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UNIVERSITY-BASED AGRICULTURE EXTENSION SERVICES IN ASEAN THROUGH AN AGRO-ECOLOGICAL/ORGANIC LENS-MALAYSIAN CASE

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INTRODUCTION

INTRODUCTION

- Extension services are usually rendered by various actors at the national level. At the national level, public, private, NGOs and even universities may also be active to transform lives of people confronting different challenges through various initiatives.

- Agricultural extension service is more than transferring the technologies among farmers.

INTRODUCTION

- Malaysian higher educational institutions particularly universities have taken good initiatives to not only provide education to the students but also involved in research, development and extension services pertaining to agro-ecology or organic farming.

- Universiti Putra Malaysia (UPM) is forefront and one of the pioneers at the national level in providing agricultural education, conducting research and advising farming community on adoption of novel agricultural technologies through direct or indirect consultations.

INTRODUCTION

- UPM is doing well in its best capacity through education, research, policy development, identification of best practices and need based rural advisory services for past, present and future of the country.

- Beyond teaching and research, higher educational institutions particularly agriculture related universities could also be involved in advisory services for the wellbeing of common people generally and farmers particularly.

INTRODUCTION

- The concept of sustainable agriculture has been growing due to its significance and opportunity for farmers as alternative farming (Rigby and Caceres, 2001).
- Feher and Beke (2013) have also highlighted the importance of sustainable agriculture and opined that this paradigm shift is not only got the attention of farmers but also becoming the development agenda of various agricultural institutions and could be one of significant measures to ensure food safety and quality along with profitability especially in the present scenario of controversial farming practices.
- Additionally, organic farming could be helpful to furnish food requirement of the increasing population (Azadi *et al*., 2011) and can also be useful in employment and income generation, accelerate tourism activities in the context of rural development in developing countries (Scialabba, 2000; Hülsebusch, 2007).

INTRODUCTION

- Agro-ecology is the combination of two terms which are agriculture and ecology.
- Schroeder *et al*. (2006) described the agro-ecology as "a science of sustainable agriculture, provides a platform for the union of these two disciplines using a holistic, problem solving approach.
- Francis and Carter (2001) further articulated the practical importance of the amalgamation of multidisciplinary fields into agro ecology which would help in well preparation of students and extension workers particularly in the present issue of food security. The activities they mentioned were interactive learning techniques, skill oriented training and problem solving techniques on practical grounds.
- Borsari & Vidrine (2005) hold an opinion that many higher educational institutions have spotted the significance of adding courses of sustainable agriculture into their curricula.

INTRODUCTION

- Hence, the number of Land Grant Universities (LGUs) offering courses in agro-ecology and sustainable agriculture at undergraduate and graduate level are increasing in the United States (Schroeder *et al.,* 2006).
- The importance of agro ecology/organic farming, the present study was designed to assess the present situation of the subject in teaching, research and university based extension services for farming community.
- Additionally, it is hoped that this mapping study would give new directions for further research, accelerating extension services and multilevel education at the university (ies) level.

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METHODOLOGY

METHODOLOGY

- The pertinent information and material have been gathered through internet, UPM library resources and concerned departments of the university.
- The researcher also approached some experts for detailed discussion on the subject matter.

RESULTS AND DISCUSSION

RESULTS AND DISCUSSION

- There are numerous higher educational institutions offering courses related with agro-ecology, organic farming and agricultural extension.
- However, there may be some courses offered at multi educational level with different course titles but their course contents have aspects of agro-ecology or/and organic farming like sustainable agriculture.
- Scheme of studies at various levels have been kept changing according to the need and demand of various actors at national and international level.
- Some of the higher educational institutions which are involved in imparting agriculture related education are presented in Table 1.

RESULTS AND DISCUSSION

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Table 1: Some of the Malaysian higher educational institutions involved in agricultural and related educational programmes

No.	Name of institutions	Public/private
1.	Universiti Putra Malaysia (UPM)	Public
2.	University of Malaya (UM)	Public
3.	National University of Malaysia (UKM)	Public
4.	Northern University of Malaysia (UUM)	Public
5.	Universiti Malaysia Sarawak (UNIMAS)	Public
6.	Universiti Malaysia Sabah (UMS)	Public
7.	Multimedia University	Public
8.	Universiti Teknologi MARA (UiTM)	Public
9.	Universiti Sultan Zainal Abidin (UniSZA)	Public
10.	Universiti Malaysia Terengganu (UMT)	Public
11.	Universiti Malaysia Kelantan (UMK)	Public
12.	Nilai University	Private
13.	Binary University College of Management and Entrepreneurship	Private
14.	Infrastructure University Kuala Lumpur (IUKL)	Private
15.	Universiti Tunku Abdul Rahman (UTAR)	Private
16.	University of Nottingham Malaysia Campus	Private

RESULTS AND DISCUSSION

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Table 2: Summary of some of the UPM departments involved in teaching, research and extension activities

No.	Name of Faculty/Department/Institute/Center
1.	Faculty of Agriculture
2.	Institute of Social Studies (IPSAS)
3.	Faculty of Human Ecology
4.	Faculty of Design and Architecture
5.	Faculty of Educational Studies
6.	University Community Transformation Center (UCTC)
7.	Faculty of Science
8.	Institute of Tropical Agriculture and Food Security
9.	Institute of Plantation Research

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Table 3: Summary of undergraduate, graduate and post graduate courses as part of curriculum about agro-ecology/organic farming at UPM

No.	Name of course (s) about Agro-ecology/Organic Farming
1.	Principles of Sustainable Agriculture
2.	Organic Production Systems
3.	Agriculture, Environment and Food System
4.	Climate Change and Agriculture
5.	Crop Ecology and Cropping Systems Plantation Crops
6.	Sustainable Agriculture Development

RESULTS AND DISCUSSION

Table 4: Summary of undergraduate, graduate and post graduate courses as part of curriculum about agricultural extension, rural development and community development at UPM

No.	Name of Course (s)
1.	Agricultural Extension
2.	Transfer of Agricultural Technology
3.	Agricultural Communication
4.	Program Planning In Agricultural Extension
5.	Adult Education
6.	Adult Education Program Development
7.	Leadership in Extension and Community Development
8.	Community Development
9.	Community Resource Development
10.	Working with Community
11.	Community Development
12.	Training Programme Design and Management
13.	Planning and Development of Agricultural Skill Training Programme
14.	Teaching and Learning in Agriculture Education

RESULTS AND DISCUSSION

- The university is not only active in providing education pertaining to agro-ecology and organic farming but also train students about agricultural extension, rural advancement and community development so that they can become agent of change in their professional life.
- Furthermore, Department of Agriculture Technology, Faculty of Agriculture is vibrant in the discipline of agricultural extension and rural advisory services.
- The courses related to extension education are mostly offered by Faculty of Educational Studies and courses regarding community development are being offered (at various degree levels) under the Faculty of Human Ecology.

RESULTS AND DISCUSSION

- Besides teaching, the university is also involved in research conduction, supervision and publication of the research.
- The research areas are ranging from organic farming to consumers intention to purchase the organic food, adoption factors, marketing aspects and extension services.
- The further elaboration is given in the Table 5.

RESULTS AND DISCUSSION

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Table 5: Summary of UPM's Faculty, Researchers and Students Publications

Authors and Year	Title of Publication	Nature of publication (Journals/Thesis/Proceedings/ Lecture/Report)
Mohamed, Zainal Abidin and Terano, Rika and Sharifuddin, Juwaidah and Rezai, Golnaz (2016)	Determinants of paddy farmer's unsustainability farm practices.	Agriculture and Agricultural Science Procedia, 9. pp. 191-196. ISSN 2210-7843
Rezai, Golnaz and Shamsudin, Mad Nasir and Mohamed, Zainal Abidin and Ting, Jenn Ling (2016)	Can contract marketing motivate farmers to go organic? Measuring the moderation effect of contract marketing.	American Journal of Agricultural and Biological Sciences, 11 (1). pp. 29-34. ISSN 1557-4989; ESSN: 1557-4997
Talib, Jamal and Wan Harun, Wan Sulaiman and Mohd Eusof, Zainol and Ramlan, Mohd Fauzi (2016)	Sustainability of farming systems on sloping uplands.	Research Report. Research Management Centre, Serdang, Selangor.
Hamdan, Mas Ernawati and Man, Norsida and Md. Yassin, Sulaiman and Alby, Jeffrey Lawrence D'Silva and Mohamed Shaffril, Hayrol Azril (2013)	Farmers' adaptive capacity towards the impacts of global warming: a review.	Asian Social Science, 9 (13). pp. 177-184. ISSN 1911-2017; ESSN: 1911-2025

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Table 5: Summary of UPM's Faculty, Researchers and Students Publications

Authors and Year	Title of Publication	Nature of publication (Journals/Thesis/Proceedings/ Lecture/Report)
Tiraieyari, Neda and Hamzah, Azimi and Abu Samah, Bahaman and Uli, Jegak (2013)	Attitudes of Malaysian extension workers towards sustainable agricultural practices.	Agriculture and Agricultural Science Procedia, 9. pp. 191-196. ISSN 2210-7843
Tiraieyari, Neda and Hamzah, Azimi and Abu Samah, Bahaman and Uli, Jegak (2013)	Knowledge and perceptions of extension workers on sustainable agriculture practices.	American Journal of Agricultural and Biological Sciences, 11 (1). pp. 29-34. ISSN 1557-4989; ESSN: 1557-4997
Taraka, Kallika (2012)	Effects of agricultural extension and environment-related practices on technical efficiency of paddy farmers in the central region of Thailand.	Ph. D thesis, Universiti Putra Malaysia.
Wan Harun, Wan Sulaiman (1995)	Research and education for sustainable agriculture: Universiti Pertanian Malaysia institutional report.	AAACU Tenth Biennial Convention, 17-22 Jan. 1995, Taichung, Taiwan. pp. 1-15.

RESULTS AND DISCUSSION

- There are some other authors who have published and worked on agro-ecology, organic farming and sustainable agriculture and are affiliated with other Malaysian higher educational institutions.
- Academicians and researchers are also inclined towards the importance of agro-ecology and organic farming.
- The summary of their some work is presented in the following Table 6.

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Table 6: Summary of other Malaysian Faculty, Researchers and Students

Author (s) & Year	Title	Affiliation
Somasundram, C., Razali, Z., & Santhirasegaram, V. (2016).	A Review on Organic Food Production in Malaysia.	University of Malaya
Omar, N. A., Nazri, M. A., Osman, L. H., & Ahmad, M. S. (2016)	The effect of demographic factors on consumer intention to purchase organic products in the Klang Valley: An empirical study	National University of Malaysia & Asia Pacific University of Technology and Innovation, Malaysia
Hongyeng, L., & Agamuthu, P. (2014).	Material/substance flow analysis of carbon flux in an organic and a conventional vegetable farm	University of Malaya
Saleki, Z. S., & Seyedsaleki, S. M. (2012).	The main factors influencing purchase behavior of organic products in Malaysia.	Multimedia University of Malaysia
Barrow, C. J., Ngai Weng, C., & Masron, T. (2009).	Issues and challenges of sustainable agriculture in the Cameron Highlands	University Sains Malaysia

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- UPM have different research farms and research units to conduct in vivo and in vitro based research on various issues.
- There is also an organic unit under the umbrella of Faculty of Agriculture. Under this unit, a part from research, there are educational programs too.
- In this regard, children education program was conducted with the aim to sensitize, familiarize the new blood with the importance of organic farming and organic food along with childhood exposure to the eco-friendly agriculture.
- Moreover, kids were equipped with knowledge about chemical and pesticide free farming including preparation of materials, handling and harvesting.

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- UPM academia and researchers are also involved in the projects like composting which bolsters the agro-ecology and organic farming.
- The research is underway pertaining to oil palm fruit empty bunch for further use.
- Similarly, the university intellectuals are also working on organic production of livestock a part from crops to produce organic meat to meet not only the protein requirements but also source of safe food from the future perspective.
- Therefore, these efforts reveal that the UPM think tanks are advocates of agro-ecology and organic farming approaches.

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- University Community Transformation Center (UCTC) is one of the UPM centers, established to engage community and facilitate extension services and coordinate the university community program under the National Blue Ocean Strategy 8 (NBOS) Ministry of Education, Malaysia.
- UCTC is also actively involved in conducting state of the art trainings for local and international people.
- For this purpose, moving vehicle or mobile advisory and consultancy services are provided. The vehicle is equipped with mini lab with diagnosis facility and various experts are also part of the field mission.
- The university is transferring knowledge and reaching out majority of farmers through PUTRA Outreach Clinic and PUTRA Outreach (Extension) Bus.

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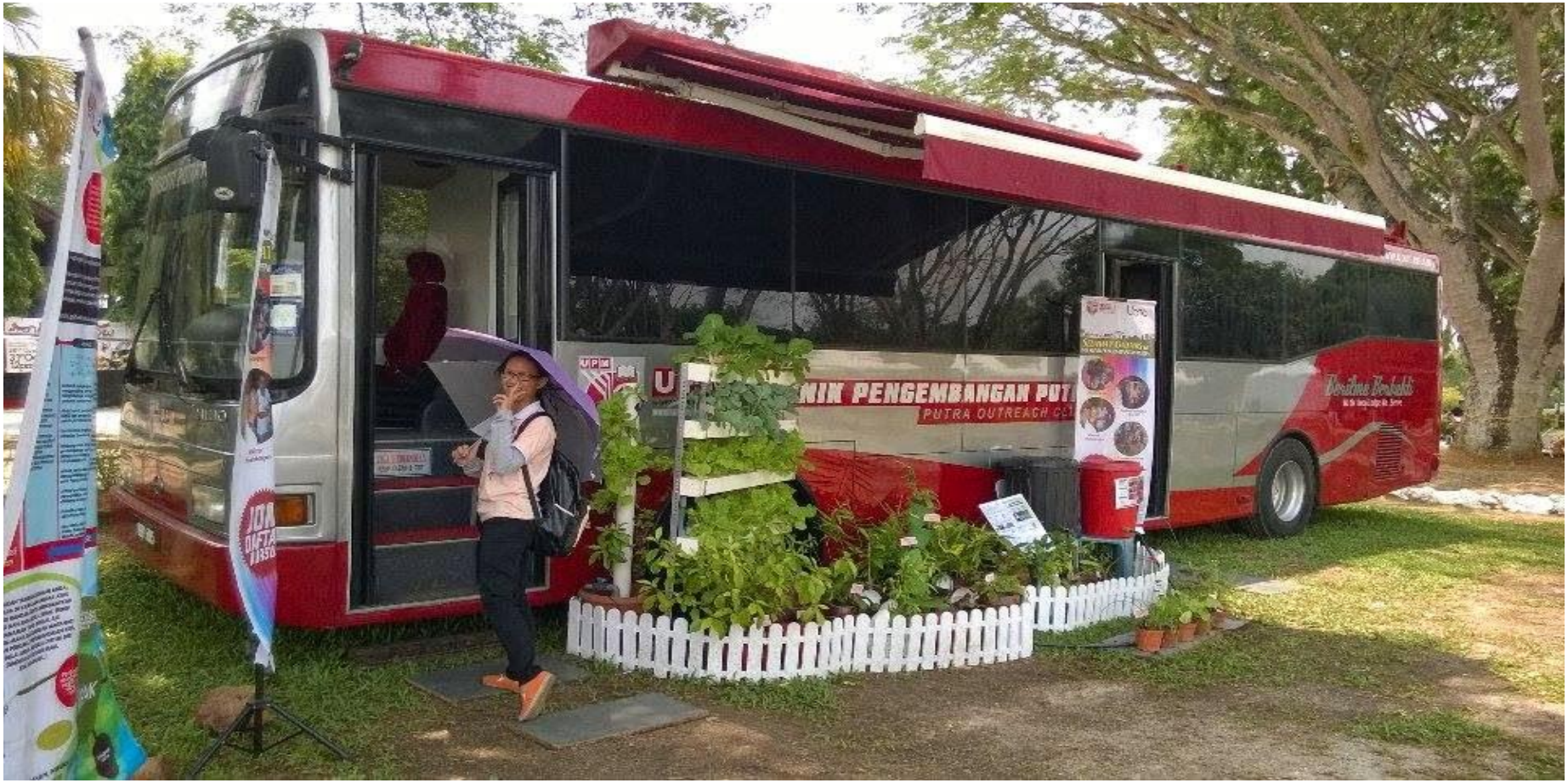
PUTRA Outreach Clinic and PUTRA Outreach (Extension) Bus



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PUTRA Outreach Clinic and PUTRA Outreach (Extension) Bus

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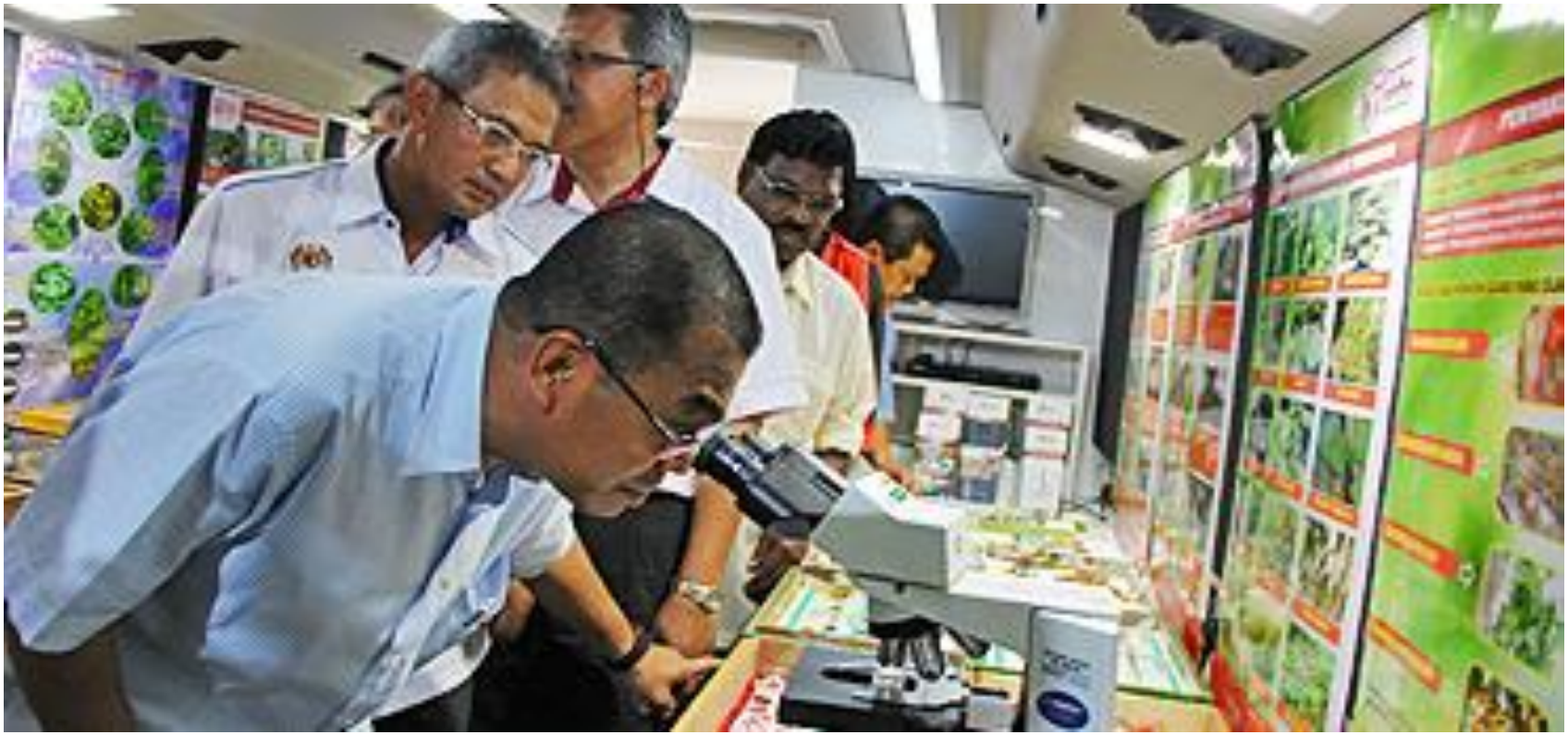
PUTRA Outreach Clinic and PUTRA Outreach (Extension) Bus



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- There are other extension and adult training programs by UPM for students and farmers.
- These include
  - Trainings of students for development of *Orang Asli* (native people) through various agricultural extension programs
  - Urban Farming Project with the urban community and for the urban people
  - Serdang Green Town (3Rs = Recycle, Reuse and Reduce).
  - Mushroom cultivation using natural materials (Oil Palm Empty Fruit Bunch)
  - Paddy technologies (with 7 components: IPM etc)
  - Acidity soil recovery trainings (Merbok Project)
  - Green Angle for Primary and Secondary school

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Trainings of students for development of *Orang Asli* (native people) through various agricultural extension programs

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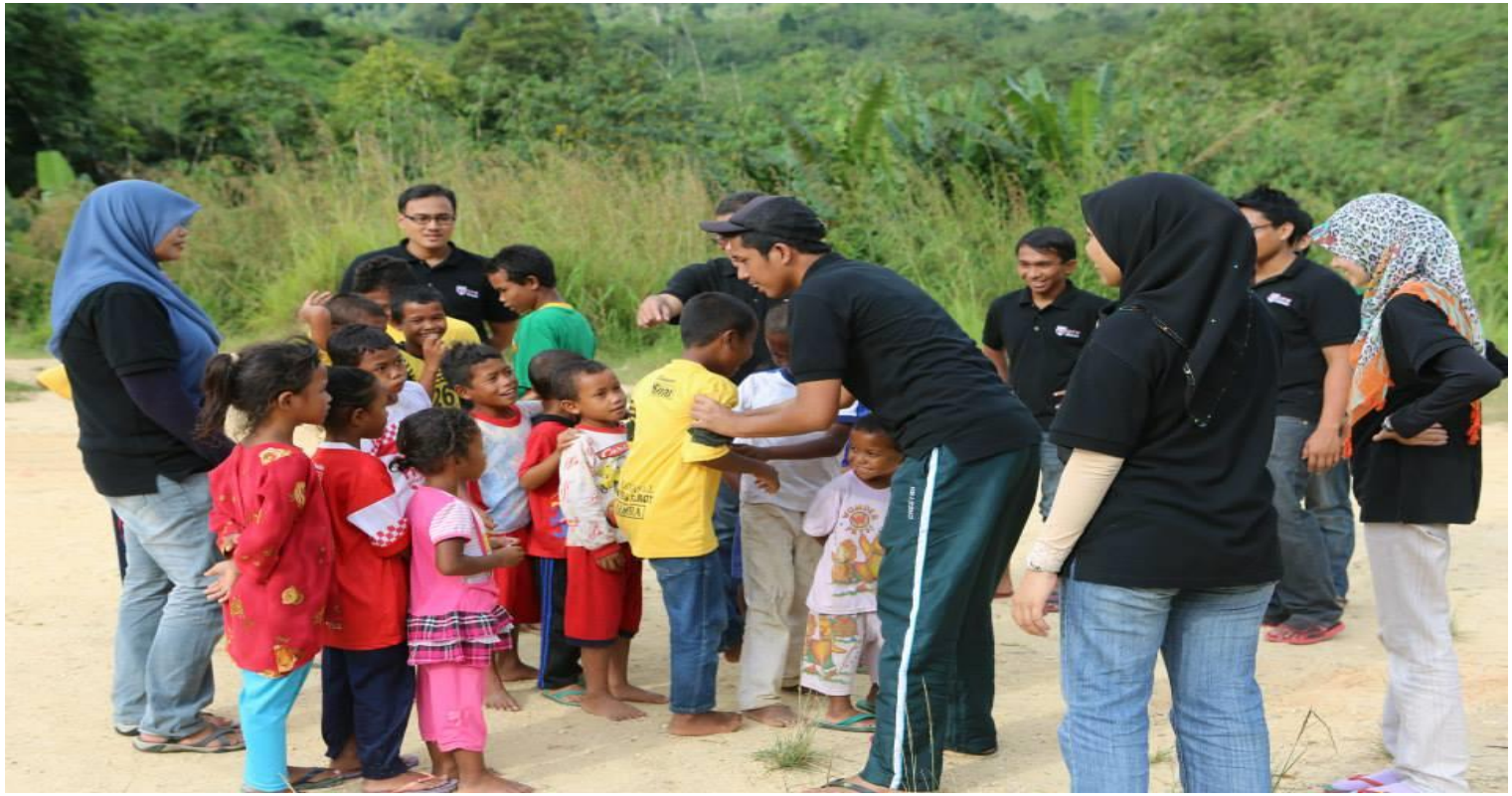
Trainings of students for development of *Orang Asli* (native people) through various agricultural extension programs



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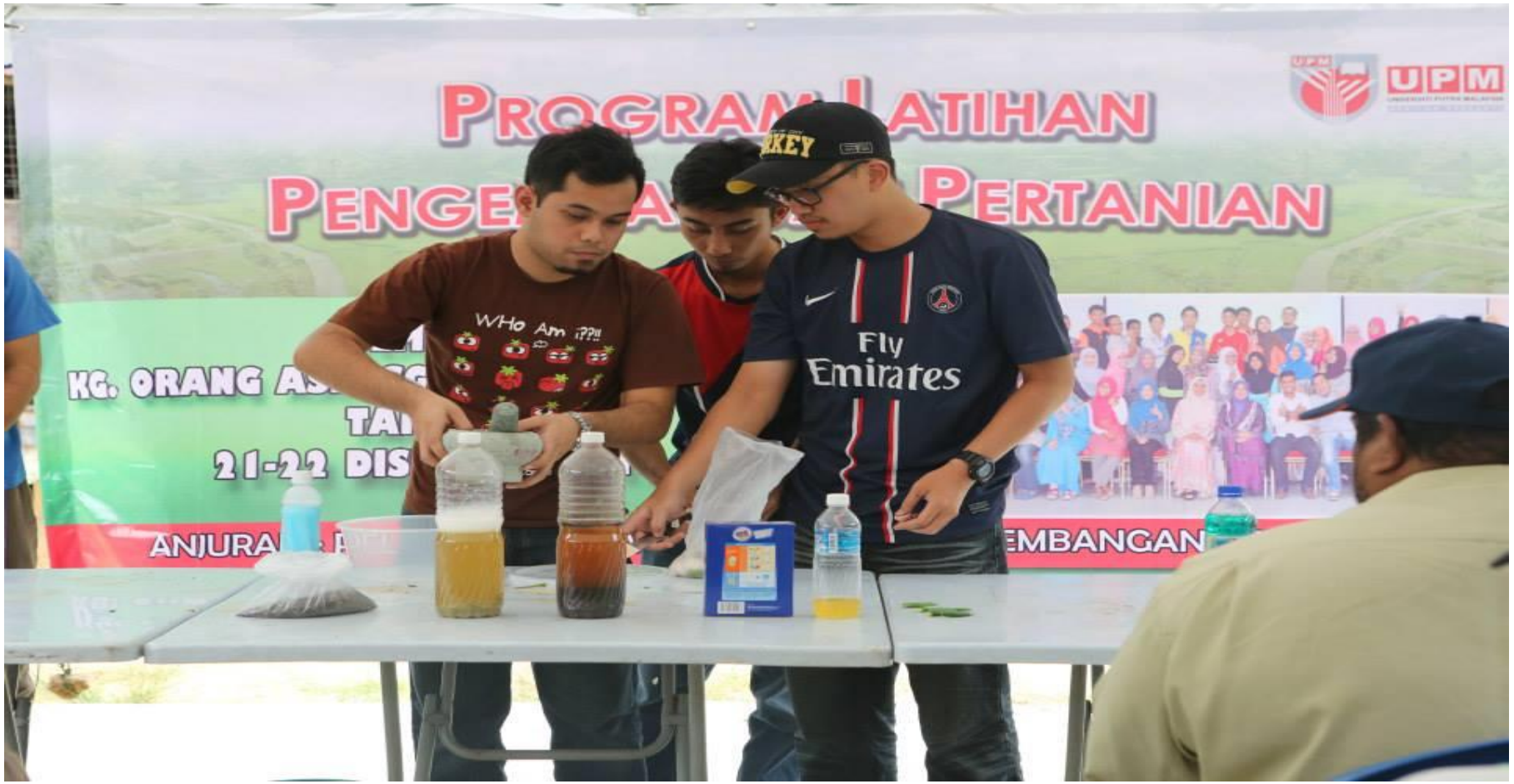
Trainings of students for agricultural extension programs



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Field trip for agricultural extension course

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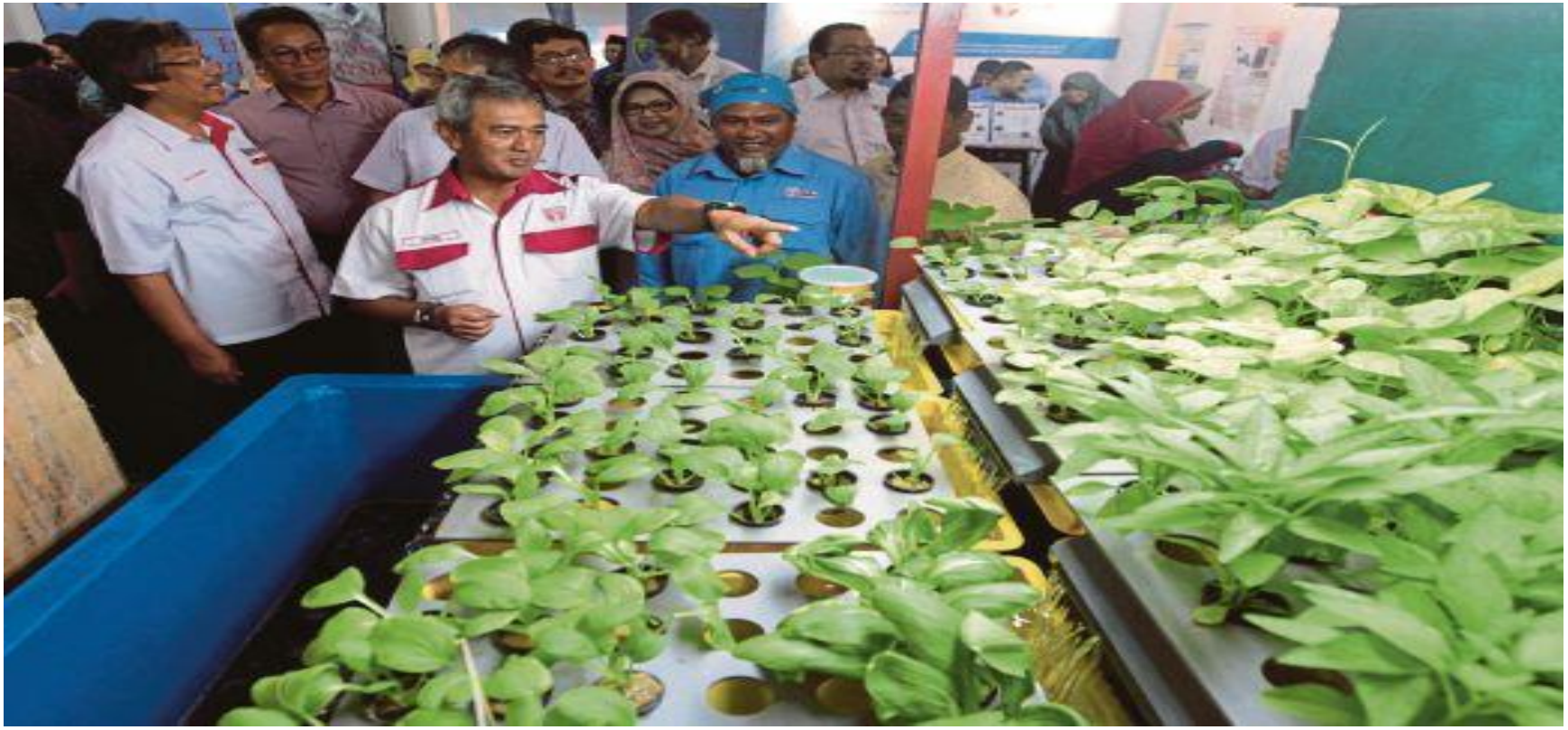
Urban Farming Project with the urban community and for the urban people



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Urban Farming Project with the urban community and for the urban people

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UPM Agricultural Specialist Clinics at Malaysia Agriculture, Horticulture & Agrotourism Show (MAHA)

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UPM Agricultural Expo and Convocation Festival

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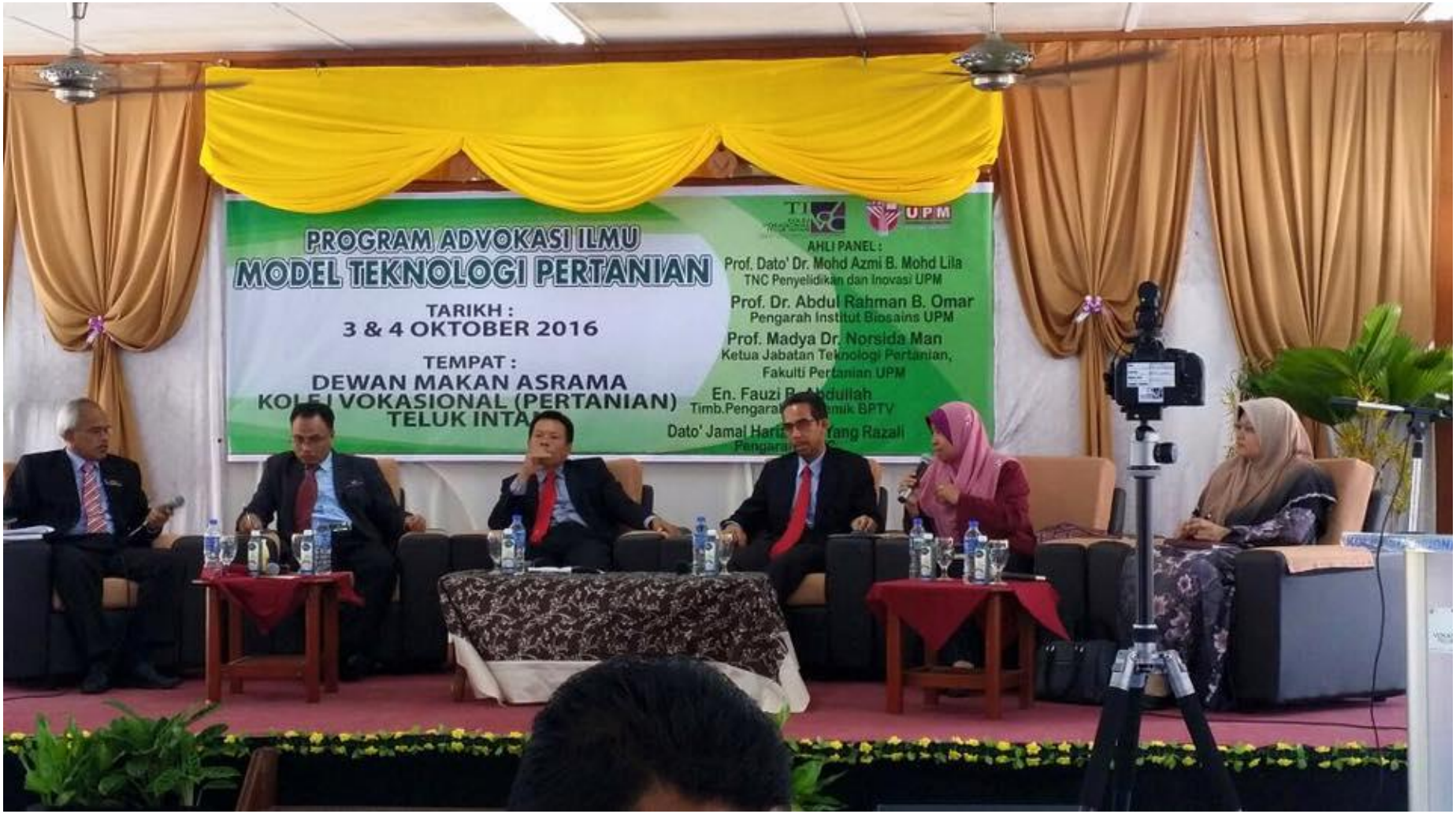

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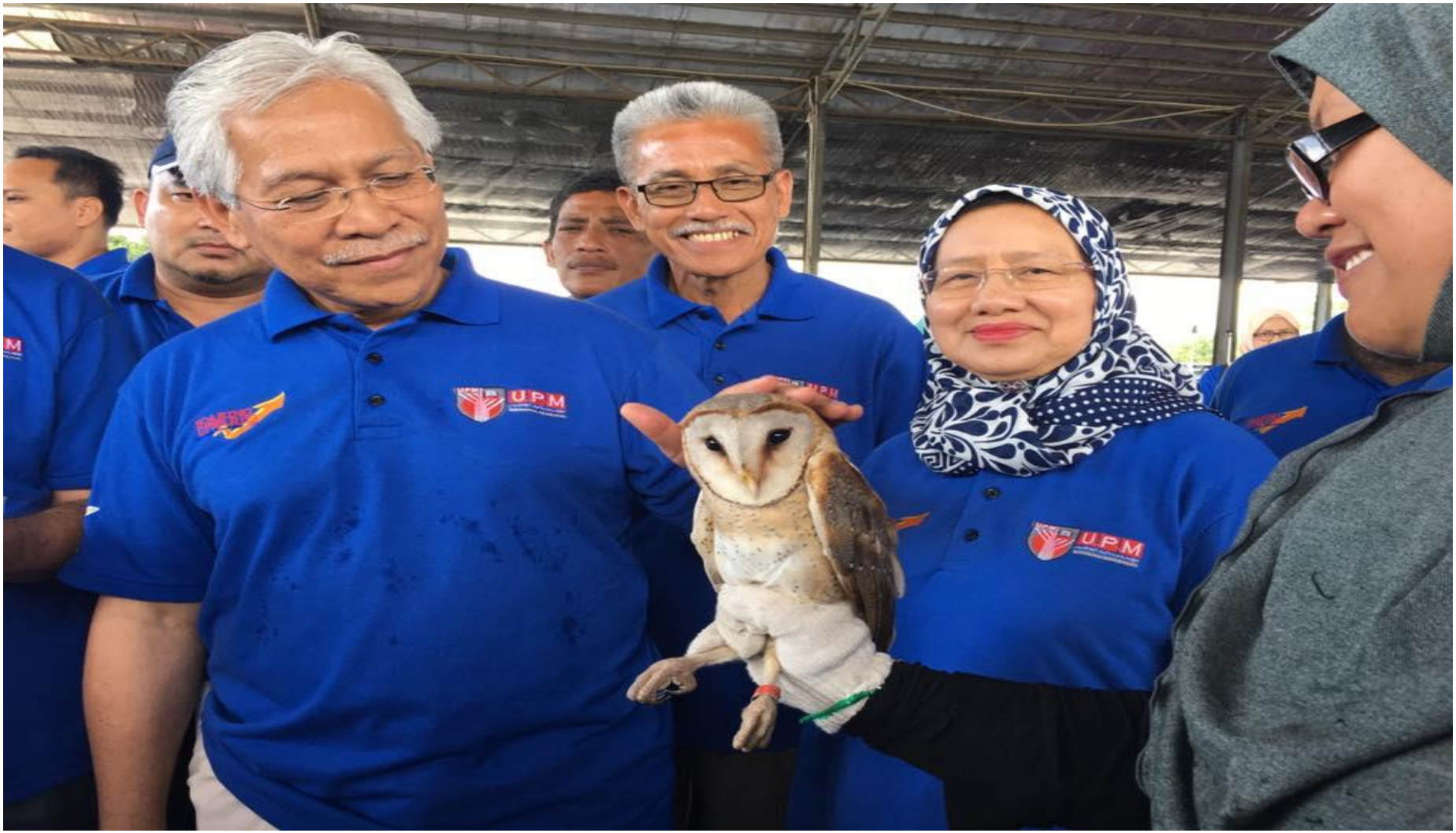

SWOT Analysis

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Strengths	Weaknesses
• Faculties and institutes members have capacity • Faculties and institutes members have competency • Expertise in training provision • Expertise in module development • Expertise in conduction of research and supervision	• Less grants for R & D projects • Shortage of specific budget • Lack of interest by the academia • Lack of time • Focus more on teaching and research than extension activities by academia • Shortage of extension specialists at university level
Opportunities	**Threats**
• Can offer tailor made short courses • Demand is increasing • Can help in policy development and execution at farm and farmer level • Capacity development of extension field staff	• Lack of farmers' interest • Less number of adopters (farmers) due to constraints of market price • The focus might not be aligned with the objective of university (ies)

POLICY AND RESEARCH RECOMMENDATIONS

There are some useful policy and research recommendations which are given below:

1)There are many higher educational institutions in Malaysia but evidences of their involvement in the subject are not quantified yet.

2)More funds should be generated and allocated to conduct research on agro-ecology and organic farming from agricultural extension perspective.

3)Extension service providers (public, private, NGOs) in either advocating or inhibiting are still unclear.

4)Although policy and guidelines are existing but the success rate of policy execution required to be documented.

5)Intra national and inter regional cooperation is required to promote agro-ecology and organic farming.

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CONCLUSION

CONCLUSION

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- The literary work has been done to evaluate university based extension services for farming community in Malaysia through agro-ecology, organic farming and sustainable agriculture perspective.

- The base line research results show that there are more than 16 higher educational institutions who are offering courses pertaining to agriculture at multi educational level.

- Moreover, the available evidences draw attention of academia, researchers, policy makers and extension service providers to work more and support environment friendly agriculture systems for ultimate food and environment safety from the future point of view.

CONCLUSION

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- UPM has been playing important role since its inception in agricultural development through variety of programs, research activities and extension programs but, there are still gaps which can be bridged through involvement of academia and extension specialists, allocation of more budgets for extension activities, incorporation of courses pertaining to agro-ecology and organic farming in scheme of studies, introduction of special rewards and awards for UPM staff who would render additional advisory services are names a few.

- At the national level, there is need to work together at institutional level and should join hands with other ASEAN countries to promote agro-ecology, and organic farming through establishing regional extension networks.

- There is a dire need to restructure extension and advisory system at national and regional level.

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