

**DEVELOPMENT OF ORGANIC FARMING IN JAPAN:
ISSUES AND PROSPECTS**

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ABSTRACT

It was in the 1970s when some farmers and health conscious consumers started having a contract for production of organic foods in Japan. The Government's moves on organic farming were rather slow, and only in 1994 was organic farming officially defined as one form of environment conservation agriculture. Generally in Japan, the emphasis is placed on the reduced use, rather than the termination, of synthetic chemical inputs. In 2001, certification was made compulsory for organic products, but development in organic farming appeared to be slower than anticipated. This paper traced the development process of organic farming and examined the causes of the slow progress in organic farming from the economic and technological viewpoints. Profitability of organic farming appeared to be higher than the conventional farming, but the labour-consuming nature was considered a limitation in the expansion of farm size, presenting a difficulty in realizing a larger total net income by organic farming. Unstable and low yield was apparent in the case of organic farming. The maintenance of soil fertility, pest control and weeding were the major issues for organic rice farming, but alternative practices were limited.

Keywords: Environment conservation agriculture, cost and return, soil fertility, pest control, weeding

**ORGANIC AGRICULTURE IN THE WORLD WITH EMPHASIS
ON VIETNAM**

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ABSTRACT

Organic agriculture is defined as an environmentally and socially sensitive food supply system. This article shows a brief history of certification and regulation of organic agriculture in the world. Organic food demand is very high for domestic consumers as well as export to main markets such as EU, Japan, USA and China. The European Union, the USA and Japan are the largest markets, by far, though there are smaller but interesting markets in many other countries, including some developing countries. Research indicates that retail sales of organic food and beverages in 1998 amounted to more than \$ 13 billion in Western Europe, the USA and Japan nearly 16 billion in 2000 and a forecast of close to 90 billion in 2010. According to the SOEL-Survey Feb.2003, almost 23 million hectares are managed organically world-wide. The major part of this area is located in Australia (10.5 million hectares) and Argentina (3.2 million hectares). The world's largest certified organic property (994,000 ha) is located in Australia (FAO 2001).

In the past, Vietnam was the same as other countries, where intensive farming relying on chemical fertilizers, pesticides and new varieties resulted in high productivity. But, high level (overuse) of chemical fertilizers and pesticides and indiscriminate application caused problems of environmental pollution and unsafe agroproducts. Thus in order to limit it, we follow safe and organic production. The Vietnamese Government is a strong supporter of IPM and since 1992 it has been running a very successful National IPM programme. In 1998, the National IPM programme formally supported the local IPM movements to build a community IPM Network that can provide a framework for nation-wide IPM implementation. The Government decided to adopt the policy for developing sustainable agriculture as one of important agricultural policies. In order to achieve this policy goal there must be harmonization of agriculture with the environment. As promotion for site-specific organic farming, the establishment of a natural cycling system where organic crops are integrated with livestock production and the promotion of exporting organic products were pursued.

We will improve the procedures for producing organic food of key crops such as rice, tea, coffee, vegetables, fruits, livestock and set up a framework for safe and organic agriculture (standard, regulation, certification body) in Vietnam.

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**ORGANIC FARMING, THE CURRENT STATUS AND
FUTURE DEVELOPMENT IN VIETNAM**

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ABSTRACT

Organic farming or organic agriculture, which has been established in many developed countries, is currently a new subject in Vietnam. This article mentions some concepts and definitions of organic farming and processing that have been used in the world. It also discusses the development of organic farming across the world and how those experiences might serve as a guide for Vietnam.

Key words: Organic product, natural farming, organic resources, safe vegetable product

**EFFECT OF POTASSIUM LEVELS ON CHEMICAL PROPERTIES
OF SOIL GROWN TO POTATO AS A WINTER
CROP IN VIETNAM 2003-04**

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ABSTRACT

This study sought to determine the effect of potassium (K) on the soil's chemical properties through lowering the pH or increasing the concentration of water-soluble aluminum (Al) in the soil which can suppress potato common scab. Potassium (0.40 and 80 kg K₂O ha⁻¹ in Hanoi and 0.100 and 200 kg K₂O ha⁻¹ in Dalat) was applied into the rows where potato plants were planted in Dongxuan village, Socson district, Hanoi city, and in Dalat city in winter-spring crop of 2003/04. The soil, without potassium applied, had values of pH (H₂O) and pH (KCl) and water-soluble aluminum concentration similar to those where potassium was applied in both sites. In Dongxuan village, the value of pH (H₂O) ranged from 4.9 - 5.9. pH (KCl) ranged from 4.3 - 5.0 and aluminum concentration was very low (0.002-0.037 mg l⁻¹). In Dalat City, pH (H₂O) value ranged from 6.5 - 7.2. pH (KCl) 6.1 - 6.7 and aluminum concentration values were almost nil (0-0.011 mg l⁻¹). These values are not significant between treatments at P < 0.05 and could not suppress potato common scab. Increasing levels of potassium in soil resulted in higher yield of potato. Potassium applied at the rates of 0.40 and 80 kg K₂O ha⁻¹, the yielded 8.33, 9.72 and 10.83 t ha⁻¹ in Hanoi. Similar results obtained in Dalat city, where application rates of 0.100 and 200 kg K₂O ha⁻¹, yielded 9.14, 11.15 and 12.98 tons ha⁻¹ respectively. The application of potassium therefore suppressed potato common scab and increased potato yield.

Key words: fertilizer, soil science, plant pathology, *Streptomyces scabies*

**EFFECT OF ETHEPHONE AND STORAGE TEMPERATURE ON TUBER
SPROUTING IN YAM (*Dioscorea* spp.)**

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ABSTRACT

Experiments were conducted to assess the potential of 2-chloroethyl-phosphonic acid (Ethephone) and storage temperature to induce sprouting of dormant tubers of white Guinea yam (*Dioscorea rotimdata*) and water yam (*D. alata*). Ethephone was applied to foliage of yam plants 10 days before harvest or to tubers at harvest. Application of Ethephone alone did not influence the sprouting of dormant tubers in most varieties of *D. rotimdata* and *D. alata*. The period of tuber dormancy was shortened by storage in darkness at 30°C constant temperature in all tested varieties. Tubers of varieties TDa 95/00328 and TDr 93-31 stored under 30°C after soaking with Ethephone sprouted in January. The response of these varieties suggests a possibility for the use of Ethephone and storage in dark condition at constant 30°C in ware yam production. It would be used to develop new cropping cycles for yam.

Keywords: *Dioscorea alata*, *D. rotundata*, dormancy, off-season production

IN VITRO DETERMINATION OF SALT TOLERANCE AT THE CALLUS AND SEED GERMINATING STAGE OF *DACTYLOCTENIUM AEGYPTIUM* (L.) P. BEAUV.

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ABSTRACT

The salt tolerance of *D. aegyptium* was determined *in vitro* both at the callus and seed germinating stage. Seeds from the native plants of salt affected areas were induced to calli on MS medium supplemented with $18.1\mu\text{mol}^{-1}$ 2,4-D for seven weeks. The embryogenic calli (EC) were used for determination of salt tolerance using 0-5% NaCl. The calli could tolerate up to 4% NaCl with the fresh weight of 16.3 % of control. However, at 3-4% NaCl, the EC changed to Triable calli and lost their regeneration capability. Seeds were determined for salt tolerance by germinating on MS medium supplemented with five concentrations of 0-2.0% NaCl, at 0.5% interval. The highest percentage of seed germination was 32% in 1.0% NaCl. Seedlings which survived at the highest salinity were selected to multiply shoots and induce roots, then, determined for salt tolerance at 0.125 (control), 0.5, 1.0, 2.0, 3.0 and 4.0% NaCl for six weeks. The selected plants could survive up to 3% NaCl with 100% survival. In the case of 0.5-2.0% NaCl, the growth of shoots and roots were stimulated with the maximum fresh and dry weight at 2.0% NaCl. The osmolality of shoot sap and water that rinsed the leaves increased as salinity- increased. The present study shows that the salt tolerance selection system for *D. aegyptium* at seed germinating stage was more promising than at the callus stage.

Key words: embryogenic calli, osmotic adjustment, salt secretion, salt stress, salt tolerance selection

**ASSESSING PERFORMANCE OF IRRIGATION WATER
USERS' ASSOCIATIONS IN INDONESIA THROUGH
FARMERS' PERCEPTION**

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ABSTRACT

The demand for rice which is the staple food for majority of Indonesia's 210 million people is steadily increasing following the population growth. To keep the farms productive, the availability of water is the obvious factor and the institutions involve in irrigation management are expected to improved rice production performance. This paper is based on a study conducted in two rice-producing regions in East Java. The analysis is based on primary data collected from two locations: water sufficiency areas (WS) and water deficit areas (WD). In WD areas, farmers have expressed their dissatisfaction on water adequacy during the dry season and on the water schedule for intermittent flow. The shortage of water and dissatisfaction in timely supply and duration of water delivery both in WS and WD areas are also identified as major sources of conflict among the farmers, and between the farmers, and management of Water Users' Associations (WUA). Ability of farmers to pay irrigation water fee and the farmers' acceptance of irrigation fee system are two major issues affecting the success of fund raising for irrigation operation and maintenance. The study also indicates that farmers in WS area have more flexibility in water use as compared to those in WD area. Accountability of WUA management practice is considered as the most influential factor affecting the performance of WUA and the challenge for the organization is to strengthen its capability and improve efficiency for providing irrigation services in order to meet farmers' needs irrespective of their locations.

Keywords: Irrigation management, water distribution, sources of conflict, irrigation fee, management accountability

THE INFLUENCE OF *BEAUVERIA AMORPHA* ON THE FIELD POPULATION OF DIAMONDBACK MOTH, *PLUTELLA XYLOSTELLA* (LEP: YPONOMEUTIDAE) AND PARASITISM BY *DIADEGMA SEMICLAUSUM* (HYM: ICHNEUMONIDAE) IN BALI ISLAND

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ABSTRACT

Diamondback moth, *Pluella xylostella* (L), is one of the most important pests of cruciferous plants throughout the world. The local farmers still use synthetic pesticides to control the pest, although it has been known that the use of pesticides is dangerous to the environment. The use of entomopathogenic fungi such as *Bcauveria amorpha* is an alternative way to reduce the dependence on synthetic pesticides in the field. A field experiment was conducted in order to know the influence of *B. amorpha* against diamondback moth, *Phitella xylostella* and its parasitoid, *Diadegma semiclausimi* in cabbage in Pancasari, Buleleng Regency (1200 m a.s.l.) from May up to August 2003. The experiment was arranged in paired - block design. The results indicated that the use of *B. amorpha* was significantly able to reduce around 50.7% of the *P. xylostella* population arid reduce yield losses as well. There was no effect on the activity of *D. semielausum*

Keywords: biological control, cabbage

SEWAGE SLUDGE AS FERTILIZER IN SOYBEAN PRODUCTION

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ABSTRACT

This research sought to study the growth, yield, yield components, seed quality, including nutrient and heavy metal content of soybean cultivar Chiang Mai 60 (CM. 60) by using sewage sludge from domestic wastewater treatment as fertilizer. The experiment used a completely randomized design, divided in 6 treatments with 4 replications and was conducted from February to June, 2004. Sewage sludge was mixed with soil at the rate of 5, 10, 15 and 20% by weight, and chemical fertilizer (12-24-12) was applied at the rate of 10 grams/basin.

The results showed that soybean growth, yield, yield components, seed quality, protein and lipid were significant ($P < 0.05$), showing the best potential productivity at 5% by weight and being better than chemical fertilizer. The residues of heavy metals (lead, cadmium and mercury) accumulated in leaves and seeds, including in soil before and after the study were also significant ($P < 0.05$) related to the quantity of sewage sludge used. Soil nutrients of all treatments were also significant ($P < 0.05$). The data varied similarly to the residues of heavy metals. The replacement of sewage sludge for chemical fertilizer in plant production including soybean could be as a nutrient source. However, it must be used in an appropriate rate. Moreover that, it should not be used in plants for human and animal consumption because heavy metals may accumulate in plant products.

Key words: nutrient, potential productivity, heavy metal

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**EFFECT OF NEEM ON GROWTH AND YIELD OF SOME
VEGETABLE CROPS**

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ABSTRACT

The effects of neem leaves and seed extracts on growth and yield of pe-tsai (Chinese cabbage), pak-choy (Chinese mustard) and water convolvulus vegetables were evaluated in field experiments at Koke Sawang primary school in Khon Kaen province from October 2000 to March 2001. The treatments were 1) soil incorporated with chopped neem leaves and watered with neem seed extract every three days. 2) chopped neem leaf incorporated in soil without neem extract watering, and 3) control untreated. Plant height and weight at harvest were recorded weekly. The results showed that soil incorporated with chopped neem leaves and watered with neem extract resulted in maximum plant height and yield whereas the control plot produced the least yield.

Keywords: chopped neem leaf, Chinese cabbage, Chinese mustard, yield