Agriculture, Fisheries and Conservation Department

September 2003 (Revised Edition)

Organic Farming
Protocol for Organic Crop Production

1. Forward

1.1 This Protocol was developed by the Agriculture, Fisheries and Conservation Department in response to the increasing local demand for vegetable produce, which have been produced by organic farming systems.

1.2 The Protocol aims to provide a guide to farmers contemplating conversion and enabling them to continue practicing organic farming.

1.3 This Protocol is subject to annual revision in the light of further experience with the technical details. Review of any aspect may be requested by submitting a proposal, including detailed reasons, to AFCD for consideration.

2. Principles of Organic Crop Production

2.1 Organic farming comprises agricultural systems that promote the environmentally, socially and economically sound production methods. These systems take soil fertility as a key to success and aim to optimize quality in all aspects of agriculture and the environment. Major emphasis is placed on the use of renewable resources and the need for conservation of energy, soil and water resources. The production cycle is self-sustainable, with the utmost restrictions on external inputs especially fertilizers and pesticides. It has much in common with sustainable agriculture in that it aims to nurture and maintain the land for future generations.

2.2 The principal aims of organic farming include:

- ✧ the production of food of high quality in sufficient quantity;
- ✧ utilizing, as far as possible, renewable resources;
- ✧ the enhancement of biological cycles in farming systems;
- ✧ maintaining and increasing fertility of soils;
- ✧ the avoidance of pollution resulting from agriculture;
- ✧ the co-existence with, and the protection of, the environment.

3. Production Requirements

3.1 Organic production systems require that:

- ✧ only products composed of substances listed in Annex I and II may be used as plant protection products, fertilizers, soil conditioners and foliar sprays;
- ✧ sufficient organic material should be returned to the soil to increase, or at least maintain, humus content on an ongoing basis;
- ✧ as far as possible, organic or self-saved seeds should be used; if these are not available, untreated or Annex II substances treated seeds or plant propagation material may be used;
- ✧ crops and products derived from recombinant-DNA technology are not permitted for use in organic farming;
- ✧ as far as possible, organic production areas should be located in such a way that contamination from other sources are minimized;
- ✧ converted production land shall not get switched back and forth between organic and conventional management.

3.2 Organic farming systems rely upon crop rotation, crop residues, composts from animal and plant origin, green manure, legumes, approved mineral-bearing rocks and aspects of biological pest control to maintain soil productivity, supply plant nutrients and to control pests and weeds.

3.3 The requirements of this Protocol must be implemented for at least a twelve-month conversion period* before the planting of a new crop and products harvested afterwards may bear indications referring to organic production methods.

3.4 Before entering the conversion period, the production requirements of the Protocol must have been met for at least one complete cropping period or cycle and subject to collection of field samples for analysis and granting of permission by the certification organization. During the conversion period, farm produce may be sold as “produce of organic farming in process of conversion” or a similar description.

*Certification organization may decide to reduce or extend the conversion period on the basis of previous land usage and environmental changes during the conversion period. For examples, evidence that inputs outside Annex I and II had not been used during the previous three years; or during the conversion period, pollution of farm area from foreign sources.

4. Soil Management

4.1 In organic production, biodegradable material of microbial, plant or animal origin shall form the basis of the fertilization program. Mineral fertilizers shall only be used in a supplementary role to organic materials. The fertility and the biological activity of the soil must be maintained or increased by any one, or combination of the following methods:

- ✧ cultivation of legumes, green manure or deep rooting plants in an appropriate multi-annual rotation program;
- ✧ incorporation in the soil of fully mature composed organic material;
- ✧ tillage techniques;
- ✧ maintenance and management of livestock; and
- ✧ application of matter or substances derived from sources as listed in Annex I only to the extent that adequate nutrient of the crop or soil conditioning are not possible by the above methods or, in the case of manure, they are not available from organic farming.

5. Control of pests, diseases and weeds

5.1 Organic production should be carried out in a way which ensures that losses from pests and diseases are minimized. The basic principles of pest control strategies shall be formulated by understanding and disrupting the ecological needs for the pests. In general, pests, diseases and weeds may be controlled by any one, or a combination of the following integrated pest management approaches:

✧ choice of appropriate species and varieties;
✧ appropriate crop rotation programmes;
✧ mechanical or physical controls such as traps, barriers, light and sound;
✧ mulching and mowing;
✧ biological control;
- protection of natural enemies of pests through provision of favorable habitat, such as hedges and nesting sites, ecological buffer zones which maintain the original vegetation to house predators and parasites;
✧ flame weeding;
✧ grazing of livestock.

5.2 Only in cases of imminent or serious threat to the crop and where the measures identified above are not effective, products referred to in Annex II can be used. However caution needs to be exercised even when using products derived from natural sources, as some of them are not necessary non-toxic.

5.3 A developed organic farm will operate within a self-sustainable production cycle, with the utmost restrictions on external inputs especially fertilizers and pesticides. Inputs from outside must be kept to an absolute minimum and used on the basis of need only.

The inputs listed in Annex I and II are therefore not meant for continuous use. They may be used in emergency situations when the natural balance of the system may be disturbed. Also, during the conversion period external inputs may be required in order to improve the nutrient status and physical conditions of the soil, and to overcome the result of previous farming activity.

5.4 Where it is considered that a substance should be added to Annex I and II, or that amendments should be made thereto, the applicant must submit a full proposal giving the reasons for the inclusion or the amendments to AFCD for consideration

6. Contamination Control

6.1 Where there is a suspicion of contamination, all relevant measures should be taken to minimize contamination from outside and within the farm. In cases where protected coverings may be used, products based on polyethylene and polypropylene or other polycarbonates are permitted. These shall be removed from the soil after use and shall not be burned on the farmland. The use of polychloride based products is prohibited. In addition, samples of the relevant farm products and possible sources of pollution (soil and water) shall be analyzed by the certification organization to determine the level of contamination on a regular basis.

6.2 Tools and materials for production, packing and transportation should be separated from those used in conventional farming to reduce the rise of pollution.

Annex I

Permitted substances for use in soil management and fertilizing:

Repeated use of any product has the potential to introduce residues and contaminants. Heavy or repeated use of any of the following products should be based on assessment of need and with knowledge of the chemical properties of the products.

Farm Manure and Compost Material

- ✧ Composts from plant residues and spent mushroom★
- ✧ Dried farmyard manure and dehydrated poultry manure★
- ✧ Composts from animal excrements, including poultry★ (human excrement shall not be used on vegetable production)

Organic Fertilizers

- ✧ Bone meal, peanut cake, fish meal, hoof and horn meal and soybean meal
- ✧ Waste products from fish and animal processing★
- ✧ Commercial organic fertilizers and liquid feeds★
- ✧ Seaweed or seaweed meal (formulated products) ★
- ✧ Naturally occurring organisms (e.g. earth worms and rhizobium)
- ✧ Humus from earthworms and insects (insect dropping)
- ✧ Sawdust, bark and wood waste
- ✧ Straw
- ✧ Wood ash or charcoal
- ✧ Peat (not as soil conditioner; permitted for seed and potting module composts)

Mineral Fertilizers

- ✧ Vermiculite
- ✧ Gypsum (calcium sulphate)
- ✧ Lime (calcium carbonate of natural origin e.g. crushed limestones)
- ✧ Sulphur
- ✧ Perlite

During farming operation, inputs used in soil management and certilization should be clearly recorded. As far as possible, avoid frequent and repeated use of any single substance.

The substances or commercial products identified above by an asterisk (★) may have added nitrogen or other chemical substances which are unacceptable in organic farming and as such classified as restricted-use substances. Recognition by certification organization is needed before use.

Annex II

Permitted substances for plant pests and diseases control

The reliance on substances rather than management practices for the control of pests and diseases is not in accordance with organic farming principles. Caution needs to be exercised even when using the substances listed below, as they are not necessarily non-toxic.

Plant and Animal Origin

- ✧ Natural Pyrethrum✸ extracted from *Chrysanthemum cinerarieafolium*, without Piperonyl Butoxide
- ✧ Natural Rotenone✸ extracted from *Derris elliptica*, *Lonchocarpus*, *Thephrosia* spp.
- ✧ Natural Neem oil and extracts✸ from *Azadirachta indica*
- ✧ Natural acids (e.g. vinegar)
- ✧ Natural animal and plant products (e.g. honey, milk and cane sugar, but excluding tobacco and nicotine)

Minerals

- ✧ Inorganic compounds✸ and copper salts✸ (Bordeaux mixtures, copper hydroxide, copper oxychloride)
- ✧ Sulphur✸
- ✧ Potassium permanganate✸
- ✧ Mineral oils (paraffin oil) ✸
- ✧ Sodium bicarbonate (Baking powder)

Microorganisms used for biological pest control

- ✧ *Bacillus thuringiensis;*
- ✧ *Beauveria basiana*
- ✧ *Spodoptera litura* Nuclear polyhedrosis virus;
- ✧ Entomopathogenic nematodes (e.g. *Steinernema* sp.)

Traps

- ✧ Metaldehyde baits* in traps or enclosed from the environment
- ✧ Pheromone preparations
- ✧ Insect attractants (e.g. cuelure)

Others

- ✧ Potassium Soap (soft soap)
- ✧ Carbon dioxide and nitrogen gas

During farming operation, inputs used in pest and disease control should be clearly recorded. As far as possible, avoid frequent and repeated use of any single substance.

The substances or commercial products identified above by an asterisk (✸) have been listed as restricted substances. Recognition by certification organization is needed before use. Some of the listed substances are subject to regulatory control under the Pesticides Ordinance (Cap. 133). Safety precautions as listed on the label must be strictly followed before use.

For any enquiries or suggestion about this <Protocol for Organic Crop Production>, please contact the Plant Protection Section :

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