Technology Transfer Strategies And Experiences On Urban and Peri-Urban Agriculture

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INTRODUCTION

Urban agriculture (UA) has long been practiced in many major cities of the world and is widely considered ancient as the historical development of cities itself.

In the late 20th century, Asia became the key center in the development of UA and per projection of the Food and Agriculture Organization, by the year 2005, Asia will be home to 12 of 15 largest cities in the world. To combat food insecurity, threat to urban environment and quality of life, the Consultative Group for International Agricultural Research (CGIAR) launched the Strategic Initiative on Urban and Peri-urban Agriculture (SIUPA) in 1999.

In the Philippines, as early as 1983, UA has been charted as one of the major undertakings of Don Severino Agricultural College now Cavite State University. However, it was only in 1995 when the College of Agriculture (CA), University of the Philippines Los Baños (UPLB) gave attention to the concept. As a consequence, UPLB – CA in cooperation with the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), sponsored a symposium – workshop on UA on June 1, 1995.

The birth of UA program in the Department of Agriculture (DA) commenced in 1998 when DA acting Secretary instructed the director of DA Region IV to include UA as one of its programs and the "Gulayan at Bulaklakan sa Kapaligiran" project was established on February 14, 1999.

In the same year, the Cavite State University (CvSU) in Indang, Cavite and the Central Luzon State University (CLSU) in Muñoz, Nueva Ecija, have put-up various UA models to showcase the underlying technologies being utilized.

On February 12, 2000, the Bureau of Agricultural Research (BAR) of DA organized a consultation-workshop to plan and formulate the research, development and extension (RD&E) on UA as a discipline under "one system, one program" approach. Eventually, a Core Planning Team (CPT) was organized and CvSU has been entrusted to be the lead agency (Papa and Crucido, 2001).

Urban Agriculture has been simply defined as ***farming in the cities and other highly urbanized areas*** (Duldulao, 2001) Considering various dimensions, UA is located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, and grows or raises, processes and distributes a diversity of food and non-food products, (re-) uses largely human and material resources, products and services found in and around that urban area, and in turn, supplies human and material resources, products and services largely to hat urban area (Mougeot, 2000).

DA'S ONE PROGRAM, ONE SYSTEM APPROACH

The DA, in coordination with the Department of Science and Technology (DOST) agencies and research institutions, will enhance, support and consolidate the existing National Research and Development System in Agriculture and Fisheries (NaRDSAF) which is composed of two subsystems: agriculture research and fishery research. The NaRDSAF complements the National Extension System in Agriculture and Fisheries (NESAF).

To ensure the integration and continuity of government's efforts in research, development and extension, the agricultural modernization law created the **Council for Extension, Research and Development for Agriculture and Fisheries** (**CERDAF**) that would integrate all government's efforts in agriculture and fisheries RDE (Drilon, 2000).

National Research, Development and Extension (RDE) Network. This network leads the planning and orchestration of the implementation and evaluation of the major programs in agriculture and fisheries. The national network is composed of national research institutes, state universities and colleges (SUCs), DA Staff bureaus and their attached agencies.

Under the "one system, one program" approach approved by AFMA, there were 25 national networks focusing on the following priority commodity areas/disciplines where Urban Agriculture was included (DA-BAR, 2001):

- Rice
- Corn
- Coconut
- Fruit Crops
- Vegetables
- Ornamentals
- Fiber Crops
- Legumes
- Grains
- Post-harvest
- Root Crops
- Plantation Crops
- Sugarcane
- Livestock and Poultry
- Capture Fisheries
- Aquaculture
- Fisheries Post-harvest and Marketing
- **Urban Agriculture**
- Social Science and Policy
- Biotechnology
- Crop Protection
- Soil and Water Resources
- Irrigation and Drainage
- Agricultural Engineering
- Post-harvest, Food Science and Nutrition
- Plant Genetic Resources

STRATEGIES FOR TECHNO DISSEMNINATION AND TRANSFER

The experiences of the DA line agencies and State Universities and Colleges including the private sector identified the following strategies used to transfer Urban Agriculture technologies to its clientele groups and stakeholders: 1) establishment of demonstration projects; 2) conduct of training-workshop; 3) production and distribution of information, education and communication materials; 4) information dissemination through the tri-media; 5) conduct of field trip, farm visit and field day; 6) personal and small group discussion of the package of technologies; 7) establishment of school-based UA projects; and 8) adoption of FAITH (Food Always In The Home) gardens in urban areas.

Establishment of UA Demonstration Projects

The member-agencies of the Urban Agriculture network, namely: Cavite State University, University of the Philippines Los Baños, Central Luzon State University and Bureau of Plant Industry spearheaded the establishment of demonstration projects that showcased the various technologies on Urban Agriculture. These demo-projects were visited by various groups of clientele, ranging from school children to college students, farmers groups, residents of subdivisions and government technicians. Seemingly, the models that these visitors appreciated were adopted in their backyards and/or workplaces.

Private farms, like that of Mr. Gil Carandang, dubbed as Leisure Farms, are also showcasing urban agriculture technologies. Likewise, the Agriculture Department of various Local Government Units of Metro Manila are showcasing the technologies on urban agriculture (Box 1 – Location, area and number of beneficiaries of Gulayan and Bulaklakan projects)

Conduct of Training-Workshops

The above-mentioned agencies were also responsible in conducting training-workshops where walk-in clients and pre-scheduled participants and trained on the process of establishing vegetable and ornamental gardens. Likewise, the participants are guided through hands-on activities.

Production and Distribution of Information, Education and Communication (IEC) Materials

Along production and distribution of IEC materials, said agencies had published the following: UPLB – Herbs and Spices Handbook; CLSU – Book entitled "Urban Agriculture: A Step by Step Guide to Successful Container Farming in the city"; CvSU – 12 Brochures on Urban Agriculture Models (Box 2); and BPI – hand-outs on urban gardening. The Strategic Initiative on Urban and Peri-Urban Agriculture (SIUPA) of the Consultative Group for International Agricultural Research is publishing newsletter

Information Dissemination through the Tri-Media

The radio station DZMM hosted by Mr. Louie Tabing has aired in his ***Sa Kabukiran*** program topics on urban agriculture with experts from UPLB, CLSU and CvSU as resource persons. Likewise, the ***Kumikitang Kabuhayan*** of ABS-CBN Channel 2 television station has featured the CvSU Urban Agriculture Demonstration Project.

In the same manner, Crucido (2004) published an article entitled "Containerized Gardening" to both the Agriculture Magazine published by the Manila

Bulletin, and the MARID Agribusiness Digest published by the Foundation for Resource Linkage and Development, Inc.

Box 1. Location, area and number of beneficiaries of Gulayan and Bulaklakan projects

Location	Area (m^2)	Beneficiaries
Brickstone Ville, Barangay 175 Camarin, Caloocan City	20,000 sq. m.	50 families
Talon II, Las Piñas City	1,300 sq. m.	200 families
Bgy. Valenzuela along C-5	700 sq. m.	10 families
Bgy. 31, Southsite, Bonifacio Makati City	250 sq. m.	
Bgy. Concepcion/Bgy. Catmon Malabon, Metro Manila (MM)	38,000 sq. m.	108 families
Welfareville Compound Mandaluyong City	10,000 sq. m.	30 families
Lakandula High School Manila	8,000 sq. m.	100 students
CCP Complex near GSIS Bldg. Metro Manila Development Authority (MMDA) Compound	20,000 sq. m.	30 MMDA aides
Greenheights Subd., Bgy. Putotan Patdu Compound, Muntinlupa City	15,000 sq. m.	30 families
Bgy. Sta. Ana, Pateros, MM	2,000 sq. m.	50 families
Bgy. BF Homes Gov. Santos West Riverside, Parañaque City	10,000 sq. m.	50 families
Bgy. 76, Zone 10, Pasay City	450 sq. m.	MMDA aides
Francisco Legaspi Memorial School Pasig City	300 sq. m.	Teachers and students
East Fairview, District II Quezon City	789 sq. m.	700 families
Talayan Village, Quezon City	15,000 sq. m.	
Pinaglabanan Shrine Compound San Juan, MM	500 sq. m.	300 MMDA aides
Municipal Hall Compound Taguig, MM	800 sq. m.	54 youths and mothers
Maysan Road (Back of City Hall) Valenzuela City	1,500 sq. m.	City Hall employees
Viente Reales, Valenzuela City	3,000 sq. m.	
Infanta Elementary School Infanta, Quezon	1,500 sq. m.	Teachers and students
Adventist University of the Philippines Silang, Cavite	20,000 sq. m.	Teachers and students
Bgy. Caloocan Elementary School Balayan, Batangas	5,000 sq. m.	Parents of Grade VI pupils

Source: Duldulao, 2001

Conduct of Field Trip, Farm Visit and Field Day

Once an organized group of farmers and garden enthusiasts are formed, the members are given orientation briefing by the urban agriculture practitioners through the conduct of field trips, farm visits or attending field days.

The Technology Promotion Center, a pet project of the Land Bank of the Philippines in partnership with State Universities and Colleges and Local Government Units, are conducting filed days for matured technologies that were verified and validated (Papa and Sangalang, 2005).

Box 2. Urban Agriculture Technologies in Brochure Form	
Module 1	Containerized Vegetable and Root Crops Production Technology
Module 2	Aero Gardening
Module 3	Modified Trellis Vegetable Production Technology
Module 4	Organic vegetable Gardening Technology in Horizontally Elevated Bamboo Tubes
Module 5	Medicinal-Culinary Herbs and Spices Production Technology
Module 6	Improvised Hydroponics Plant Culture in Cascade System
Module 7	Vegetable Production Technology in Mixed Organic Media
Module 8	Edible Plant Landscaping Technology
Module 9	Floating Vegetable Garden Technology
Module 10	Inland Fish Culture
Module 11	Technology on Low-Cost Hydroponics System for Vegetable Production
Module 12	Compartmentalized Vegetable Production Technology

Personal and Small Group Discussion of the Package of Technologies

Another strategy for technology transfer of urban agriculture technologies is personal and small group discussions with potential adopters. This is done through Home visits by the technicians and through meetings conducted for the purpose. In this approach, Mubarik and Porciuncula (2001) reported that the technicians have active roles to play in extending technical assistance to the clientele. The transfer of technology also takes place through either informal-unscheduled interactions or in a more organized scheduled discussions.

Establishment of School-Based UA Projects

Once school officials are convinced that urban gardening is a potential source of income and a training ground for young children, then urban agriculture projects are being established and maintained. These are being emulated by both the parents and pupils and/or students in their households.

Adoption of FAITH (Food Always In The Home) Gardens in Urban Areas

FAITH gardening, which was promoted by the International Institute of Rural Reconstruction, is a technology that is widely adopted both in the rural and urban/per-urban areas. Combination of crops is planted in an area and the residents directly consumed the harvested vegetables. It is dubbed as a "natural refrigerator" since the products are made available to consumers while these are still fresh and green. The technology is widely practiced in the Province of Laguna and in Metro Manila.

CONCLUDING STATEMENTS

Based on the foregoing discussions, the technology transfer strategies and experiences of the various stakeholders of urban and peri-urban agriculture prevailed with the staunch support of the agencies and government units involved in the venture. The political will of those who promote the program dictates the level of success in the implementation of the urban and peri-urban agriculture projects/programs. While dissemination through the tri-media reaches a huge number of clientele, the strategies that involve groups and individuals are the best option for eventual adoption of the technologies being promoted.

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