Creating a School Garden

Simple steps to boost success and promote food safety in the garden

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Topics We Will Discuss

• Food Safety in the Garden
• Site Selection
• Garden Design & Pests
• Planning & Caring
• Compost & Manure
• Harvesting
• Storage
• Putting the Garden to Bed
WHY DO WE NEED TO THINK ABOUT FOOD SAFETY IN THE GARDEN???
Food Safety in the Garden

Foodborne Illnesses

• Cases: 48 million per year (1 in 6)

• Hospitalizations: 128,000 per year

• Deaths: 3,000 per year
Figure 1. Contribution of different food categories to estimated domestically-acquired illnesses and deaths, 1998-2008*

<table>
<thead>
<tr>
<th>Food Category</th>
<th>Illnesses</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce</td>
<td>46%</td>
<td>23%</td>
</tr>
<tr>
<td>Meat and Poultry</td>
<td>22%</td>
<td>29%</td>
</tr>
<tr>
<td>Dairy and Eggs</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Fish and Shellfish</td>
<td>6.1%</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

*Chart does not show 5% of illnesses and 2% of deaths attributed to other commodities. In addition, 1% of illnesses and 25% of deaths were not attributed to commodities; these were caused by pathogens not in the outbreak database, mainly *Toxoplasma* and *Vibrio vulnificus*.

Food Safety in the Garden

Common pathogens & incubation period

- Norovirus 12-48 hours
- Salmonella 6-72 hours
- E.coli 0157:H7 1 to 10 days
- Listeria 3-70 Days
Food Safety in the Garden

- People most at risk
  - Infants & children
  - Pregnant women
  - Elderly
  - People with a weakened immune system
FOOD SAFETY IN THE GARDEN

• Potential Sources of Contamination in the Garden
  – Soil
  – Water
  – Manure/Compost
  – Wild & Domestic Animals
  – Personal Hygiene/ Sanitation
  – Harvest Containers
  – Water
  – Post-harvest handling & temperature control
FOOD SAFETY IN THE GARDEN

Organic vs. Conventional?
SITE ASSESSMENT
Site Selection: Light

- Full Sun is best
- Root & leaf crops can take some shade
- Tall crops like tomatoes can shade other crops
- Careful planning in late fall!
SITE SELECTION: SOIL

Soil Test, Soil Test, Soil Test!

- Heavy metals
- Nutrient levels & pH
Site Selection: Soils

- RI’s native soil tends to be on the acidic side.
- Plants have various pH needs
  - For most edible crops soils need to have a pH of 6.0 to 6.5
- URI Master Gardeners offer FREE pH testing throughout the state!
Site Selection: Soils

- The best soil for edible gardening is;
  - Well-drained
  - Rich in organic matter
  - Loose to a depth of at least 8 inches
**WATER**

- **Edible gardens need at least 1 inch of water per week (including rain).**
- **Know your source!**
  - WELLS should be tested at least once a year
  - PUBLIC water supplies do not need to be tested
  - SURFACE water (lakes, ponds, rivers & streams) pose the most risk and is not recommended for school gardening.
The Centers for Disease and Control and Prevention estimate that over 50% of foodborne illnesses are linked to poor handwashing.

- Best Practice: Wash hands with soap and clean running water and dry using paper towels.
How to build a portable hand washing station for less than $20.00. Video can also be found by clicking here.
Clean water is also needed for applying chemicals, fertilizers and washing your harvest!
Is it safe to water a school garden with water collected from a rain barrel?
Drip Irrigation/Soaker hoses: A Great Way to Water

- Efficient
- Minimizes plant diseases
- Reduces soil splash on the edible portion of the plant which could contain pathogens
SITE ASSESSMENT: NO NO’S

Gardens should be located away from livestock & wild animals
Site Assessment: No No’s

Gardens should be located away from manure piles and compost piles.
Site Assessment: No No’s

Gardens should also be located away from well caps, garbage cans and septic systems.
• **What’s the safety risk?**
  - Animal feces from animals, like deer, can bring pathogenic E. coli, Campylobacter, Shigella, and Salmonella, among other foodborne illness-causing microorganisms.
THAT AIN’T GOING TO DO SQUAT!
Planning the Edible Garden

Cool Weather Crops
- Plant April-May

Warm Weather Crops
- Plant end of May-June
Caring For Your Garden

- Weeding
- Mulching
- Fertilizing
Caring for Your Garden

Rotate Crops!

- To reduce the buildup of pests & diseases
- Reduce drain on soil nutrients
Compost

A way of recycling organic waste into a rich soil amendment that will

- Increase organic matter in soil
- Add nutrients to the soil
- Improve drainage & soil structure
- Benefit microbial populations that will help keep plants healthy
- ** A little goes a long way! Soil test for organic matter levels to determine how much compost is needed.
Compost

Safe to include in compost heap:

- **High Carbon**
  - Straw, leaves, shredded newspaper

- **High Nitrogen**
  - Fruit and vegetable scraps, untreated grass clippings

Do not compost!

- Carnivorous manure (dog, cat etc)
- Treated grass clippings
- Invasive or diseased plants
- Meat & Dairy products
Safety Concerns

- Unfinished compost
- Compost that contains manure
- Application times
- Runoff from compost bins
COMPOST

Make sure your compost is:
- Is at least 27 cubic feet (3’x3’x3’) to generate enough heat to destroy pathogens.

Slow aka Cold Composting (~12 months)
- Add correct ratio of browns to greens
- Aerate and turn pile throughout the year
- Sift and incorporate compost into the soil during the off season.
- **Not recommended to apply directly to actively growing crops.

Hot aka Fast Composting (~2-4 months)
- Temperatures need to reach at least 131° F for 15 days, during which time materials need to be turned a minimum of 5 times*
- If time/ temperature has not been met or you’re unsure, the recommendation is to apply compost in the off-season.
Compost

**Herbaceous Manure**
- Manure that comes from animals that have a plant-based diet
- Goats, chickens, cows etc

Not recommended for School Gardens unless experienced composter is managing the compost operation.
- Contains pathogens
  - Can be removed with thermophilic composting i.e. a pile that heats up to 131°F for at least 5 days, during which time materials are turned a minimum of 5 times.
Helpful Tips

– Not confident in your compost abilities?
  • Apply it to the school garden in the off season!

– Unable to measure the temperature?
  • Apply it to the school garden in the off season!
Fresh Manure

Not Recommended for direct use in the school garden!

- High in pathogens
- Can burn plants if not applied at the right time
Things to remember

- Be careful not to break, nick or bruise any produce when picking
- Harvest vegetables of high quality. Rotting produce cannot be stored for very long.
Harvesting

Handwashing

- Important at all steps!
  - Before & after working in the garden, using the bathroom, and before preparing fruits and vegetables
- Assist small children
**Feeling sick?**
- Be aware or try to avoid gardening & cooking if you are feeling ill.

**Open Cuts or sores?**
- Keep them clean and covered.
Harvesting

The Tools
- Harvesting Containers
- Scissors
- Knives
- Pruners
Harvesting

What not to pick!
- Produce with open wounds
- Produce that has fallen on the ground
Putting the Garden to Bed

- Finish Harvesting
- Add compost if needed
- Grow a green manure crop during the off-season
WHEN IN DOUBT!

Contact URI Master Gardeners via the free Gardening Hotline!

1.800.448.1011 or by emailing gardener@etal.uri.edu