties; to research into the rules on formation and development of embryonic calluses and asexual embryos in some important economic plants.

- To conduct applied research and create by gene technology (gene transfer technology and molecular identification method) a number of new plant varieties with superior agricultural and biological characteristics such as high yield, high quality, disease-resistance, pest-resistance and capability of coping with unfavorable climatic conditions. By 2010, to put a number of new plant varieties (including 5 pure rice varieties, 3 hybrid rice varieties and 2 hybrid maize varieties) turned out by cell technology and molecular identification method to mass production. By 2011, a number of genetically modified varieties (such as cotton, maize, soybean) will be put to production.

- To apply and develop micropropagation industry throughout the country for trial production and industrial production of key and essential products, thus meeting the demands for high-quality and disease-free plant varieties.

- To conduct applied research into and manufacture kits for diagnosing some plant diseases.

- To establish genetic finger prints of a number of Vietnamese endemic plant varieties which shall serve as a basis for the conservation of rare- and precious-gene banks, protection of varieties and branding; to assess the genetic diversity of plants in Vietnam.

**b/ Forest plants:**

- To conduct applied research so as to create by gene technology (gene transfer technology and molecular identification method) a number of new forest plant varieties with superior forest and biological characteristics such as high yield and high quality, stem and leaf pest-resistance and

capability of coping with unfavorable environmental conditions. To create 2-4 strains of wattle and gum tree, which grow fast, turn out high-quality timber of low lignin content. To build a library of deoxyribonucleic acid (DNA) for a number of forest plants and endemic plants.

- To apply cell technology to the selection and propagation of forest trees. To create 2-3 polyploid wattle and cajeput varieties which grow fast, turn out high-quality timber and are disease- and pest-resistant. To develop the micropropagation industry and satisfy the demand for forest plant varieties by 2015.

- To conduct research and apply microbiological technology in order to produce plant protection preparations and microorganic fertilizers for forest plants. By 2010, to create 2-3 plant protection preparations and functional fertilizers for forest plants; by 2015, to produce on an industrial scale plant protection preparations and functional fertilizers for forest plants.

**c/ Livestock:**

- To conduct research and apply gene technology (gene transfer technology and molecular identification method) in order to create a number of new livestock breeds (poultry, pig, cow), each with 1-2 strains of high productivity, high quality, and capable of resisting diseases in unfavorable environmental conditions.

- To study, renovate and apply advanced animal cell technologies in order to raise reproductivity of livestock in service of the conservation and preservation of reproductive cells as well as the evaluation of animal quality; to apply embryo-cutting technique and renovate in-vitro fertilization techniques in service of animal reproduction. To widely apply sperm- and embryo-freezing technologies to the preservation and conservation of banks of endemic, rare and precious livestock

genes. To apply gene technology to determining the gender of cow embryos of 7 days old.

- To study and produce vaccines for livestock and functional feed; to strive to produce and basically satisfy the demands for animal vaccines by 2015.

d/ Microorganisms:

- To conduct applied research, trial production and industrial production of microorganic preparations and plant protection preparations of high economic benefits. To work out processes for production and development of plant protection preparations for spraying trees or fertilizing soil so as to control 10 major epidemics; to commercialize 10 products. To build up a model of extensive application of plant protection preparations to vegetables, coffee, tea, flowers, grape and cotton.

- To research into and exploit the system of soil microorganisms in order to restore, stabilize and improve soil fertility. To build 1-2 technological processes for production of soil-improvement microorganic preparations and preparation-using models; to set up 1-2 establishments producing soil-improvement microorganic preparations.

- To research into preservation technologies, preparations and solutions; to boost the application thereof to post-harvest preservation, long-term preservation and farm produce processing.

- To research into and apply biotechnology in order to treat daily-life wastewater and environmental pollution in husbandry farms, craft villages, rural areas, food-processing factories and latex plants. To create 5 subproduct-processing processes for processing discarded agricultural products; 5 megass-processing models; 5 models of treating daily-life and industrial wastewater.

2. Forming and developing an agro-biotechnological industry in order to boost the production of, and trading in, and provision of

services related to, key and essential products and goods in the domain of agro-biotechnology:

- To set up and encourage enterprises of all economic sectors to invest in technology transfer and receipt; to strongly and efficiently apply technical advances and new technologies to production of, trading in, and provision of services related to, key and essential products and goods turned out by agro-biotechnology in service of consumption and export.

- To form and strongly develop an agro-biological industry, creating a favorable market to promote enterprises to invest in projects on industrial production of key and essential products and goods (technical-economic projects). To boost the production of, trading in, and provision of services related to, key and essential products and goods turned out by agro-biotechnology in some important industries such as production of varieties of agricultural, forestry and industrial plants, flowers and ornamental plants; microorganic industry, production of edible mushrooms; production of livestock breed; production of biological fertilizers and plant protection drugs; production of diagnosis kits and vaccines for plants and livestock; and post-harvest preservation.

3. Building potentials for agro-biotechnology development

a/ Human resource training:

- To send some scientists who have achieved doctorates or master degrees to countries with developed biotechnology for re-training within a duration of between 6 months and 1 year.

- To send students to countries with advanced biotechnology for postgraduate training according to the program's research contents.

- To train agro-biotechnological engineers at home; to conduct postgraduate training in the agro-biotechnology major according to the program's

research contents.

- To train at home biotechnological technicians for the implementation of the program in localities and enterprises.

- The training of agro-biotechnological human resources in the 2006-2010 period must reach the following results: 50 officials shall be re-trained, 60-80 new doctors, 200-250 new masters and 500-1,000 new technicians.

b/ Building technical and material foundations; modernizing machinery and equipment:

- To make intensive investment in upgrading the system of scientific research and training establishments in the domain of agriculture and rural development; to additionally supply modern machinery and equipment and modernize laboratories of this system so as to raise research capacity and apply modern biotechnologies to production and life.

- To complete the investment in, and commission of, two key laboratories on animal cell technology (of the Husbandry Institute) and plant cell technology (under the Agricultural Genetics Institute of the Vietnam Institute of Agricultural Sciences); to add to the "Scheme on building key laboratories" the building of a key gene-technology laboratory for the southern region (from Da Nang southward); on the basis of these key laboratories, to set up and develop outstanding agro-biotechnological centers.

- To build, interconnect, and commission a national agro-biotechnological database and information system; and a system of libraries having basic publications on this domain in the forms of books, magazines and electronic forms so as to ensure the full supply and exchange of the most basic and latest information on agro-biotechnology between units and officials working in this domain.

4. International cooperation in the agro-biotechnological domain;

- To implement about 50 projects on cooperation with foreign scientific organizations or scientists with a view to making the fullest use of advanced knowledge and technologies, modern machines and equipment as well as other supports for strong and quick development of Vietnam's agro-biotechnology as well as for the settlement of the country's some important and pressing agro-biotechnological issues.

- To step up the transfer, receipt, mastering and wide and efficient application of technical and technological advances and new scientific achievements of the world in biotechnology to agricultural production in Vietnam.

### III. A NUMBER OF MAJOR SOLUTIONS:

1. Accelerating and efficiently implementing research and production projects, encouraging technology transfer, creating a favorable market and strongly boosting the formation and development of an agro-biological industry:

- To boost the implementation of schemes on basic research, applied research, scientific research and technology development (R-D); projects on trial production (project P); projects on industrial production of key and essential products (technical-economic projects) and projects on international cooperation in the agro-biological industry, which will be approved or considered for support by the Minister of Agriculture and Rural Development (at the proposal of the program's administration committee and evaluation opinions of the Scientific Advisory Council). The selection, implementation, evaluation and pre-acceptance tests of the results of the aforesaid projects must strictly abide by current regulations on scientific and

technological activities.

- To create a favorable market and strongly accelerate the formation and development of an agro-biological industry in service of the production of, trading in, and provision of services related to, key and essential high-quality and competitive products and goods for consumption and export.

- To encourage the transfer, receipt and import of new technologies of high economic benefit; to boost and apply technical advances in the agro-biotechnological domain to production and life. To boost the establishment of enterprises of all economic sectors and encourage them to operate and invest in technology transfer, production of, trading in, and provision of services related to, products and goods turned out by agro-biotechnology. Enterprises operating in the agro-biotechnological domain shall enjoy the highest preferences in capital borrowing, tax and land-use rights according to current regulations.

2. Capital for the implementation of the program; increasing and diversifying investment capital sources for agro-biotechnological development:

- a/ Total state budget capital for the realization of the program in the next 10 years (the 2006-2015 period) is estimated at about VND 1,000 billion (about VND 100 billion for each year on average). This source shall be spent on basic research, applied research, scientific research and technological development, trial production and support for projects on industrial production of key and essential products and goods; improvement of material and technical foundation, machinery and equipment; human resource training, international cooperation and some other related activities of the program. The Ministry of Agriculture and Rural Development shall elaborate annual and long-term plans on state capital for the implementation of this

program and send them to the Ministry of Planning and Investment and the Ministry of Finance for sum-up and submission to the Prime Minister.

From 2006, on the basis of the total capital sources approved by competent agencies, each year the Ministry of Planning and Investment and the Ministry of Finance shall allocate VND 100 billion from the state budget to the Ministry of Agriculture and Rural Development for organization of the implementation of the program.

- b/ Forms of investment and investment support for agro-biotechnology include:

- Investment in basic research, applied research, scientific research and technology development (R-D) schemes; in the procurement of machinery and equipment in service of research and training of human resources for agro-biotechnology shall be wholly made with budget capital, reserved for scientific, technological and economic development, and with international cooperation capital sources.

- Projects on trial production (projects P) in the agro-biotechnological domain shall comply with current regulations applicable to state-level projects P (managed by the Ministry of Science and Technology), with 60% of total funds for these projects to be recovered.

- Projects on the industrial production of key and essential high-quality and competitive products and goods of in the agro-biotechnological domain in service of consumption and export (technical-economic projects) under the biological technical-economic program shall be supported with state budget capital according to current regulations applicable to four technical-economic programs (coordinated by the Ministry of Planning and Investment), with the characteristics of agro-biotechnology taken into consideration.

c/ To increase and diversify investment capital sources for the implementation of the program and agro-biotechnology development: apart from state budget capital, in order to efficiently carry out the program's activities, it is necessary to mobilize capital from production, business and service enterprises of all economic sectors; capital from concerned organizations and individuals at home and abroad for investment in or donation for agro-biotechnology development in Vietnam; capital from international cooperation sources (non-refundable aid under bilateral, multi-lateral cooperation projects, ODA capital for investment in the construction of technical and material foundations, procurement of machinery and equipment and training of human resources for agro-biotechnology).

3. Stepping up the construction of technical and material foundations and training of human resources for agro-biotechnology:

- To step up the construction of technical and material foundations for agro-biotechnological research and development institutes and centers; to speed up the modernization of research and analysis machines and equipment for laboratories of agro-biotechnological research and development institutes and centers

- To intensify domestic and overseas re-training and training of scientific and technological personnel at the degrees of doctorate, master, bachelor, technological engineer and technician; to satisfy the human resource demands for the effective implementation of the program and agro-biotechnology development in Vietnam.

4. Perfecting mechanisms, policies and the system of legal documents in order to promote agro-biotechnology development and application:

- To formulate and promulgate according to competence or submit for promulgation preferential mechanisms and policies applicable to investment in agro-biotechnology development; mechanisms and policies to attract the talented staff such as wage or allowance regimes; to amend and perfect the system of legal documents in order to support and promote biotechnology development and application in service of peasants' life as well as agriculture and rural development.

- To strictly abide by regulations on intellectual property in the protection of copyrights and industrial property rights (copyright to plant varieties, animal breeds, microorganism strains, technological processes, etc.) in the agro-biotechnological domain.

5. Enhancing international cooperation; boosting propaganda to raise the awareness of all authorities, sectors and people about the role of agro-biotechnology.

- To enhance international cooperation in the agro-biotechnological domain; to take initiative in formulating bilateral and multilateral cooperation programs, schemes and projects with countries with advanced biotechnologies in order to make the fullest use of intellectual and financial supports from these countries for agro-biotechnological development in our country.

- To intensify communication, propaganda and education work so as to raise the awareness of all authorities, branches and people about the important role of biotechnology in the mankind development in general and in agriculture in particular. To regularly disseminate among people the latest scientific and technological knowledge and achievements in biotechnology as well as the outstanding results of application of agro-biotechnology to production and life.

#### IV. ORGANIZATION OF IMPLEMENTATION

1. The Ministry of Agriculture and Rural Development shall assume the prime responsibility for, and coordinate with the Ministry of Science and Technology and concerned ministries, branches and localities in, organizing the implementation of the program and annually report the results thereof to the Prime Minister.

The Minister of Agriculture and Rural Development shall set up a management board for the program for organizing the implementation of the program, which shall be composed of the Minister of Agriculture and Rural Development as its head, a deputy minister managing this domain as its deputy head, a representative of its Science and Technology Department as its secretary, and representatives of functional agencies of the Ministry of Agriculture and Rural Development and departmental-level representatives of several concerned ministries, branches and localities (the Government Office, the Ministries of Planning and Investment; Finance; Science and Technology; and Education and Training, and the People's Committees of Hanoi and Ho Chi Minh city) as its members. The program's management board shall work under a regulation promulgated by the Minister of Agriculture and Rural Development cum head of the board.

2. The Ministry of Planning and Investment and the Ministry of Finance shall allocate enough funds within annual plans for the Ministry of Agriculture and Rural Development to organize the implementation of the program in a timely and efficient manner.

3. The Ministry of Science and Technology shall coordinate with the Ministry of Agriculture and Rural Development in building and increasing the potential regarding material and technical

foundations, machinery and equipment for the system of scientific and technological research establishments specialized in agro-biotechnology; to formulate preferential mechanisms and policies applicable to agro-biotechnological research activities; to formulate an investment mechanism and a working regulation for outstanding centers and regulations related to intellectual property in the agro-biotechnological domain.

4. The Ministry of Industry shall coordinate with the Ministry of Agriculture and Rural Development in planning the development of the agro-biotechnological industry; to formulate preferential mechanism and policies for enterprises investing and operating in the agro-biotechnological industry.

5. The Ministry of Education and Training shall coordinate with the Ministry of Agriculture and Rural Development in training human resources for agro-biotechnology development and the agro-biotechnological industry.

6. Ministries, branches, localities and enterprises wishing to join in the implementation of the program's contents related to their functions and tasks shall make registration with the Ministry of Agriculture and Rural Development for consideration.

**Article 2.-** This Decision takes effect 15 days after its publication in "CONG BAO."

**Article 3.-** The Minister of Agriculture and Rural Development, ministers, heads of ministerial-level agencies and Government-attached agencies, presidents of provincial/municipal People's Committees, and concerned organizations and individuals shall have to implement this Decision.

**Prime Minister**  
**PHAN VAN KHAI**