

# **PEST MANAGEMENT FOR ORGANIC APPLE ORCHARDS IN KOREA**

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## **Introduction**

This paper is a summary of the writer's lesson for experiment-based organic cultivation on Pest Management for Apple Orchards, as part of the two-year internship program at the International Organic Agriculture Research Institute. Most of organic apple orchards in Korea have big problems of pest damage. Desirable pest management in organic apple orchards are as follows ;

### **1. The goals of organic cultivation**

- o To produce high quality products with no residue of harmful organo-synthetic pesticides
- o To maintain soil fertility, and the healthy growth of plants
- o To preserve the natural cycle of matters and biodiversity
- o To raise livestock based on special moral principles when using livestock manure fertilizer
- o To prohibit the use of synthetic materials or genetically modified organisms (GMO)
- o To build an agricultural ecosystem that is clean and harmonious with the surrounding environment

### **2. The characteristics of the organic cultivation of fruit trees**

- o Requires much effort in cultivation and in management
- o Fruit trees undergo serious pest damages as the trees are exposed to pests and diseases over a long growth period
- o Consumers demand high quality produce; the fruit's sweet taste and good shape
- o Demand is higher for fresh fruits than for processed ones

### **3. The agricultural machinery effective to prevent pests upon organic cultivation**

- o Disease control – Spray lime sulfur mixture a maximum of three times; three to five application of lime Bordeaux mixture (There is a need to reduce the frequency of its application, and to develop an alternative substance); silver ion water

- o Pest control – One or two sprayings of machine oil emulsion and pheromone mating disrupter; egg yolk oil or canola oil with emulsifier and nine to thirteen applications; oriental medicine substances

- o Diseases and pests control – Decomposed chitin microorganisms, and paper bags

#### **4. Indirect ways to prevent diseases and pests**

- o To choose a suitable plot of land (considering weather conditions and the surrounding environment)

- o To choose suitable trees and crops

- o To provide and manage the habitat of natural enemies (weeds along fences)

- o To improve and maintain soil fertility

- o To manage controlled, but balanced nutrients

- o To plant trees considering the tree-form and shape to allow plenty of natural lights and easy ventilation

#### **Conclusion**

- o There is a need to develop apple varieties and rootstock that are suitable for organic cultivation

- Select crops suitable for organic cultivation that are resistant to diseases, pests, and physiological disorders

- o To establish a tree shape and soil management system for organic apples cultivation

- Establish a fertilization system that can replace chemical fertilizers, yet still maintain soil fertility; improve the physical properties of soil and develop ways to manage topsoil suitable for organic cultivation; develop lighting conditions in canopy

- o To establish a management system to control diseases and pests of organically grown apples

- Develop a management system to reduce the occurrence of diseases and pests on apple orchards; commercialize environmentally friendly agricultural machinery designed to prevent diseases and insects (To reduce the use of lime Bordeaux mixture, and to develop alternative measures)

- \* Write manuals for managing organic cultivation of apples; establish association for relevant organic organizations; actively study the cases of advanced countries; and conduct on-site verification tests.