AGROECOSYSTEM DETERMINANTS AND DESIRABILITY OF TOPICS IN DEVELOPING A TRAINING CURRICULUM ON URBAN AGRICULTURE IN PHILIPPINES

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INTRODUCTION

- Total population is expected to increase to about 5.34 billion in 2025 of which more than half will thrive in urban areas in Asia

- With the present incident of ever-increasing world population and majority of growth taking place in almost all cities, agriculture is expected to complement this inevitable trend by expanding the total area allocated for crop production and livestock, and perhaps the inescapable utilization of even the most developed urban areas for agricultural activities.

- In the Philippines, UA is still in its early stage as compared to the efforts already have made by other countries particularly in Africa, Europe, and Latin America.

- One factor that may contribute to its premature stage is insufficient attention from local authorities and limited availability of data.

- Another factor that attributed to UA status in the country is the limited training programs designed for particular agroecosystem – which comprise socio-economic and cultural dimensions of human resource development and biophysical factors of a given environment.

• The uniqueness of each agroecosystem is often neglected in designing training interventions.

• Since each agroecosystem has its own features, knowledge will be the key to the dissemination of an appropriate approach to UA management.

• In response to this issue of UA, this study was conducted to determine the desirability for the training curriculum of UA program in the context of agroecosystem determinants – the socio-economic, cultural, biophysical characteristics as well as the knowledge, skills, and farming practices of urban farmers in District 1, Muntinlupa City.

STATEMENT OF THE PROBLEM

❖ One of the limitations of urban agriculture development in the Philippines is the lack of adequate and applicable training programs intended for urban productivity improvement and increased awareness on appropriate farming systems that may lead to socio-economic sustainability of main stakeholders

STATEMENT OF THE PROBLEM

In Muntinlupa City, no training program yet has been developed in the context of agroecosystem dimensions on the pursuit of UA program in the community. Hence this study attempted to answer the following questions:

• Is UA training curriculum desirable in the city?

• If so, what are the agroecosystem determinants that might associate to the desirability of the topics to be included in UA training curriculum development?

OBJECTIVES OF THE STUDY

General: Determine and analyze the desirability of training curriculum of UA program in District 1, Muntinlupa City in the context of agroecosystem determinants.

OBJECTIVES OF THE STUDY

Specific Objectives:

• Describe the socio-demographic characteristics; economic characteristics; urban farmers' socio-cultural, political, and institutional aspects of interaction; biophysical characteristics; and their knowledge, skills and farming practices in urban agriculture

• Determine the desirability of the respondents in the development of training curriculum for urban agriculture

OBJECTIVES OF THE STUDY

• Analyze the relationship between the selected agroecosystem determinants and respondents' desirability for the topic contents in the training curriculum for urban agriculture; and

• Develop a compendium of topics in UA training curriculum for District I, Muntinlupa City.

THEORETICAL FRAMEWORK

•**Systemic Thinking**
This approach gives emphasis on the whole farm including the farm household as a system, and on the interactions between the components making up that system.

•**Holism Approach**
All parts that make up the whole are interdependent. Therefore, the whole is not just the sum of the parts but is intrinsically bigger than or different from the sum of the parts. The ontology of holism implies that any change in one part will have a significant impact not only on other parts but also on the system as a whole.

In this study, the components of urban agroecosystem were examined holistically and the interrelationships of the parts were analyzed.

Conceptual Framework

- **Agroecosystem Determinants**

Socio-demographic factors
Social characteristics
Household assets & facilities

Economic Factors
Economic characteristics
Credit accessibility
Crop production costs & market sales
Perceived food security level

Socio-Cultural, Political & Institutional
Aspects of Interaction
Membership in organization and its benefits derived from it
Political and Institutional extent of assistance & support

Biophysical Characteristics
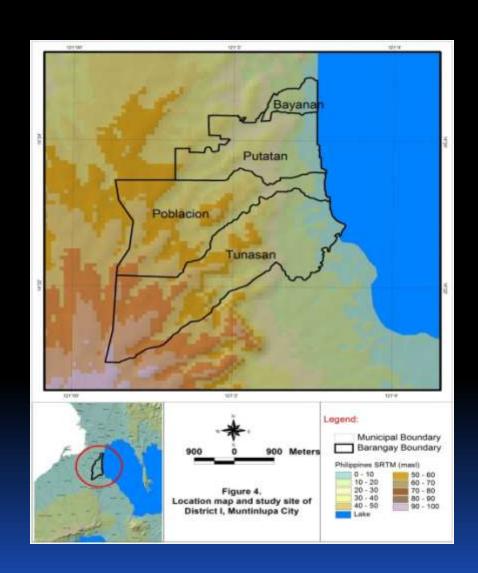Land characterization
Crop production

Knowledge, Skills and Farming Practices
Access to trainings
Cropping systems adopted
Soil nutrient management
Pests and diseases practices
Farmer's indigeneous knowledge

Desirability of the training curriculum in urban agriculture

RESEARCH METHODOLOGY

- Location of the Study
  District 1, Muntinlupa City
  – Tunasan, Poblacion,
  Putatan, Bayanan

- 139 respondents

- 21 key informants
  Local government units
  Academic institutions
  Private individuals
  Urban farmer organization

Figure 4.
Location map and study site of
District I, Muntinlupa City

Data Gathering and Research Instrument

- primary and secondary data

- Interview questionnaire

- Focus group discussion

Statistical Analysis of Data

- The data was computed, analyzed, and presented using frequency distribution, percentage technique, weighted mean, range, and ranking.

- The Spearman rho correlation

- Z-score for the generation of the compendium of topics in UA training curriculum

Results and Discussions

•The social characteristics of the urban farmers revealed that more than half of them were male, married and in their middle adulthood, and reached only elementary level.

•In terms of economic characteristics, the economic strata of urban farmers ranged from poverty to below poverty level. Based on the results of the study, the average monthly expenditure was greater than the average monthly income of the urban farmers. This inference was supplemented by the views of the urban farmers by admitting that most of them are "poor" in terms of their income in farming.

Results and Discussions

- Generally, urban farmers had poor socio-cultural interaction since majority of them have no involvement in any social organization. Through the finding of the study, it can also be concluded that the local government units as well as barangay/city political officials have very low participation in the development of UA in the community.

- Biophysical characteristics affected the productivity of the urban farmers. Majority of them had a small land area used in farming. Aside from this, majority did not experience increase in productivity for the last three years.

Results and Discussions

- Urban farmers had low knowledge and skills in urban farming. This assumption could be attributed to low productivity. The findings revealed that urban farmers had no proper techniques on how to increase productivity. Likewise, majority of them did not attend training for urban farming for the last three years.

Desirability for UA Training Curriculum in Muntinlupa City

- Average mean of desirability - 1.85, "highly desirable.

- Having a demonstration area in the community and showcasing of UA best practices and the use of participatory approaches were the desirable features of the training curriculum.

Desirability for UA training curriculum by respondents.

STATEMENT	NATURE OF DESIRABILITY (N=139)						WEIGHTED MEAN
	Very Desirable		Desirable		Not Desirable		
	Freq	%	Freq	%	Freq	%	
• UA should be one of the programs of the community.	136	97.8	3	2.2	-	-	1.97
• UA should be taught in non-formal education.	129	92.8	5	3.6	5	3.6	1.89
• There should be a demonstration area of UA in the community.	126	90.6	8	5.8	5	3.6	1.87
• There should be showcasing best practices of UA in the community.	127	91.4	4	2.9	8	5.8	1.86
• Participatory approaches should be used in teaching UA in non-formal education.	100	71.9	29	20.9	10	7.2	1.65
Overall weighted mean Description							1.85 Highly Desirable

Desirable Topics for UA Training Curriculum

TOPICS/AREAS FOR UA TRAINING CURRICULUM	WEIGHTED MEAN	DESCRIPTION
Cropping Practices		
Intercropping	1.36	Highly Desirable
Multiple cropping	1.31	Desirable
Organic farming or zero chemical farming	1.23	Desirable
Integrated farming or mixed farming	1.04	Desirable
Farming using recyclable waste materials	0.99	Desirable
Vertical farming	0.76	Desirable
Backyard farming	0.67	Desirable
Greenhouse vegetable gardening	0.63	Not Desirable
Double cropping	0.48	Not desirable
Mono cropping	0.33	Not Desirable

Desirable Topics for UA Training Curriculum

TOPICS/AREAS FOR UA TRAINING CURRICULUM	WEIGHTED MEAN	DESCRIPTION
Other farming-related practices		
Controlling of pests and diseases	1.32	Desirable
Compost preparation	1.29	Desirable
Preparation of herbicides	1.28	Desirable
Marketing and keeping records	1.27	Desirable
Harvesting	1.22	Desirable
Proper application of fertilizer	1.18	Desirable
Green manure preparation	1.10	Desirable
Use of animal manure	0.98	Desirable
Incorporating of trichoderma	0.94	Desirable

Factors Correlated With the Desirability of UA Training Curriculum

➢ Gender was negatively significant but with weak relationship to the desirability of the topics in multiple cropping and compost preparation and was positively significant with desirability to the topic in harvesting.

➢ Education was found significant to the desirability of multiple cropping negatively, while positively associated to the desirability of topics in organic farming, farming using waste management and integrated farm.

- Length of service in the barangay is negatively associated to the desirability of the topics on organic farming, vertical farming, backyard farming.

- Being immigrant is positively associated to the desirability of backyard farming as UA topic while negatively but with weak relationship to the desirability of compost preparation.

- monthly income was significantly correlated but negatively associated to the desirability on the topics in organic farming and farming using waste management.

➢ As for perceived present socio-economic status, the desirability to the topic of vertical farming was found to be significant.

➢ In terms of perceived socio economic status five years from now, it was significantly associated to the desirability of the topic in integrated farming.

➢ Food security was significantly related to the desirability of topic in harvesting as one of the topics in UA training curriculum but in negative relationship.

➢ Desiring their children to be a farmer or engaged in farming was significantly associated to the desirable topics in incorporating trichoderma, green manure preparation, animal manure preparation, and proper application of fertilizer.

➢ Membership in organization, involvement of local offices in pursuing the urban agriculture program and seek help from local officials regarding problem in farming are significantly associated with organic farming, backyard farming, proper application of fertilizer, incorporation of trichoderma, and animal manure preparation.

- Seeking help from local officials was also associated to the topics in marketing.

- Respondents' participation in their affiliated organization was found to be positively associated to the desirability on the topic in harvesting.

- Among selected biophysical factors, only the practice of organic fertilizer application has been found positively significant with the topics in organic farming, backyard farming, integrated farming, and herbicides preparation.

➢ The topic organic farming has significant relationship with the attendance in agricultural training in the past 3 years and in soil management technique.

➢ Attendance in training was also associated with the topic in incorporating trichoderma.

Development of Compendium of Topics for UA Training Curriculum Based on Agroecosystem Determinants

TOPICS	Z-SCORE
Multiple farming	0.58
Intercropping farming	0.73
Organic farming	0.24
Farming using waste management	-0.66
Integrated farming	-0.47
Vertical farming	-1.52
Backyard farming	-1.86
Compost preparation	0.46
Incorporating of trichoderma	-0.81
Green Manure preparation	-0.21
Animal manure preparation	-0.70
Proper application of fertilizer	0.05
Control of pests and diseases	0.58
Herbicides preparation	0.43
Harvesting	0.20
Marketing	0.39

Models of Compendium of Topics Based on Agroecosystem Determinants

TOPICS	SIGNIFICANT AGROECOSYSTEM DETERMINANTS	Z-SCORE	MODEL OF UA TRAINING CURRICULUM
Organic farming	Selected determinants in all areas of agroecosystem	0.24	Model 1
Harvesting	Social, economic, socio-cultural and political interaction	0.20	Model 2
Proper Fertilizer application	Economic, socio-cultural and political interaction	0.05	Model 3
Multiple crop farming	Social	0.58	Model 4
Compost preparation	Social	0.46	Model 4
Marketing	Socio-cultural and political interaction	0.39	Model 5
Herbicides preparation	Biophysical	0.43	Model 6

Conclusion and Recommendations

- Providing a training curriculum in urban agriculture is highly needed. Such training programs must be designed to help farmers become more efficient and productive in their farm work and improve their economic status.

- The prospective clients of the UA training curriculum are mature, married, with limited farm area and with a family income below poverty line. These could be the bases of the curriculum developer to suit the UA training curriculum to the needs of the farmers.

Conclusion and Recommendations

- The commodities raised by the farmers have no increase. This can be attributed to their insufficient knowledge and skills in the production of these commodities. Such problem can be addressed through a sound training curriculum that could cater to the needs of the prospective clients in the locality.

- The desirability of topics varied based on the agroecosystem determinants. This finding implies that before introducing a subject matter in farmer's training programs, their need and the availability of other relevant resources must be carefully studied.

Conclusion and Recommendations

- One way to ascertain training needs of urban farmers is to involve them in program planning. School administrators, teachers, urban farmers, agricultural agencies and other influential persons in the locality should work together to assure a successful training program.

- The finding that urban farmers' desirability in UA training curriculum differs by agroecosystem determinants implies that separate and different training programs can be evolved and developed. The desirability among topics in UA training curriculum of the urban farmers implies their willingness to participate in adult-farmer education programs.

Conclusion and Recommendations

- The finding that urban farmers' desirability in UA training curriculum differs by agroecosystem determinants implies that separate and different training programs can be evolved and developed. The desirability among topics in UA training curriculum of the urban farmers implies their willingness to participate in adult-farmer education programs.

- Since conducting a training course is costly, partnership with private sectors as well as government agencies to sponsor the financial need of the training should be taken into consideration.

Suggested UA Training Curriculum Program

I. **Training Course Title**: Organic Vegetable Production and Herbicide Preparation

II. **Description:** A one-week training course for urban farmers who have limited knowledge on planning and organic management of vegetable crops coupled with herbicide preparation.

III. **Goal:** To train 25 – 35 urban farmers on organic farming in vegetable production with herbicide preparation.

IV. **Objectives:**

- To assess awareness of the urban farmers on organic farming
- To update the participants on organic farming in vegetable production
- To update the participants on herbicide preparation
- To be able to construct a demo farm on organic farming in vegetable production with herbicide preparation

V. **Target Clients:** Urban farmers engaged in vegetable production in District 1, Muntinlupa City.

VI. **Methodology:**

- Participatory Approach
- Medium of Instruction: Filipino
- Site visit in demonstration area located in Greenheights, Muntinlupa City

VII. **Course Content**

- Basic concept on organic vegetable production
- Basic concept on herbicide preparation
- Basic concept on planning and management of organic vegetable crop

VIII. **Monitoring and Evaluation**

- After a month, follow up monitoring on the demo farm with the participants

IX. **Resources** Budgetary requirement of Php 60,000.00 for this training.

Conclusion and Recommendations

- The academic institution such as the Pamantasan ng Lungsod ng Muntinlupa and Muntinlupa Technical Institute, could perform their function of providing training programs to adult farmers in the communities that indicate such need.

Conclusion and Recommendations

- Extension workers are important links in the success of the implementation of the models in UA training curriculum.

- It is recommended that those extension workers and teachers should have gained more knowledge, skills and understanding to deal with adult farmers.

THANK YOU VERY MUCH ! ! !