Development Action Plan (DAP)

35TH INTERNATIONAL VEGETABLE TRAINING COURSE

"VEGETABLES: FROM SEED TO TABLE AND BEYOND"

MODULE II (3-28 OCTOBER 2016)

WORLD VEGETABLE CENTRE

KASETSART UNIVERSITY, KAMPHAENG SAEN CAMPUS, THAILAND



Biodata

Joanna Cho Lee Ying

Research officer (2011- 2044)

Malaysian Agricultural Research & Development Institute (MARDI)

Education background

BSc Plant Technology

MSc Postharvest Physiology

Main responsibilities

- Conducting postharvest research on vegetables, fruits and flowers
- Provide technical advices to public and private sectors







30 million population

43rd most populous country on earth

13 states

Total landmass of 329,847 sq. km

Official language

Bahasa Malaysia

State religion

Islam

Additional information

- Tropical climate, rich in biodiversities
- Staple food: Rice
- **Government:** Federal parliamentary democracy under an elective constitutional monarchy
- Diversified economy: leading exporter of electrical appliances, electronic parts & components, palm oil and natural gas, tourism, commerce & medical tourism









National Dish : *Nasi Lemak* (Coconut rice with spicy anchovies)



Malaysian Agricultural Research & Development Institute (MARDI)



- Established in 1971
- Statutory body & mandated to conduct research in agriculture, food and agro-based industries
- Provides technical services and entrepreneurship
- **Our Vision:** Leader in Agrofood Research & Innovation
- Our Mission: Creating Inclusive Knowledge & Technologies For Sustainable Agrofood Sector

Horticulture Research Center (HR)



Three topics in module 2 that I found most useful

Vegetable Postharvest Technologies

- Packaging, package design & materials
- Fresh cut, water loss, browning & microbial control
- Cooling, pest control & storage



Nutrients value and antioxidant content of selected indigenous vegetables of Malaysia grown using MARDI technology

OVERWEIGHT POPULATIONS IN SOUTHEAST ASIA

Overweight prevalence (%) for adults of both sexes (BMI of > 25 kg/m2)

1st in S.E Asia 6th in Asia Pacific Region



Source: WHO Non-Communicable Diseases Country Profiles, 2011

Problem No. 1

Are Malaysian eating healthily?

- In Malaysia, the recommended intake of fruits and vegetables is five servings (approximately 400 g) which are two servings of fruits and three servings of vegetables per day (Ministry of Health Malaysia, 2010)
- Results from the Malaysian Adult Nutrition Survey (Norimah et al., 2008), revealed that consumption of fruits is still low among Malaysians and is not included in the top ten daily consumed foods among Malaysian adults

Problem No. 2





In 1980, 1.731 billion people worldwide, i.e. 39% of the world population were living in cities. In 2015, the number had increased to 3.968 billion (54%). According to projections, the urban share of the world population will grow to 6.419 billion (66%) by 2050.



[®]Home>FFTC Agricultural Policy Articles>Food security and safety>Articles/ Related published articles

The Potential of Urban Farming Technology in Malaysia: Policy Intervention

2015-11-17

Rasmuna Mazwan Muhammad and Mohd Rashid Rabu

Economic and Social Science Research Centre,

Malaysian Agricultural Research and Development Institute (MARDI)

Persiaran MARDI-UPM, 43400 Serdang, Selangor, Malaysia.

INTRODUCTION

Urban farming is a cultivation practice where food is produced in the cities around existing town areas (Bailkey and Nasr, 2000). Generally, urban farming is not a new concept in Malaysia. The similar concept of farming activities adopted by urban folks surrounding residential areas started a long time ago. This type of cultivation has been widely named with various contexts of urban farming, or urban agriculture or home



Fig. 1: Import of fruits & vegetables, 2009-2012. Source: Ministry of Agriculture and Agro-based Industry

Malaysia, Steood Import Reaches RM13 million annually

vegetables for the households and in some instances earn extra income for household

Urban Horticulture: The way to reduce food import bill and our cities more livable



Minister of Agriculture (3rd from left) visiting booths at Urban Holticulture Conference 2014 in Johor Bhar

MARDI is at the forefront of local efforts to

Urbankit : New technology urban horticulture

By: Mohd Johaary Abdul Hamid Strategic Planning and Innovation Management Division, MARDI

settle in low cost housing which offers very limited potential for any kind of gardening or agricultural activities. Studies show that by 2020, the urban urban horticulture and designed poor will constitute 85% of our city

population and one of the challenges their food bill and increase household a bi facing us is finding ways to maximise income urban agriculture within the very This kit is suitable for growing herbs an limited space that is available. and vegetables as well as rearing fresh An urban kit for agriculture is water fish. Herbs and vegetables such as by one of the best solutions to the space mint, lettuce, spinach and watercress are R not snared. This has made it food and increase their income but if its high tolerance to variations in water the necessary for low income urbanites to properly managed, it has the potential to conditions such as pH, temperature, improve the quality of the environment. oxygen and nitrates. The Urbankit technology was

This integrated system successfully pest developed by MARDI to encourage generates the nutrients needed by the it-yo plants and fish with the tilapia food and wastes and ammonia running through 31 x specifically for the urban poor to reduce



Penggunaanteknologi pertanian terkini memungkinkan penduduk bandar bercucuk tanam untuk menampung belanja harian selain menampilkanlandskap vang menarik

UTUSAN MALAYSIA

NIN 07.09.15



BE Plot mislatif awal krisis bekalan makanan

EKNOLOGI TUBE Plot amat sesu

elbagai jenis savuran dan herba boleh ditanam menerusi teknik TUBE Plot ciptaan MARI Dieh LUOMAN RIDHWAN

anan dilakukan, sebuah aysia (MARDI) bagi matlamat Struktur berkenaar

ENYEDARI peri pen-antura 40 hingga 60 peratus Mengulas lanjut, Muhd. tingnya langkah pencega- daripadanya adalah tergolong Akhtar berkata, TUBE Piot te-han krisis bekalan ma- dalam kelompok miskih bandar. Iah dicipta dengan harapan agar "Jadi, situasi itu bakal menyu- bekalan makanan terutamanya struktur penanaman tumbuhan litkan keadaan mereka yang jenis sayur-sayuran dapat diseruktur pentanaman tumusuan bertingkat telah dicipta oleh akan berhadapan kesukaran tanam secara meluas di kawasan Institut Penyelidikan dan Ke- untuk mendipatkan bekalan bandar sekali gus menggulakkan majuan Pertanian Ma- makanan. Di sinilah MARDI pertanian bandar. memainkan peranan mela-bentuk TUBE Plot itu sendiri tel-lui penciptaan TUBE Plot yang ah diihamkan daripada konsep

saya kira adalah yang pertama seumpamanya di negara ini," ka-hat semakin mendapat tempat

Struktur berkenaam yang dinamakan Tropical Ur-tanya kepada Kosmo/di Serdang, dalam kalangan rakyat negara ini. Innovation in urban farming -Self watering containers

By: Dr. Zabedah Mahmood, Ab. Kahar Sandrang and Sakinah Idris. Horticulture Research Centre, MARDI

MARDI

PERKENAL

PERTANIAN MUDAH

urdened with the ever increasing food prices, the urban poor are Destimated to spend 50-70% of their income on food. It is time for the urban population to start growing their own food as community or individual projects and ensure a continuous supply of nutritious fresh vegetables and fruits. Before public interest can grow,

farming techniques need to be modernised to make growing food easy and interesting.

Growing in containers is getting popular especially in cities where the space for gardening is rather limited. However, container growing is water ntensive, requiring watering two to three times a day, every day. With the busy city life, watering can easily be forgotten and would be avoided

guide watering needs, a float indicator is placed in the pipe.

The self watering mechanism and the position of the reservoir minimise evaporation losses and watering can be reduced to once a week during the dry season. Fertilizer use is also minimised with about 2 grams or one tablespoon of NPK granules for one crop of leafy vegetables.

Measuring 56 cm x 24 cm x 21 cm. most vegetables, herbs and ornamentals grow well in Greenkit. The size is sufficient for at least a single serving of vegetables for the family. Each Greenkit can produce a kilogramme of spinach or kailan, sufficient for a single serving of eight.

As for 'ulam', one Greenkit can pack a few species as only a few young shoots is usually consumed in a single meal. It is amazing to note that we can grow herbaceous trees such as 'tenggek burung' and curry plant in a Greenkit by training them small and compact as we keen ninching the shoots for



Objectives

- The primary aim of this study was to determine the nutritive content, antioxidant content, and antioxidant activity of selected varieties of indigenous vegetables from Malaysia grown using Greenkit Technology
- To determine the antioxidant activity and total phenolic content of selected indigenous vegetables during storage









Outputs

- Nutritive content, antioxidant content, and antioxidant activity of selected varieties of indigenous vegetables from Malaysia grown using Greenkit Technology generated
- Selection of proper harvesting index, storage temperature and packaging materials of selected varieties of indigenous vegetables from Malaysia grown using Greenkit Technology generated



Activities

Year						20	16											20	17					
 Determination of nutrients value and antioxidant content of selected indigenous vegetables of Malaysia Five varieties (pegaga, sambung nyawa, kesum, ulam raja) 	J ◀	F	Μ	Α	Μ	J	J	Α	S	0	N	D	J	F	Μ	Α	Μ	J	J	Α	S	0	Ν	D
 Determination of postharvest studies on selected indigenous vegetables of Malaysia during storage Harvesting index Storage temperature Packaging materials 													+											0



Total budget requested

Details	2017 (RM)	2018 (RM)					
Temporary & Contract Worker	18 000	18 000					
Travel & Transportation	4000	3000					
Research materials & supplies	15 000	10 000					
Minor modifications & repair	5000	5000					
Total	42 000	36 000					
Overall total	RM 78 000						

Project benefits/Outcomes

- Improvement of nutrition by identifying the availability of micronutrients obtainable from indigenous vegetables that can be added to food databases and used to develop and implement their intake among Malaysians
- Development of appropriate postharvest handling technique to retain quality of indigenous vegetables during storage



Collaborators

- Agronomists
- Postharvest scientists
- Nutritionists



• Budget allocation for laboratory analysis

Thank You Terima Kasih Khob khun ka



ACKNOWLEDGEMENTS:

AARDO, MARDI, WORLD VEGETABLE CENTER, MS. SOMCHIT, BON, WOW, LECTURERS, FRIENDS (*NUNOO, AEY, PA, PUI, VEDITA, HNIN HNIN, DR. BOW, MI POOH, KAIPATI, DONALD & PAUL*), AND KIND PEOPLE OF THAILAND I MET DURING MY STAY HERE