AGAINST THE BACKDROP OF A CHANGING GLOBAL AGRICULTURAL ENVIRONMENT, the year 2010 is an opportune time to recognize FFTC’s four decades of achievements in promoting the transfer of modern and practical agricultural information and technology to attain improved production, higher incomes, and a better quality of life for small-scale farmers in the Asian region. The programs and activities of FFTC in 2010 are consistent with its tradition to help bridge the technological and economic gap between developed and developing countries, and to continuously respond to emerging technological needs toward enabling small-scale farmers to compete and survive in this new environment in agricultural production, marketing, and trade.

In 2010, the Center embarked on programs and activities related to the sustainability of natural resources and the environment through ecologically sound agricultural practices, enhancement of rural development and entrepreneurship, exploring alternative sources of energy, and meeting changing market and consumer preferences through high-quality foods and safety standards amid recent trends in economic development and globalization. Summarized below are the major programs and activities of the Center in the year 2010.

The FFTC 40th anniversary symposium/20th Technical Advisory Committee (TAC) meeting
FFTC successfully marked its 40 years of existence as a regional information center with an international symposium on the topic “Perspectives on Agriculture in the Asian and Pacific (ASPAC) Region”. Attended by about 100 participants composed of speakers, guests, FFTC Technical Advisory Committee (TAC) members, FFTC Executive Board and Working Group members, and observers from all over the region, the said symposium provided an opportunity for the sharing and exchange of current perspectives and challenges that all countries must face and respond to in order to achieve a competitive and sustainable agriculture. The symposium was held back to back with the 20th FFTC-TAC Meeting. The FFTC-TAC, composed of leading agricultural scientists/experts in the ASPAC, meets every two years to: provide policy and program advice in the formulation, implementation and evaluation of FFTC work programs and activities; deliberate on the agricultural needs and requirements of countries in the region; and suggest ways to improve the performance and effectiveness of the Center’s operation.

Enhancement of functional biodiversity relevant to sustainable food production in the ASPAC region
The international seminar on Enhancement of “Functional Biodiversity Relevant to Sustainable Food Production in the ASPAC Region” was organized by FFTC in cooperation with the National Institute for Agro-Environmental Sciences (NIAES) and the National Institute of Fruit Tree Sciences (NIFTS) of Japan, and the Council of Agriculture (COA), Taiwan ROC. The seminar primarily aimed to obtain a better understanding of the current status of functional biodiversity, particularly focusing on natural enemies and pollinators, in the Asian and Pacific (ASPAC) region. Where significant decreases in functional biodiversity are observed in certain areas/countries/region, factors responsible for the decline and its adverse effects on short- and long-term crop production were discussed. This seminar also provided a venue for the sharing and exchange of relevant information and promising technologies/management strategies to enhance functional diversity for sustainable crop production. Promising ‘indicators’ for evaluating the effect of cultural practices and/or agricultural technologies on functional biodiversity were also identified and proposed for the Asian monsoon areas.

Evaluation and sustainable management of soil carbon sequestration in Asian countries
The international seminar primarily sought to review the current status of soil carbon pools in major soil groups based on Asian Soil Information System (SIS) in the Asian region; review the current status of soil carbon pools in different land uses, such as croplands, grazing/range land, degraded soils, irrigated soils; assess the critical limit of soil organic carbon pools on most soils for food security, soil quality, nutrient management and carbon emission in this region; assess issues on soil carbon sequestration for mitigating climate change, including soil cultivation, crop area. The training-workshop primarily aimed to strengthen the agricultural biotechnology nutrients requirement,
soil erosion, farming practice, societies value and benefit, carbon cycling, etc.; and propose sustainable agricultural practice (soil and nutrient management, integrated farming system, etc.) and improved component technologies of SIS such as remote sensing and digital soil mapping for the enhancement of soil organic carbon pools.

**Improved utilization of fishery by-products as potential nutraceuticals and functional foods**
Harvesting of seafood is continuously rising due to its increasing consumption for its many proven health benefits. This in effect has led to the abundance of by-products, as can be seen from the frozen and canned seafood industry in the Asian region where tons of exoskeleton are discarded annually. Commercial processing of aquatic foods requires removal of bones, skin, head, and viscera (by-products), which account for approximately 60-70g/100g of the weight. Most by-products have traditionally been sold cheaply for use in fishmeal production, hauled into the ocean, or dumped on land.

This international seminar aimed to share and exchange relevant information and promising technologies on potential fishery by-product resources for value-added production into nutraceuticals and functional foods; as well as to promote and exchange seafood waste utilization technology and information among countries in the Asian region.

**Utilization of native animals for building rural enterprise in warm climate zone**
Native animals have undoubtedly made positive contributions to the rural economy. However, these contributions are limited due to poor production performance. Two major concerns must therefore be addressed: poor efficiency in the use of locally available feed materials, and generally low production efficiency and productivity.

The seminar-workshop primarily aimed to gather and organize practical strategies and technologies that would enhance sustainable production and utilization of native animals in building rural enterprises. The activity also sought to build research and development (R&D) partnerships and collaboration between and among participating countries toward the development and promotion of products from native animals.

**Fertilizer policy for ensuring sustainable food production in the Asian and Pacific region**
In view of the increasing world food demand, fertilizer policy remains to be a significant part of every nation's food security strategy. In the Asian and Pacific (ASPAC) region, some advanced countries have declining fertilizer demand trends, toward increasing fertilizer efficiency and recycling of organic resources as the major strategies. Meanwhile, in most developing countries, fertilizer consumption is still increasing rapidly, and providing sufficient fertilizer supply to small-scale farmers at reasonable price remains an important policy and technological issue.

Amid the current situation and future trends on the demand and supply of fertilizers for sustainable food production, the seminar served as a venue for the sharing and exchange of information on technology development in the production and use of innovative/appropriate fertilizers for sustainable food production; and to deliberate on the current fertilizer policy issues in the Asian region.

**Agricultural biotechnology training-workshop for Southeast Asian countries**
Modern biotechnology, particularly its applications, has been making vital contributions and opportunities to agriculture, forestry and fisheries development globally. In particular, agricultural biotechnology has been at the forefront of development, with its promise of improving food quality and contribution to the attainment of food security worldwide.

The training-workshop aimed to improve the agri-biotech manpower of Southeast Asian countries, as well as to establish partnerships and cooperation for the development of agricultural biotechnology industry among countries in the region. This training-workshop on agricultural biotechnology is the fourth of a series of training courses launched in 2007, envisioned to pave the way for the enhancement of the biotechnology industry in the region.

**Rapid Bioassay of Pesticide Residues (RBPR) on fruits and vegetables for market inspection and farm education**
To share the benefits of the Rapid Bioassay of Pesticide Residues (RBPR) technology with countries in the Asian and Pacific (ASPAC) region, FFTC in cooperation with the Agricultural Research Institute (ARI), Council of Agriculture (COA) of Taiwan ROC spearheaded the second-year implementation of the training course on RBPR on Fruits and Vegetables for Market Inspection and Farm Education. The training course consisted of intensive lectures, discussions, laboratory exercises, hands-on experiences and field visits to observe the practical application of RBPR in fruit and vegetable production and marketing.

**Edible mushroom production for Asian farmers and entrepreneurs**
The training course on Edible Mushroom Production for Asian Farmers and Entrepreneurs was conducted to equip researchers, government officers, and extension workers in the ASPAC region with a working knowledge and share successful experiences on improved technologies of mushroom production. The training curriculum focused on the importance of
### Summary of 2010 Work Program

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Type*</th>
<th>Venue</th>
<th>Co-sponsors</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>The FFTC 40th anniversary symposium/20th Technical Advisory Committee (TAC) meeting</td>
<td>MT/SP</td>
<td>Taiwan</td>
<td>COA</td>
<td>21-25 April</td>
</tr>
<tr>
<td>Enhancement of functional biodiversity relevant to sustainable food production in the ASPAC region</td>
<td>SM</td>
<td>Japan</td>
<td>NIAES, NIFTS, COA</td>
<td>8-12 Nov</td>
</tr>
<tr>
<td>Evaluation and sustainable management of soil carbon sequestration in Asian countries</td>
<td>WS</td>
<td>Indonesia</td>
<td>ISRI, NIAES, COA</td>
<td>27 Sept – 2 Oct</td>
</tr>
<tr>
<td>Improved utilization of fishery by-products as potential nutraceuticals and functional foods</td>
<td>SM</td>
<td>Thailand</td>
<td>KU, NTOU, FRI, COA</td>
<td>25-29 Oct</td>
</tr>
<tr>
<td>Utilization of native animals for building rural enterprise in warm climate zone</td>
<td>SM-WS</td>
<td>Philippines</td>
<td>PCARRD, PCC, CLSU, COA</td>
<td>19-23 July</td>
</tr>
<tr>
<td>Fertilizer policy for ensuring sustainable food production in the Asian and Pacific region</td>
<td>SM</td>
<td>Korea</td>
<td>RDA, TFCL, COA</td>
<td>21-26 June</td>
</tr>
<tr>
<td>Agricultural biotechnology training-workshop for Southeast Asian countries</td>
<td>TW</td>
<td>Taiwan</td>
<td>NTU, SEARCA, NSC, AIT, COA</td>
<td>29 Aug – 11 Sept</td>
</tr>
<tr>
<td>Training course on Rapid Bioassay of Pesticide Residues (RBPR) on fruits and vegetables for market inspection and farm education</td>
<td>TC</td>
<td>Taiwan</td>
<td>ARI, COA</td>
<td>31 May – 5 June</td>
</tr>
<tr>
<td>Training course on edible mushroom production for Asian farmers and entrepreneurs</td>
<td>TC</td>
<td>Taiwan</td>
<td>ARI, COA</td>
<td>21-27 Nov</td>
</tr>
<tr>
<td>Healthy management of pathogen-free citrus seedling for the rehabilitation of the citrus industry from serious epidemic of HLB and virus diseases in Cambodia (Year 2)</td>
<td>TT</td>
<td>Cambodia</td>
<td>RUA, RDF</td>
<td>Jan - Dec</td>
</tr>
<tr>
<td>Field evaluation of Taiwan yellow corn hybrids in Laguna province, Philippines</td>
<td>TT</td>
<td>Philippines</td>
<td>BPI-LBNCRDC, MECO, COA</td>
<td>Oct - Dec</td>
</tr>
</tbody>
</table>

*Type of Activity: MT=Meeting; SP=Symposium; SM=Seminar; WS=Workshop; TT=Technology Transfer; TC=Training Course; TW=Training Workshop

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eco-friendly resource recycling of agricultural wastes. Specifically, the training course served as a venue for the sharing and exchange of information and success stories and experiences on enterprise development initiatives involving the promotion and adoption of improved technologies for sustainable commercial production of edible mushroom for Asian farmers and entrepreneurs.

**Healthy management of pathogen-free citrus seedling for the rehabilitation of the citrus industry from serious epidemic of HLB and virus diseases in Cambodia (Year 2)**

Now on its second year, this technology transfer project was conducted to promote the pathogen-free (PF) citrus foundation and nursery system and techniques. It also aims to establish a health management strategy and
technology through epidemiological studies on HLB and virus diseases. Three main work items summarized the activities for this year. These are: 1) The continuous supply of diagnostic strips and reagents for RUA in order to promote disease indexing in PF system; 2) The instruction for Dean Setha, RUA to finish the research work (PhD thesis) on the strains and epidemiology of HLB and virus diseases; and 3) The production of pathogen-free citrus seedlings including Pusat sweet orange, Honey mandarin, and Phurchrach pummel in RUA.

Field evaluation of Taiwan yellow corn hybrids in Laguna province, Philippines
This project in the Philippines basically aims to evaluate the performance of Taiwan yellow corn hybrids in Laguna province, Philippines and to promote the utilization of Taiwan yellow corn hybrids to farmers, local government agencies through conduct of a Field Day. In terms of yield performance, yellow corn hybrids significantly outperformed the yield of BPI yield variety in four testing sides in Laguna, Taiwan yellow corn was also found to be acceptable among farmer cooperators and local government. Given this, it is recommended that registration of the yellow corn hybrids in the National Seed Industry Council of the Philippines be done before the said variety is commercialized in the country.

FFTC publications and website on Asian agriculture
The Center’s publication program focuses on the vast and far-reaching potential of timely and relevant scientific and technological information in agriculture in enabling small-scale farmers to achieve improved agricultural productivity, make effective use of natural resources, raise their income, and produce food that is accessible, available and affordable to all. The most recent and relevant agricultural technology and information collected by the Center through its various activities are documented and published in the form of technical and extension bulletins, book series, newsletters, and a yearly publication on statistical agricultural indices in the region.

Meanwhile, the FFTC website and database has become an important information resource on Asian agriculture, particularly for the national extension systems in the region. The growing use of the FFTC website/publication database gave a larger number of people worldwide access to the Center’s technical and practical information on sustainable agriculture.
Co-sponsors of FFTC Programs in 2010

Japan
National Institute of Fruit Tree Science (NIFTS)
National Institute for Agro-Environmental Sciences (NIAES)

Korea
National Agricultural Cooperative Federation (NACF)
Rural Development Administration (RDA)

Taiwan ROC
Agricultural Research Institute (ARI), COA
Council of Agriculture (COA)
Fisheries Research Institute (FRI), COA
National Chung-Hsing University (NCHU)
National Science Council (NSC)
National Taiwan University (NTU)
National Taiwan Ocean University (NTOU)
Rural Development Foundation (RDF)
Taiwan Fertilizer Co. Ltd.

Philippines
Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD)
Bureau of Plant Industry - Los Baños National Crop Research and Development Center (BPI-LBNCRDC), Department of Agriculture (DA)
 Philippine Carabao Center (PCC), DA
Central Luzon State University (CLSU)
Manila Economic and Cultural Office (MECO)
Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)

Indonesia
Indonesian Soil Research Institute (ISRI)

Thailand
Kasetsart University (KU)

Cambodia
Royal University of Agriculture (RUA)