



Republic of the Philippines

Department of Education

Region VII, Central Visayas

**DIVISION OF CEBU PROVINCE**

Sudlon, Lahug, Cebu City



August 25, 2015

DIVISION MEMORANDUM

No. 538, s 2015

**ADAPTATION OF CROP MUSEUM IN SCHOOLS**

To : Assistant Superintendent  
Education Supervisors/Coordinators  
District Supervisors/OICs  
Elementary and Secondary School Heads  
Heads, Private Elementary and Secondary Schools

1. To extend strong support to the Gulayan sa Paaralan Program (GPP), and address the integrated approach to food and nutrition security in the Philippines, all Education Supervisors/Coordinators, District Supervisors/OICs, Heads of Public/Private Elementary/Secondary Schools, are enjoined to adapt a School Crop Museum.
2. Crop Museum shall serve as a decentralized facility where teachers, students and community members can view a diverse range of nutritionally relevant hardy vegetable varieties which includes trees, shrubs, root crops, creepers and short season annual crops.
3. It will also serve as nurseries (source of planting materials) for surrounding schools and communities. The mother plants are preserved in crop museum in the entire year. Attached is the list of crop diversity in the crop museums.
4. For your information and guidance.

  
**ARDEN D. MONISIT, Ed.D**  
Schools Division Superintendent

## School Crop Museum

Crop Museums serve as a decentralized facility where teachers, students and community members can view a diverse range of nutritionally relevant and hardy vegetable varieties. It includes trees, shrubs, root crops, creepers, and short season annual crops. It will also serve as nurseries (source of planting materials) for surrounding schools and communities. The mother plants are preserved in crop museums through the entire year. The table below shows the crop diversity within the crop museums.

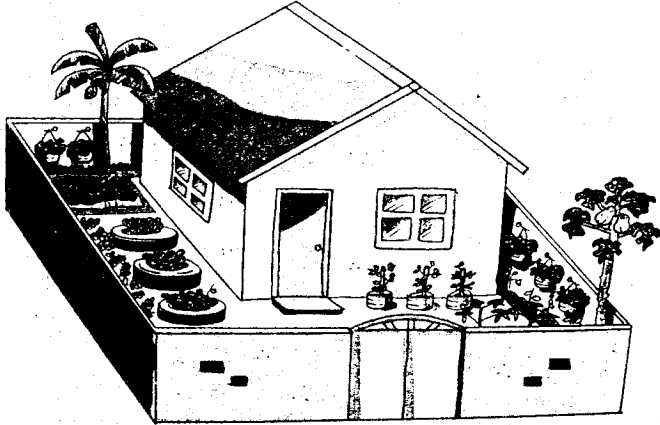
Gabi/ Taro (6 varieties)	Kamote/ Sweet potato (3 varieties)	Cassava 2 varieties)	Arrow Root, Ube, Yams (3-6 varieties)
Patani/ Lima bean (3 varieties)	Batao/ Hyacinth bean (2 varieties)	Sigarilyas/ Winged bean (2 varieties)	Kadios/ Pigeon pea (3 varieties; 6 plants each)
Kulitis/ Amaranth (3-4 varieties)	Saluyot/ Long-fruited jute (2 varieties)	Malunggay/Moringa	Japanese Malunggay
Roselle (2 varieties)	Singkamas/ Turnip (2 varieties)	Talong/ Native eggplant	Kamiatis/ Tomato (Cherry and Ruby)
Pechay	Mustasa	Luya/ Ginger (2 varieties)	Sibuyas dahon/ Green onions, shallot (2 varieties each)

# Para sa malusog na pamilya: masustansiyang gulay itanim, simpleng pamamaraan gamitin

Tunay na mayaman ang mga gulay sa bitamina at mineral. Mahalagang kumain ng gulay araw-araw para sa tiyak na kalusugan ng ating katawan at isipan.

## Sa maliit o malaking lugar...

Maaari kayong magkaroon ng gulayan sa bahay tiyakin lamang o ito'y nasisikatan ng araw ng hindi bababa sa anim na oras sa isang araw.



## Sa paggawa ng kamang-taniman o garden plots

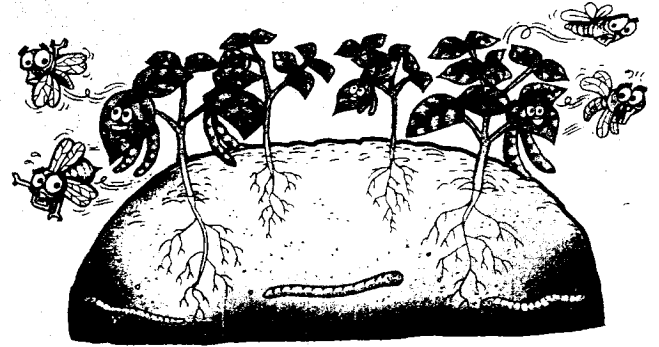
Mainam ang kamang-taniman na may lalim na isang piye o 1 foot at taas na hindi bababa sa 5 hanggang 6 na pulgada. Ang buhaghag na lupa ay tumutulong sa tamang paglaki at paghaba ng ugat ng halaman kung kaya't nagiging matibay ito. Mas maraming tubig at sustansiya ang nakakadaloy sa ilalim na bahagi ng lupa. Ang tubig na nasa ilalim na bahagi ng lupa ay hindi kaagad natutuyo kung kaya't ang pagdidilig ay hindi kailangan gawin ng madalas.



## Simulan natin sa lupa...

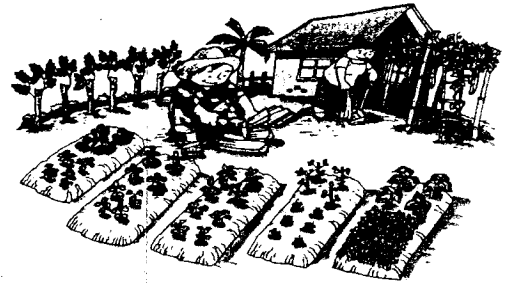
Katulad ng tao, mahalaga ang kalusugan ng lupa. Ang malusog na lupa ay nagbibigay ng malusog na mga tanim. Kung malusog ang mga tanim sila ay matibay laban sa peste at sakit. Ang pagtatanim ng "legumes" o butong gulay katulad ng paayap, munggo, patani at iba pa ay isang paraan para maibalik sa lupa ang mga nawalang sustansiya nito.

Ang paglalagay namah ng tabon sa garden plots o taniman ay nagbibigay proteksyon sa lupa laban sa malakas na hangin, ulan at init ng araw.



## Magtanim ng sari-saring gulay

Mainam na magtanim ng iba't ibang uri ng gulay upang may tuloy-tuloy na mapagkukunan ang pamilya ng masustansiyang gulay sa buong taon. Ang sari-saring tanim sa isang lugar ay isang epektibong paraan laban sa pagdami ng peste. Mas mainam kung katutubong gulay ang itanim sa bakura sapagkat hindi sila masyadong aiagain. Maraming mga katutubong gulay ang naisasantabi at hindi binibigyang halaga ngunit ang mga ito'y mas mayaman sa nutrisyon kumpara sa mga kilalang gulay ngayon.



## Mag-imbak ng buto para sa susunod na pagtatanim

Hindi na kailangan gumastos na muli para sa buto. Mula sa gulayan, pumili ng malusog na halaman na maaring mapagkukunan ng binhi. Tuyoin muna ng mabuti ang buto sa malilim na lugar bago tuluyang tuyoin sa ilalim nang araw. Suriin ng mabuti ang mga buto bago ilagay sa sidi. Tiyaking walang bukbok ang mga ito upang hindi masayang ang ibang buto.



## Para may madaliang pagkukunan ng pataba

Magtanim ng mga puno na magandang gawing pataba sa lupa katulad ng kawate sa paligid ng gulayan upang may tiyak at madaliang mapagkukunan sa oras na ito'y kailangan. Kapag maraming puno sa paligid ng gulayan agiging malamig ang klima sa loob ng taniman na angkop sa mga halaman. Dahil dito, hindi agad natutuyo ang lupa kahit mainit ang panahon.



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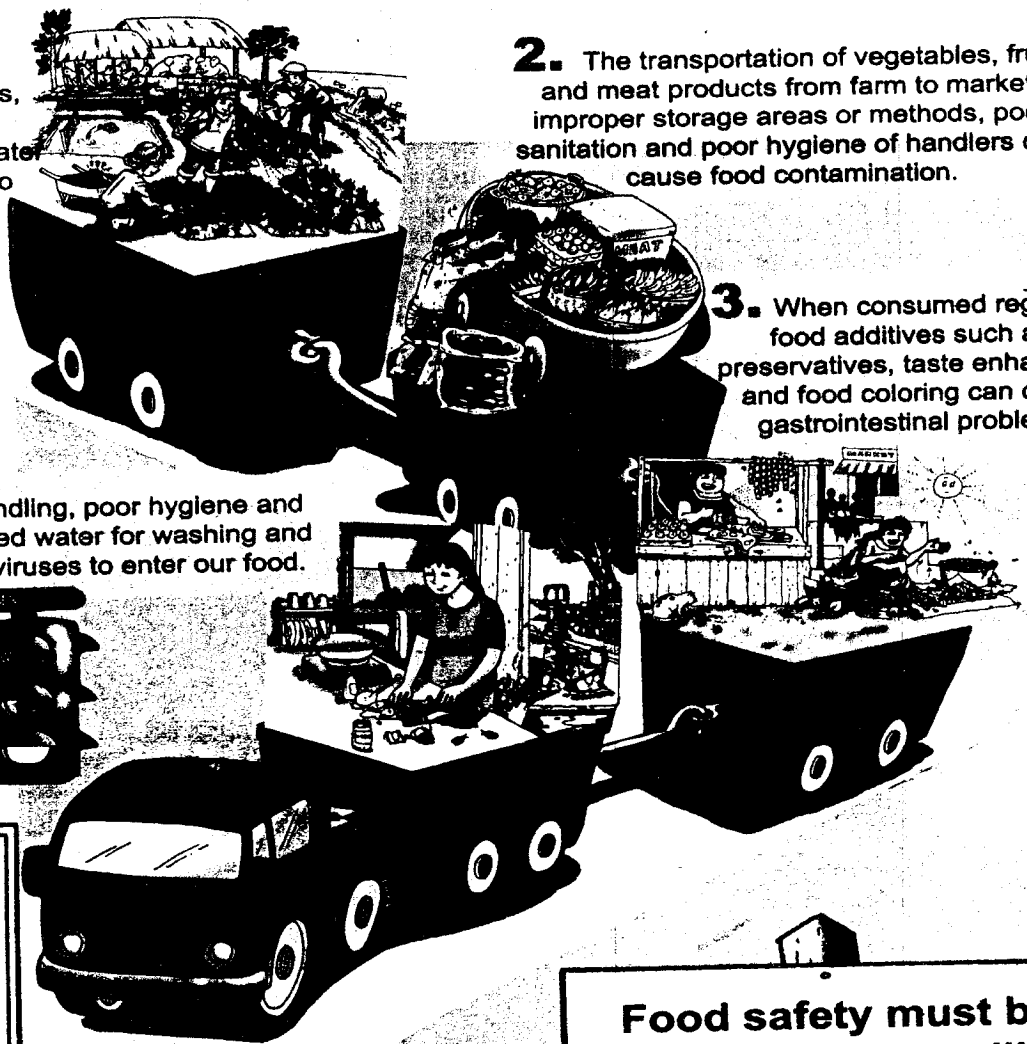
# Food safety is crucial to food security. Is your food free from contaminants?

**1.** Indiscriminate use of pesticides, antibiotics or hormones may cause food contamination. Contaminated water or fresh compost materials may also contain harmful bacteria.

**2.** The transportation of vegetables, fruits and meat products from farm to market, improper storage areas or methods, poor sanitation and poor hygiene of handlers can cause food contamination.

**3.** When consumed regular food additives such as preservatives, taste enhancers and food coloring can cause gastrointestinal problems.

**4.** At home, improper food handling, poor hygiene and sanitation, and use of contaminated water for washing and cooking can cause bacteria and viruses to enter our food.



**Ways to reduce the risk of food contamination by bacteria, virus or chemical residue.**

**Food safety must be ensured while handling preparing and storing food.**

1. Grow vegetables around your home using organic agriculture methods.

2. In the garden, use clean water and fully decomposed compost because harmful bacteria may be present in water, animal manure and compost.

3. Avoid using sewage water for watering vegetables. If it can't be avoided, sewage water should be filtered through sand before use. Vegetables grown with such water should be thoroughly washed and cooked.

4. Peanuts, corn and soybean should not be stored under high temperature conditions to avoid fungus contamination.

5. At home, wash vegetables properly before storing. Bacteria can come from the soil and contaminated storage. Do not store vegetables and rootcrops in plastic bags.

6. Buy only fresh fruits, vegetables and meat. Processed foods contain harmful additives and preservatives.

7. Lessen the use of food additives like salt, msg and other food enhancers to avoid gastrointestinal health problems.

8. During food preparation, use clean utensils, wash hands properly and cook meat products thoroughly. Disinfect the kitchen and utensils regularly. Dispose kitchen waste properly.

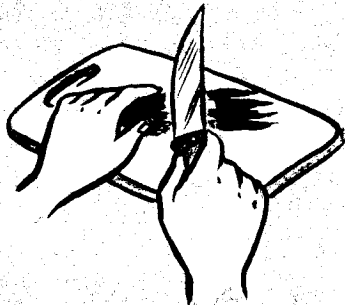


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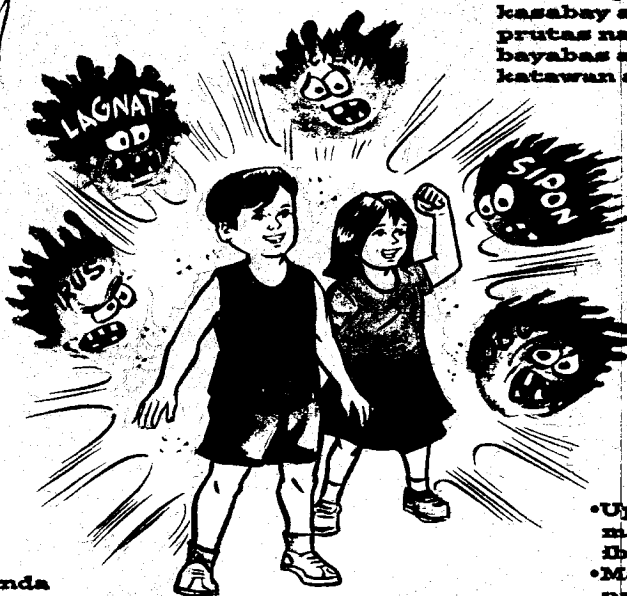
# Ang pagkain ng gulay ay mabisa laban sa sakit: Tiyakin na ito'y masustansya, lutuin at ihain ito ng tama

Ang pagkain ng sapat na gulay araw-araw ay tumutulong upang magkaroon ng malakas na katawan, matalas na isipan at matibay na resistensya laban sa sakit at impeksyon. Maiwasan din ang sakit sa puso, cancer at diabetes.

Mas matingkad na kulay, mas mayaman sa bitamina at mineral



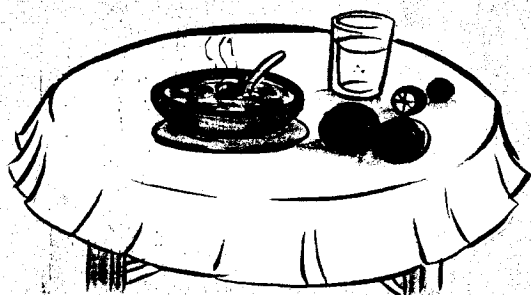
Maraming paraan ng paghahanda at pagluluto ng gulay. Maari itong igisa, isahog sa sinigang at nilaga. Pwede ring gawing ensalada at fresh cuts na may dips.



- Pumili ng gulay na may matingkad na kulay.
- Lutuin ang gulay ng tama, huwag i-overcooked.
- Hugasan mabuti ang gulay bago gayatin upang hindi mawala ang mga bitamina.
- Gumamit ng kaunting mantika sa pagluluto ng madahong gulay upang ma-absorb ng katawan ang Bitamina A.
- Ihain ang mabeberde at madadahong gulay kasabay ang Calamansi juice at iba pang prutas na mayaman sa Bitamina C tulad ng bayabas at dalanghita upang ma-absorb ng katawan ang Iron.

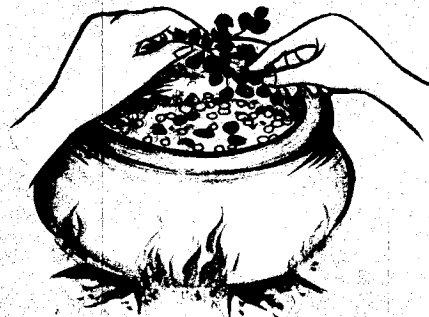


- Upang magustuhan ng mga bata, maghanda ng gulay na may iba't-ibang hugis at kulay.
- Maari ding ihalo ang gulay sa mga paboritong pagkain ng bata tulad ng Yema, Lumpia, at Veggie Balls.



Mabuting maghanda ng iba't-ibang klaseng gulay para sa sapat na sustansya. Halimbawa, para sa karagdagan ng protina, samahan ng malunggay at iba pang dahong gulay ang mga butong gulay tulad ng munggo at beans.

- Maghain ng gulay para sa pamilya araw-araw ngunit siguraduhin ang kalinisan at kaligtasan nito.
- Hugasang mabuti ang gulay ngunit iwasan ang sobrang paghugas upang hindi mawala ang mga sustansya nito.
- Tiyakin din na ligtas sa mga kemikal na pamatay ng peste at insekto ang ihahaing gulay.





**"Kinabukasan ng Bata Ihanda, Wastong Nutrisyon ang Simula"**

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# Malaki ang kontribusyon ng gulayan sa paaralan sa pagtuturo sa mga bata ng tamang nutrisyon at pangangalaga sa kalusugan.

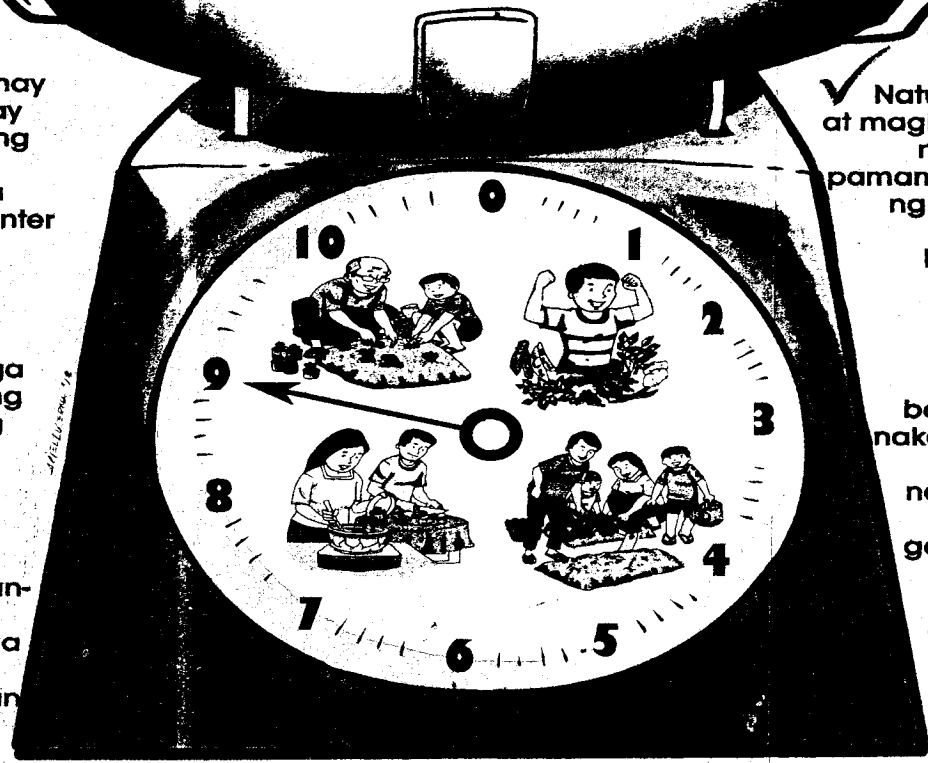


✓ Ang gulayan na may sari-saring gulay ay nakapagbibigay ng masustansiya at sariwang gulay sa school feeding center sa buong taon.

✓ Natututunan ng mga bata at maging ng mga magulang nila ang mga simpleng pamamaraan sa pag-aalaga ng mga tanim na maari nilang gawin sa kanilang mga tahanan.

✓ Dito nakikilala ng mga bata ang mga iba't ibang uri nang masusustansiyang gulay lalo na ang mga hindi karaniwang nakikita sa paligid. Maraming mga katutubong gulay ang naisasantabi at hindi binibigyang halaga ngunit ang mga ito'y mas mayaman sa nutrisyon kumpara sa mga kilalang gulay ngayon.

✓ Natututunan din ng mga bata ang mga bagay na nakakabuti at nakakasama sa kalikasan. Sa pamamagitan nito naituturo sa kanila kung ano ang maari nilang gawin bilang mag-aarapara ito'y mapangalagaan. Simula sa pagbungka at paghawak sa lupmas lalo silang napapalapi sa kalikasan.



✓ Mas nahihikayat ang mga bata na kumain ng gulay kung sila'y kasama sa pagtatanim, pag-aalaga at pamimintas sa mga ito. Dito natututunan nila ang kahalagahan ng pagkain ng gulay sa kalusugan.

✓ Ang gulayan sa paaralan ay nagsisilbing lugar kung saan ang mga katutubong gulay ay patuloy na napapangalagaan. Muli nating ibalik ang mga katutubong gulay sa mga gulayan sa paaralan at komunidad. Ito'y isang paraan para sila'y mapangalagaan at hindi mawala sa atin.

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## Bio-Intensive Gardening (BIG)

IIRR has been in the forefront of sustainable development and sustainable agriculture since the 1960s. In 1984-85, IIRR developed and packaged the Bio-Intensive Gardening (BIG) technology as a response to the widespread starvation in Negros Island, brought about by the collapse of the sugar industry. As a hunger-prevention strategy, IIRR, in partnership with UNICEF, worked with local communities to set up thousands of bio-intensive gardens throughout the province.<sup>1</sup> Two decades later, BIG is still being practiced particularly in the southern part of the province which is less reliant on the sugar industry.

Widespread poverty, hunger and malnutrition threaten to destabilize global economic, social, political and environmental conditions. Immediate measures must be taken to reverse the current trends, which contribute to food insecurity. At the school level, there is a dire need to learn and disseminate appropriate technologies to support food security and nutritional programs.

Bio-Intensive Gardening (BIG) is a *biological* (as opposed to chemical) form of agriculture in which a small area of land is *intensively* cultivated, using nature's own ingredients to rebuild them and maintain the soil's productivity. At the heart of the approach is the effort to improve the soils' capability to nurture and sustain plant life. What a BIG gardener tries to do on his small plot is to stimulate and replicate a natural forest (with constant recycling of nutrients and maintenance of soil, moisture and microbial conditions). A healthy soil means a healthy stand of plants; and that also means fewer insects and less disease. In the bio-intensive approach, yields continue to rise for the first few

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<sup>1</sup> In 2003, Dr. Pratima Kale, then IIRR president, was invited to speak at the Southeast Asia Ministers of Education Organization (SEAMEO) conference of ASEAN education ministers hosted by the Philippines' Department of Education. At that meeting, Dr. Kale spoke of school-based BIGs as a strategy for involving parents and the community in school affairs, notably school health and nutrition referring to the Negros BIG experience of 1984-85. Twenty years later, she showed evidence of school-based bio-intensive gardens in the town of Ilog which continued to be planted and harvested by community groups for school-feeding and for home consumption, attesting to the long-term viability of the technology.



years and then tend to stabilize (at an overall higher yield). Such systems and outputs (i.e. yields) are easily sustained at that level for many years with unchanging or even reduced levels of material and labor inputs.<sup>2</sup>

BIG is **environment - friendly** (use only organic fertilizers or pesticides); it is **adaptable** (the technology is consistent with low-income home lot/farm situation, where locally available materials, i.e. seeds, crop varieties, and indigenous knowledge are used optimally with introduced technology learned from other experiences); and it is **cost-effective** (the cost structure does not require heavy inputs and therefore lower cost, through use of portion of the harvest as planting material for the next cycle and a weekly year-round harvest of vegetables). As a technology to organically produce vegetables the whole year round, the BIG can significantly improve household food security, resolve household nutrition requirements and contribute to household income.



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<sup>2</sup> Gonsalves, Julian F., "Characteristics of the Bio-Intensive Approach to Small-scale Household Food Production", paper presented at the Asian Vegetable Research and Development Centre, Taiwan, VIP Gardening Workshop, April 1985. (Reprinted in the BIG handbook/manual, 2007)



*Integrated Approach to Address Food and Nutrition Security in the Philippines*

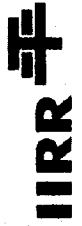
## **PROJECT BRIEF**

The Integrated Approach to Address Food and Nutrition Security project is a three-year action research activity supported by International Development Research Centre (IDRC-CRDI) Ottawa, Canada. This project aims to demonstrate the effectiveness of organic systems of gardening and crop diversity in schools directed towards providing safe and nutritious vegetables to support and sustain supplementary feeding programs in schools. Nutrition education further serves to change dietary practices. The project is being implemented by International Institute of Rural Reconstruction (IIRR), Food and Nutrition Research Institute of the Department of Science and Technology (FNRI) and Department of Education, Division of Cavite.

The project started with 27 public elementary schools, representing the 27 school districts of the Dept of Education in Cavite. To date the project has brought about changes in the school gardens through the adoption of Bio-Intensive Gardening (BIG) technology, following a series of capacity building and technical support provided by IIRR. Indigenous vegetables were promoted. Crop museums were established to ensure availability and access to vegetable seeds. Fertilizer needs were met through the use of madre de cacao or Kakawate as green leaf manure. Another major research endeavor focused on the development of standardized cycle menu options for school feeding programs developed by FNRI. Research also investigated the use of iron fortified rice. Supplementary feeding meals in school now also increasingly incorporate indigenous vegetables grown in the school garden. Enhanced lesson plans and information education communication (IEC) materials were prepared to support the education of teachers, parents and the school children.

In this last year of the project the sharing of best practices to other schools in the provinces of Laguna, Batangas, Rizal and Quezon was facilitated last May, with more than 100 agriculture, home economics teachers and principals trained. During the last year of the project, the focus will shift to efforts to outscale, upscale and institutionalize school nutrition programs more widely in the Philippines. Policy briefs, research papers and IEC materials will be generated to support the ongoing programs of the Department of Education in the Philippines.

# Bio-Intensive Garden Standard for Schools



<p>1. Garden area should be adequate (at least 100 sq m), receives direct sunlight for at least 4-6 hours, with good water source and drainage system.</p>	<p>2. School garden functions as a nutrition source for the feeding program and as a learning venue for all school children and other stakeholders at anytime of the year.</p>	<p>3. Garden plans (cropping pattern and garden layout) are prepared on an annual-basis taking into consideration water/climate and feeding center requirements.</p>	<p>4. School garden practices soil and water conservation technique such as:</p> <ul style="list-style-type: none"> <li>• <b>Raised-deep dug (1 ft deep) bed.</b> It is efficient because it stores more water, encourages roots to grow deep, and prevents loss of top soil during rainy season.</li> <li>• <b>Regular use of natural fertilizers</b> to improve soil quality and to keep the soil moist.</li> <li>• <b>Use of mulch</b> (dried grass/ leaves) to cover garden beds to help reduce evaporation and weed growth.</li> <li>• <b>Rain-water is stored and recycled</b></li> </ul>
<p>5. There is diversity within the garden taking into consideration season and feeding center requirement.  (Diversity in school gardens means that there are ten to twelve different crops and fruit trees at a given time with 70 % indigenous and 30 % exotic.)</p>	<p>6. Drought tolerant and nutritionally dense leafy vegetables (e.g. amaranth, long-fruited jute, etc.) are grown for the feeding program and promoted in schools.  Root crops such as sweet potato, cassava, taro, yams, etc. are grown as energy source.  Legumes such as mungbean, cowpea, rice bean, hyacinth bean, lima bean, winged bean and pigeon pea, etc. are grown to serve as protein source.</p>	<p>7. Trees that will serve as source of fertilizers are planted within the school garden for easy access of green manure and to improve garden microclimate.  (Kakawate/Madre de cacao/Gliricidia sepium are planted 1 meter apart on the boundaries of the garden or within the school vicinity)</p>	<p>8. School garden practices cover cropping/ground cover during school vacation/summer season (e.g. hyacinth bean, rice bean, cowpea). Cover crops are planted in beds to protect the soil from drying out and suppress weed growth.</p>
<p>9. Composting of leaves and remains of plants in a compost bin is practiced all year round. Other locally available materials such as animal manure, eggshells, and wood ash may be incorporated.</p>	<p>10. Garden is free of chemicals. Botanical insecticide is used only as and when needed.</p>	<p>11. School garden is self reliant in seeds/ planting materials with functional nursery.</p>	<p>12. There is team work among school administrator, agriculture teacher, feeding center teacher, and other stakeholders.</p>