

# Agriculture in Architecture in Cities

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2

**Magandang hapon po!**

**Ako po si Arch Mynn.**

Ang aking paper ngayon ay tungkol sa

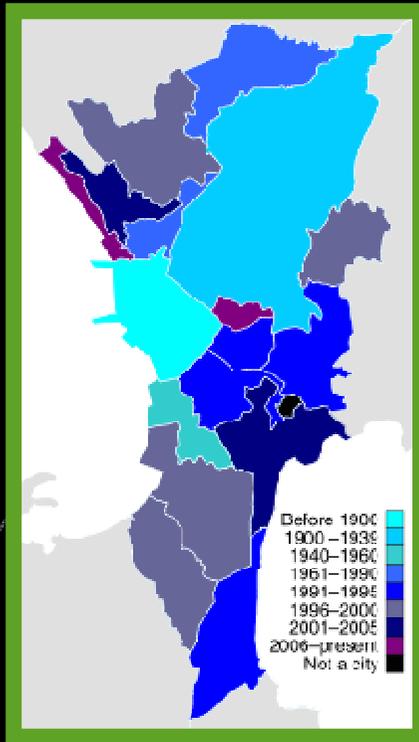
# **Agriculture in Architecture in Cities**

Paano tayo makakatulong mapakain ang milyong  
milyong tao sa Metro Manila sa darating na  
madramang panahon

Puwede ho kaya ang agrikultura sa siyudad?  
Sa ating mga gusali? Sa ating kapaligiran?

**Para sa ikagaganda at likas kayan  
pag-unlad ng ating siyudad at bansa**





## Metro Manila



- Metropolitan Manila (MM) is a megacity of 16 cities and a municipality of Pateros
- Manila's population density grew by 14.6 sq kilometers from 1948 to 1996
- By 2040 it will have a population by 11.6 M from 2010 of 13.8 M
- By 2050, most of the Filipinos will be in MM.



Me and my Mother  
At  
Central Luzon Agricultural College  
Munoz, Nueva Ecija

## My understanding and research about Agriculture

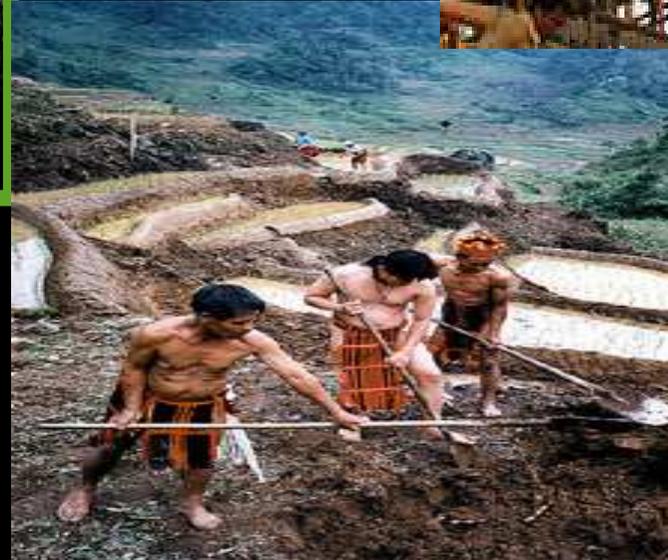


In 1571, Lopez de Legazpi laid out the first plan for a capital city in the Philippines which became a walled area called "Intramuros."



## Central Luzon State University, Nueva Ecija

In the early - 20th century, during American period, they established Schools, also Agricultural Schools such as the Central Luzon State University and The University of the Philippines, Los Baños, plus new industries and new farming equipments



Man's evolution from

## **HUNTERS TO FARMERS TO INDUSTRIAL WORKERS TO TECHNOLOGICAL URBANITES**

overshadowed the transition of forests to farmlands to towns whose densities gave birth to cities that rose vertically worldwide. The growth in population that propelled this journey required parallel advances in agricultural production.



That's me  
at my Lolo's farm  
and "Batil"

My Lolo Pio





The hunting for deer, wild boar and wild labuyo by the natives could no longer be sustained as forests were largely overtaken by land development and the aborigines were absorbed into the domestic fabric of the existing socio-cultural structures, other aborigines went further in deepest mountains. To meet the exponential increase in demand for protein, western techniques in livestock and poultry farming in small, medium and corporate scale were accepted as the practical way to supply food to the metropolis and the entire country.



**The growth of population led to the specialization in agriculture differentiated by the soil, climate, and demand**



# Masagana 99

## Green Revolution



*It was an effort during the 1940's through the 1970's to increase food production, particularly in poor countries such as Mexico, Pakistan, and the Philippines, through crop breeding and increased use of fertilizer, pesticides, and irrigation.*

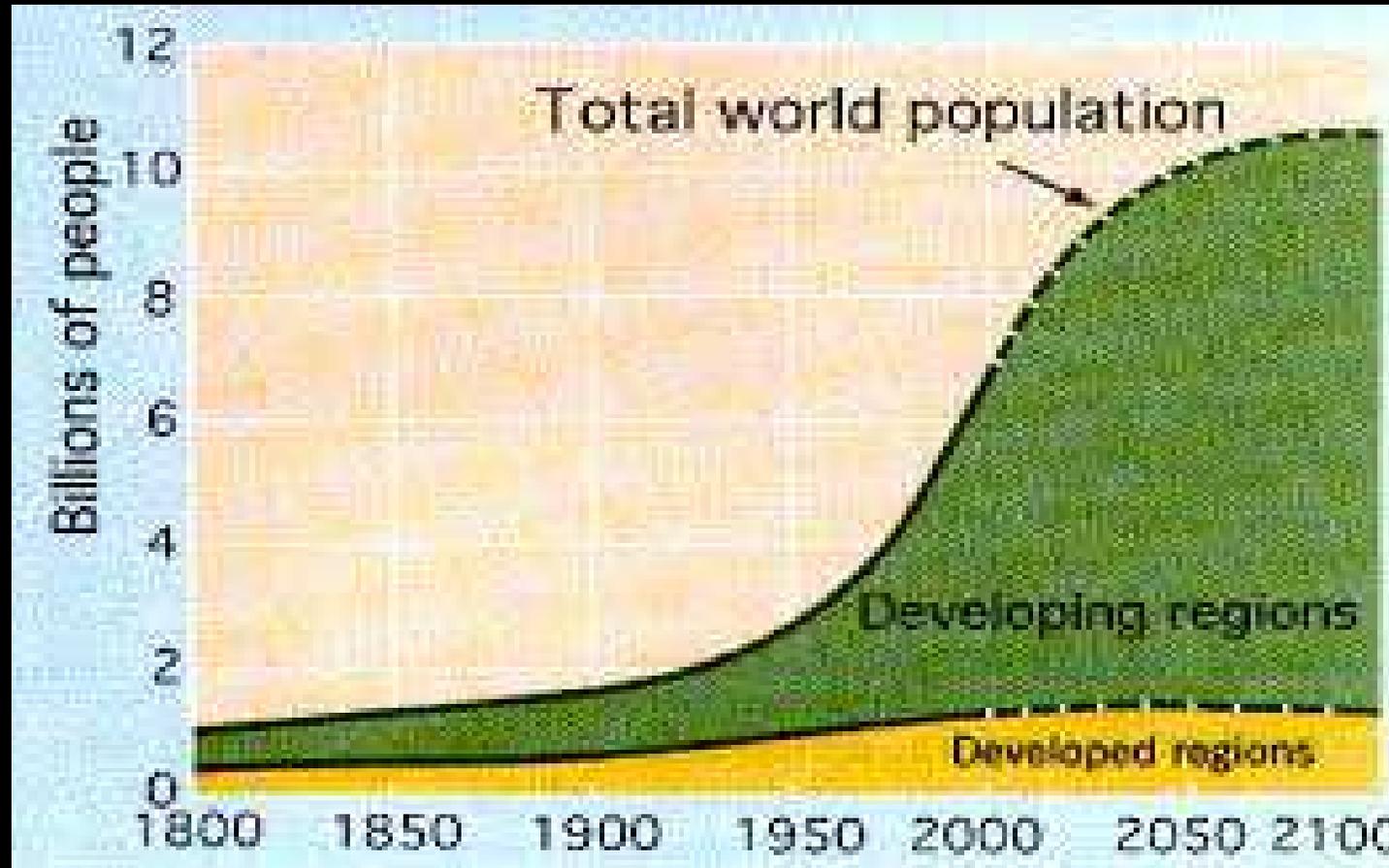


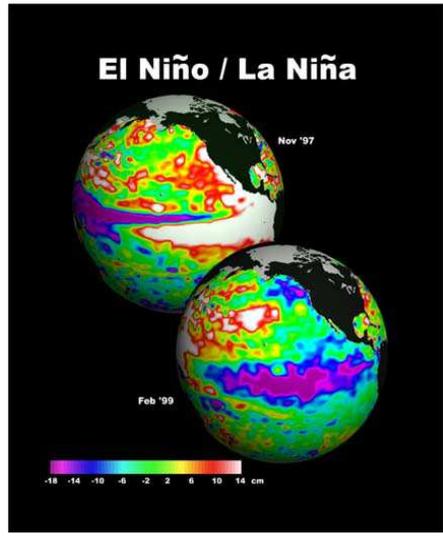


## Fertile Crescent – Origin of Agriculture

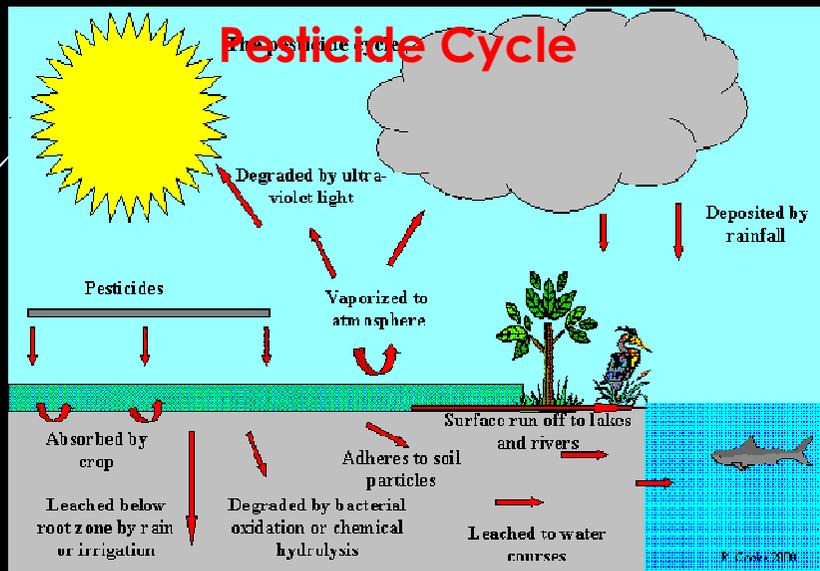
An area of fertile land in the Middle East, where civilizations flourished, extended around the Rivers Tigris and Euphrates in a semicircle from Israel to the Persian Gulf.

Now we have  
World Crisis  
Population Explosion  
By  
**2050**  
We will be  
**11 Billion**





In 1990, the country experienced a severe drought



Future urban life will be facing graver conditions not only from global climate change but from the high cost of electricity, transportation and food due to our dependency on diminishing fossil fuels. It is no secret that the Philippines had turned into a laggard in terms of agriculture output and land reform, a respected financial executive told fiscal and monetary officials of the Aquino administration.



More fun  
to study  
and work

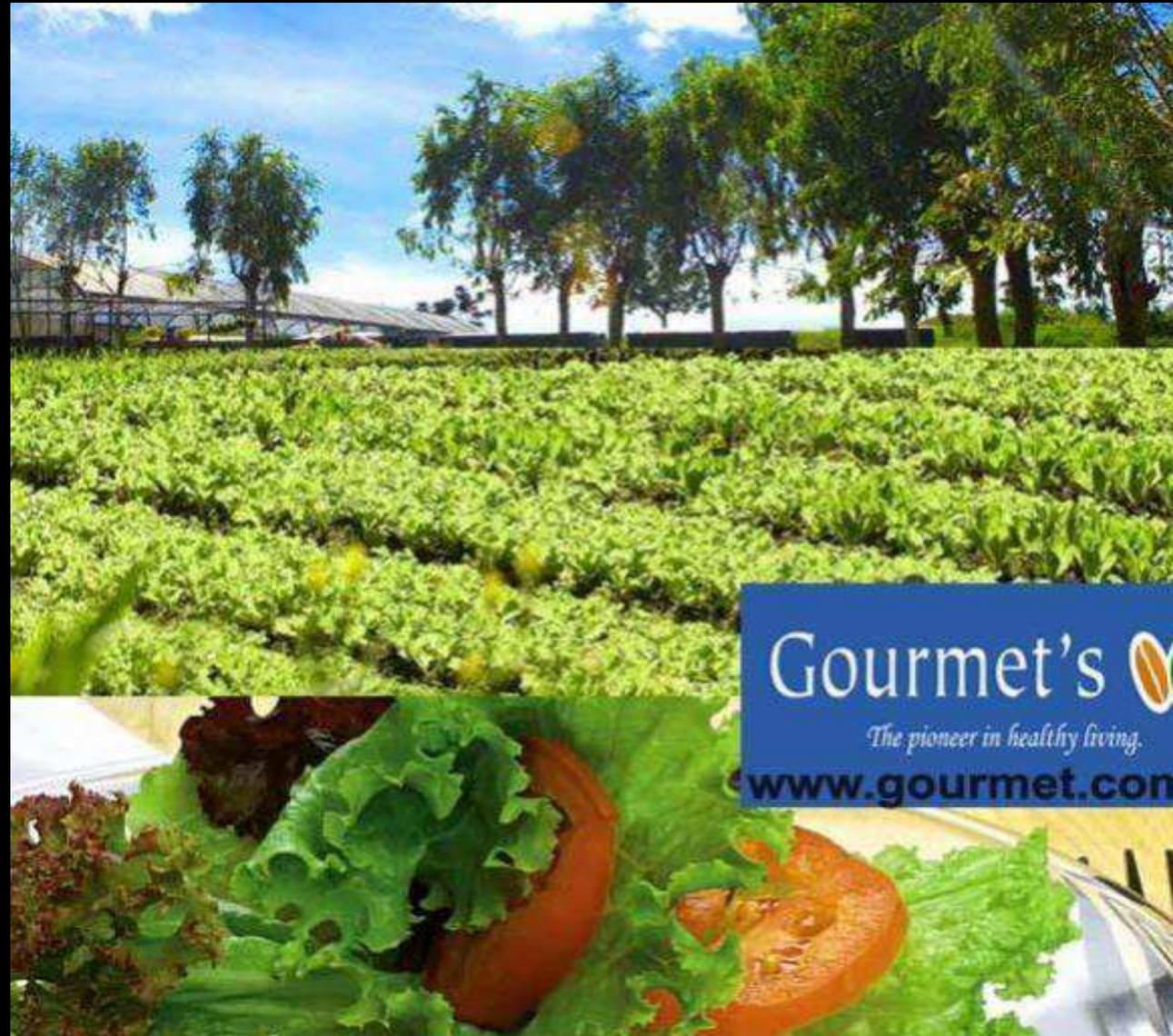


Ondoy Flood



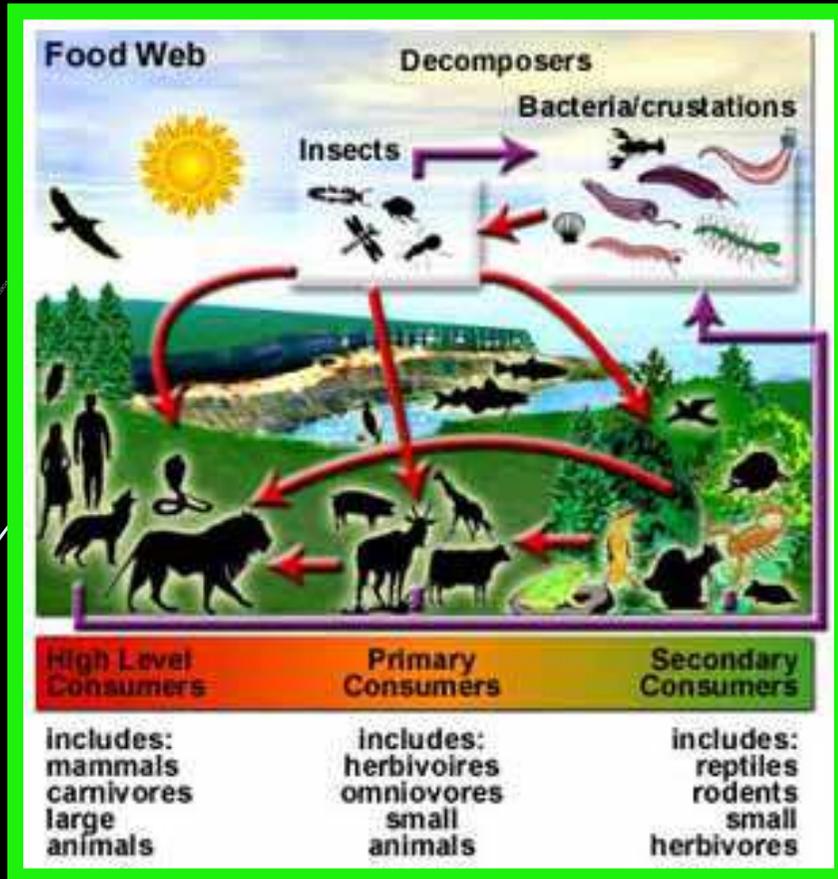


**Me and  
Dean Ponce  
at Batad  
Terraces**



## **Organic Farming**

Feeding more people in the city, we find ways

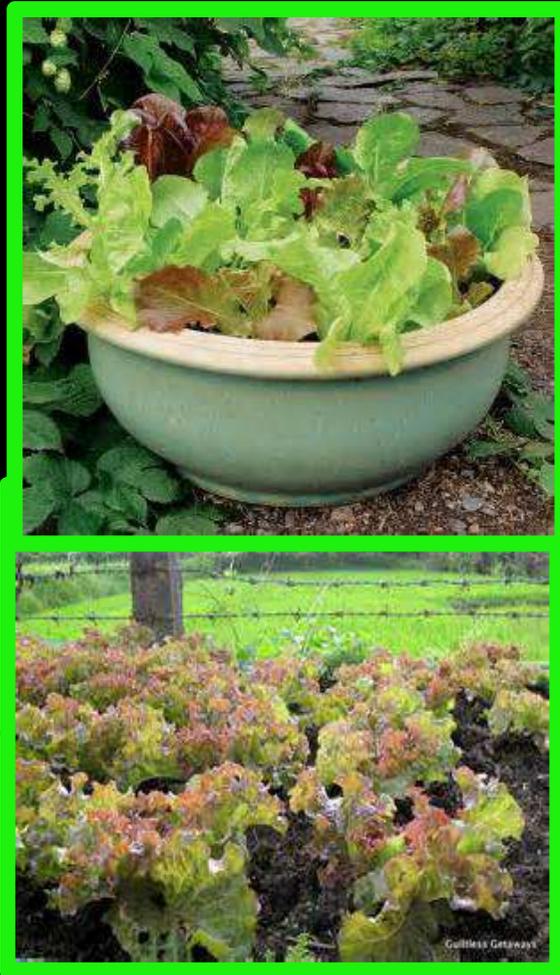


**Food Web**

**Status - Complicated**



**Status - Single**



**Peter Moore** - By growing food close to where it will be bought and then eaten, this reduces transportation miles, energy and carbon footprint of the food produced. E.g., when we can consume our lettuce that we ourselves plant, we succeed in obtaining about 90% of that energy, less waste, sure no fertilizer and good for our health.



**Huge cost of Food Mileage**



### Some Mileage from:

**Baguio : vegetables - 246 k**

**Ilocos: garlic/tomatoes - 402 k**

**Cagayan Valley: fruits/veg - 344k**

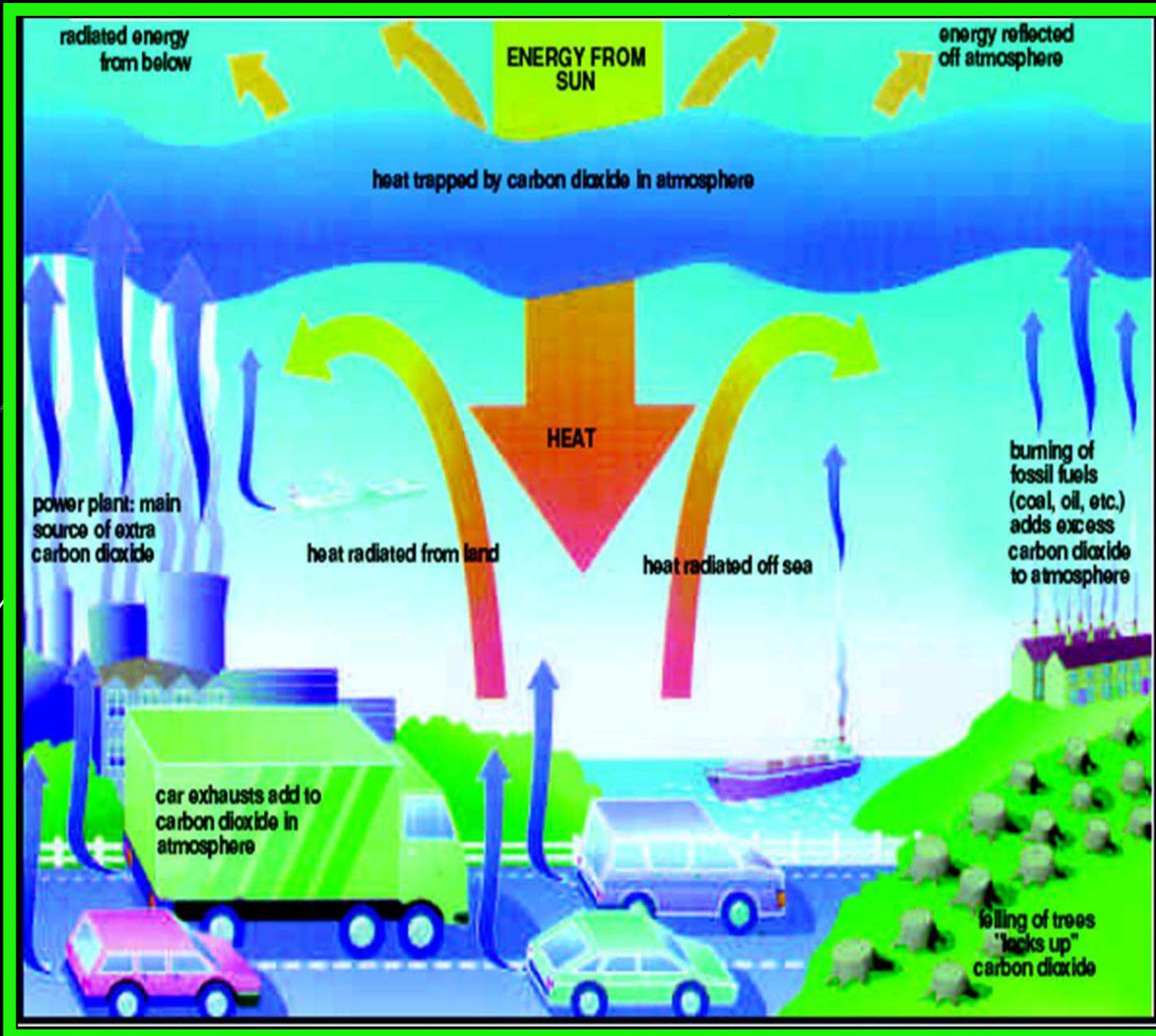
**Central Luzon: sugar/rice - 128 k**

**Calabarzon: coffee, dairy - 101**

**Bicol: pineapple, pili - 355**

**Davao: bananas/durian - 978 k**

**Surigao: cocoa - 726 k**



It is apparent that the phenomenon of Global Warming has direct links to food production and Urban Agriculture is work in progress in the development of the multi task of addressing the need for food while protecting human health and helping alleviate environmental problems.

## Pesticides in food cause **1.4 million cancer cases**

The most significant cancers associated with pesticides are uterine, prostate and breast cancer, and leukemia and brain cancer in children. Studies also show the relation of pesticide exposure to genetic mutations, birth defects, nervous system disorders, immune and endocrine malfunctions.

# The top 10 leading diseases in the Philippines

Also the leading cause of death in the country

21

**Heart Disease** – caused by constricting flow of blood and oxygen to the heart **due to obesity or high cholesterol.**

**Vascular Disease** – refers to disease in the **circulatory system** which is related to heart problems.

**Hypertension** – or high blood pressure because most Filipinos are **fond of eating food high in bad cholesterol.**

**Cancer** – refers to the prevalence of abnormal cancer cells infecting an organ primarily due to the habit of Filipinos to **over-Indulgence on liquor, food, other vices.**

**Tuberculosis** – a bacterial disease infecting the lungs because of **smoking and air pollution.**

# The top 10 leading diseases in the Philippines

22

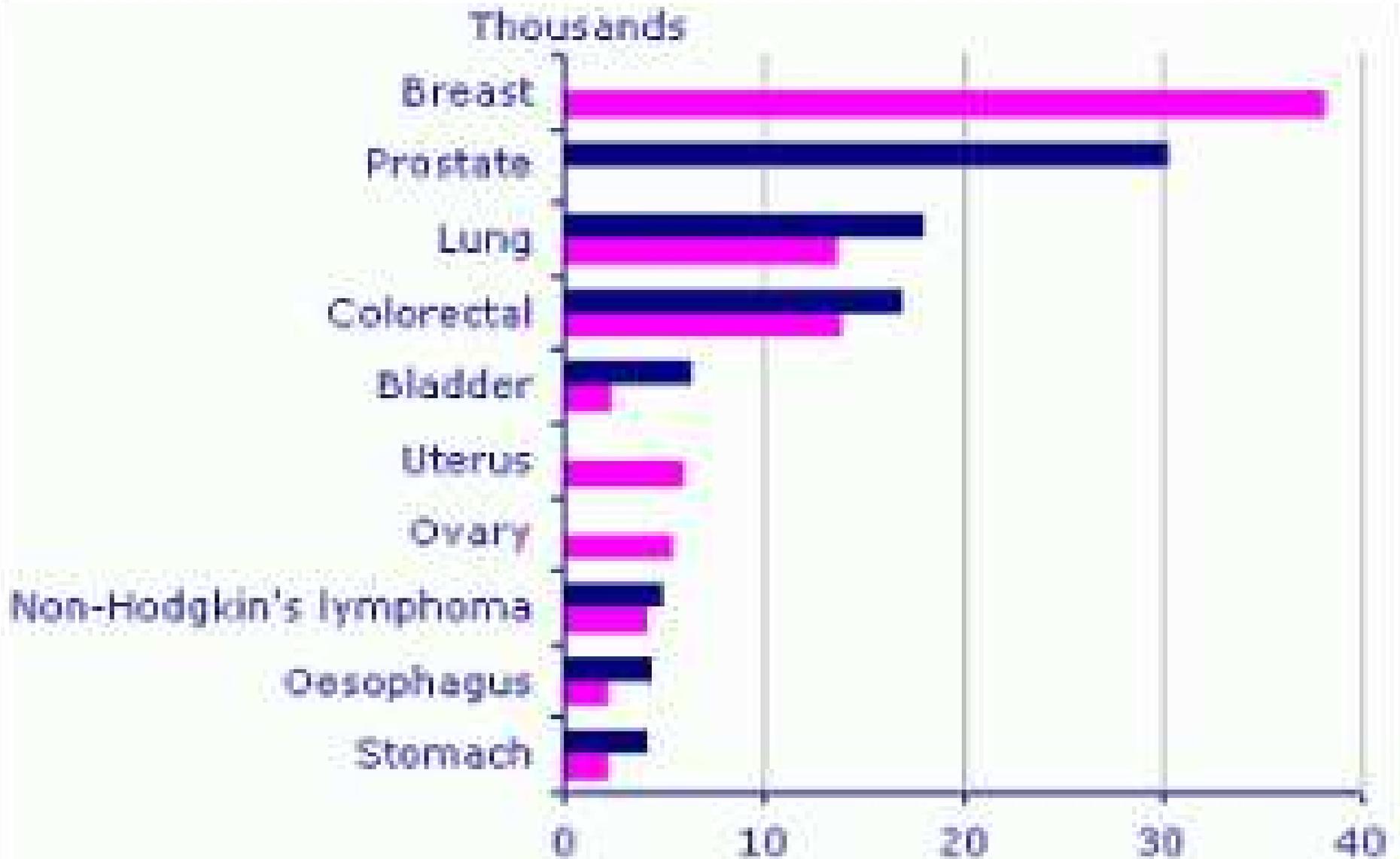
**Respiratory diseases** – any disease that affects the respiratory system which is due mainly to the Filipinos' **indulgence to smoking. The country is where people can buy the cheapest cigarettes in Asia.**

**Diabetes** – a metabolism disorder characterized by inability of the body to balance sugar, primarily caused by **the fondness of Filipinos to eat processed foods.**

**Pneumonia** – an infection in the lungs caused by bacteria, fungi and viruses. This is common among hard working **Filipinos who have the habit of letting their shirts off after sweating from work.**

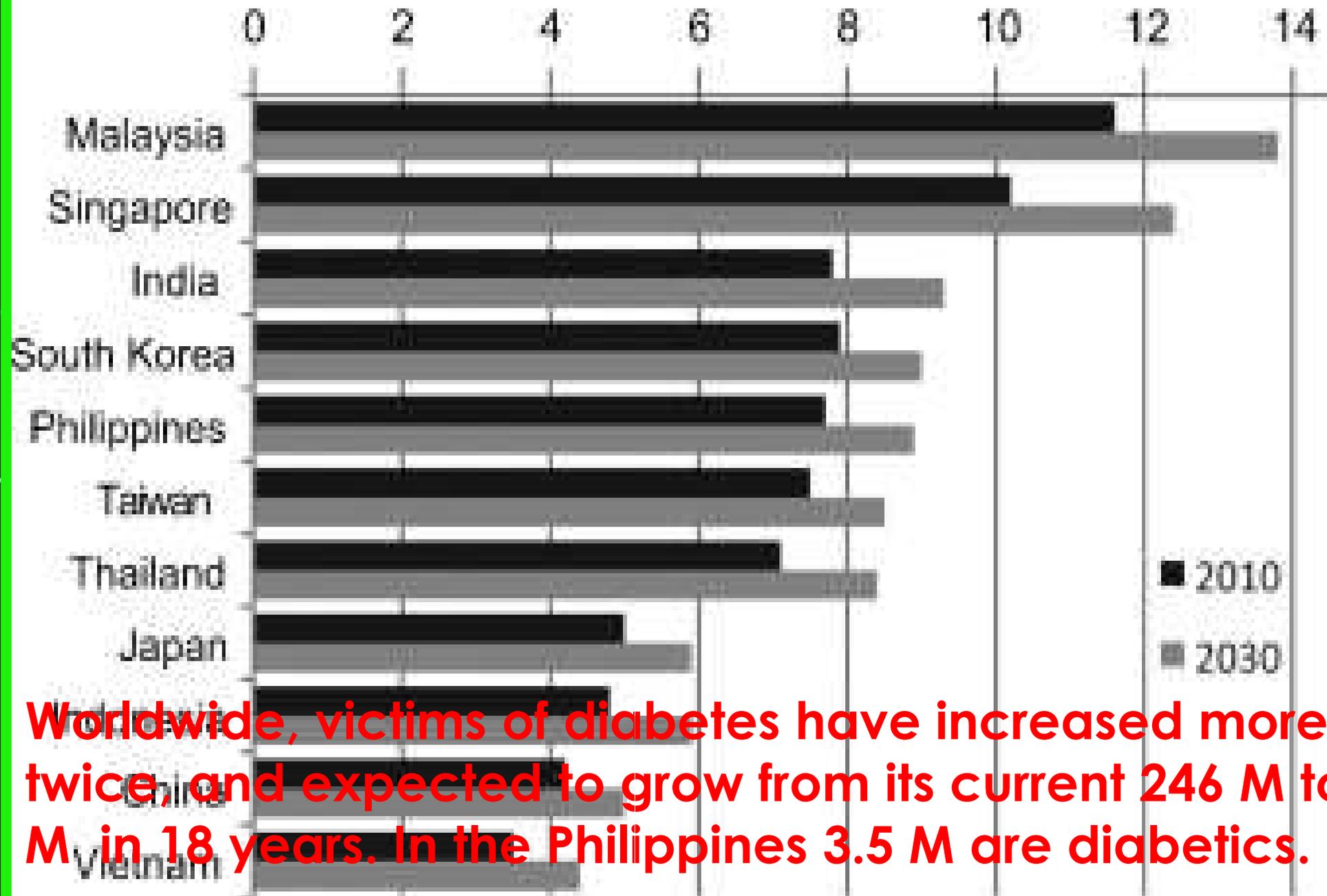
**Diarrhea** – characterized by loose bowel movement and dehydration. Still common in rural areas in the provinces **where people have no access of clean water.**

**Dengue** – a deadly disease caused by a **mosquito** carrying dengue virus. Common in the Philippines because of the prevalence of floods in the metro.



**Breast cancer has overtaken lung cancer as the most prevalent form of cancer in the Philippines**

## Prevalence of diabetes (%)



**Worldwide, victims of diabetes have increased more than twice, and expected to grow from its current 246 M to 380 M in 18 years. In the Philippines 3.5 M are diabetics.**



To embed edible organ  
plant species in the cor  
planting palettes, we ne

**Garlic**

**Dark Leafy Green**

**Grapes**

**Green Tea**

**Tomatoes**

For Diabetes Prevention  
Asparagus, avocado, B  
Broccoli, Carrots, Eggpl  
Sweet Potatoes, Yam,  
Pumpkin, Cauliflower, c  
Cucumber, Peppers....

The ill effects that emerged from the previous efforts to address the huge world demand for food through the “Green Revolution has brought about new paradigms in food production:

26



**Organic Farming**  
**Urban Agriculture**  
**Green “Sky Farms”**  
**Architecture**  
**And**  
**Edible Aesthetic**  
**Urban Landscape**

## Horizontally,

We need to grow organic plants in plazas, parks, streetscapes, easements, and cleaned esteros, school yards, and lower levels of interchanges.

Here are some examples of plants we can grow horizontally from which we can obtain inspiration



The Victory Garden concept is inspired by historic success and the modern intention to create a public food garden from scratch on the front lawn of the San Francisco Civic Center



Lafayette Greens in the City of Detroit



Center Street Farm in Oakland, California, U.S.



## Inner City Farm in Vancouver,

Canada began when a group of friends realized they wanted to be able to have their own garden and to grow their own food, but didn't have access to the land needed to make it happen. In an expensive city like Vancouver



Urban agriculture in Bangkok, Thailand



**Corn Plantation in City Park**

the Garden Forking Paths constructs a green maze,



**Corn  
Plantation  
Batangas**

How to overcome the urban disconnection to growing food:

**The disconnection of the idea of growing food in the mega city urban setting has already been bridged through real experiences that now form the justification for Urban Agriculture.**

# By initiatives of Government



In San Francisco, "California Homemade Food Ac



In the Cuban  
experience  
when the  
country was  
subjected to  
an embargo,  
small scale  
farming  
provided the  
alternative  
for  
Subsistence



Vegetable gardens of urban poor households in  
Barangay Pinyahan, Diliman, Quezon City



Urban Farming  
at  
QC Memorial Circle





Urban Vegetable Gardening  
at the Bonifacio Naval Station  
Taguig City.

For residences without yards, a practical option is for vegetables to be grown in recycled containers. We also encourage plant nursery owners to sell weeks old vegetable plants and market them in cars in different villages and subdivisions. Bio-gradable garbage can also be composted for fertilizer.





**Utilize creative ways of drip irrigation with recycled materials**

# As part of the Education System



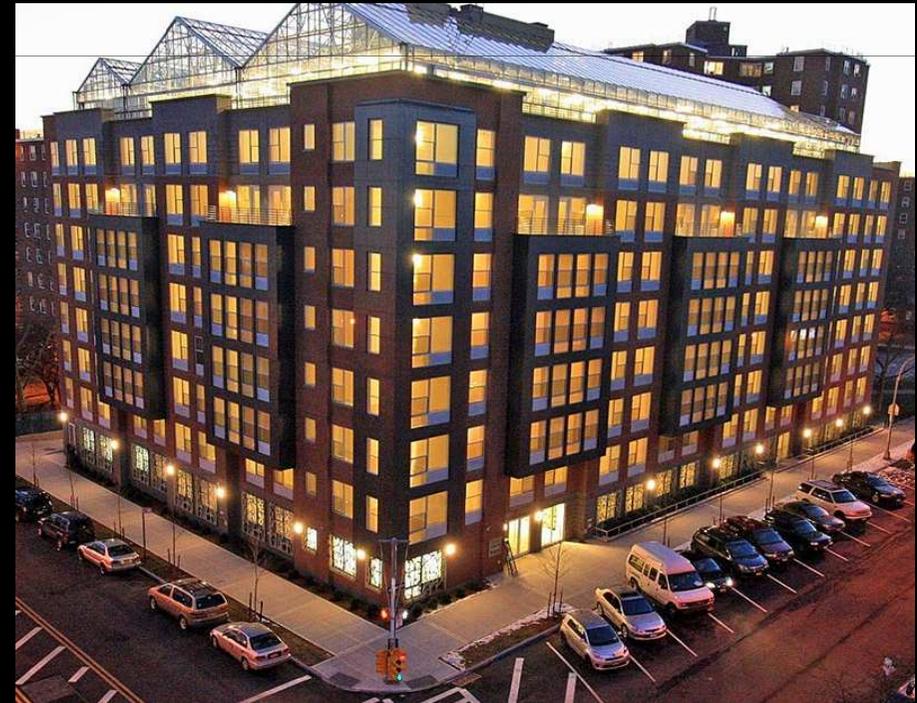
**Vegetable Gardening and Cooking Classes as part of Curriculum**

## **Vertically,**

**To grow edible plants in buildings like Barangay halls, public market, residential and commercial condominiums and high rise buildings in their façade, breezeways, walls and roofs.**



New York City's new Arbor House, a green building located in the Morrisania neighborhood of the Bronx,, the eight-story building includes 120 apartments for low-income households, a rooftop hydroponic farm that provides fresh produce, an indoor and outdoor fitness areas to help promote exercise in an area with extreme obesity and asthma rates.



An aerial photograph of a city skyline, likely New York City, showing numerous skyscrapers. Many of the buildings have green roofs, which are highlighted with a semi-transparent green overlay. The text is overlaid on the center of the image.

**The New York Planning proposal  
would make 1200 acres  
available for  
Roof top Farming**



The vertical farms, with viewing platforms, as envisioned by Spanish architect Javier Ponce for Honkong. Inspired by terraced rice farming techniques in China, the farm is a series of circular farm plots.



## Proposed Crops:

### ALL YEAR-ROUND-CROPS



Lettuce



Flowering Chinese  
Cabbage



Chinese Kale



Chinese White Cabbage



### WINTER-SPRING CROPS



Water cress



Spinach



Matrimony Vine



Chayote



### SUMMER CROPS



Water spinach



Yard-long Bean



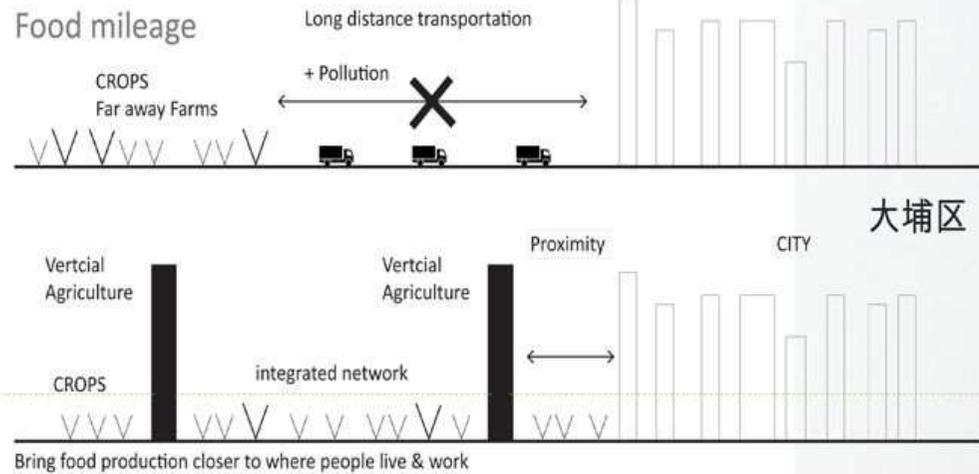
Bitter Cucumber



Hairy Gourd



## Food mileage



Made from lightweight recycled materials, the towers would grow food hydroponically on a series of rotating floor-plates that would give crops the maximum amount of sunlight, inspired by the shifting terraces in traditional Chinese rice farming.





## Urbanana proposed for Paris

Concept for a vertical banana Plantation



**Proposed Skyscraper Farm, B**

## Trending– new futuristic green building



Ken Yeang's Fusionopolis

"skyscraper farms"



Singapore has welcomed its first commercial vertical farm - a vegetable skyscraper powered by hydraulics, called

## **Sky Greens,**

the vertical farm churns out five to ten times as many vegetables than what could be produced in the same amount of land used in traditional farming. The farm itself is made up of 120 aluminum towers that stretch thirty feet tall..





**For his Baby James**

**In Beijing, China, residents care of vegetables that grow on the top balcony of their high-rise apartment**

Papa James aim to ensure food safety to grow these vegetables by being certain that no harmful chemicals are used in the production of the food that he will feed his baby James.



## San Miguel Corporation Headquarter by Arch Francisco Manosa

It takes its formal language from the Banaue rice terraces, if the building is retrofitted with edible aesthetic landscaping it will be the first and only vertical urban farm in the Philippines.



**Develop vegetable gardening on roof decks**

In Planning, Architecture, and Landscape Architecture in the Metro Manila context, the following concerns come to mind:

**Security**

**Pollution**

**Irrigation**

**Ownership**

How about the **“The Big One”**



If you are eating Oats and if that was produced locally, where do you think you would be living?

India |  Ghana |  Australia



Which of the following foods have travelled the least to reach a home in London?

Broccoli |  Banana |  Apple



If Cassava was the staple food of yours, which country would you be living in?

Zaire |  Mongolia |  Peru



Which country does US import most of its maize from?

Mexico |  India |  US produces most of it.



Which of these following products have travelled the most to reach your table in Bangalore?

Apple |  Jackfruit |  Orange



Thus transporting food from the rural to urban will be lessened → **less vehicles, less carbon emissions.** Then, abundance of vegetation in the city means **cleaner air, fresh food and healthy people.**

**THINK. EAT. SAVE.**



**Following the new concept of  
“Edible Aesthetic Urban Landscapes”,  
a urban agriculture that is planned and implemented following  
principles of “Organic Farming” shall make possible a combine  
physical and psychic returns to Metro Manila.**

## **As a conclusion,**

We should integrate the lessons in development that has led to the current situation that has made separate but coincident realizations of design professionals around the world that food security can be helped resolved through

**Urban Agriculture  
Architecture.**

Simply stated, these lessons are the following:

- ➔ **Food cycles must be simple and short both in time and space.**
- ➔ **Use of artificial means, whether chemical or genetic, has led to disastrous harm to man's health.**

Simply stated, these lessons are the following:

- There are practices aimed at multiplying food production but led to environmental damages.
- There are diseases related to food intake. Also, there are selected food that can be cures for the most fatal ailments.

Simply stated, these lessons are the following:

62

- ➡ Urban landscaping can be creatively edible and aesthetically fruitful.
- ➡ The advocacy of **urban agriculture\_architecture** can only succeed if envisioned and implemented holistically.

Simply stated, these lessons are the following:

- ➔ **Integration of edible vegetation in terraces, balconies, breezeways, walls and roofs of Buildings . It will be a requirement in the design of spaces and be added in the National Building Code of the Philippines, aligned with the positive aims of urban agriculture architecture.**

Simply stated, these lessons are :

➔ **The Philippines** because of generous sunlight, water, fertile soil , and hardworking creative people can spearhead **Urban Agriculture Architecture** in the context of the **Developing World.**

*It is my humble recommendation therefore  
that following*

***incentive driven best practices***

*in the world like the “Green Mark” Scheme  
in Singapore, backed by*

***comprehensive research,***

*That unified standards in the development of*

66

# ***Urban Agriculture Architecture***

*be developed in Metro Manila via*

**A multi-disciplinary, multi-agency, multi-institutional public-private cooperation among academic institutions, professional organizations, government agencies, non-governmental organizations, corporate responsible businesses**

Be pro-actively discussed,  
formulated, tested, refined and  
eventually, implemented to  
symbiotically protect ourselves and  
our environment  
before it is too late.



**Think. Eat. Save. Live Well. Be happy. .**



Illustration by Bea Alfonso

Thank you po