

THE
UNIVERSITY
OF RHODE ISLAND

OUTREACH CENTER

CREATING A SCHOOL GARDEN

*SIMPLE STEPS TO BOOST SUCCESS AND PROMOTE
FOOD SECURITY*



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THINK BIG  WE DO™

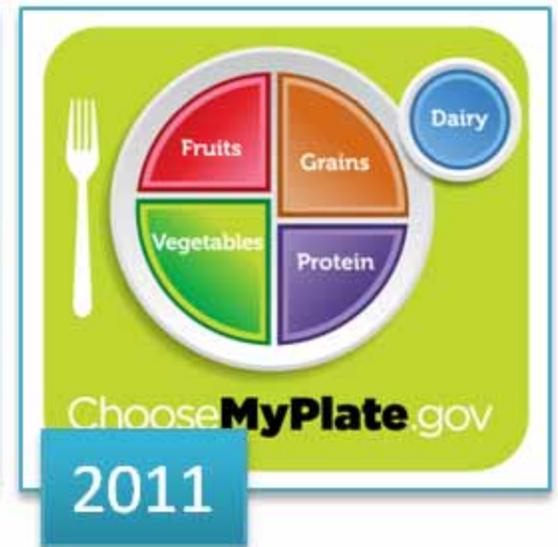
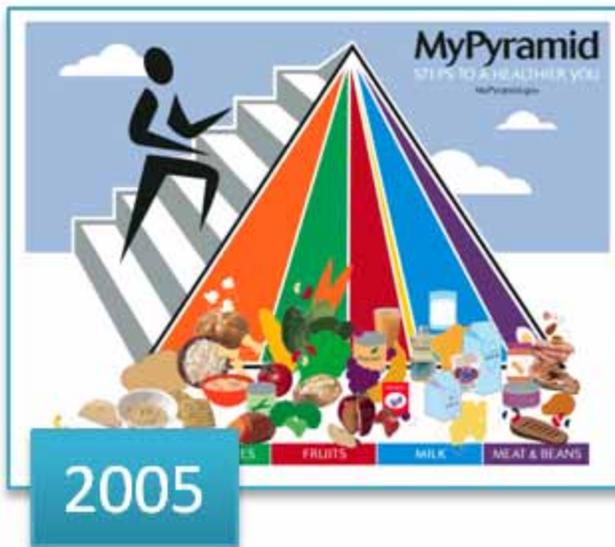


TOPICS WE WILL DISCUSS

- **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**

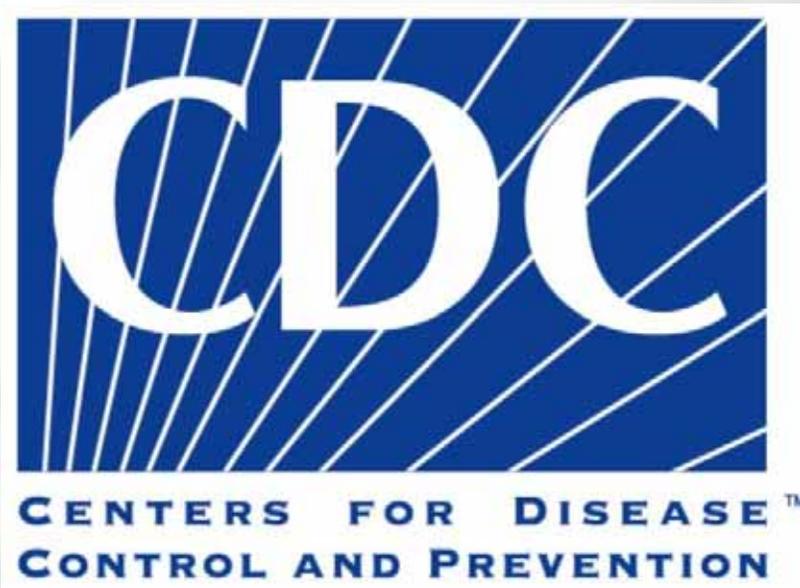
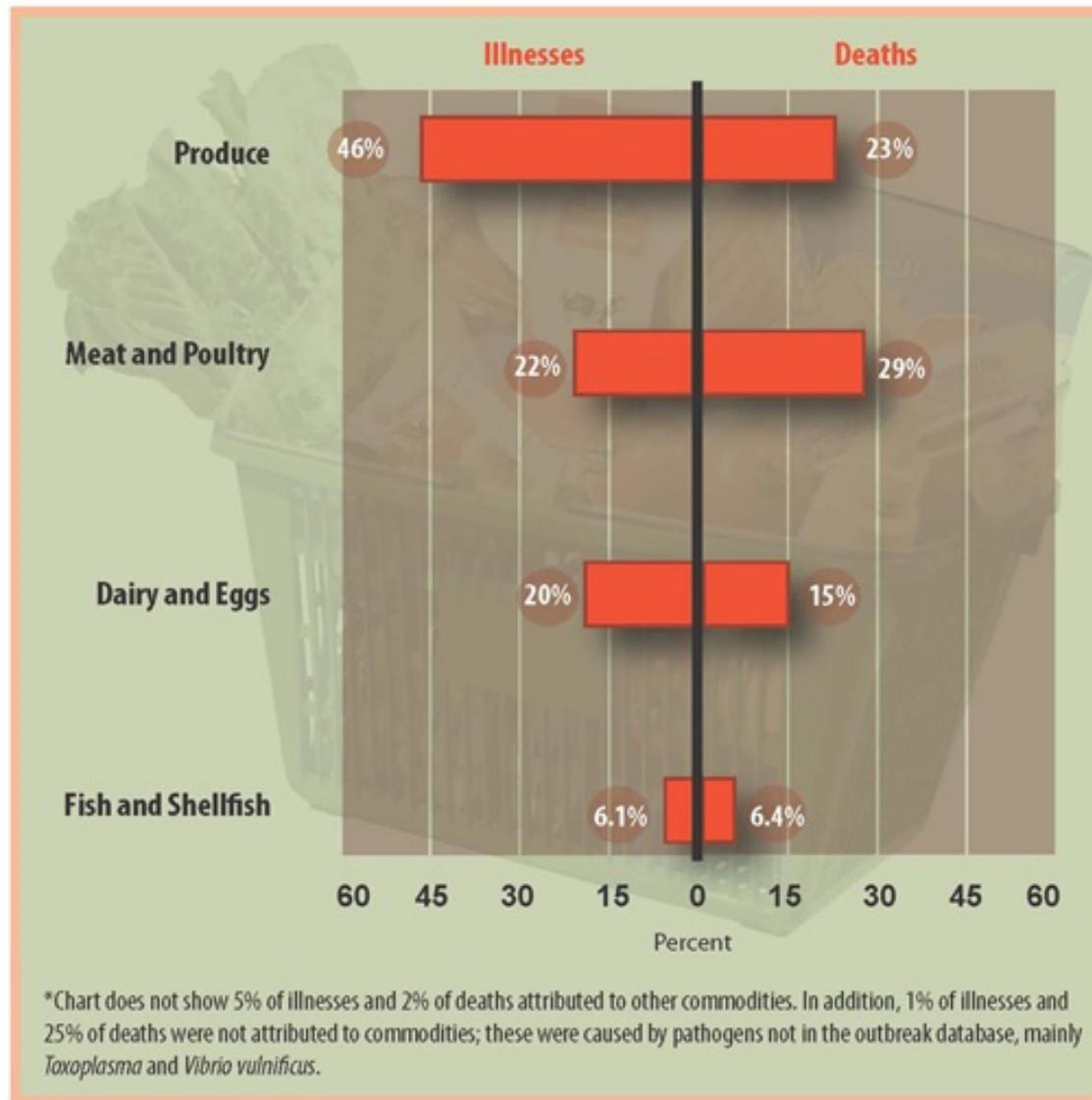


Figure 1. Contribution of different food categories to estimated domestically-acquired illnesses and deaths, 1998-2008*



Source: Painter JA, Hoekstra RM, Ayers T, Tauxe RV, Braden CR, Angulo FJ, Griffin PM. Attribution of foodborne illnesses, hospitalizations, and deaths to food commodities by using outbreak data, United States, 1998–2008. *Emerg Infect Dis* [Internet]. 2013 Mar [date cited]. <http://dx.doi.org/10.3201/eid1903.111866>



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



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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



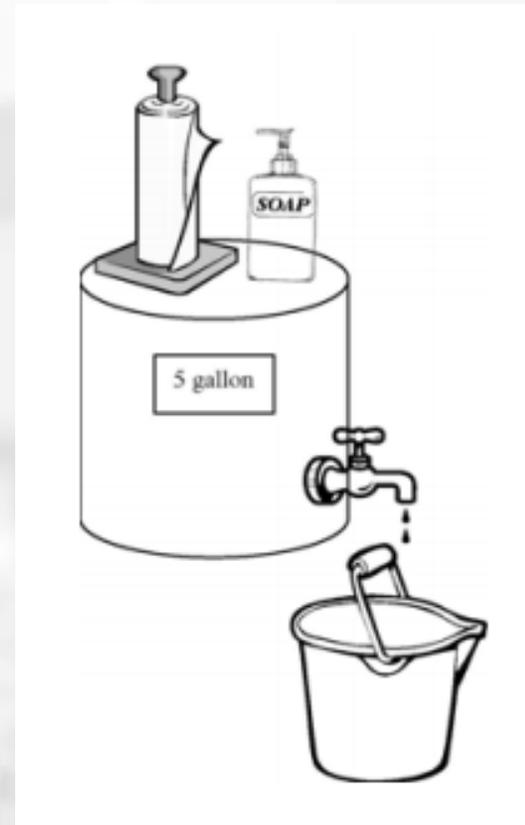
WATER

- **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.

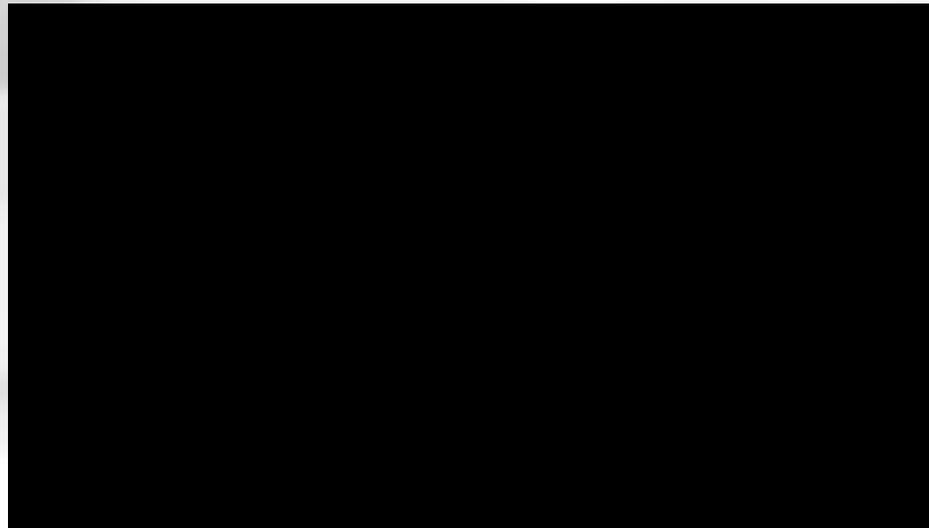


WATER

- **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.



WATER



How to build a portable hand washing station for less than \$20.00. Video can also be found by clicking [here](#).

WATER

Clean water is also needed for applying chemicals, fertilizers and washing your harvest!



WATER

Is it safe to water a school garden with water collected from a rain barrel?



WATER

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.



GARDEN DESIGN & PESTS

- **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

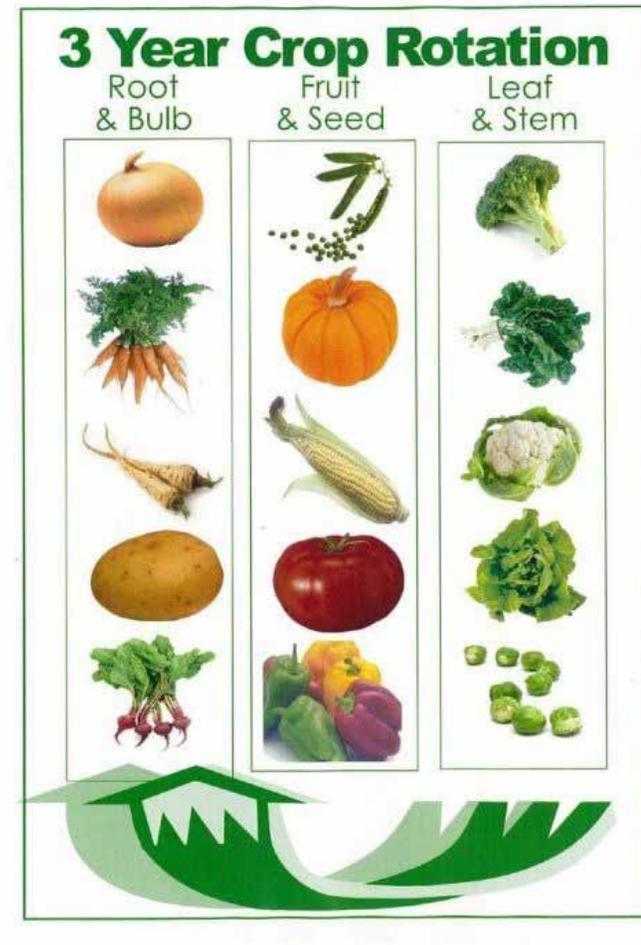
- **Weeding**
- **Mulching**
- **Fertilizing**



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



COMPOST

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.



COMPOST

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



HARVESTING

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



HARVESTING

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