

Demonstrations of Sustainable Vegetable Pest and Crop Management: Fresh Market Sweet Corn

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Introduction: Four sweet corn pest and crop management systems (Organic, IPM/Present, IPM/Future, and Conventional) were defined and implemented at NYSAES Geneva and on grower farms.

The systems were compared on the basis of **economics**, pest control **efficacy** and **environmental** impact.

Methods: The definitions of the four systems evaluated are shown in Figure 1. In general the four systems were defined based on the following criteria: Conventional – those practices which were thought by extension and faculty to be commonly used by fresh market sweet corn growers; IPM Present -those practices which follow IPM Elements (Petzoldt et al 1999); IPM Future – IPM Present practices plus those practices that may still be under research or expensive to implement; Organic – following NOFA-NY guidelines (NOFA-NY 19__).

-Economics of each of the systems were evaluated by defining a typical farm profile growing fresh market sweet corn. Surveys were sent out to approximately 24 sweet corn growers during the 1997 growing season with 9 growers responding. A typical fresh market sweet corn farm has 275 total production acres with 100 acres planted to field crops, 100 acres to other vegetables and 75 acres planted to sweet corn. To determine ownership costs, repair costs and estimated life expectancy for each implement, the frequency of use on all production acres was calculated and general assumptions were made about practices (G. White, pers comm). A 30% premium price was used for Organic system calculations.

-Pest control efficacy was evaluated using scouting data and end of season evaluation of corn ears for pest damage.

-Environmental impact was evaluated by means of the Environmental Impact Quotient (Kovach et al 1992), pesticide use, and synthetic fertilizer use.

-The site at NYSAES contained all four systems and allowed for a rotational component to be introduced. Each system consisted of an early and a late planting of a half-acre each year. At the NYSAES site the IPM Future system could not include the use of *Trichogramma ostriniae* because of the potential for interplot interference.

-Grower sites varied in size from 1 to 5 acres. Each farm had either one or two of the systems present in a field with the intent to represent all four systems each year. In reality, the Organic system could only be located on three grower sites and the pest management practices we demonstrated on those farms were not different from the IPM Future system sites. In grower fields, the IPM Future insect management strategy was modified to include the use of *Trichogramma ostriniae* and *Bacillus thuringiensis* (Bt) for European corn borer (ECB) management. Actual economic data was not obtained from growers since this is confidential information

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