



Integrated S&T Agenda in Agriculture, Forestry and Natural Resources for CY 2006–2010

**Philippine Council for Agriculture, Forestry and Natural
Resources Research and Development (PCARRD)**
Department of Science and Technology (DOST)

Message



Let me congratulate PCARRD for coming up with the Science and Technology (S&T) Agenda for 2006–2010 in consultation with the major stakeholders of the country with the end in view of providing the directions that will enable robust and vibrant agriculture, forestry and natural resources (AFNR) sectors to flourish as envisioned under Philippine Agriculture 2020. This initiative is imperative as investments in S&T should be focused on few but strategic areas which will result to maximum impact.

This S&T Agenda will guide PCARRD and the National Agriculture and Resources Research and Development System in the funding and coordination of programs in AFNR for the next four years. While the responsibility for resource generation in support of the S&T Agenda lies essentially on PCARRD, the S&T community as well as other public and private entities, are encouraged to provide their due share of resources in the spirit of partnership and collaboration.

Again, my congratulations to PCARRD!

A handwritten signature in black ink, appearing to read 'E. Alabastro'.

Estrella F. Alabastro
Secretary
Department of Science and Technology

Message



Warmest greetings and felicitations to the officials and staff of PCARRD for successfully producing the Integrated S&T Agenda for CY 2006–2010.

We, at BAR, acknowledge how science is important as a vital component to our country's future, government and business.

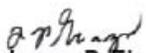
But support for scientific researches is not enough on its own. We also need to make sure that scientific innovation gets translated into applied uses. This task, however, can only be realized if we all keep our efforts coherent and focused. Our undertaking towards the achievement of this, demands that we make S&T more policy relevant and accessible not only to the people we are working with but to the people we are working this for.

This is an era where the S&T community needs to demonstrate its readiness and ability to change course and redefine its role and commitment to society. We come to an era where science has to be recognized as a tool for development rather than an outcome or a reward for development. Our developmental goals cannot be achieved without the participation and support of the different stakeholders and sectors both in urban and rural areas. They determine the nature and levels of resources that go into public scientific enterprise and overall governance of science and innovation. We must ensure that science is inclusive rather than exclusive. We need to seek partnerships and collaborative efforts of other concerned stakeholders.

I want to commend PCARRD for ensuring that science and technology are at the core of our efforts to reconstruct and develop our country. This is necessary to ensure that the benefits of S&T are part of our response to the challenge of poverty eradication and underdevelopment.

I hope this integrated agenda for S&T set us towards a common direction in battling the challenges of food security and poverty. Together, let us work for the country's development.

Mabuhay and congratulations!


Nicodemes P. Eleazar
CESO IV Director
Bureau of Agricultural Research (BAR)
Department of Agriculture

Message



Congratulations to the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) for its continuing leadership and steadfast performance.

The integrated S & T Agenda for 2006-2010, as crafted, will create more dynamic and rewarding endeavors in the environment and natural resources sector. The DENR through its R & D arm, the Ecosystems Research and Development Bureau, fully supports this S & T Agenda that would run in tandem with ERDB's major research and development programs and thrusts.

May ERDB and PCARRD maintain their fruitful partnership towards one goal.


MANUEL D. GEROCHI, CSO I
USEC for Lands Management, DENR
and OIC-ERDB

Message



My sincerest greetings and congratulations to the efficient PCARRD officials and staff behind the crafting of this Science and Technology (S&T) Agenda for 2006-2010.

It is such an honor for me to be part of yet another milestone achievement of the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD). The perspectives presented in this plan, and the directions it proposes to undertake will, without a doubt, be of great advantage for a great number of our fellow Filipinos – the Philippines being still a major agricultural country. The effort to involve all major players in the sector to be able to put together

a document that outlines all possible courses of action is indeed very commendable. It was a grand production, so to speak, and I would say that the PCARRD is in to become a box office hit!

The Commission on Higher Education (CHED) is one with PCARRD in its aspiration to uplift the lives of and build a better future for the Filipinos. I believe that, with efforts and outputs like this S&T Agenda, the shared dream will soon be a reality.

Once again, congratulations to fellow ardent research advocates in PCARRD!

Mabuhay po tayong lahat!

A handwritten signature in black ink, appearing to read 'W. Medrano'.

William C. Medrano, Ph.D.

Executive Director
Commission on Higher Education



Foreword

PCARRD marches forward in its all-out effort to initiate high impact S&T activities in the AFNR sectors. The Council is also steadfast in seeking appropriate venues by which challenges that hamper such initiatives could be prevailed upon, in the shortest possible time, and the least resources utilized.

One such challenge is on the need for the major stakeholders in the AFNR sectors to focus on fewer but strategic areas of S&T investments due to 1) limited resources availability; 2) lack of impact on local economy/relative contribution to economic development; 3) weak S&T program complementation; and, 4) the need to be consistently relevant. With

these considerations in mind, PCARRD embarked on nationwide consultations to develop the S&T Agenda that will address the above concern with the end view of providing the directions that would allow for robust and vibrant AFNR sectors to flourish as envisioned under Philippine Agriculture 2020.

After 19 consultations held in the sectoral/industry and regional/local levels; and the participation of more than 470 individuals and 226 agencies representing the members of the scientific community, academic and development planning institutions, industry sector, donor agencies, extension service providers/LGUs and different producers all over the country, you now have with you, the S&T Agenda for 2006–2010.

This document is unique in itself for the following reasons: it is a common agenda for cooperation and partnership among the various AFNR stakeholders, participating R&D institutions and users; it is a guidepost for collective investments on major S&T activities for the medium-term; it is an integrated medium-term AFNR R&D priorities of the DA, DENR, DOST, and CHED; and, it is a harmonized national, sectoral, regional and institutional S&T agenda of the NARRDS based on areas of commonalities and complementation.

Definitely, the S&T Agenda can serve as the reference by which all stakeholders can derive more relevant thrusts and programs to fund and/or implement in the next four years. On its end, PCARRD will focus its investments in support of the S&T Agenda. I enjoin everyone who believes in the critical role of S&T in national development to do the same.


Patricio S. Faylon
Executive Director
PCARRD

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Background

The Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) announced last November 2005 its plan to undertake a series of consultations to craft the Science & Technology (S&T) Agenda. This agenda would allow agriculture, forestry and natural resources (AFNR) sectors to flourish within the context of the Philippine Agriculture (PA) 2020.

PA 2020 is a long-term plan that integrates agriculture (crops, livestock, fisheries), environment and natural resources (forestry products) sectors, and social systems. It envisions robust and vibrant AFNR production systems and services that would improve and sustain well-being in the Philippines. Its implementation will involve four major strategies in reference to the four banner programs. These are: knowledge and technology generation, R&D results utilization, capability building and governance, and policy analysis and advocacy.

The S&T Agenda for 2006–2010 is anchored on the need to focus on fewer but strategic areas of S&T investments due to:

- limited resources to support S&T activities;
- small and dispersed investments in R&D activities;
- lack of impact on local economy;
- relatively low S&T contribution to economic development; and
- need to be consistently relevant with the needs of clients and beneficiaries.

To craft a realistic and relevant S&T Agenda for CY 2006–2010, a series of multi-level, multi-sectoral consultations was conducted. Specifically the objectives of the consultations were:

- to develop a common agenda for cooperation and partnership among the various AFNR stakeholders, participating research and development (R&D) institutions and users;
- to provide a guidepost for collective investments on major S&T activities for the medium-term (CY 2006–2010);
- to integrate the medium-term AFNR R&D priorities of the Department of Agriculture (DA), Department of Environment and Natural Resources (DENR),

Department of Science and Technology (DOST), and Commission on Higher Education (CHED); and

- to harmonize the national, regional, sectoral, and institutional S&T agenda of the National Agriculture and Resources Research and Development System (NARRDS) based on areas of commonalities and complementation.

Twenty-one consultations at various levels (sectoral/industry and regional/local) have already been carried out, involving more than 470 individuals and 226 agencies representing the members of the scientific community, academic & development planning institutions, industry sector, donor agencies, extension service providers/LGUs and different producers across the Philippines.

The central question driving the consultations is:

***What could we do together to provide S&T solutions
for a vibrant agriculture and sustainable
environment in the medium-term?***

Crafting the S&T Agenda

Guiding principles in the formulation of the agenda:

- Takes off from previous work done and stems from current program initiatives [PA 2020, Millennium Development Goals (MDG), Medium-term Philippine Development Plan (MTPDP), DA Commodity Roadmaps, DENR Master Plan, DOST National Science and Technology Plan (NSTP), PCARRD Corplan and the regional/local development plans];
- Employs a consultative process focusing on areas of common concerns rather than on differences;
- Considers the current priorities among the various stakeholders (government, private sector, producers and local government units);

-
- Allows for linkage and integration across institutions and programs as well as with the major donor programs, participating agency priorities and the proposed thematic areas; and,
 - Develops product niches that complement existing regional resources, geographical endowments and commodity preferences.

Thematic areas for R&D

R&D programs were developed along the thematic approach to heighten R&D relevance and facilitate the identification of clientele and beneficiaries. The approach facilitates the identification of solutions to specific problem areas and the development of useful products.

The following thematic areas will be pursued:

- **Poverty alleviation and food security** - secures sources of productivity growth and income diversification;
- **Global competitiveness** - ensures that all parts of the agricultural enterprise chain are operating as efficiently as possible, so as to keep overall production costs at a minimal in an environment in which product prices will continue declining;
- **Frontier and cutting-edge science** – focuses on the development and familiarization with modern S&T-based innovations, techniques, methodologies, tools, and equipment to boost local RDE capabilities to world-class standards;
- **Natural resource management and sustainable development** - development, documentation, evaluation and application of environment friendly and good indigenous resource management practices/technologies, disaster/hazard mitigation and rehabilitation/protection of ecologically fragile areas; and,
- **Support to allied agricultural/forestry services** – includes (1) development of innovative and modern S&T-based methodologies, tools and equipment to enable regulatory agencies perform better surveillance, evaluation, detection and certification work in a faster, cheaper, more accurate and reliable manner following the prescribed product quality standards and other biosafety requirements; (2) provision of scientific-based information to policy-makers, decision makers and government negotiators to international agreements.

S&T Banner Programs

PCARRD will pursue strategic S&T directions as indicated in the Corplan 2005–2010. These directions, in turn, are guided by the major final outputs (MFOs) of DOST, which include diffusing knowledge and technology; generating new knowledge and technology; developing S&T human resources; and, providing S&T services.

To attain the MFOs, PCARRD has been implementing four major programs, namely:

- knowledge and technology generation;
- policy analysis and advocacy;
- R&D results utilization; and
- capability building and governance.

Conceptual Framework

The agenda was crafted to unify and facilitate harmonious interaction of the four S&T banner programs with the thematic program areas, thus paving the way for a more clear-cut S&T direction. The harmonized S&T directions focused on the desired target products (e.g. varieties, planting materials, banana chips, diagnostic kits, ecotourism areas, biofuels) with an industry cluster orientation.

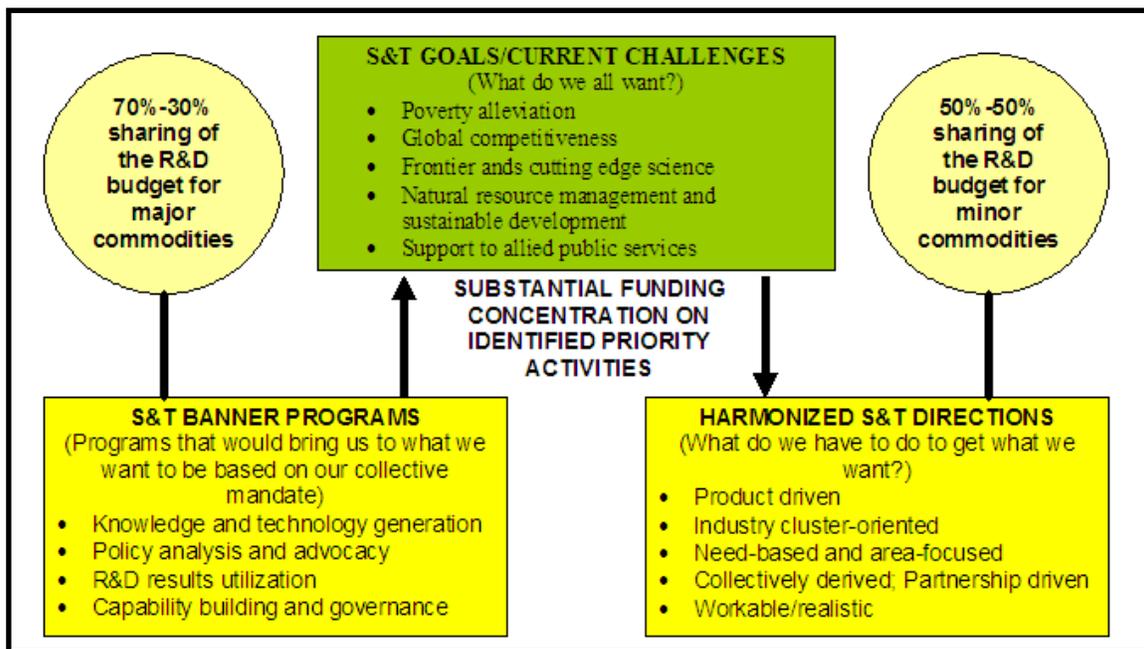


Figure1. Conceptual framework in crafting the S&T Agenda

PCARRD would provide 70% of the total budget of national R&D programs/projects on major commodities with the partners footing the remaining 30%. For regional R&D programs/projects on minor commodities, PCARRD will shoulder 50% of the budget (Fig. 1).

S&T Agenda Structure

The overall structure of the Integrated S&T Agenda in Agriculture, Forestry and Natural Resources for CY 2006–2010 is anchored on the four banner programs of PCARRD. This paradigm integrates knowledge and technology generation, the utilization of the generated R&D results, policy formulation and advocacy program, and capability building and governance. The structure below unifies program components which allows for synergism among program components, across program, and across components of the four programs (Fig. 2).

Through this structure, the resources and the development services can be channeled into carrying out specific activities that will provide the proper environment for attaining the desired outputs by 2010.

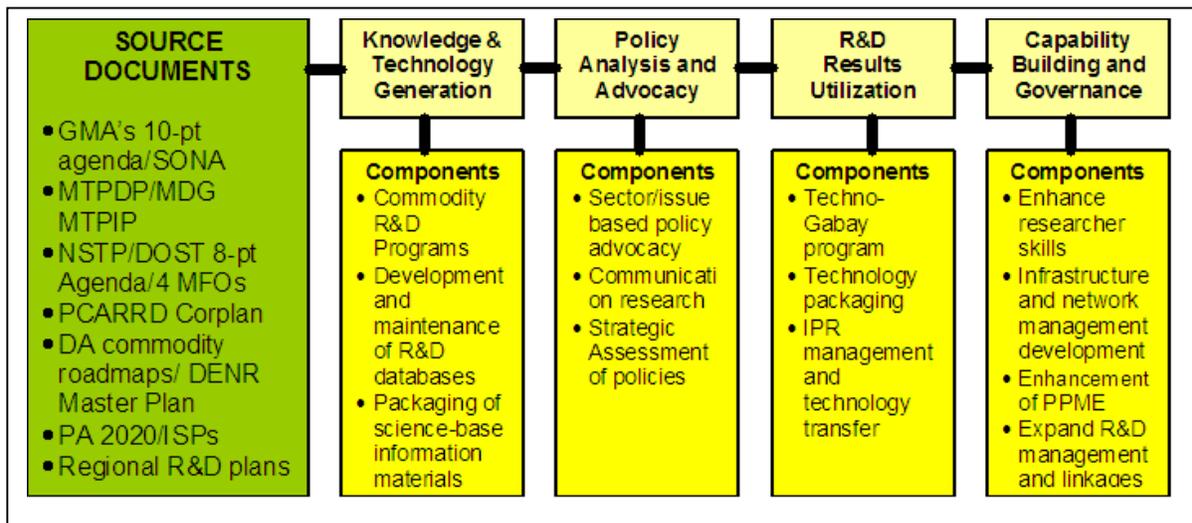


Figure 2. The overall structure of the S&T Agenda for CY 2006-2007

Knowledge and Technology Generation

Knowledge and Technology Generation (KTG) is the formative banner program, setting the trend for other S&T activities through its three components, namely: R&D agenda, development and maintenance of R&D information systems, and packaging of science-based information materials.

Components

R&D Agenda

The R&D agenda of the crops, livestock and forestry sectors were basically derived from 10 Industry Strategic Plans (ISPs) crafted by PCARRD in collaboration with the National Academy of Science and Technology (NAST). The ISPs are for the following industry clusters: export fruit crops, vegetables, legumes and root crops, coffee and abaca, coconut and oil palm, ornamentals, rice and white corn, sugarcane, swine-poultry-yellow corn, pasture-ruminants, and forestry.

The initial ISP-derived R&D agenda in AFNR were presented to various stakeholders during a series of participatory consultations undertaken from May to October 2006 throughout the Philippines. The various concerns and interests of the stakeholders from the 14 regional consortia were integrated into the initial document.

The final integrated R&D agenda includes 31 specific commodities under the 10 industry clusters across 14 geographical regions (Table 1). Implementation of the R&D agenda is expected to generate 101 products ([Table 2](#)) ranging from planting materials to ecotourism sites that cater to the particular needs of the five thematic program areas. The 31 commodities are further classified into major and minor commodities based on the regional interest and product niches. A commodity is recognized as major when six or more consortia have expressed commitment to support and carry out the commodity's R&D activities. Minor commodities are those included in the regional R&D agenda of less than six consortia.

Table 1. Commodities under different industry clusters vis-à-vis regional priority concerns

INDUSTRY CLUSTER	COMMODITY	REGIONS													
		CAR	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	CARAGA
EXPORT FRUIT CROPS	1 Mango		✓	✓	✓	✓		✓	✓		✓		✓	✓	
	2 Banana			✓		✓					✓		✓	✓	✓
	3 Papaya					✓									
	4 Pineapple					✓	✓								
	5 Pili						✓								
	6 Durian												✓	✓	
	7 Jackfruit									✓					
	8 Pummelo												✓		
VEGETABLES, LEGUMES & ROOT CROPS	1 Vegetables	✓	✓	✓	✓	✓				✓		✓			
	2 Legumes			✓	✓										
	3 Root Crops	✓	✓							✓	✓				
COFFEE, ABACA & RUBBER	1 Coffee	✓				✓									
	2 Abaca						✓		✓	✓	✓				✓
	3 Rubber										✓		✓		
COCONUT & OIL PALM	1 Coconut					✓	✓		✓		✓		✓		
	2 Oil palm													✓	
ORNAMENTAL PLANTS	1 Ornamental Plants	✓				✓			✓						
RICE & WHITE CORN	1 Rice	✓		✓	✓								✓		
	2 White Corn		✓						✓					✓	
SUGARCANE	1 Muscovado Sugar							✓							
SWINE, POULTRY & YELLOW CORN	1 Poultry				✓	✓	✓	✓	✓						
	2 Swine	✓			✓	✓						✓			
	3 Yellow Corn			✓	✓	✓						✓			
PASTURE & RUMINANTS	1 Goat		✓	✓	✓					✓		✓		✓	
	2 Cattle						✓								
	3 Carabao				✓				✓						
FORESTRY	1 Woodfuel and Biofuels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2 Environmental Services	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	
	3 Furniture & Handicrafts		✓			✓	✓	✓				✓			
	4 Lumber & Panel Products					✓									✓
	5 Poles & Piles														✓
NUMBER OF COMMODITY PER CONSORTIUM		8	8	9	11	15	9	6	9	6	7	7	8	9	5

✓ Major Commodity
 ✓ Minor Commodity

[Table 3](#) integrates the industry clusters, the specific commodities, R&D agenda and areas, thematic program areas and responsible consortia of all target products in the S&T agenda. The thematic areas help identify the beneficiaries and clients, such as resource-poor framers or agencies with regulatory function, and for whom the generated products are intended.

The criteria applied in the selection of the commodities and products are:

- Number of regional consortia interested to work on the commodities or products;
- Regional specificity and uniqueness of the selected commodities;
- Potential for additional wealth creation and/or employment generation;
- Availability of existing/potential local and export market in terms of effective demand;
- Adequacy of suitable areas for promoting agribusiness/enterprise development (industry growth potential and diversification);
- Availability and adequacy of resources (manpower, geographical suitability, technology); and,
- Level of support from the government and private sector (infrastructure, technology, investment promotion/market development and RDE).

Development and maintenance of R&D information systems

PCARRD will continue to provide timely, reliable and relevant data and information to its clients and beneficiaries. Particularly, it will provide information related to the generation and dissemination of technologies and products envisioned to be attained by 2010. Development and maintenance of needed information systems ([Table 4](#)) will be the major support activities.

Packaging of science-based information materials

Information and technologies generated by the R&D programs and activities will continue to be disseminated to appropriate users in usable form and format. The science-based IEC materials planned in the next four years are the listed in [Table 5](#).

Policy Formulation/Research and Advocacy (PFRA)

PCARRD's Policy Research and Advocacy Program aims to ensure that the policy environment is conducive for S&T development and investment in the AFNR sectors. The main thrust of this banner program is to ensure that the Council can carry out its programs harmoniously with other institutions and sectors in the country through the policies and advocacies it creates. It allows the three other programs to operate under a supportive and appropriate institutional framework.

Components

Sector-based PFRA

PCARRD shall continue its analysis and advocacy on macro policy issues that have significant impacts on the AFNR sectors. Special emphasis will be placed on the following areas of concern: global competitiveness; agricultural land use and asset reform; food security and poverty alleviation; natural resource sustainability and environmental quality; and agricultural inputs and support services.

The Council shall also sustain its efforts on policy issues that affect specific subsectors, commodities, or programs. In the crop subsector, studies will be focused on analyzing the impact of pertinent public policies and programs such as trade liberalization and agrarian reform, postharvest, integrated pest management, seed production, distribution system, and agricultural machineries. In livestock, focus shall be on policy issues related to swine and poultry efficiency. In forestry and environment, priority will be on watershed management, wildlife conservation, agroforestry, and forest-based products manufacturing and marketing, sloping land management, and solid waste management ([Table 6](#)).

Issue-based PFRA

PCARRD shall also carry out policy formulation, analysis, and advocacy activities on issues related to fundamental concerns such as modern biotechnology and intellectual property management ([Table 7](#)).

Strategic Assessment, Impact Assessment of Policies, Industry/Technology Forecasting

Strategic assessment, impact assessment of policies and industry/technology forecasting are crucial to PCARRD. Being at the helm of the country's R&D system and working for a sector stricken with poverty, low productivity and resource degradation, the council is formidably challenged. Among these challenges are the meager resources and ensuring that the outputs of research would really make a difference in people's lives especially that of the poor. The management mandate is therefore focusing in doing the right things (improving effectiveness) and doing things right (improving efficiency).

Organized information is needed to guide PCARRD to ask the right questions and make the right decisions. Among other things, this includes information ensuing from appraisal of specific allocation issues such as what management and support systems are most appropriate under a re-engineered PCARRD, and "what to research" given meager R&D resources. The details on the initiatives to be pursued under this component are contained in [Table 8](#).

Communication Research and Strategies as Support to Policy Awareness and Advocacy Initiatives

1. Conduct of needs assessment on proposed communication tools in support of advocacy and awareness initiatives.
2. Conduct of AKAP and stakeholders' analysis as basis for determining appropriate communication tools for advocacy and awareness initiatives
3. Development of IEC/advocacy communication materials.

R&D Results Utilization

PCARRD is committed to the utilization of the knowledge and innovations generated from R&D. The Council ensures that these results will reach the end-users, including the LGUs, farmers, entrepreneurs, technical people, and students, through the regional consortia and the Philippine National Agriculture and Resources Research and Development System (NARRDS). The activities and services provided under this program will be harnessed to support the S&T agenda for 2006-2010.

Components

Techno Gabay Program (TGP)

TGP is one of the components under R&D Results Utilization. Various activities that are intended to enhance technology transfer modalities in the AFNR sectors are embodied under five TGP major activities:

1. Enhancement of existing and development of new S&T-based enterprises
2. Packaging and dissemination of appropriate content and services of TechnoPinoy Centers and the Magsasaka-Siyentista (MS) program.
3. Expanding services of Farmers' Information and Technology Services (FITS) centers toward increasing value of agricultural products.
4. Broadening the knowledge base.
5. Upgrading of technology transfer management system and governance.

The specific activities to be undertaken under this component are shown in [Table 9](#).

Technology Packaging

Under this component, priority activities shall be pursued to attract investors on technology-based enterprises. These include the following:

1. *Packaging of Investment Portfolios*. The investment package is a business proposal that works for an enterprise to plan, allocate resources, focus, and prepare for problems and opportunities. Translating feasibility studies into an

investment package enables careful and exhaustive evaluation of the appropriateness and viability of technologies in specific locations and conditions.

This activity aims to promote greater utilization of the technologies produced by NARRDS for productivity and profit in agricultural undertakings.

2. *Technology Profitability Analysis*. Profitability analysis is an analytical tool on the project planning process and shows how it would operate under a set of assumptions. It includes the technology and financial aspects of a project. It determines which projects are technically and economically feasible for implementation
3. *Technology Assessment (TA)*. TA is a strategy/approach designed to identify gaps and risks associated with technology transfer and utilization and to determine appropriate interventions to mitigate such gaps/risks. It helps identify actions that need to be taken in the transfer and utilization of specific technologies. TA teams use the technology assessment protocol (TAP) to conduct technology assessments.

Intellectual Property (IP) Management and Other Technical Assistance on Technology Transfer

Through this component, the provision of technical assistance on IP management and other technology transfer-related concerns is effected:

1. *IP Management*. This is in line with the Institutionalization of the Intellectual Property Management in the S&T Agenda per *DOST MC 001 Series 2002*. The project encompasses activities on: formulation of policies, guidelines for S&T in ANR; review/evaluation R&D programs and projects; monitoring and evaluation of R&D programs/projects; capacity building of research personnel; and technical assistance through brokering with concerned agencies/experts (IPO, TAPI),, review of agreements and policy advocacy.
2. *Other Technical Assistance*. This includes providing technical assistance on a) packaging, planning, monitoring and evaluation of other proposals/projects/ programs/policies on technology transfer; b) policy advocacy; c) inquiries on technology transfer; d) working committees; and other concerns on technology transfer.

Capability Building and Governance (CBG)

Under this banner program, PCARRD will continue to develop the S&T capability of its regional partners and to provide a conducive policy environment for the implementation of S&T programs and activities. The council shall also support institutions engaged in strategic research and midstream and downstream R&D. This will be done through various component programs that enhance the efficient implementation of future S&T programs/projects.

Components

1. Upgrading the competencies of researchers in priority fields

PCARRD will invest in the following activities to improve the quality of research outputs and to develop/enhance the culture of technological innovation of R&D institutions:

- Strategic Human Resource (HR) planning and programming
- Training and Development
- Program Packaging/ Management
- Provision of awards, recognition and incentives to deserving S&T professionals and workers
- Implementation of a Human Resource Information Service (HRIS)
- Management/ administration of a Human Resource Development Center (HRDC)

2. R&D Equipment and Infrastructure Development Program.

The pursuit of this component is to develop state of the art facilities and equipment for priority institutions engaged in R&D fields. Specific forms of support include grants for the rehabilitation of existing facilities and grants for the acquisition of equipment specially laboratory and essential field equipment.

3. Improvement of network management

This will be done by enhancing the skills of researchers and other S&T workers on knowledge and technology management, new research methods, tools and techniques, research administration and management.

4. Rationalization of investments, management systems and generation of support

PCARRD will continue to explore new governance approaches to enhance R&D management in the NARRDS and to ensure results and impacts from limited R&D funds.

The specific programs under this component are the following:

- The PCARRD Centers of Research Excellence (CORE) Program will be pursued to raise the research and capacity development ceiling of existing first-rate research laboratories, units or institutes and accelerate the development and delivery of technology and information.
- PCARRD will provide support to the Federation of Philippine Agricultural Societies and Professional Organization (FPASPO) in order to: a) facilitate communication and interaction among member societies/organizations; b) advocate common positions on agriculture-related issues under a unified stance; c) promote excellence and growth in the agriculture profession; and d) enhance public awareness and the flow of information from R&D to extension.
- Within the organization, PCARRD will put in place a quality culture through its continual improvement program to increase the organization's efficiency and effectiveness in responding to the needs of its stakeholders.

5. Enhancement of Program Planning, Monitoring and Evaluation Systems (PPME)

6. Strengthening and maintenance of local and international linkages

The following are the activities related to the achievement of this component:

- Development of programs for resource generation;
- Encourage collaborative activities with the industry sector and the LGUs;
- Identification and provision of support to R&D needs of public regulatory agencies; and,
- Enhancement of linkaging and brokering functions related to global S&T developments.

Table 2. Target products for major and minor commodities under the Integrated S&T Agenda for CY 2006 –2010

TARGET PRODUCTS	COMMODITIES	INDUSTRY CLUSTER
CROPS SECTOR		
Mango <ul style="list-style-type: none"> • Fresh fruits • Processed products Banana <ul style="list-style-type: none"> • Varieties • Planting materials • Fresh fruits (lakatan, latundan, saba) • Processed products (saba chips) 	Major Commodities Mango Banana	EXPORT FRUIT CROPS
Papaya <ul style="list-style-type: none"> • Varieties • Fresh fruits • Processed products (dried papaya) Pineapple <ul style="list-style-type: none"> • Fresh fruits Pili <ul style="list-style-type: none"> • Varieties • Planting materials • Fresh nuts • Processed products Durian <ul style="list-style-type: none"> • Fresh fruits • Processed products Jackfruit <ul style="list-style-type: none"> • Varieties • Planting materials • Processed products Pummelo <ul style="list-style-type: none"> • Fresh fruits 	Minor Commodities Papaya Pineapple Pili Durian Jackfruit Pummelo	
Vegetables <ul style="list-style-type: none"> • Varieties • Organically grown fresh vegetables • Fresh vegetables 	Major Commodity Vegetables	VEGETABLES, LEGUMES AND ROOT CROPS (VELERO)
Peanut <ul style="list-style-type: none"> • Varieties • Fresh nuts • Processed products Yam (<i>Ubi</i>) <ul style="list-style-type: none"> • Varieties • Yam for processing 	Minor Commodities Legumes (Peanut) Root crops (Yam Sweet potato Cassava)	

TARGET PRODUCTS	COMMODITIES	INDUSTRY CLUSTER
<p>Sweetpotato</p> <ul style="list-style-type: none"> Varieties Planting materials Processed products <p>Cassava</p> <ul style="list-style-type: none"> Varieties for industrial purposes Planting materials Processed products 		
<p>Coffee</p> <ul style="list-style-type: none"> Organic <i>Arabica</i> coffee beans Planting materials Ground coffee <p>Abaca</p> <ul style="list-style-type: none"> Varieties Planting materials Tools, equipment & machineries for fiber extraction Diagnostic kits Abaca fiber Quality standards <p>Rubber</p> <ul style="list-style-type: none"> Varieties Rubber latex 	<p>Minor Commodities</p> <p>Coffee Abaca Rubber</p>	<p>COFFEE, ABACA AND RUBBER</p>
<p>Coconut</p> <ul style="list-style-type: none"> Planting materials (<i>macapuno</i>) Planting materials (coconut) Fresh nuts Processed products <p>Oil Palm</p> <ul style="list-style-type: none"> Fresh nuts 	<p>Minor Commodity</p> <p>Coconut Oil Palm</p>	<p>COCONUT AND OIL PALM</p>
<p>Ornamental Plants</p> <ul style="list-style-type: none"> Varieties Tools, equipment, machineries Cutflowers/cutfoliage 	<p>Minor Commodity</p> <p>Ornamental Plants</p>	<p>ORNAMENTAL PLANTS</p>
<p>Rice and White Corn</p> <ul style="list-style-type: none"> Organically grown rice Rice White corn 	<p>Minor Commodity</p> <p>Rice White Corn</p>	<p>RICE AND WHITE CORN</p>
<p>Sugarcane</p> <ul style="list-style-type: none"> Muscovado sugar 	<p>Minor Commodity</p> <p>Sugarcane</p>	<p>SUGARCANE</p>

TARGET PRODUCTS	COMMODITIES	INDUSTRY CLUSTER
LIVESTOCK SECTOR		
Poultry <ul style="list-style-type: none"> • Broiler meat • Table eggs (commercial) • NCD vaccine in feed & water • Day-old and hardened chicks • Slaughter native chicken • Processed and packed food products. 	Minor Commodities Poultry Swine Yellow corn	SWINE – POULTRY - YELLOW CORN
Swine <ul style="list-style-type: none"> • Weanlings • Slaughter commercial pigs • Animal disease diagnostic kits • Lechon pigs • Slaughter native pigs Yellow Corn <ul style="list-style-type: none"> • Feed corn • Solar and mechanical dryers 		
Goat <ul style="list-style-type: none"> • Breeder goats • Slaughter goats • Phytomedical anthelmintics 		
Cattle <ul style="list-style-type: none"> • Slaughter cattle Carabao/buffalo <ul style="list-style-type: none"> • Breeder dairy buffaloes • Slaughter buffalo • Buffalo milk 	Minor Commodities Cattle Carabao	

TARGET PRODUCTS	COMMODITIES	INDUSTRY CLUSTER
FORESTRY CLUSTER		
<p>Woodfuel and Biofuel</p> <ul style="list-style-type: none"> • Jatropha biodiesel • Bio-ethanol from cassava and sweet sorghum <p>Environmental Services (watershed management)</p> <ul style="list-style-type: none"> • Safe and clean water • Improved watershed areas for water production other ecosystem services • Quality water for agricultural production • Biofertilizers • Organic fertilizer • Soil conditioners <p>Environmental Services (disaster and hazard management)</p> <ul style="list-style-type: none"> • Intelligent decision support system • Hazard maps • Protected/rehabilitated/conserved land and water resources <p>Environmental Services (pollution and waste management)</p> <ul style="list-style-type: none"> • Recovered, recycled, and reused wastes • Clean environment <p>Environmental Services (global climate change)</p> <ul style="list-style-type: none"> • Agricultural systems adapted to climate change • Adaptation strategies for sustainable development <p>Environmental Services (ecotourism/ biodiversity)</p> <ul style="list-style-type: none"> • Ecotourism sites 	<p>Major Commodities</p> <p>Woodfuel and Biofuel Environmental Services</p>	<p>FORESTRY</p>

TARGET PRODUCTS	COMMODITIES	INDUSTRY CLUSTER
Furniture and Handicrafts <ul style="list-style-type: none"> • Bamboo shoots • Engineered bamboo Lumber and Panel Products; Furniture and Handicrafts; Poles and Piles <ul style="list-style-type: none"> • Lumber • Panel products • Furniture • Handicrafts • Poles • Piles 	Minor Commodities Furniture and Handicrafts Lumber and Panel Products Poles and Piles	
101 PRODUCTS	6 MAJOR COMMODITIES 25 MINOR COMMODITIES	10 INDUSTRY CLUSTERS

Table 3. Target products, R&D agenda and areas, thematic program areas and responsible consortia under the Integrated S&T Agenda in AFNR for CY 2006-2010

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
CROPS CLUSTER						
EXPORT FRUIT CROPS	Mango	Fresh fruits	Improving production system	Development/ Improvement of pest and disease management strategies	ILARRDEC CVARRD CLARRDEC STARRDEC WESMARRDEC SMARRDEC	Poverty alleviation & food security
				Development/ Improvement of farm production systems	CVARRD WESMARRDEC SMARRDEC CARRDEC	Poverty alleviation & food security
				Production of quality planting materials	CVCIRRD	Poverty alleviation & food security
				Development of new varieties through molecular studies and genetic engineering	STARRDEC	Frontier & cutting edge science
				Resource mapping using geographic information systems (GIS)	WESVARRDEC	Global competitiveness
				Development/ improvement of nutrient and water management systems	CLARRDEC STARRDEC	Poverty alleviation & food security
				Germplasm collection, conservation & utilization		Natural resources management and sustainable development
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	CVARRD SMARRDEC	Poverty alleviation & food security
				Development/ improvement of postharvest handling systems and facilities (controlled atmosphere)	CLARRDEC STARRDEC	Global competitiveness
			Improving production and marketing efficiencies	Market promotion strategies	CVARRD WESVARRDEC WESMARRDEC SMARRDEC	Poverty alleviation & food security
		Accelerating technology adoption	Technology promotion strategies	ILARRDEC	Poverty alleviation & food security	
			Technology promotion strategies (technology verification)	CLARRDEC CARRDEC	Global competitiveness	
		Processed products	Improving processing and marketing efficiencies	Supply chain improvement	ILARRDEC CLARRDEC STARRDEC WESVARRDEC WESMARRDEC SMARRDEC CARRDEC	Global competitiveness
				Development/ Improvement of processing systems and machineries	WESMARRDEC SMARRDEC	Global competitiveness

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
	Banana	Varieties	Improving production system	Development of new varieties through molecular studies and genetic engineering	STARRDEC CARRDEC	Frontier & cutting-edge science	
				Germplasm collection, conservation & utilization	STARRDEC SMARRDEC	Natural resources management and sustainable development	
		Planting materials	Improving production system	Production of quality planting materials through tissue culture	STARRDEC SMARRDEC CARRDEC CCARRD	Support to allied agricultural/forestry/services Frontier & cutting-edge science	
				Development/ Improvement of pest and disease management strategies	CVARRD STARRDEC WESMARRDEC SMARRDEC CCARRD	Poverty alleviation & food security	
		Fresh fruits (lakatan, latundan)	Improving production system	Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	STARRDEC WESMARRDEC SMARRDEC CARRDEC CCARRD	Poverty alleviation & food security
				Accelerating technology adoption	Technology promotion strategies (training, demonstration farms)	STARRDEC	Poverty alleviation & food security
				Improving processing technologies	Development/ Improvement of products and packaging systems	CVARRD STARRDEC	Poverty alleviation & food security
		Fresh fruits (saba)	Improving production system	Improving production and marketing efficiencies	Supply chain improvement	CVARRD STARRDEC SMARRDEC CCARRD	Poverty alleviation & food security
				Development of suitability maps	CCARRD	Poverty alleviation & food security	
				Development/ Improvement of farm production systems	STARRDEC	Poverty alleviation and food security	
				Development/ Improvement of pest and disease management strategies	CCARRD	Poverty alleviation & food security	
				Development/Improvement of farm tools and machineries (e.g. male bud remover)	STARRDEC CCARRD	Poverty alleviation & food security	
				Germplasm collection, conservation & utilization	STARRDEC SMARRDEC	Natural resources management and sustainable development	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
			Improving production and marketing efficiencies	Policy advocacy (pest/disease eradication procedure)	CCARRD	Poverty alleviation & food security	
			Accelerating technology adoption	Technology promotion strategies (technology demonstration)	CCARRD	Poverty alleviation & food security	
		Processed products (saba chips)	Improving processing and marketing efficiencies	Supply chain improvement	STARRDEC SMARRDEC	Global competitiveness	
	Papaya	Varieties	Improving production system	Varietal improvement/ Germplasm conservation & utilization	Development of new varieties through molecular studies and genetic engineering	STARRDEC	Poverty alleviation & food security/ Natural resources management and sustainable development
				Frontier & cutting edge-science			
		Fresh fruits	Improving production system	Development/ Improvement of pest and disease management strategies	STARRDEC	Global competitiveness	
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	STARRDEC	Poverty alleviation and food security	
		Processed products (dried papaya)	Improving processing and marketing efficiencies	Development/ Improvement of products and packaging systems	STARRDEC	Global competitiveness	
				Market promotion and strategies		Global competitiveness	
	Pineapple	Fresh fruits	Improving production system	Development/ improvement of nutrient and water management systems	STARRDEC BCARRD	Poverty alleviation & food security	
				Germplasm conservation and management	BCARRD	Natural resources management and sustainable development	
			Accelerating technology adoption	Technology promotion strategies	STARRDEC BCARRD	Poverty alleviation & food security	
			Improving production and marketing efficiencies	Market promotion and strategies (community support systems)	STARRDEC BCARRD	Poverty alleviation & food security	
		Pili	Varieties	Improving production system	Germplasm conservation & utilization	BCARRD	Natural resources management and sustainable development
			Production of quality planting materials through sex determination	Frontier & cutting-edge science			
		Planting materials	Improving production system	Production of quality planting materials	BCARRD	Poverty alleviation & food security	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
		Fresh nuts	Improving production and marketing efficiencies	Supply chain improvement	BCARRD	Poverty alleviation & food security
		Processed products	Improving processing technologies	Development/Improvement of products and packaging systems	BCARRD	Poverty alleviation & food security
	Durian	Fresh fruits	Improving production system	Development/Improvement of pest and disease management strategies	SMARRDEC CARRDEC	Global competitiveness
Development/Improvement of nutrient and water management systems				Global competitiveness		
Development/Improvement of farm production systems				Poverty alleviation & food security		
Germplasm conservation & utilization			SMARRDEC	Natural resources management and sustainable development		
Processed products		Improving processing technologies	Development/Improvement of products and packaging systems	SMARRDEC CARRDEC	Global competitiveness	
		Improving production and marketing efficiencies	Market promotion strategies (Market and feasibility studies)	SMARRDEC CARRDEC	Global competitiveness	
Jackfruit	Varieties		Improving production system	Germplasm collection, conservation & utilization	VICARP	Poverty alleviation & food security
			Reducing postharvest losses	Development/Improvement of postharvest handling systems and facilities	VICARP	Poverty alleviation & food security
	Planting materials	Improving production system	Production of quality planting materials	VICARP	Poverty alleviation & food security	
		Processed Products	Improving processing technologies	Development/improvement of products and packaging of system	VICARP	Poverty alleviation & food security
			Improving marketing systems and policy environments	Market promotion and strategies	VICARP	Poverty alleviation & food security
Pummelo	Fresh fruits		Improving production system	Development/Improvement of pest and disease management strategies	SMARRDEC	Poverty alleviation & food security
				Development/ Improvement of nutrient and water management systems		Poverty alleviation & food security
				Development/improvement of farm production systems		Poverty alleviation & food security
			Germplasm collection, conservation & utilization	Natural resources management and sustainable development		
	Reducing postharvest losses	Development/Improvement of postharvest handling systems and facilities	SMARRDEC	Poverty alleviation & food security		

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
VEGETABLES, LEGUMES AND ROOT CROPS	Vegetables	Varieties	Improving production system	Development of improved varieties	STARRDEC	Poverty alleviation & food security	
				Germplasm collection, conservation & utilization	HARRDEC STARRDEC	Natural resources management and sustainable development	
		Organically grown fresh vegetables	Improving production system	Development/Improvement of integrated crop management systems	HARRDEC ILARRDEC CVARRD CLARRDEC STARRDEC	Poverty alleviation and food security	
				Development/Improvement of pest and disease management strategies	HARRDEC ILARRDEC CVARRD STARRDEC NOMCARRD	Poverty alleviation & food security	
				Development/ Improvement of nutrient and water management systems		Poverty alleviation & food security	
				Development of improved varieties	STARRDEC	Poverty alleviation & food security	
				Development/Improvement of protected cultivation technology	HARRDEC NOMCARRD	Poverty alleviation & food security	
				Reducing postharvest losses	Development/Improvement of postharvest handling systems and facilities	HARRDEC CLARRDEC STARRDEC NOMCARRD	Poverty alleviation & food security
				Improving production and marketing efficiencies	Supply chain improvement	STARRDEC NOMCARRD	Poverty alleviation & food security Global competitiveness
					Improving welfare of producers		Poverty alleviation & food security
		Fresh vegetables	Improving production system	Development of improved varieties	STARRDEC	Poverty alleviation & food security	
				Germplasm collection, conservation & utilization	HARRDEC STARRDEC	Natural resources management and sustainable development	
				Development/Improvement of protected cultivation technology	HARRDEC CLARRDEC STARRDEC VICARP NOMCARRD	Poverty alleviation & food security	
				Development/Improvement of nutrient and water management systems	STARRDEC NOMCARRD	Poverty alleviation & food security	
				Development/Improvement of pest and disease management strategies	STARRDEC	Poverty alleviation & food security	
				Improving the efficiency of seed production system	CLARRDEC STARRDEC	Poverty alleviation & food security	
				Improving the efficiency of the seed supply chain	ILARRDEC	Poverty alleviation & food security	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
			Reducing postharvest losses and improving marketing efficiencies	Development/ improvement of postharvest handling systems and facilities	HARRDEC CLARRDEC STARRDEC	Poverty alleviation & food security
				Development/ Improvement of products and packaging systems	HARRDEC	Poverty alleviation & food security
				Supply chain improvement		Poverty alleviation & food security Global Competitiveness
				Improving welfare of producers		Poverty alleviation & food security
	Peanut	Varieties	Improving production system	Varietal improvement/ Germplasm conservation & utilization	CVARRD CLARRDEC	Poverty alleviation & food security
		Fresh nuts	Improving production system	Varietal improvement/ Germplasm conservation & utilization	CVARRD CLARRDEC	Poverty alleviation & food security
				Development/Improvement of nutrient and water management systems		Poverty alleviation & food security
			Reducing postharvest losses	Development/Improvement of postharvest handling systems and facilities	CVARRD CLARRDEC	Poverty alleviation & food security
				Development/Improvement of farm tools and machineries		Poverty alleviation & food security
		Processed products	Improving processing technologies	Development/ Improvement of products and packaging systems	CVARRD CLARRDEC	Poverty alleviation & food security
	Yam (<i>ubi</i>)	Varieties	Improving production system	Varietal improvement/ Germplasm conservation & utilization	HARRDEC ILARRDEC	Poverty alleviation & food security
		Yam for processing	Improving production system	Improving the efficiency of planting material production	HARRDEC ILARRDEC VICARP	Support to allied agricultural/forestry services
				Germplasm collection, conservation & utilization		Natural resources management and sustainable development
				Varietal improvement	HARRDEC	Support to allied agricultural/forestry services
	Sweetpotato	Varieties	Improving production system	Varietal improvement/ Germplasm collection, conservation & utilization	HARRDEC VICARP	Poverty alleviation & food security Natural resources management and sustainable development
				Development of new varieties through genetic engineering	VICARP	Support to allied agricultural/forestry services
		Planting materials	Improving production system	Improving the efficiency of planting material production	HARRDEC VICARP	Poverty alleviation & food security
		Processed products	Improving processing technologies	Development/Improvement of products and packaging systems	VICARP	Poverty alleviation & food security

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA		
	Cassava	Varieties for industrial purposes	Improving production system	Varietal improvement/ Germplasm collection, conservation & utilization	HARRDEC VICARP	Poverty alleviation & food security Natural resources management and sustainable development		
		Planting materials	Improving production system	Improving the efficiency of planting material production	HARRDEC VICARP WESMARRDEC	Poverty alleviation & food security		
		Processed products	Improving processing technologies	Development/Improvement of products and packaging systems	VICARP	Poverty alleviation & food security		
COFFEE	Coffee	Organic <i>Arabica</i> coffee beans	Improving production system	Development/ Improvement of organic production systems	HARRDEC STARRDEC	Poverty alleviation & food security		
				Production of quality planting materials	HARRDEC	Poverty alleviation & food security		
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	HARRDEC	Poverty alleviation & food security		
				Development/ Improvement of products and packaging systems	HARRDEC STARRDEC	Poverty alleviation & food security		
				Market promotion and strategies		Poverty alleviation & food security		
		Planting materials	Improving production system	production of quality planting materials through tissue culture	STARRDEC	Poverty alleviation & food security		
				Germplasm collection, conservation & utilization			Natural resources management and sustainable development	
		Ground coffee	Improving processing technologies	Development/ Improvement of products and packaging systems (Coffee blends)	STARRDEC	Poverty alleviation & food security		
				Improving production and marketing efficiencies			STARRDEC	Poverty alleviation & food security Global Competitiveness
				Improving welfare of producers				Poverty alleviation & food security
ABACA	Abaca	Varieties	Improving production system	Development of new varieties through molecular studies and genetic engineering	VICARP	Frontier & cutting edge science, Global competitiveness		
				Development/Improvement of pest and disease management strategies	CVCIRRD VICARP WESMARRDEC CCARRD	Poverty alleviation & food security		
				Development/ Improvement of nutrient and water management systems	VICARP	Poverty alleviation & food security		
				Germplasm collection, conservation & utilization	BCARRD VICARP	Natural resources management and sustainable development		
		Planting materials	Improving production system	Production of quality planting materials through virus indexing and tissue culture	BCARRD VICARP CCARRD	Support to allied agricultural/forestry services		

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CO[PI]NSORTIUM	THEMATIC AREA
		Tools, equipment, machineries	Improving processing technologies	Development/ Improvement of processing systems and machineries for fiber extraction	BCARRD VICARP WESMARRDEC CCARRD	Global Competitiveness
		Diagnostic kits	Improving production system	Development/ Improvement of diagnostic kits	VICARP	Support to allied agricultural/forestry services
		Abaca fiber	Improving production system	Development/ Improvement of farm production systems	CVCIRRD	Poverty alleviation & food security
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	BCARRD CVCIRRD	Global competitiveness
			Accelerating technology adoption	Technology promotion strategies	VICARP	Global competitiveness Poverty alleviation & food security
			Improving production and marketing efficiencies	Supply chain improvement	BCARRD VICARP	Poverty alleviation & food security Global competitiveness
		Improving welfare of producers			Poverty alleviation & food security	
			Regulation of movement of diseased plant materials	CVCIRRD	Support to allied agricultural/forestry services	
		Quality standards	Improving marketing systems and policy environments	Market promotion and strategies (quality standards)	CVCIRRD	Global competitiveness
		RUBBER	Rubber	Varieties	Improving production system	Germplasm collection, conservation & utilization
Rubber latex	Improving production system			Development/ Improvement of farm production systems	WESMARRDEC CARRDEC	Poverty alleviation & food security
				Development/ Improvement of pest and disease management strategies		Poverty alleviation & food security
	Village level rubber processing	CARRDEC	Poverty alleviation & food security			
COCONUT AND OIL PALM	Coconut	Planting materials (<i>Macapuno</i>)	Improving production system	Production of quality planting materials	STARRDEC BCARRD WESMARRDEC SMARRDEC	Poverty alleviation & food security
				Development/Improvement of pest and disease management strategies	STARRDEC	Support to allied agricultural/forestry services
		Planting materials (coconut)	Improving production system	Germplasm collection, conservation & utilization	STARRDEC WESMARRDEC SMARRDEC	Natural resources management and sustainable development
				Development of new varieties through Marker-aided selection		Frontier & cutting-edge science
				Development of new varieties through genetic engineering	STARRDEC BCARRD	Frontier & cutting-edge science

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
		Fresh nuts	Improving production system	Development/ Improvement of pest and disease management strategies	STARRDEC BCARRD WESMARRDEC SMARRDEC	Poverty alleviation & food security
				Resource mapping using Geographic Information System		Poverty alleviation & food security
				Development/ Improvement of farm production systems		Poverty alleviation & food security
		Improving production and marketing efficiencies	Supply chain improvement	STARRDEC BCARRD WESMARRDEC SMARRDEC	Global competitiveness	
			Improving welfare of producers		Poverty alleviation & food security	
	Processed products	Improving processing technologies	Development/ Improvement of products and packaging systems	STARRDEC BCARRD CVCIRRD WESMARRDEC SMARRDEC	Poverty alleviation & food security and Global competitiveness	
	Oil Palm	Fresh nuts	Improving production system	Development/ Improvement of farm production systems	CARRDEC	Poverty alleviation & food security
				Production of quality planting materials		Poverty alleviation & food security
				Germplasm collection, conservation & utilization		Natural resources management and sustainable development
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	CARRDEC	Poverty alleviation & food security
ORNAMENTAL PLANTS	Ornamental Plants	Varieties	Improving production system	Varietal improvement	HARRDEC STARRDEC CVCIRRD	Poverty alleviation & food security and Global Competitiveness
				Production of quality planting materials		Poverty alleviation & food security and Global Competitiveness
				Germplasm collection, conservation & utilization		Natural resources management and sustainable development
		Tools, equipment, machineries	Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	HARRDEC STARRDEC CVCIRRD	Poverty alleviation & food security and Global Competitiveness
		Cutflowers/ Cutfoliage	Improving production system	Development/ Improvement of farm production systems (Media mix studies)	STARRDEC	Poverty alleviation & food security and Global Competitiveness
				Development/Improvement of farm production systems		Poverty alleviation & food security and Global Competitiveness
			Reducing postharvest losses	Development/ improvement of postharvest handling systems and facilities	STARRDEC	Poverty alleviation & food security and Global Competitiveness

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
RICE AND WHITE CORN	Rice	Organically grown rice	Improving production system	Development/ Improvement of organic production systems	HARRDEC CLARRDEC	Poverty alleviation & food security	
				Production of quality planting materials			Poverty alleviation & food security
				Improving welfare of producers	HARRDEC		
		Rice	Improving production system	Development/ Improvement of farm production systems	CVARRD CLARRDEC SMARRDEC	Poverty alleviation and food security	
	Rice	Reducing postharvest losses	Improving welfare of producers	Development/ improvement of postharvest handling systems and facilities	CVARRD CLARRDEC	Poverty alleviation & food security	
				Improving welfare of producers			Global Competitiveness
	White corn	White corn	Improving production system	Development/ Improvement of farm production systems	ILARRDEC CVCIRRD CARRDEC	Poverty alleviation and food security	
				Germplasm collection, conservation & utilization			Natural resources management and sustainable development
Accelerating technology adoption			Technology promotion strategies	CVCIRRD CARRDEC	Global competitiveness and Poverty alleviation & food security		
SUGARCANE	Sugarcane	Muscovado sugar	Improving production system	Development/ Improvement of organic production systems	WESVARRDEC	Poverty alleviation and food security	
				Development/ Improvement of farm production systems			Poverty alleviation and food security
				Germplasm collection, conservation & utilization			Natural resources management and sustainable development
			Improving processing technologies	Development/ Improvement of products and packaging systems	WESVARRDEC	Poverty alleviation and food security	
			Accelerating technology adoption	Technology promotion strategies	WESVARRDEC	Global competitiveness and Poverty alleviation	
			Improving production and marketing efficiencies	Supply chain improvement	WESVARRDEC	Poverty alleviation & food security	
		Enhancing welfare of farmers				Poverty alleviation & food security	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
LIVESTOCK CLUSTERS						
SWINE-POULTRY-YELLOW CORN	Swine	Weanlings and slaughter commercial pigs	Enhancing competitiveness and sustainability of commercial animal production	Improving quality, productivity and efficiency of commercial scale livestock production	STARRDEC CLARRDEC NOMCARRD	Global competitiveness Poverty alleviation & food security
		Animal disease diagnostic kits			STARRDEC	Support to allied agricultural/forestry services
		Lechon pigs	Conservation, improvement and maximizing benefits from local animal genetic resources	Sustained and beneficial use of local animal genetic resources	STARRDEC	Poverty alleviation & food security Natural resources management and sustainable development
		Slaughter native pigs			HARRDEC	Poverty alleviation & food security Natural resources management and sustainable development
	Poultry	Broiler meat, table eggs (commercial)	Enhancing competitiveness and sustainability of commercial animal production	Improving quality, productivity and efficiency of commercial scale livestock production	STARRDEC CLARRDEC	Global competitiveness
		NCD vaccine in feed and water	Building assets from sustained small livestock and poultry-based enterprises	Improving productivity and efficiency of small-scale livestock and poultry production systems	STARRDEC CVCIRRD	Poverty alleviation and food security
		Day-old and hardened chicks, slaughter native chicken, Processed & packed food products	Conservation, improvement and maximizing benefits from local animal genetic resources	Sustained and beneficial use of local animal genetic resources	BCARRD WESVARRDEC	Poverty alleviation & food security, Natural resources management and sustainable development
	Yellow Corn	Feed corn	Enhancing competitiveness and sustainability of commercial animal production	Improving quality, productivity and efficiency of commercial scale livestock production	CVARRD CLARRDEC STARRDEC NOMCARRD	Poverty alleviation and food security
		Solar and mechanical dryers			CLARRDEC STARRDEC	Poverty alleviation & food security
	PASTURE - RUMINANTS	Goat	Breeder goats	Building assets from sustained small livestock and poultry-based enterprises	Improving productivity and efficiency of small-scale livestock and poultry production systems	CVARRD CLARRDEC
Conservation, improvement and maximizing benefits from local animal genetic resources						Sustained and beneficial use of local animal genetic resources
Slaughter goats				ILARRDEC CLARRDEC VICARP NOMCARRD CARRDEC	Poverty alleviation & food security	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
		Phytomedical anthelmintics			ILARRDEC CVARRD CLARRDEC	Poverty alleviation & food security
	Cattle	Slaughter cattle	Building assets from sustained small livestock and poultry-based enterprises	Improving productivity and efficiency of small-scale livestock and poultry production systems	BCARRD	Poverty alleviation & food security
	Carabao/ Buffalo	Breeder dairy buffaloes	Conservation, improvement and maximizing benefits from local animal genetic resources	Sustained and beneficial use of local animal genetic resources	CLARRDEC	Frontier and cutting edge science
		Slaughter buffalo Buffalo milk	Building assets from sustained small livestock and poultry-based enterprises	Improving productivity and efficiency of small-scale livestock and poultry production systems	CLARRDEC CVCIRRD	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
FORESTRY CLUSTER							
	Furniture and Handicrafts	Bamboo shoots	Enhancing utilization of bamboo shoots for export	Bamboo production and management	ILARRDEC STARRDEC BCARRD WESVARRDEC NOMCARRD	Poverty alleviation & food security	
				Post-harvest processing			
				Economics and marketing			
		Engineered bamboo	Enhancing production of quality raw materials; Improving processing machine efficiency	Bamboo production and management	ILARRDEC STARRDEC BCARRD WESVARRDEC NOMCARRD		Natural resources management and sustainable development
				Bamboo utilization and processing			
			Improving production and marketing efficiencies	Supply chain improvement	ILARRDEC STARRDEC WESVARRDEC		
	Lumber and Panel Products; Furniture & Handicrafts; Poles and Piles	Lumber Panel products; Furniture Handicrafts Poles Piles	Enhancing production of quality raw materials and products	Nursery and plantation management	STARRDEC CCARRD	Natural resource management and sustainable development	
				Forest biotechnology (breeding of selected tree and non-tree species through macro and micropropagation)	STARRDEC	Frontier and cutting-edge science	
				Product development and improvement	CCARRD STARRDEC	Natural resource management and sustainable development Global Competitiveness	
				Marketing and socio-economic studies			
				Production of quality raw materials			
				Product development and improvement	ILARRDEC STARRDEC	Global Competitiveness	
				Socio-economics and feasibility studies	STARRDEC	Global Competitiveness	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
	Woodfuel and biofuel	Jatropha biodiesel	Enhancing production of quality planting materials for biofuels; developing efficient oil extraction machine for biofuel	Germplasm management and varietal improvement	ILARRDEC CVARRD CLARRDEC STARRDEC VICARP WESMARRDEC CARRDEC	Natural resources management and sustainable development; Global Competitiveness
				Nursery and plantation technologies	HARRDEC ILARRDEC CVARRD CLARRDEC STARRDEC BCARRD WESVARRDEC CVCIRRD VICARP WESMARRDEC NOMCARRD SMARRDEC CARRDEC CCARRD	Natural resources management and sustainable development; Global Competitiveness
				Physico-chemical characterization	STARRDEC VICARP	Natural resources management and sustainable development; Global Competitiveness
				Development of machinery and technology package for mechanical extraction		Natural resources management and sustainable development; Global Competitiveness
				Product development		Natural resources management and sustainable development; Global Competitiveness
				Socio-economics and market studies		Natural resources management and sustainable development; Global Competitiveness
		Bio-ethanol from cassava and sweet sorghum	Ensuring supply of quality planting material	Varietal improvement	ILARRDEC CVARRD STARRDEC WESVARRDEC VICARP NOMCARD	Natural resources management and sustainable development
			Ensuring sustainable supply of cassava and sweet sorghum	Pests and diseases management	ILARRDEC STARRDEC NOMCARRD WESVARRDEC	Natural resources management and sustainable development
				Cultural management/ farming systems	STARRDEC CLARRDEC WESVARRDEC NOMCARRD	Natural resources management and sustainable development

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA	
			Development of processing machine for oil extraction and its utilization for bio-ethanol.	Processing equipment	ILARRDEC CLARRDEC STARRDEC	Natural resources management and sustainable development	
				Postharvest management	WESVARRDEC VICARP CARRDEC		
					Production of ethanol through enzymatic and microbial process	STARRDEC	Natural resources management and sustainable development
					Socio-economics and market studies	ILARRDEC STARRDEC	Natural resources management and sustainable development
					Feasibility studies of biofuel from different sources	ILARRDEC STARRDEC VICARP	Natural resources management and sustainable development
					Wastes management		Natural resources management and sustainable development
	Environmental services (watershed management)	Safe and clean water	Enhancing sustainable management of critical watersheds	Watershed management	STARRDEC WESVARRDEC NOMCARRD SMARRDEC	Natural resource management and sustainable development	
		Improved watershed areas for water production and other ecosystem services	Enhancing sustainable watershed management	Hydrologic studies	HARRDEC ILARRDEC CLARRDEC STARRDEC NOMCARRD	Natural resources management and sustainable development	
					Development/ improvement of approaches and methodologies as decision support for watershed management	STARRDEC	Natural resources management and sustainable development
		Quality water for agricultural production		Development/ improvement of integrated soil and water resources for agricultural production	HARRDEC ILARRDEC CLARRDEC WESVARRDEC CVCIRRD NOMCARRD CARRDEC	Natural resource management and sustainable development	
		Biofertilizer Organic fertilizer Soil conditioners		Development of fertilizers, soil conditioners and other soil fertilizer management technologies	HARRDEC ILARRDEC CLARRDEC STARRDEC BCARRD CVCIRRD NOMCARRD CARRDEC		
				Production and marketing efficiencies	Supply chain improvement	CLARRDEC STARRDEC	Global Competitiveness
				Environmental impact assessment		Natural resource management and sustainable development	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
	Environmental services (disaster and hazard management)	Intelligent decision support system Hazard maps	Enhancing disaster/hazard mitigation and protection of biodiversity and ecologically fragile areas	Environmental hazard management; watershed management	HARRDEC ILARRDEC CLARRDEC STARRDEC	Frontier and cutting-edge science
			Enhancing disaster/hazard mitigation and protection of biodiversity and ecologically fragile areas	Environmental hazard management	STARRDEC	Support to allied agricultural/ forestry services; natural resource management and sustainable development
		Protected/rehabilitated/ conserved land and water resources	Developing mitigating measures and modalities for disaster/hazard and ecologically fragile areas	Formulation of environmental hazard management strategies	HARRDEC ILARRDEC CLARRDEC STARRDEC BCARRD CVCIRRD NOMCARRD SMARRDEC	Natural resources management and sustainable development
Environmental services (pollution and waste management)	Recovered, recycled, and reused wastes; clean environment	Managing waste and pollutant for environmental protection and resource recovery	Development of systems, strategies and approaches to manage wastes and pollutants	ILARRDEC STARRDEC BCARRD WESVARRDEC NOMCARRD	Frontier and cutting-edge science Natural resources management and sustainable development	
Environmental services (global climate change)	Agricultural systems adapted to climate change Adaptation strategies for sustainable development	Minimizing effects of agriculture and forestry activities on climate change	Development of strategies for adaptation and mitigation related to climate variability change and extreme events	STARRDEC	Natural resources management and sustainable development	
			Vulnerability and impact assessment; watershed development	CLARRDEC STARRDEC CVCIRRD NOMCARRD	Natural resource management and sustainable development	
Environmental services (ecotourism/ biodiversity)	Ecotourism sites	Improving biodiversity conservation and management for sustainable ecotourism; preservation and effective use of indigenous structures and system for community development and sustainable tourism	Standard development in selecting areas for ecotourism	HARRDEC ILARRDEC STARRDEC CVCIRRD CARRDEC	Natural resource management and sustainable development	
			Rehabilitation and management of ecotourism sites		Natural resources management and sustainable development	

INDUSTRY STRATEGIC PLAN	COMMODITY	PRODUCT	R&D AGENDA	R&D AREA	CONSORTIUM	THEMATIC AREA
			Improving biodiversity conservation and management for sustainable ecotourism; preservation and effective use of indigenous structures and system for community development and sustainable tourism	Ecotourism product development	HARRDEC STARRDEC CVCIRRD CARRDEC	Natural resources management and sustainable development
				Solid waste management within ecotourism and agroecotourism sites	HARRDEC ILARRDEC STARRDEC CVCIRRD CARRDEC	Natural resources management and sustainable development
				Ethnobotanical, socio-economic and cultural studies on the management of economically important flora and fauna	HARRDEC ILARRDEC CLARRDEC STARRDEC CVCIRRD CARRDEC CCARRD	Natural resources management and sustainable development
				Environmental impact assessment	STARRDEC	Natural resource management and sustainable development

Table 4. R&D Information Systems for the S&T Agenda CY 2006-2010

PARTICULARS	YEAR				
	2006	2007	2008	2009	2010
A. To be Developed					
<input type="checkbox"/> Commodity Information Network (CIN) <ul style="list-style-type: none"> ▶ Corn and Other Feed Grains Information Network (CoFGIN) ▶ Philippine Watershed Information Network (PhilWIN) ▶ Ecotourism Information Network ▶ Non-Wood Forest Products Information Network ▶ PhilOrganic 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ 				
B. To be Enhanced and Maintained					
<input type="checkbox"/> Commodity Information Network (CIN) <ul style="list-style-type: none"> ▶ Horticulture Information Network (HORTINET) ▶ Mango Information Network (MIN) ▶ PROSEA ▶ Biotechnology Web ▶ Swine Information Network (SwIN) ▶ Poultry Information Network (PIN) ▶ Ruminants Information Network (RIN) ▶ Corn and Other Feed Grains Information Network (CoFGIN) ▶ AgMachIN ▶ El Niño Information System ▶ Wood Information Network (Wood Infonet) ▶ Bamboo Information Network (Bamboo Infonet) ▶ Agroforestry Information Network (Agroforestry Infonet) ▶ Philippine Watershed Information Network (PhilWIN) ▶ Ecotourism Information Network ▶ Non-Wood Forest Products Information Network 	<ul style="list-style-type: none"> ✓ 	<ul style="list-style-type: none"> ✓ 	<ul style="list-style-type: none"> ✓ 	<ul style="list-style-type: none"> ✓ 	

PARTICULARS	YEAR				
	2006	2007	2008	2009	2010
▶ PhilOrganic		✓	✓	✓	✓
<input type="checkbox"/> R&D Management Information System (RDMIS)					
▶ Crops Sector	✓	✓	✓	✓	✓
▶ Livestock Sector	✓	✓	✓	✓	✓
▶ Forestry Sector	✓	✓	✓	✓	✓
▶ Agricultural Resources Management Sector	✓	✓	✓	✓	✓
▶ Socio-economics Sector	✓	✓	✓	✓	✓
<input type="checkbox"/> Training Databases					
▶ Socio-economics			✓	✓	✓

Table 5. Production and Publication of Science-Based Information Materials

TITLE	YEAR				
	2006	2007	2008	2009	2010
I. FOR PACKAGING					
A. The Philippines Recommends Series					
1 for native chicken production		✓			
2 for feed corn			✓		
3 for bamboo		✓			
4 for watershed management			✓		
5 for soil diagnosis and amelioration		✓			
6 for water saving technologies		✓	✓		
7 for alternative sources of energy from agriculture resources			✓	✓	
8 for pressurized irrigation system for high value crops				✓	✓
9 for root crops processing technologies					✓
10 for pili		✓			
11 for chrysanthemum		✓			
12 for pineapple		✓			
13 for papaya		✓			
B. Book Series, State of the Art Series and Compendium					
1 State of the Art - Supply chain management	✓	✓			
2 State of the Art - Poverty impact of development programs in AFNR		✓			
3 State of the Art - Urban vegetable production in the Philippines	✓	✓			
4 State of the Art - Agricultural mechanization in the Philippines: Status and directions	✓	✓			
5 State of the Art – Protected vegetable production in the Philippines		✓			
6 Compendium of information and technology on <i>Jatropha</i>		✓			
7 Protocol on Ex-Post SE Evaluation of R&D Projects		✓			
8 Research methodologies manual			✓		

TITLE	YEAR				
	2006	2007	2008	2009	2010
9 Policy options to enhance the development of smallhold banana industry		✓			
10 Performance evaluation and microlevel impact assessment of TGP		✓			
11 Proceedings: Rice, water and forest conference		✓			
C. Primers					
1 Triple cross goat production	✓				
2 Crossbreeding for slaughter pig production	✓				
3 Crossbreeding for slaughter pig production (Tagalog version)		✓			
4 Free range native chicken production		✓			
5 Application of the village-level processing facilities for coffee				✓	
6 Organic vegetable production		✓			
7 Organic fertilizer production (Model 1: Private entrepreneur)		✓			
8 Organic fertilizer production (Model 2: LGU-based)		✓			
D. Komiks Series					
1 May pera sa kambing (isang komiks ukol sa pagnenegosyo ng kambing)	✓				
2 RRG: sagot sa salot sa kambing (isang komiks ukol sa rapid rotational grazing)	✓				
3 Kanlungan ng pag-asa sa gitna ng unos (isang komiks ukol sa pag-iwas sa bulate ng kambing)	✓				
4 Ang lahat para kay Bamboo! (isang komiks ukol sa paggamit ng dahon at bunga bilang pamurga)	✓				
5 UMMT: Pansagip sa kambing, proyektong pangkabuhayan (isang komiks ukol sa paggawa ng urea-molasses-mineral tube sa bukid)	✓				
8 Cradle of hope amidst the storm	✓				
9 RRG: defense against the serial killers in the goat farms	✓				
E. Manuals and Production Guides					
1 Bamboo for ornamentals			✓		
2 Production technology on natural dye			✓		

TITLE	YEAR				
	2006	2007	2008	2009	2010
3 Phenology of some native trees in Caraga				✓	
4 Bambusetum in the Philippines			✓		
5 <i>Jatropha</i> varieties for biofuel production			✓		
6 Seeds and seedling sources of priority ITP species in the Philippines			✓		
7 Macropropagation techniques for priority trees				✓	
8 Potential forest tree species for biofuel			✓		
9 Clonal propagation of pitcher plant				✓	
10 Food plants from the forest			✓		
11 Manual: Use of copra dryer and affordable village level processing equipment for coconut				✓	
12 Manual: Organic agriculture		✓			
13 Manual: CFV/SLM technologies			✓		
14 Manual: Systems approach to land use planning				✓	
15 Manual: Use of copra dryer and affordable village level processing equipment for coconut					✓
16 Manual: Protected vegetable production in the Philippines			✓		
17 Manual: Compendium of commercially viable coconut technologies		✓			
18 Manual: Facilitators on the integrated goat management (4 volumes)		✓			
F. Flyers, Leaflets, Brochures and Information Bulletin					
1 Promotion of safe and improved production and postproduction practices for VELERO					✓
2 Brochure on pests and diseases of selected industrial forest species	✓				
3 for CFV as a techno transfer modality	✓				
4 for PRO-ACT (Infanta) modality			✓		
5 for protected crop culture				✓	
6 for <i>Xylaria</i> for plastic degradation					✓
7 for vegetables (carrot, garden pea, snap beans, potato, alugbati, saluyot, ginger)		✓			

TITLE	YEAR				
	2006	2007	2008	2009	2010
G. Situationers					
1 S&T investment in AFNR		✓			
H. R&D Highlights (2005-2010)	✓	✓	✓	✓	✓
I. Fact Sheets					
1 Goats: sure bet in building rural assets	✓				
2 Native chicken: from scratching to niching	✓				
3 Livelihood opportunities from the milk of the best	✓				
4 Beefing up the country's cattle industry	✓				
5 Yellow corn: securing the future of the livestock and poultry industries	✓				
6 Organic vegetable production		✓			
7 Conservation agriculture		✓			
8 Agricultural machinery		✓			
K. Posters					
1 Native chicken products			✓		
2 Triple cross goats			✓		
3 Corn and other feed grains information network (CofGIN)			✓		
4 Swine artificial insemination				✓	
5 Organic anthelmintics				✓	
6 Triple cross/four way cross pigs					✓
L. E-learning Modules					
1 Slaughter goat production		✓			

TITLE	YEAR				
	2006	2007	2008	2009	2010
M. Profitability Analyses					
1 Fresh mango production	✓				
2 Lakatan production	✓				
3 Abaca fiber production	✓				
4 Tanglad tissue culture		✓			
5 Small-scale tanglad production		✓			
6 Arabica, excelsa and liberica coffee		✓			
7 Coffee clonal garden		✓			
8 Native papaya production (for papain)		✓			
9 Backyard "Bahay Kubo" production		✓			
10 Processed mango (puree and dried)		✓			
12 Controlled atmosphere technology for mango		✓			
13 Biodiesel from coconut		✓			
II. FOR RE-PRINTING					
A. The Philippine Recommends Series					
1 for broiler production			✓		✓
2 for table egg production				✓	
3 for native chicken production				✓	
4 for goat farming				✓	✓
5 for beef cattle production					✓
6 for feed corn					✓
7 for fast growing species		✓			
8 for wood furniture		✓			
9 for rattan		✓			
10 for agroforestry				✓	
11 for agricultural waste processing and management			✓		
12 for organic fertilizer production and utilization				✓	

TITLE	YEAR				
	2006	2007	2008	2009	2010
B. Primers					
1 Gabay sa pangangalaga ng triple cross na baboy		✓	✓	✓	✓
2 Triple cross goat production		✓	✓	✓	✓
3 Crossbreeding for slaughter pig production		✓	✓	✓	✓
4 Crossbreeding for slaughter pig production (Tagalog version)			✓	✓	✓
5 Free range native chicken production			✓	✓	✓
6 Pangangalaga ng kambing			✓	✓	✓
7 Primer on "Luz" calamansi production		✓			
C. Komiks Series					
1 May pera sa kambing (isang komiks ukol sa pagnenegosyo ng kambing)		✓	✓	✓	✓
2 RRG: sagot sa salot sa kabing (isang komiks ukol sa rapid rotational grazing)		✓	✓	✓	✓
3 Kanlungan ng pag-asa sa gitna ng unos (isang komiks ukol sa pag-iwas sa bulate ng kambing)		✓	✓	✓	✓
4 Ang lahat para kay Bamboo! (isang komiks ukol sa paggamit ng dahon at bunga bilang pamurga)		✓	✓	✓	✓
5 UMMT: Pansagip sa kambing, proyektong pangkabuhayan (isang komiks ukol sa paggawa ng urea-molasses-mineral tube sa bukid)		✓	✓	✓	✓
6 Si Elvis ni Jimmy (isang komiks ukol sa pagpapalahi ng kambing)	✓	✓	✓	✓	✓
7 Salamat kay Doktor (isang komiks ukol sa pangangalaga ng kalusugan ng kambing)	✓	✓	✓	✓	✓
8 Cradle of hope amidst the storm			✓		✓
9 RRG: defense against the serial killers in the goat farms			✓		✓

TITLE	YEAR				
	2006	2007	2008	2009	2010
D. Manuals and Production Guides					
1 Banana production manual		✓			
2 Mango production manual		✓			
3 Vegetable production guides on (eggplant; lettuce; cucumber; sweet pepper; and okra)		✓			
III. FOR REVISION/UPDATING					
A. The Philippines Recommends Series					
1 for cashew					✓
2 for coconut				✓	
3 for cacao				✓	
4 for soybean					✓
5 for peanut				✓	
6 for mango				✓	
7 for coffee			✓		
8 for cassava			✓		
9 for corn			✓		
10 for pili				✓	
11 for corn postproduction operations (published 1997)			✓		
12 for table egg production		✓			
13 for broiler production	✓				
14 for goat farming, revised 2004			✓		
15 for beef cattle production, revised 1994			✓		
16 for livestock feed formulation, revised 2000				✓	
17 for forage and pasture, revised 2001				✓	
18 for carabao production, revised 2002				✓	

TITLE	YEAR				
	2006	2007	2008	2009	2010
19 for pork production, revised 2005					✓
20 for animal health care, revised 2002					✓
21 for duck egg production, 2003					✓
B. Primers					
1 Gabay sa pangangalaga ng triple cross na baboy	✓				
2 Pangangalaga ng kambing		✓			
C. Manuals and Production Guides					
1 Financial viability analysis of technologies		✓			
2 Standard methods of analysis for soil, plant tissue, water and fertilizer			✓		
D. Flyers, Leaflets, Brochures and Information Bulletin					
1 Swine information network (SwIN)			✓		
2 Poultry information network (PIN)			✓		
3 Ruminants information network (RIN)			✓		
E. Fact Sheets					
1 Goats: sure bet in building rural assets			✓		✓
2 Native chicken: from scratching to niching			✓		✓
3 Livelihood opportunities from the milk of the beast			✓		✓
4 Beefing up the country's cattle industry				✓	
5 Yellow corn: securing the future of the livestock and poultry industries				✓	
6 Water			✓		
7 Ecotourism			✓		
8 Philippine mahogany			✓		
9 Banana			✓		

TITLE	YEAR				
	2006	2007	2008	2009	2010
10 Coffee			✓		
11 Abaca			✓		
12 White corn			✓		
13 Coconut			✓		
14 Mango			✓		
F. Situationers					
1 AFNR, Employment		✓			
IV. FOR PRINTING					
A. Philippine Recommends Series					
1 for pineapple		✓			
2 for papaya	✓				
3 for pili		✓			
4 for chrysanthemum		✓			
4 for broiler production	✓				
5 for table egg production		✓			
6 for native chicken production		✓			
7 for goat farming, revised 2004			✓		
8 for beef cattle production, revised 1994			✓		
9 for feed corn			✓		
10 for livestock feed formulation, revised 2000				✓	
11 for forage and pasture, revised 2001				✓	
12 for carabao production, revised 2002				✓	
13 for pork production, revised 2005					✓

TITLE	YEAR				
	2006	2007	2008	2009	2010
14 for animal health care, revised 2002					✓
15 for duck egg production, 2003					✓
16 for reforestation and tree farming		✓			
17 for bamboo		✓			
18 for water saving technologies		✓			
19 for soil diagnosis and amelioration		✓			
20 for alternative sources of energy from agriculture resources				✓	
21 for pressurized irrigation system for high value crops					✓
22 Compendium of information and technology on <i>Jatropha</i>		✓			
B. Book Series, State of the Art Series, Compendium					
1 State of the Art - Supply chain management		✓			
2 State of the Art - Poverty impact of development programs in AFNR		✓			
3 State of the Art - Urban vegetable production in the Philippines		✓			
4 State of the Art - Agricultural mechanization in the Philippines: Status and directions		✓			
5 State of the Art - Protected vegetable production in the Philippines			✓		
6 Policy options to enhance the development of smallhold banana industry		✓			
7 Performance evaluation and microlevel impact assessment of TGP		✓			
8 Proceedings: Rice, water and forest conference		✓			
9 Compendium of commercially viable coconut technologies		✓			
C. Primers					
1 Gabay sa pangangalaga ng triple cross na baboy	✓				✓
2 Triple cross goat production	✓				✓
3 Crossbreeding for slaughter pig production	✓				✓

TITLE	YEAR				
	2006	2007	2008	2009	2010
4 Crossbreeding for slaughter pig production (Tagalog version)		✓			
5 Free range native chicken production		✓			
6 Pangangalaga ng kambing		✓			
D. Komiks Series					
1 May pera sa kambingang (isang komiks ukol sa pagnenegosyo ng kambing)	✓				
2 RRG: sagot sa salot sa kabingang (isang komiks ukol sa rapid rotational grazing)	✓				
3 Kanlungan ng pag-asa sa gitna ng unos (isang komiks ukol sa pag-iwas sa bulate ng kambing)	✓				
4 Ang lahat para kay Bamboo! (isang komiks ukol sa paggamit ng dahon at bunga bilang pamurga)	✓				
5 UMMT: Pansagip sa kambingang, proyektong pangkabuhayan (isang komiks ukol sa paggawa ng urea-molasses-mineral tube sa bukid)	✓				
6 RRG: defense against the serial killers in the goat farms	✓				
7 Cradle of hope amidst the storm	✓				
E. Manuals and Production Guides					
1 Information Bulletin on high yielding sugarcane varieties	✓				
2 Manual: Compendium of commercially viable coconut technologies		✓			
3 Manual: Protected vegetable production in the Philippines				✓	
4 Manual: Organic agriculture		✓			
5 Protocol on ex-post evaluation of R&D projects			✓		
6 Manual: CFV/SLM technologies				✓	
7 Manual: Use of copra dryer and affordable village level processing equipment for coconut					✓
8 Manual: Facilitators on the integrated goat management (4 volumes)		✓			

TITLE	YEAR				
	2006	2007	2008	2009	2010
F Flyers, Leaflets, Brochures and Information Bulletin					
1 for vegetables (carrot, garden pea, snap beans, potato, alugbati, saluyot, ginger)		✓			
G. Fact Sheets					
1 Goats: sure bet in building rural assets	✓				
2 Native chicken: from scratching to niching	✓				
3 Livelihood opportunities from the milk of the beast	✓				
4 Beefing up the country's cattle industry			✓		
5 Yellow corn: securing the future of the livestock and poultry industries			✓		
6 Yam		✓			
7 Peanut		✓			
8 Tomato		✓			
9 Eggplant		✓			
10 Pili		✓			
11 Mungbean		✓			
12 Sweetpotato		✓			
13 Durian		✓			
14 Queen pineapple		✓			
15 Cassava		✓			
H. Situationers					
1 AFNR, employment and poverty			✓		
I. R&D Highlights					
1 R&D Highlights for CY 2006		✓			

TITLE	YEAR				
	2006	2007	2008	2009	2010
J. Posters					
1 Poster - Native chicken products			✓		
2 Poster - Triple cross goats			✓		
3 Poster - Corn and other feed grains information network (CofGIN)			✓		
4 Poster - Swine information network (SwIN)			✓		
5 Poster - Poultry information network (PIN)			✓		
6 Poster - Ruminants information network (RIN)			✓		
7 Poster - Swine artificial insemination				✓	
8 Poster - Organic anthelmintics				✓	
9 Poster -Triple cross/four way cross pigs					✓
K. Profitability Analyses					
1 Tangland tissue culture			✓		
2 Small-scale tanglad production			✓		
3 Arabica, excelsa and liberica coffee			✓		
4 Coffee clonal garden			✓		
5 Native papaya production (for papain)			✓		
6 Backyard "Bahay Kubo" production			✓		
7 Processed mango (puree and dried)			✓		
8 Controlled atmosphere technology for mango			✓		
9 Biodiesel from coconut			✓		
V. FOR PUBLICATION IN E-FORMAT					
A. The Philippines Recommends Series					
1 for orchids	✓				
2 for rubber	✓				

TITLE	YEAR				
	2006	2007	2008	2009	2010
3 for sugarcane	✓				
4 for durian	✓				
5 cashew	✓				
6 for papaya			✓		
7 for pineapple			✓		
8 for chrysanthemum			✓		
B. Manuals and Production Guides					
1 Banana production manual	✓				
VI. TO BE SOURCED OUT					
1 AMTEC Bulletin Series	✓	✓	✓	✓	✓
2 PhilRice Technology Bulletins	✓	✓	✓	✓	✓
3 Mechanization Bulletin	✓	✓	✓	✓	✓
4 WOCAT Materials	✓	✓	✓	✓	✓
Profitability Analyses					
1 Fresh mango production		✓			
2 Lakatan production		✓			
3 Abaca fiber production		✓			

Table 6. Sector-based PFRA.

Activity	Description	Institution Involved
Crops		
<p>Analysis and advocacy of policy options for the development of the fruits industry</p>	<p>Lack of product standards or grading system in the marketing of fruits contributes to marketing inefficiency. This means that traders determine the classification to be assigned to the fruits. Such negligent system allows the traders the opportunity to set the standard and exploit the producers. For as long as the fruits industry cannot standardize the system to be fair for all stakeholders, traders will always predominate the producers. A review of the implementation of product standards by the BAFPS will be undertaken and policy options will be developed to promote product standardization in the fruits industry.</p> <p>Land distribution in commercial fruit plantation through CARP could result in productivity decline following division of farms into smaller units. Development and advocacy of alternative management schemes for commercial fruits plantation once subjected to CARP should be undertaken. These may include cooperatively owned and managed and joint venture schemes depending on the preference of the agrarian reform beneficiaries.</p>	<p>UPLB</p>
<p>Analysis and advocacy of policy options for rehabilitation of abaca farms</p>	<p>Recently, there has been a resurging interest and expanding application for abaca fibers resulting in the rise in demand. However, the abaca industry is saddled with declining productivity, poor technology adoption and prevalence of pests and diseases, among other problems. The need to rehabilitate about 82,000 infected farms should be given priority. Analysis and advocacy for the strict enforcement of existing plant quarantine laws as well as full-scale implementation of the six-point abaca disease eradication program should be undertaken.</p>	<p>UPLB, LSU</p>
<p>Policy analysis and advocacy to enhance the development of the vegetable industry</p>	<p>Although vegetables are not included in the Early Harvest Program agreement of Philippines and China, a few vegetables not produced in the Philippines are apparently included in the EHP such as Brussels sprouts, globe artichokes, truffles, olives, capers, dried onions, dried mushroom, peas, chickpeas, kidney beans and other beans and nuts. Apart from these, other vegetables from China are being smuggled into the country severely affecting the local vegetable industry in the process. The effects of smuggling and allowing Chinese vegetables in the local market need to be studied in-depth with the end in view of advocating reforms in the implementation of the EHP in the Philippines.</p>	<p>UPLB, DA, DTI</p>
<p>Land consolidation for promotion of agricultural machinery and structures</p>	<p>Policy options will be formulated for the viability and potentials of land consolidation mechanisms/strategy (or cooperativism for agricultural mechanization) for effective use of farm machinery.</p>	<p>PCARRD, DA, DENR, DOST, NGOs, UPLB, Cooperatives, private sector, NEDA, DILG, LGUs</p>

Activity	Description	Institution Involved
Livestock		
Policy research and advocacy towards the development of the goat industry	Policy research and advocacy for the institutionalization of the Small Ruminant Center at CLSU and development of a national program for goat industry development will be pursued. The SRC should be mandated to develop a national program. Among the areas for consideration is the establishment of a national breeding program for goat, development of an organized goat marketing system, monitoring of slaughtering, and development of export potential and niche market for goat milk.	UPLB, CLSU, PCARRD, DA
Policy research and advocacy to control/mitigate the degradation of pasturelands	Continuous migration, squatting, overgrazing, lack of incentives for ranchers to undertake pasture improvements, and conflicting land use policies are among the causes of pastureland degradation. A comprehensive policy analysis and advocacy is needed for pastureland improvement and implementation of land use policies favorable to development of pasture ruminants industry.	UPLB, CLSU, DA, PCARRD
Policy research on credit system for livestock	Financing is a major constraint in the intensification of ruminant production system. Upgrading of breeding stocks and import dependence by ranchers for breeder and feeder stock require adequate resources. Source of financing, however, is limited and the schemes are not favorable to ranchers given the long gestation period in ruminant production. Policy research and advocacy on restructuring of financing programs fit for ruminant production will be pursued.	UPLB, PCARRD, DA
Forestry		
Policy analysis and advocacy for bamboo plantation development	The total area for bamboo plantation is inadequate and the existing stands have low productivity. Bamboo plantations must be developed in bamboo-rich and market-driven areas. Analysis of policies affecting the development of bamboo plantations in these areas and formulation and advocacy of policy recommendations to enhance raw material production will be pursued.	UPLB, MMSU
Policy analysis and advocacy for wide-scale development of biofuel plantation in CBFM areas	This entails an in-depth analysis of policies that could affect the development of biofuel plantation in CBFM areas, and formulation and advocacy of policy recommendations for the wide-scale plantation development in these areas. Advocacy for implementation of comprehensive government program on biofuel development using <i>Jatropha</i> must be pursued and sustained.	UPLB
Analysis and advocacy of policy options for improvement of ecotourism sites	Ecotourism in the country could not take off due to lack of government support, inadequate marketing effort to attract ecotourists, incomplete development of ecotourism sites, and the lack of efforts to correct the perceived threats of ecotourism to indigenous cultures, among others. In-depth analysis of these constraints with the aim of formulating policy options for ecotourism development will be undertaken.	ERDB, UPBL, Dept. of Tourism

Activity	Description	Institution Involved
Policy research and advocacy for sloping land management	The causes and consequences of land use changes in the uplands will be analyzed and areas needing S&T intervention will be determined. Existing policies related to sloping land agriculture will be studied and recommendation/options will be developed and advocated for effective management of the uplands.	PCARRD, DA-BSWM, DA-ATI, DENR, DAR, UPLB and SUCs, Care Phil., Private sector, NLUC, Regional consortia, NGOs, and community-based organizations
Policy research and advocacy on solid waste management in the country	<p>Solid waste management (SWM) is a major concern in many parts of the country. Large volumes of municipal wastes continue to create environmental concerns. Local government units raise the issue of SWM eating up large chunks of their budgets. With the implementation of RA 9003 on Solid Waste Management, this concern has been partly addressed. However, a number of concerns have to be attended to through more appropriate policy initiatives at the national, regional, and local levels. Among these are:</p> <ul style="list-style-type: none"> • Provision of science-based solutions to the quality and processes in composting at the LGU level and conduct policy research on the management of residuals. • Establishment of cost accounting system (including social and environmental cost), investment portfolio for the compost/organic fertilizer products and effect proper valuation of process/production inputs and requirements, and market. • Promotion of community-based SWM and capacity building for the adoption of barangay composting system 	PCARRD, DOST, NGOs, LGUs

Table 7. Issue-based PFRA

Item	Description	Institutions Involved
Advocacy and awareness campaign for Technology Transfer Bill	The bill seeks to facilitate the removal of impediments in strengthening public-private collaboration in S&T activities; harmonize integrated technology transfer system; and reinforce institutional mechanism for technology transfer.	DOST, DA, DENR, DTI, CHED, DOH, SUCs, IPO, DBM, DOF, LGUs, private entities
Harmonization of environmental laws to promote sustainability in agriculture	Existing policies, programs, and regulations protecting the integrity of the environment and natural resources do exist. These policies may however be conflicting and in need of harmonization. Advocacy to harmonize these policies will be done. (Examples of existing policies include Forest Land Grazing Lease Agreement and Pasture Lease Agreement; Community-Based Forest Management Program; Management Agreements covering industrial lease and grazing lease; and compliance with TRIPS on Plant Variety Protection).	UPLB, ERDB- DENR, DA
Harmonizing water and crops management	Appropriate quantities of water need to be applied to coincide with the peak needs of crops to optimize crop response to fertilizer use. Inefficiencies in water use do exist and there is little incentive for farmers to restrict their use or spend their own money on measures to improve utilization of available water and timing their use with the needs of the crop. Water misuse is not just matter of faulty technologies but more of a question of economic policies. Policy analysis and advocacy about impacts, trade-offs, and consequences due to such inefficiencies are needed.	UPLB, DA
Ratification of the International Treaty on Plant Genetic Resources for Food and Agriculture	PCARRD will actively assist the ongoing effort to ratify the treaty. Accession to the Treaty which has been favorably endorsed by DOST, DA, and DENR will be beneficial in the country's effort of conserving plant genetic resources. The country's ability to store as many seeds known to human as possible in the Svalbard Global Seed Vault for example lies entirely on the ratification and on the country signatory to the Treaty.	DOST, DA, DENR
Policy analysis and advocacy on agricultural machinery production, registration and importation	Formulate policy options on the formation of joint venture between local and foreign manufacturers for setting up manufacturing plants and putting together an attractive and clear-cut package of investment incentives on machinery importation and registration	PCARRD, DA, Private sector, AMMDA, NEDA, financing Institutions PCIERD
Implication of asset UPLB, reform programs on poverty alleviation in AFNR	Government program on asset reform aims at improving the structure and efficiency of tenure system over critical assets particularly land and involves transferring either or both property or usufruct to assets primarily to alleviate poverty in the agriculture and natural resources sector. Policy research will be done to assess the implications of asset reform programs on poverty alleviation and to formulate policy recommendations towards the enhancement of program impact on the target beneficiaries.	PCARRD, DAR, UPLB, SUCs
Gender and Development in S&T	PCARRD will continuously respond and provide support to strategic gender needs such as enhancing women and men's participation, access to, and control of economic and political resources, and equality and sharing power and the benefits of developmental efforts.	PCARRD, NARRDN, regional consortia

Table 8. Initiatives for 2006–2010 in strategic assessment, impact assessment of policies, and technology forecasting.

Activity	Description	Institution Involved
Comprehensive assessment of PCARRD's investment in the regional consortia	<p>A cursory evaluation of PCARRD's investment in the regional consortia has recently been completed. The evaluation concluded that outputs from such investment have been significant both in terms of their nature and magnitude. The assessment provided some general options and implications, particularly with respect to the emerging policy directions of PCARRD.</p> <p>A logical offshoot of the cursory evaluation is a more comprehensive assessment. The relevance/importance of the outputs of PCARRD's investment will be gauged from the perspective of PCARRD and that of the regional consortia. In addition, strategic options will be analyzed in-depth by considering the institutional dynamics in the regions. More importantly, specific recommendations will be presented on how to rationalize regional R&D management and implementation within PCARRD's emerging policy framework.</p>	PCARRD
Performance Evaluation and Impact Assessment of the PCARRD TechnoGabay Program	<p>The regional consortia oversee the implementation of the Techno Gabay Program (TGP) in the region. The bulk of PCARRD's investment in the consortia has been on Techno Gabay. A major challenge to PCARRD is to see how effective TGP is in delivering AFNR information and technologies and improving access and utilization by intended clients. A performance and impact assessment of TGP on the target beneficiaries and other stakeholders served by the program will be used as bases in recommending strategies and policy measures to further enhance the implementation of the program.</p>	Regional Consortia
Estimating returns to research investment	<p>The numerous studies conducted in the 1970s and 1980s on the rate of returns to research drew similar conclusions – that the rate of return on research investment is high. A repeat of clear results for the nth time is no longer needed. Rather, we would like to synthesize information from past studies and in the wake of economic globalization, generate new data that would give indications on what sort of AFNR research would yield high or low, returns in terms of what crops and livestock, what sector, and in what places or particular zones. Inferences drawn from the study can serve as bases in allocating and prioritizing research resources. More resources would be allocated for researches that gives high returns. If the rate is inadequate, either less should be done or identify the subsector of the particular research where extra spending will raise the rate of return.</p>	UPLB, CLSU, LSU, USM
Mid-Term Review of the PCARRD Medium Term Plan 2005-2010	<p>PCARRD is currently being guided by its Medium-Term Plan 2005-2010. As in other organizations, plans are not cast in stone and adjustments have to be made as new developments unfold. As part of a strategic assessment activity, a mid-term review of the PCARRD Medium-Term Plan is proposed in 2007. PCARRD's macro environment will be assessed against which the relevance of some programs/strategies may be gauged and to identify the specific adjustments will be identified.</p>	PCARRD
Technology Forecasting	<p>A very powerful strategic corporate, technology, and human resource plan hinges on how well specific technologies of the future are forecasted. A technology forecasting (TF) team was therefore created in PCARRD. Mechanisms are being developed to operationalize the TF. This includes conduct of basic skills training on TF and technology forecasts for AFNR industries.</p>	PCARRD

Table 9. Techno-Gabay program priority activities for CY 2006-2010

Priority Areas/Activities	Description
Interconnectivity enhancement	Involves enhancing interconnectivity of the FITS centers through ICT-based equipment and facilities.
Development of appropriate information systems/databases	Development and improvement of FITS IS, Regional Profile IS and other appropriate web-enabled databases.
Continuing education for FITS staff and MS <ul style="list-style-type: none"> • ICT trainings • IEC trainings • Cross visits/Study tours 	Identification, preparation, and conduct of ICT- and IEC-based trainings for MS, FITS and regional consortia staff, other TGP stakeholders and partners.
	Retooling of project implementers through values enhancement trainings and study tours and cross visits to successful local and international community information centers and farms.
Documentation and analysis of MS practices	The MS GAP shall be documented and will serve as inputs for the development of the POTs for the focused products identified. Activities will also include development of guidelines/approaches/strategies in documentation of MS practices and monitoring of documented MS practices.
Development and packaging of need-based POTs	On focused areas in which a regional consortium has available technologies and expertise, the consortium shall lead in the packaging of appropriate POTs or component technologies. For commodities/products identified by FITS centers not within the capability of the consortium to handle, the technical research divisions of PCARRD shall lead in developing the POTs.
Establishment of S&T-based farms	S&T-based farms are Magsasaka Siyentista (MS) farms or enterprises that showcase the effectiveness of S&T in improving productivity and income of farmers. The farms or enterprises highlight S&T-based livelihood and business opportunities for particular focus commodity/product in a community. S&T-based farm is part of the process of developing an investment package. Involves finalization of guidelines on S&T based farm and officially communicating these to the stakeholders; review of proposals on S&T based farms, and conduct of reconnaissance surveys in the regions re: S&T-based farms.

Priority Areas/Activities	Description
Publications, tri-media releases and approaches, and quick information dispatch	Involves preparation and development of publications, tri-media releases and approaches, and quick dispatch of information to enhance promotion and dissemination of technology transfer modalities and information and technology services on the AFNR sectors.
Database content development and build up	Involves content development of FITS and Regional Profile ISs and other databases on Technology Transfer and monitoring content development of these systems and databases.
Provision of technology services to promote POTs	Involves development of guidelines/strategies in the promotion of POTs for distribution to the consortia and monitoring of technology services provided to at least 30 farmer-clients per FITS per year.
Value-adding S&T services (e.g., analysis and testing, packaging and handling, support services to enterprise development)	S&T support to enterprises will be made available to the FITS centers. Entails consolidation and analysis of information and technology services required by FITS centers based on supply chain analysis.
FITS-directed R&D	Activities include development of guidelines re FITS-directed R&D and funding for implementation of these FITS-directed R&D.
Partner-Member Agency (PMA) scheme	Development and dissemination of guidelines re PMA schemes. Based on the guidelines the PMA scheme will be implemented.
National program, planning, monitoring & evaluation (PPME)	Involves development of guidelines and support system for the national PPME and its implementation.