Community IPM Grants Program - Implementation Project
FINAL REPORT

Title: **Developing IPM Resources for Youth Gardening Programs**

Project Leaders:
**Monika Roth**, Agricultural Extension Educator, Cornell Cooperative Extension of Tompkins County.
**Leigh MacDonald Rizzo**, Education Coordinator, Ithaca Children's Garden.

Collaborators:
**Molly Shaw**, Area Fruit and Vegetable Educator, Cornell Cooperative Extension of Tioga County, South Central NY Agriculture Program.
**Carolyn Klass**, Cornell Diagnostic Laboratory, Entomologist.

**Abstract**
School gardens and youth gardening programs have arisen from the disconnect between children and the outdoors. Modern day children need more opportunities for physical activity and an improved diet with fruits and vegetables to combat childhood obesity. We propose to develop the plans for an IPM fruit and vegetable demonstration garden that will be illustrated by plants, cultural practices and signage, and to develop 6 hands-on IPM lessons to be piloted at Ithaca Children's Garden. The purpose will be to teach youth (and adults) about pest identification, beneficial insects, and pest management. Training for use of the IPM lessons will be offered to area school garden coordinators.

**Background and Justification**

Increasingly youth are disconnected from the natural world spending more time indoors and less time exploring outdoors. Another equally important fact is that kids have no idea where food comes from and how it is grown. The diets of children often lack fresh fruits and vegetables and childhood obesity has become a documented crisis. In response, there has been a resurgence of interest in engaging youth in growing fruits and vegetables to reconnect them to the outdoors and acquaint them with the taste of garden fresh produce. Youth also benefit from exercise they get while gardening.

During this past year, Cornell Cooperative Extension of Tompkins County has initiated a project aimed at coalescing community efforts addressing childhood obesity. There is strong community interest in the role gardening can play in addressing the obesity issue. This is evidenced by the numbers of school gardens and youth gardening programs that have emerged in our community (see enclosed directory). In interactions with teachers, parents and volunteers associated with these programs, they have expressed a need for resources and lessons for teaching youth about the science of garden environments.

In 2007, the Ithaca Children's Garden developed a 50 ft x 150 ft growing garden featuring fruits and vegetables. The garden is a teaching resource for youth, educators and the community. ICG has space for illustrating IPM principles for fruits and vegetables in their growing gardens and for educational signage. Collaboratively ICG and CCETC staff will draw upon IPM staff expertise, to identify IPM principles to illustrate in the ICG growing gardens and to develop 6 lessons to be piloted with the ICG

Youth Horticulture Apprentice Program. Lessons will be shared with other school and community garden programs coordinators. An IPM demonstration garden focused on fruit and vegetable IPM will serve to complement the IPM demonstration garden established next to the Sciencenter a few years ago which focuses solely on ornamentals.

**Objectives**

-To illustrate vegetable and fruit IPM principles at the Ithaca Children's Garden aimed at educating youth about pests, sound cultural practices to minimize pest development, the importance of pest resistant varieties, strategies for protecting vegetables and fruits from pests such as floating row cover, beneficial insects, mulching, etc.
-To develop effective signage that complements the IPM principle being illustrated in a fun way that not only "tells" but also encourages independent exploration.
-To develop 6 IPM lessons to be piloted on a weekly basis during the 6-week summer Youth Horticulture Apprentice Program (YHAP) operated by ICG staff to teach teens (ages 14-18) about pests that affect fruits and vegetables and how they are managed
-To teach youth about plant-plant and plant-pest interactions so they have a better understanding of ecology and natural systems
-To develop lessons that can be shared with the school garden and youth program coordinators in Tompkins County and beyond

**Procedures**

1. Develop Gardens illustrating IPM principles:

-Hosted a brainstorming session with project leaders, collaborators and selected IPM staff to identify IPM principles pertaining to the vegetables and fruits growing at the Ithaca Children Garden that could be most easily illustrated.
-ICG staff traveled to Geneva to meet with Deb Marvin and review existing IPM curriculum materials.
-Staff developed planting plans that incorporated cultural practices, plant health, biological and physical controls to be illustrated at the garden.
-Identified and ordered supplies and materials to support hands-on activities for identifying, monitoring, excluding and managing pests at the garden (magnifying glasses, nets, sticky traps, netting, row cover, mulching materials, signs holders)
-Gardens were planted in spring 2008 to illustrate the following practices:

-animal pest exclusion (deer fencing, bird netting)
-insect exclusion (row covers)
-weed management (plastic mulch, woodchip/straw mulch, use of vinegar spray, compared to bare ground and hand cultivation)
-plant health (soil testing, plant spacing, thinning, morning watering to minimize disease)
-plant families – identification and placement of plants so cabbage family, tomato family, mustard family, etc. were spread out in the garden rather than all in one location
-pest monitoring – sticky traps, nets
-chemical control: deer repellent, baking soda for mildew, vinegar spray for weeds

* NOTE: because this is a Children's Garden, our policy is to restrict use to pesticides that are considered least toxic so we only used a few materials selectively. This also gave us the opportunity to talk about toxicity and safe used of pesticides.

2. Educational Programming

Educational programming focused on implementation and demonstration of IPM practices compared to controls; monitoring for pests; and hands-on activities with youth about food garden cultural practices and pest management.

Target audiences included:

1) youth aged 5-13 – salad farmers (spring program), plus summer drop in gardening programs (Kids Gardening Club – weekly lessons in the Edible Garden).

2) 12 summer Youth Horticulture Apprentices aged 14-18 (July-mid-August)

3) general garden visitors who would view IPM practices illustrated in the garden; Family Fun Workshops in summer featured a Bug Hunt with Entomologist Carolyn Klass.

The following broad themes were presented:

-**Identification** of Pests and Problems in the Garden: types of pests (diseases, insects and weeds) and how they damage plants; and pest life cycles

-**Beneficials** – not all pests are bad, good bugs to look for…ladybugs, spiders, etc.

-**Monitoring for Pests**– tools for monitoring included: nets, sticky traps, pheromone traps, along with observation – detective work in the garden! *This was a favorite activity for all youth!*

-**Cultural practices for pest management and plant health** – cultural practices included both implementation and/or illustration of a practice to improve plant health and reduce pest damage compared to a control; *for example*:

-planting on bare ground, compared to black plastic or woodchip mulch for weed control

-plant spacing – rows that were left unthinned or planted to closely together compared to rows that were properly spaced

-row covers to exclude flea beetles and cucumber beetles compared to rows left uncovered

By illustrating a cultural practice and the control, youth were able to see the benefit from the cultural practice and observed differences in pest damage. For example, flea beetle damage on the emerging crucifers and cucurbits compared to those that were covered; and powdery mildew pressure was more prominent on closely spaced cucumbers and squash.

**Results & Discussion**

GOAL: IPM principles and practices pertinent to fruit and vegetable growing were illustrated at the Ithaca Children's Garden Growing Garden through demonstrations and signage. Youth and adults visiting the garden gain understanding of IPM principles and practices including the importance of pest identification, understanding pest life cycles, and IPM methods for pest management.

RESULT:

GOAL: Youth learn about cultural requirements for healthy plant growth and about pest problems and management strategies through exploration and hands-on experiences taught during IPM lessons.
RESULTS:
-Twelve Youth Horticulture Apprentices will participate in the pilot IPM program and will give feedback on the effectiveness of the lessons through pre- and post- surveys.
-Bug Hunt – 32 youth
-Salad Farmers – 22 youth, age 3-8

GOAL: Area school garden coordinators, eager for curricula that help enrich their school gardening programs, will be invited to tour the ICG demonstration IPM garden and receive training in use of the lessons.
RESULTS: CCETC has established a School Garden Educators Network. At least 12 school/youth garden coordinators will attend our first training session and tour the garden (late August, 2009). School/youth garden coordinators will be asked to rate the tour/training and the effectiveness of the IPM lessons once they use them with youth in their programs. Additionally, a tool will be developed so the garden coordinators can assess youth learning.

GOAL: The IPM garden will add value to ICG's educational goals and programs.
RESULT: The IPM principles and practices demonstrated at the ICG garden met two needs:

1) on-site demonstration of IPM practices so that visitors learn about things they can do at home to improve their vegetable garden yields and reduce pests;
2) hands-on activities that we integrate into our food gardening educational programs with youth…including bug hunts, plant thinning, weeding, mulching, row covers, sticky traps, etc.

**Project Location:** Ithaca Children's Garden, Cass Park, Rt. 89, Ithaca; Tompkins County

**Resources Developed:**
-Lesson outlines