North Carolina Cooperative Extension Backyard Rain Garden Program: Lessons Learned


Goal:
Pushing Back the Frontiers of Ignorance with A Better Management Practice

Annual Loadings (2002-03)
Chapel Hill Cell C1

- TN
- NO3-N
- TKN
- TP

Rain Garden Project:
1. Funding - 319 grant.
2. Example Installations - Getting the gardening community interested.
3. Post Mortem – How have they worked?
4. Herding Cats in Chapel Hill
5. Positives of the program:
   - Website development
   - Enabling others
   - Community Conservation

Homeowner Education
- ‘How To’ Rain Garden Education
  - Stormwater Management
  - How to Build
  - Which Plants Work Best
  - Maintenance Issues
- Rain Garden Events with Sign Up
- Site visits and data collection
- Installation Cost-Share Offered
- Follow-up
Involving County Extension Agents

Homeowner Education:
Garden Location & Installation

Observe your yard during a rainfall event

- Where does water flow?
- Where does water travel or collect?

Rain Garden Construction

Potential Site
Site Visits and Data Collection

• Source and flow path of stormwater
• Drainage areas and percent impervious surfaces
• Soils descriptions (texture, depth to seasonal high water table, etc.)
• Proximity to wells, foundations, septic systems
• Identifiable outlet?
• Existing landscape features
• Design

Garden Timing

• Add garden after other construction is finished
• Planting best done between November and April

Be Aware of Clay Soils!
### Sizing your Rain Garden

How much runoff is coming from impervious areas?

### Sizing Chart

<table>
<thead>
<tr>
<th>Impermeable Surface Area</th>
<th>Required Size of Rain Garden (ft² deep)</th>
<th>Potential Rain Garden Dimensions (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 ft²</td>
<td>40 ft²</td>
<td>4X10, 5X8, 6X7</td>
</tr>
<tr>
<td>1000 ft²</td>
<td>50 ft²</td>
<td>5X10, 6X8</td>
</tr>
<tr>
<td>1200 ft²</td>
<td>60 ft²</td>
<td>4X15, 5X12, 6X10, 8X8</td>
</tr>
<tr>
<td>1400 ft²</td>
<td>70 ft²</td>
<td>5X14, 7X10</td>
</tr>
<tr>
<td>1600 ft²</td>
<td>80 ft²</td>
<td>7X12, 8X10, 9X9</td>
</tr>
<tr>
<td>1800 ft²</td>
<td>90 ft²</td>
<td>6X15, 7X13, 8X12, 9X10</td>
</tr>
</tbody>
</table>

### Rain Garden Installations

#### Raleigh

- A+
- Well maintained
- Involved, motivated gardener

Day of Installation + 18 Months

- A+
- Well maintained
- Dead plants replaced

Day of Installation + 3 years

- A+
- Well maintained

### Party on!
**Chapel Hill Rain Garden Project:**

- **First Attempt – larger scale solution.**
- 10 new homes in an existing suburban watershed (wet areas, standing water, erosion, inadequate sized drain culverts, over washed driveways, etc).
- Increased volume and velocity of water.
- Before / After Monitoring

**Goals**

- Implement a series of cost-effective practices
- Return the stormwater situation toward its pre-development condition.
  
  Design principles:
  - 1) Handle stormwater at its source.
  - 2) Decrease the velocity of water, especially the water that runs off impervious surfaces.
  - 3) Improve water quality before it enters the drainage way.
  - 4) Keep water on the surface aiding infiltration and evapotranspiration, avoiding the use of underground pipes.

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**Cary**

- Fall After Installation
- After 1 year, 2 inch rain
  - Functioning well
  - B – Needs some house cleaning / some plants have died***

**Durham Museum of Life and Science**

- Day of Installation
- + 18 Months
  - B
  - Well Maintained / some plants have died, others need to be moved
  - Function Compromised – Aesthetics
Benefits

• Reduce flooding / improve water quality.
• Improve ‘backyard environment’
• Enhance water quality downstream (Little Creek, Jordan Lake, and beyond).
• This will be the first before/after study of low impact development (LID) of this type and scale (rain gardens, vegetated swales, irrigation management, gutter drain management) in a suburban environment.
• Transfer to other problem areas across the community.

PROBLEM: Water drains directly from roof and lot into pipes, without opportunity for treatment or infiltration.

SOLUTION: This lot is the ideal location for a rain garden, 1) Enhance water treatment capacity by excavating existing native soil and replace with high permeability soil. 2) Carefully manage irrigation system to maintain a dryer soil to avoid rain runoff.

Chapel Hill Rain Garden Project

• Too many ‘Experts’
• Neighborhood Dissention (Upslope Neighbors vs. Downhill Neighbors)

Red flowering plants in MY raingarden? That will not happen.......
Lessons Learned:

- Most raingardens are still working
- Cost Share = Success
- Interest in Gardening = Success
- Ownership / Involvement = Success
- Slow Acceptance of New Technology
- Time / Handholding / Digging
- Plant Selection / Plant Maintenance***

Future

- Wake County Requirement?
- Community Conservation Program
  - 18 Pilot Counties in NC
  - DSWC Administers / Cons. Districts Implement
  - $500K Cost Share Available
  - Owner Inters into Contract
  - Extension Providing Education