



Cornell University
Cooperative Extension
Rockland County

10 Patriot Hills Drive
Stony Point, NY 10980
Phone: (845) 429 - 7085
Fax: (845) 429 - 8667
www.rocklandcce.org

NYSIPM Community IPM Projects, 2014
Grant report from Cornell Cooperative Extension, Rockland County

Title:

Demonstrating fence options for community, school and home vegetable and ornamental gardens in areas with high deer and woodchuck pressure

Project Leader:

Annie Christian, Horticulture Community Educator, Cornell Cooperative Extension Rockland County, alc44@cornell.edu

Cooperator:

Donna De Sousa, Master Gardener Volunteer, Cornell Cooperative Extension Rockland County

Abstract:

Two different methods of fencing will be tested with respect to their ability to keep both deer and woodchucks out of mixed annual and perennial gardens. One method will be to use heavy woven wire fencing and 1"20 gauge chicken wire for a groundhog barrier. The other method will be to use heavy black plastic fencing and 1" hex mesh material for a groundhog barrier. Master Gardener volunteers and CCE staff will keep exact records of fencing material costs, participate in the installation of the fencing and will keep weekly records of how effective this fencing proves in excluding wildlife. We will also provide IPM education to the general public and schools through videos and print materials.

Both fences were installed in August, leaving enough time for the Master Gardener Volunteers, Americorps interns and CCE educators to document the process of installation and monitor the fence's effectiveness at keeping out woodchucks and deer. Community members came to CCE and learned about the fenced gardens and IPM garden pest management during two, summertime CCE Rockland Demonstration Garden tours and during a School Garden Network workshop in October. A 9-minute instructional video on the fences and their role in IPM education at CCE Rockland is now available to view on the CCE Rockland website.

Background and Justification

Rockland County Cornell Cooperative Extension is located on a large tract of town property where we have close to an acre of space for our horticultural use. The CCE staff and Master Gardener volunteers have created extensive demonstration gardens, maintained by a diligent and enthusiastic group of volunteers each week. This corps of volunteers provides ample opportunity to use these gardens for various educational purposes, such as educating school gardeners and homeowners on how to manage a range of mammalian and insect pests with IPM methods, how to vegetable garden and how to grow non-invasive plants in enclosed garden settings.

Building Strong and Vibrant New York Communities

The property on which the CCE Rockland County office resides is home to abundant wildlife, including large populations of deer and woodchucks. These animals make it nearly impossible to do any kind of vegetable gardening or perennial gardening without the use of exclusion and other IPM methods. For the homeowner or school gardener, this kind of pest pressure can mean a loss of money and wasted effort for gardens grown in vain. The Master Gardener volunteers have tried virtually every method of management with the exception of full exclusion. However the deer around CCE Rockland even eat ferns and yucca from these gardens. The opportunity here is that CCE Rockland's environs mirror what schools and home gardeners face in Rockland County. As a result we have the opportunity to model what schools and home gardeners can do on their properties in terms of securing the necessary supplies for creating control methods as well as demonstrating the financial considerations and evaluation of such control methods. Exclusion is a costly technique in comparison to other strategies. By demonstrating how it can be done in the most cost-effective manner, we will teach school gardeners and homeowners how to approach exclusion properly from the start.

Objectives:

- 1. Research and install the two, most effective and affordable fencing techniques for excluding deer and woodchucks from two identical vegetable and ornamental crop gardens at CCE Rockland.*
- 2. Compare the two different methods of fencing in terms of their effectiveness at keeping out deer and woodchucks.*
- 3. Provide homeowners with IPM education and educational materials detailing best IPM methods of exclusion, insect and bird management and disease prevention. This would include information on but not be limited to encouraging beneficial insects, using bird netting and ensuring proper air circulation among crops. These educational materials - particularly those distributed through media outlets- will also encourage homeowners to visit CCE Rockland's demonstration gardens and learn more about IPM methods of pest control.*
- 4. Provide school gardening groups with IPM education and educational materials regarding best methods of exclusion, insect and bird management and disease prevention. This would include information on beneficial insects, insect life cycles and ensuring proper air circulation among crops.*
- 5. Conduct project evaluation by way of surveying program participants who visit the demonstration gardens. Find out what they have learned from the pest exclusion strategies used at the Rockland CCE demonstration gardens.*

Procedures:

- 1. Video-camera the process of researching fencing, buying fencing materials, installing the fence and sharing the results of our demonstration on the whole project; produce two educational videos from this footage that can be posted to the CCE Rockland website and You Tube, making full note of the fact that this is part of a grant-funded demonstration on fencing effectiveness. Provide the public with print material summarizing the cost of the fencing demonstration.*
- 2. Master Gardener Volunteers and horticulture staff will make weekly observations and record the effectiveness of the two fencing methods by observing crop damage, holes in fencing, etc. They will also demonstrate how to repair fencing on both types of fence netting material should holes appear.*

3. *Provide educational material on the exclusion methods used in the CCE demonstration gardens to the public in the form of both video clips updating the progress of the project, and brochures detailing the IPM exclusion techniques used at CCE Rockland. Distribution of these materials will include, but not be limited to:*
 - a. *The monthly demonstration garden tours where 70-80 people attend annually*
 - b. *Community events such as the Home Show and Environmental Day*
 - c. *30-40 Speakers' Bureau presentations each year where ~600 people attend*
 - d. *A visual display of text and photographs on this exclusion demonstration created for the horticulture lab, where over 500 people visit annually*
4. *Through the School Garden Network (SGN) meetings, the SGN email list serve and SGN Facebook page, we will encourage the school gardening groups that we advise to visit the CCE demonstration gardens to learn about IPM strategies for dealing with garden pests. We will also provide them with:*
 - a. *Links to the how-to videos and our website*
 - b. *Print materials on the IPM exclusion techniques employed at CCE Rockland*
5. *Issue a two or three-question survey to all participants (including both the public and school gardening groups) before and after the CCE demonstration garden tours and school garden group tours regarding what they knew and what they now know about IPM exclusion techniques for deer and woodchucks in home and school gardens. Use this method to assess their learning. Ensure that this information is shared with the public in an appropriate manner in the informational video.*

Results and Discussion:

With the fencing installed on August 17, Master Gardener Volunteers (MGV), Americorps interns and educators at CCE Rockland had ample opportunity to fully document the installation of the two fences and to assess the effectiveness of the fences in keeping out garden pests. They filmed each step as the fencing trenches were dug, concrete poured, fencing posts erected and so forth. As soon as the fences were installed, the MGVs planted a few summer squash so that they could begin observing any possible garden pest damage right away. From the very beginning the MGVs filled out weekly observation logs in which they recorded any evidence of deer or woodchuck disturbance in the gardens; they've filled out these logs every week for the past 4 months. The crowning achievement is the 9-minute video created by MGV Donna De Sousa and her husband, offering an engaging viewpoint on why this project came to be and demonstrating the efforts and labor behind this project.

Given the late installation date of the fences, CCE was not able to bring as much of the Rockland community to the gardens as we had originally intended. Through a combination of two Demonstration garden tours on August 31st and September 28th and a School Garden Network workshop on October 21st, we were able to share the fenced Demonstration gardens with 20 participants. The MGVs and educators brought the participants to the gardens, described the project and the importance of exclusion for home and school vegetable gardens. The participants also received a Cornell fact sheet on Dealing with Deer and filled out an evaluation asking whether or not they felt they had a better understanding of exclusion techniques and if they would consider installing a fence themselves. Over half of those evaluated said that they would consider installing a fence like those at CCE Rockland.

The late installation of these gardens did prevent us from being able to establish sufficient demonstration plantings and move forward on promoting IPM techniques for dealing with pests;

therefore we were limited by what we could share with homeowners and school garden educators in 2014. However we are actively preparing for next year's season. We've created an instructional fact sheet on both types of fencing; this is being distributed through the lab and will be handed out at the Home Show in 2015, where over 300 people come to see our booth each year. Photos of the garden and the installation video will be shared through the School Garden Network's winter newsletter. School garden educators will also learn about exclusion and other IPM techniques during a spring 2015 workshop that will be held in the demonstration gardens.

Because of these gardens, our association now has the opportunity to teach homeowners and school garden educators about exclusion methods, the use of flowering plants to attract and support pollinators and beneficial insects and ensuring proper air circulation among crops. We will do this through holding SGN workshops, Speakers' Bureau presentations, monthly garden tours in the demonstration gardens, promoting the use of exclusion at community events via the instructional fact sheet and sharing our NYS-IPM video far and wide. At the end of next year, CCE Rockland will create a final report for local use, summarizing the results of the project in 2016. This information will be used for a submission of an article on the fenced gardens to our local newspaper, reaching a readership of thousands. We will also use this report for our Association's annual report.

We'll also continue to evaluate participants on the effect that these gardens have on their consideration of exclusion as an IPM technique. By excluding deer and woodchuck, Rockland County residents will be able to have better success with their gardens. This will encourage physical activity through gardening and healthy eating of more vegetables and fruits grown at home or at school.

Project Location(s):

Demonstration gardens at Cornell Cooperative Extension Rockland County, 10 Patriot Hills Drive, Stony Point, NY 10980

Samples of resources developed:

- Photos (posted to Dropbox and shared with kje7@cornell.edu as instructed)*
- Video (posted to Dropbox and shared with kje7@cornell.edu as instructed)*
- Cornell Fact Sheet No. 183: Protecting Vegetable and Perennial Gardens from Wildlife- included below*
- School Garden Network newsletter- winter 2014 issue- attached*
- Example of weekly log sheet-attached*

Protecting Vegetable and Perennial Gardens from Wildlife

Garden pests are inevitable when growing vegetables and perennials in school and home gardens. Deer and woodchuck are particularly difficult pests; deer can jump over fences of insufficient height and woodchucks can burrow beneath fencing if there is no underground barrier. The best method for dealing with these pests is through exclusion (i.e. fencing and other physical barriers.) Fencing can be costly; however it is possible for homeowners to install fences themselves and save on labor. Below is a how-to instructional sheet on proper installation and materials options for homeowners and school gardeners.

Metal Post Fence:



Materials Required:

- 7 Steel Posts, black coated: 2" outer diameter, 10' long for corners and mid-points
- 2 Steel Posts, black coated: 2 1/2" outer diameter by 10' long for gate opening
- 2 Steel top rails: 69" long
- 3 Steel top rails: 176" long
- 3 Line Post Tops
- 6 Terminal Post Caps
- 10 Rail Ends
- 10 Rail End Bands
- Bottom tension wire 60'
- Standard C-flex Deer Fencing: black polypropylene, 7.5' x 60'

Vinyl Coated Chicken Wire: 1" x 1" (20 gauge) x 24" high x 60' long for underground woodchuck exclusion
1 black Coated Steel Pedestrian gate, 3' wide with Standard C-flex Deer Fencing
Gate hardware
Zip ties
Concrete mix
Small stakes and string

Wooden Post Fence:



Materials Required:

9 ACQ Treated Wood Posts: 4" x 4" x 10'
4 ACQ Treated Wood Rails for horizontal support: 1" x 4" x 76"
10 ACQ Treated Wood Rails for horizontal support: 1" x 4" x 15'4"
Green Welded Wire: 2" x 4" opening, 48" high x 60' long
Green Welded Wire: 1" x 1" opening, 48" high x 60' long
Vinyl Coated Chicken Wire: 1" x 1" (20 gauge) X 24" high x 60' long for underground groundhog exclusion
1 ACQ treated Wood Pedestrian gate, 3' wide with Green Welded Wire Fencing
Gate hardware
Exterior Use Wood Screws
Exterior Use Staples or U-nails
Concrete mix
Small Stakes and String

Both fenced gardens are fifteen by fifteen foot square and eight feet high with a three foot wide gate. The Metal Post Fence is built with steel posts and polypropylene deer fencing. The Wood Post Fence is built with four by four wood posts and welded wire fencing. Both fences have an L-shaped underground woodchuck exclusion fence made from vinyl coated chicken wire fencing.

General Directions:

1. Measure and mark out the four corners with small stakes. Stretch string between the corner stakes.
2. Dig a trench a foot deep and at least a foot wide along the outside of the string.
3. At the corner stakes, dig holes for the four corner posts three feet deep.
4. Set the corner posts in the holes. Use a level to check that they are vertical and secure in place with rocks in the hole. Once secure, fill the hole with cement mixture.
5. Create string guides for the three midpoint posts and the two gate framing posts. For each side of the fence, place a small stake about a foot away from the corner posts and run a string between the two stakes along the outside edge of the corner posts. For three of the sides, find the midpoint and repeat steps 3 and 4 for each midpoint post. For the gated side, place the gate framing posts to correctly fit the gate and gate hardware and repeat steps 3 and 4 to set in the posts.
6. Attach rails for horizontal support to the posts:

On the Metal Post Fence, top rails are attached to the top of the posts using the 10 rail end bands and rail end cups at the corner post and gate framing posts, and using the 3 line post tops at the midpoint posts. The three long top rails are used for the sides without the gate and the two short top rails for the side with the gate. Once the top rails are in place, finish off the tops of the corner posts and gate framing post with the 6 terminal post caps.

Also for this fence, run the bottom tension wire along the ground and around the entire perimeter of the fence. Attach the wire to the corner and midpoint posts with zip ties.

On the Wood Post Fence, along the three sides without the gate, nine of the longer wood rails are attached to the corner and midpoint posts along the top, midpoint and the ground using wood screws. For the side with the gate, four of the shorter wood rails are run along the top and midpoint from the corner post to the gate framing post, leaving the gate area clear. The tenth longer wood rail is run along the ground from corner post to corner post across the gate opening.

7. Create the L- shaped underground woodchuck exclusion fence with the vinyl coated chicken wire fencing. The fence runs completely around the perimeter including the area under the gate site. Lay about one foot of the fence down along the side of the trench, then bend the fence outwards and lay the remainder along the bottom of the trench.

On the Metal Post Fence, the fence is attached to the corner, midpoint and gate framing posts and to the bottom tension wire with zip ties.

On the Wood Post Fence, the fence is attached to the corner, midpoint, and gate framing posts and to the bottom cross bars with U staples.

8. Fill in the trench with soil.

9. Attach the above ground fencing material.

On the Metal Post Fence, polypropylene deer fencing is attached to the corner, midpoint and gate framing posts and then to the bottom tension wire with zip ties.

On the Wood Post Fence, the 1" x 1" green welded wire fencing (to deter small animals such as baby rabbits) is run along the bottom half of the fence and attached to the corner, midpoint and gate framing posts and then to the bottom

cross bars with U staples. The 2" x 4" green welded wire fencing is run along the top half of the fence and attached at the corner, midpoint and gate framing posts and then to the midpoint and top crossbars with U staples.

10. Finish the fence by installing the gate and gate hardware.

Neither Cornell Cooperative Extension, Cornell University nor any representative thereof makes any representation of any warranty, express or implied, of any particular result or application of the information contained herein or regarding any product. It is the sole responsibility of the user to read and follow all product labeling instructions and to check with the manufacturer or supplier for the most recent information. Nothing contained in this information should be interpreted as an express or implied endorsement of any particular products or criticism of unnamed products.

The information on pest management for New York State contained in this publication is dated October 2010. The user is responsible for obtaining the most up-to-date pest management information. Contact any Cornell Cooperative Extension county office or PMEP (<http://pmep.cce.cornell.edu/>), the Cornell Cooperative Extension pesticide information website. The information herein is no substitute for pesticide labeling. The user is solely responsible for reading and following manufacturer's labeling and instructions.

Hort 183 12/2014 ACR