

## **SUSTAINABLE ORGANIC FARMING SYSTEMS IN THE NORTHERN HIGHLANDS OF THE PHILIPPINES**

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### **ABSTRACT**

Participatory rural appraisal (PRA) approaches were conducted to document sustainable indigenous strategies of organic farming systems practiced in the highlands of Northern Philippines. The local peoples of Bayyo and Ducligan have developed different indigenous strategies to sustain productivity in their different production systems. The production systems are terraced irrigated fields (payew), the permanent swidden (katualle), shifting cultivation system (uma), and vegetable gardens. The different strategies that they have developed include terracing, crop rotation, mixed cropping, soil fertility management, fallowing and natural resource conservation system.

For soil fertility management, *Tithonia diversifolia* (sunflower) is the main source of organic fertilizer in payew fields in cold high elevation areas while *Chromolaena odorata* and *Gliricidia sepium* are commonly used as organic fertilizer in low elevation areas. In the katualle, weeds removed are applied as mulch and organic fertilizer for the growing crops. Fallowing is an essential component of the shifting cultivation system in uma fields to rejuvenate soil fertility.

Bayyo farmers keep a collection of a diverse array of sweet potato varieties suited to different growing conditions and with varying characteristics of growing season length, herbage yield, drought tolerance and tuber storage longevity. The upland Tinguian tribes of Abra have evolved a century old system of regulating the use of natural resources among the local communities.

**Key words:** indigenous strategies, PRA, organic farming, rice terraces, mulching, sweet potato, natural resource conservation, Philippine highlands, *Tithonia divesifolia*, *Chromolaena odorata*

**CONTRACT FARMING IN THAILAND: NET RESULTS IN THE  
THREE DECADES**

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**ABSTRACT**

This paper sought to draw lessons learned from Thailand's experiences in contract farming. The work is based on a review of literature, as well as the authors' previous and updated field research. Three issues are highlighted: the roles of the public sector in supporting a favorable environment, market competition and pricing, and farmer satisfaction with contract farming at its early stage of development.

Over the past three decades, Thailand has experienced tremendous progress in contract farming, despite the failure of some large schemes in the initial stage. The government created a supportive environment; and good government-private-farmers cooperation has proved to be of great contribution to the successful cases. Competition for contract farmers and land increased as well as demand of farmers to join the system which imply fairly satisfactory results of the contract system.

**Key words:** marketing development, market access, pricing, government roles

**INSECTICIDAL ACTIVITY OF INDONESIAN PLANT EXTRACTS AGAINST THE  
CABBAGE HEAD CATERPILLAR, *CROCIDOLOMIA PAVONANA* (F.)  
(LEPIDOPTERA: PYRALIDAE)**

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**ABSTRACT**

Methanol extracts of 43 species of Indonesian plants and the chloroform soluble fraction of selected extracts were evaluated for their insecticidal activity against the cabbage head caterpillar, *Crocidolomia pavonana* (F.) (Lepidoptera: Pyralidae), using a leaf-residue feeding method. Extracts of *Annona squamosa* seeds (Annonaceae), *Dysoxylum acutangulum* twigs, *D. mollissimum* seeds (Meliaceae), *Piper nigrum* seeds and *P. retrofractum* fruits (Piperaceae) at a concentration of 0.5% (w/v) caused 100% larval mortality. The extracts of three species of *Aglaia* (Meliaceae), i.e. *A. elaeagnoidea* leaves, *A. harmsiana* seeds, and *A. odorata* leaves, at the same concentration caused 51% - 83% larval mortality. Larval mortality from the other test extracts was below 40%.

Further tests with the active extracts revealed *D. acutangulum* as a new promising source of botanical insecticides. The LC<sub>50</sub> and LC<sub>95</sub> of a chloroform-soluble fraction (CSF) of *D. acutangulum* twig extract against *C. pavonana* larvae were 107.7 and 234.5 ppm, respectively. *C. pavonana* larvae intoxicated by *D. acutangulum* extract showed the typical symptom of molting inhibition suggesting hormonal interferences. Thus, this extract should be safe to other organisms devoid of insect hormones or the like. The residual activity of *D. acutangulum* extract was also evaluated in a field trial. The 0.16% *D. acutangulum* CSF extract (5 x LC<sub>99</sub>) was sprayed on potted broccoli plants and the residues were exposed to sunlight but protected from rain, for 1-14 days. The results showed that the extract residues remained active (larval mortality ≥ 93%) until 14 days after spraying. Further studies are underway in our laboratory to isolate and identify the insecticidal compounds in *D. acutangulum*.

**Key words:** Botanical insecticides, insect growth regulator, Meliaceae

## **ORGANIC VEGETABLE FARMING AND MARKETING IN THE PHILIPPINES: STATUS AND PROSPECTS**

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### **ABSTRACT**

This paper aims to: 1) present an overview of government policies that promote the adoption of organic agricultural practices in the Philippines and the role of the private sector in the development of the Philippine organic industry; 2) describe organic vegetable farming practices in the country; 3) determine the profitability of producing organically grown vegetables; 4) examine the market potential of organically grown vegetables; 5) compare the price and quality competitiveness of organically grown vegetables; 6) identify the major problems related to the production and marketing of organically grown vegetables; and 7) give policy recommendations to improve the production and market prospects of organically grown vegetables in the country.

Vegetable producers practicing organic farming in the Philippines are mostly found in Benguet, Cavite, and Bukidnon. These farmers did not use chemical inputs. To ensure year-round supply of vegetables, they grew vegetables in greenhouses. They also used net tunnels, and drip irrigation as well as adopted mulching and soil sterilization in order to obtain higher yields.

Micro level studies reveal that the production of selected organically grown crops was more profitable than the conventional inorganic method of production.

Empirical evidences also show that organically grown vegetables have considerable market potential in Metro Manila, Philippines considering the strong demand of direct household consumers and institutional buyers as a result of environmental and health consciousness among urban consumers. The bulk of the market comes from middle to upper class consumers who are relatively well informed and aware about organic food. Generally, the consumers perceived organically grown vegetables to be quality competitive in terms of the absence of chemicals and nutritional value due to the healthy and pesticide-free nature of the product. Moreover, the prices of organically grown vegetables were much higher than their conventionally grown counterparts.

**Key words:** production cost, net income, prices and quality, competitiveness, market potential

**BIOLOGICAL STUDIES ON CABBAGE WHITE BUTTERFLY *PIERIS RAPAE*  
LINNAEUS (LEPIDOPTERA: PIERIDAE)**

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**ABSTRACT**

The cabbage white butterfly, *Pieris rapae* Linnaeus is one of the important pests of cruciferous crops in Viet Nam. The morphological changes at each stage for *P. rapae* was described. The effects of temperature on development, longevity and oviposition of *P. rapae* were studied in the laboratory. At 20, 25 and 30°C and 70 - 80% RH with a 12L:12D photoperiod. The egg stage was 3.38, 2.77 and 2.13 days, respectively. Larval development was 14.89, 12.70 and 10.24 days and pupal developmental time was 8.86, 6.75 and 5.50 days, respectively. Total life cycle was 28.65, 23.09 and 18.42 days, respectively. The average longevity of adult and number of eggs laid by a female decreased with higher temperature.

This paper also shows the effect of various food plants on survival and development time of *P. rapae*. The population dynamics of this pest was investigated in the cabbage field where larval density peaked at 30 – 40 days after transplanting. Seasonal build up of *P. rapae* was observed on cruciferous crops and larval density was high from March to the beginning of May 2002 – 2003, and declined during the summer season. Chemical control tests against *P. rapae*, conducted in the laboratory, gave significant results.

**Key words:** insect biology, damage, population dynamics, fecundity, longevity

**THE MODEL CASE OF CHINESE ECOLOGICAL AGRICULTURE:  
ITS MEANING AND FUNCTION FOR THE ESTABLISHMENT  
OF ECO-AGRICULTURE IN SOUTHEAST ASIA**

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**ABSTRACT**

Chinese Ecological Agriculture (CEA) is a system of agriculture which was established and developed under the guidance of harmonious development of economy and the environment. It summarized and absorbed the successful experiences of varied agricultural models based on the principles of ecology, economics, and an applied system of engineering methodology.

The purpose of this presentation is to look at the background of CEA and the developing factor as the proto-theory of “Endogenous Development”. It is a different stand from the development of the agricultural product for export or the “organic” statistics which is extended mainly around the east coast of China towards the global market by the theory of “Exogenous Development”. The conclusion is aimed as a suggestion for some direction for South Asian sustainable development based on local agriculture.

**Key words :** CEA, green food, market oriented, peoples’ participation