Abstract

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Three vegetable growing villages at Ban Mae Tho, Ban Khun Wang and Ban Khun Mae Wag were surveyed. Eight growers including of 4, 2 and 2 from Ban Mae Tho, Ban Khun Wang and Ban Khun Mae Wag were respectively selected to join the project. The pilot project of growing pesticide free vegetables in the screen houses were done by these growers. Seven different kinds of vegetables were planted as follows: baby cos lettuce (cv. Baby Star), Chinese kale, orange sweet pepper and violet cauliflower were grown at the Royal project, Ban Mae Tho and Mae Wag stations; cherry tomato, sugar snap pea and rocket salad were grown at the Royal project, Khun Wang station.

Producing vegetables in the screen houses by using the technologies of TRF (Thailand Research Fund) as obtained from the outcomes of the researchers in different disciplines was initiated in November 2004 and ended in November 2005. The results in significant increase in qualities and yields of vegetables were compared with the growers outside the project. Although at the beginning, the technologies used might have caused increasing in investment input but in the long run the input will be reduced. In return, the growers will be obtained high quality and quantity of the products and also will be obtained more income.

The project indicated to produce the vegetables in the screen houses as the demonstrated units. However, the problem had existed because the vegetable growing members did not follow the suggesting instructions. Therefore, the project had to terminate the activities at Ban Khun Mae Wag and Ban Khun Wang. Then put more activities at Ban Mae Tho.

Previously, the growers applied too much fertilizer according to the soil analysis results. So it was suggested to reduce the amount of fertilizer. Water was given to the vegetable crops in the form of water dripping. Tensiometers were used in every house to indicate the frequency of water supply to the vegetable crops. Fertilizers were mixed with water and supplied to the crops as needed. The system was very convenient and time saving.

Diseases occurred on the crops in the screen houses were monitored. There were 6 potential diseases which have caused some damages to the involved vegetables. Two diseases, nutrient deficiency and leaf spot (*Cercospora* sp.) were observed on babycos salad. Similarly, 2 were observed on Chinese kale, wilt disease caused by *Fusarium* sp., *Phytophthora* sp. and *Pythium* sp. and downy mildew caused by *Peronospora parasitica.* In orange sweet pepper 6 diseases were found: water soaked on branches and stems caused by bacteria and *Botrytis* sp., leaf blight especially on leaf edges caused by *Fusarium* sp. and unknown species, bacterial wilt caused by *Ralstonia solanacearum*,

anthracnose on fruit and stem end breaking. In case of cherry tomato, late blight caused by *Phytopthora infestans* was observed. Besides, 2 diseases, powdery mildew (*Oidium* sp.) and leaf spot (*Cercospora canescens*) were noted on sugar snap pea.

The severity of diseases was not so high on leaf utilizing vegetables like babycos and Chinese kale because these particular crops were fast growing and short life. On the other hand, higher severity was observed on orange bell pepper and cherry tomato because their growth period was quit longer. During fruit setting period of these crops they were become more susceptible than at earlier stages. Moreover, at the time of approaching to harvest, the pesticides which have longer residue effect were not allowed to use.

Data on pest control were collected and revealed that in some growing season pesticides were not applied because the growers knew how to use integrated method to control of the pests. For instance, the adult insects of leaf miner, eggs and worms of common cut worm were picked up and gotten rid of them. Utilization of sticky glue was introduced to catch adult flea beetles. Sanitation of the plots by getting rid of crop debris to reduce the propagules of plant pathogens and early infection was also done. In the screen houses the number of *Coenosia* predator was increased into the amount sufficient to stop the infestation of leaf miner.

The project of producing pesticide free vegetables in screen houses in cooperation with the local growers was profitable. The evidence had shown that the growers who worked under the advice of the project had obtained more income than the outside growers. Promisingly, they were also guaranteed to obtain the income all year round. For the reason, at least 16 more growers intended to join the project with the loan money supported by the Bank for Agriculture and Agricultural cooperatives.