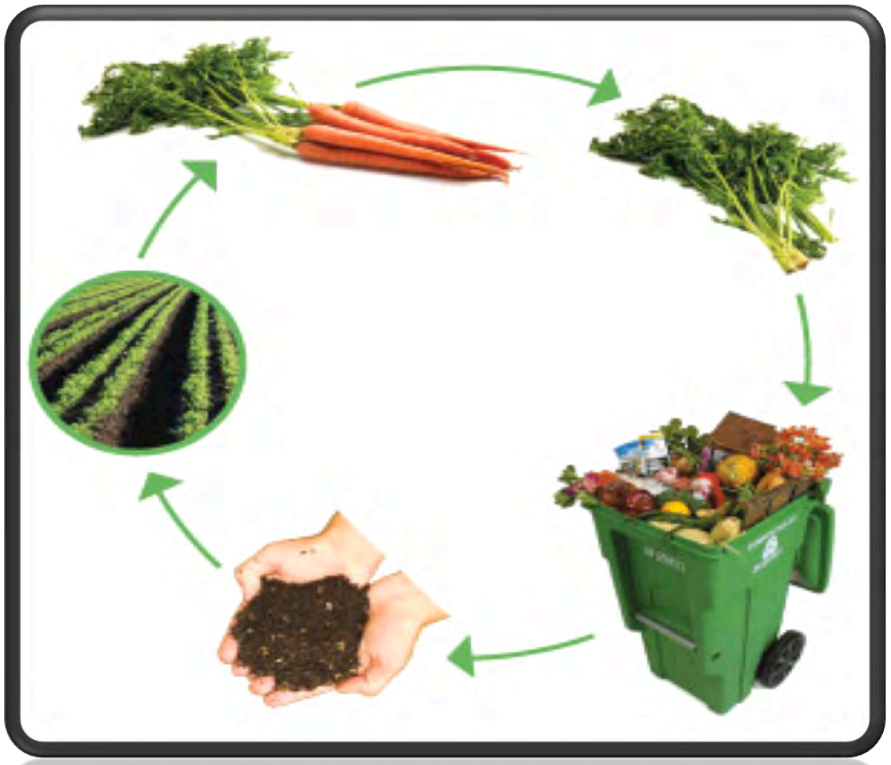
Chicago Lights Urban Farm: Composting 101



What exactly is compost?

- Compost is the end result of composting which is an effective and environmentally friendly way to create plant fertilizer from different materials like vegetables and fruit scraps, paper, leaves, grass, and other tree waste.

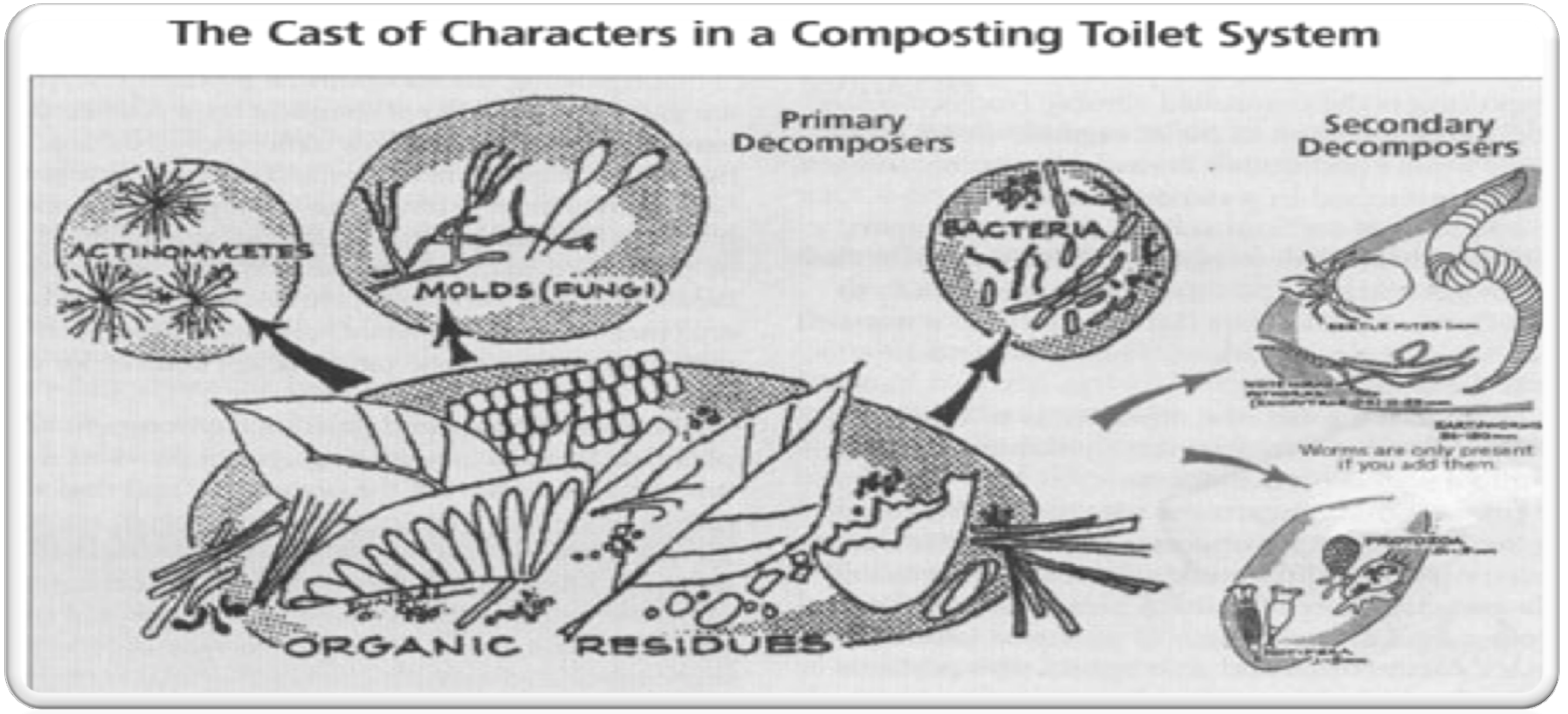
Q. Why do you think compost is better than chemical fertilizers?

What ingredients do we need for composting?

- We use green materials like fruits, vegetables, grass, coffee grounds, table scraps and fresh garden weeds because they are nitrogen rich and provides protein needed for growth and reproduction.
- We use brown materials like dry leaves, paper, cardboard, wood chips, straw and dry grass because they are carbon based which provides energy needed for the decomposition process.

Q. What type of ingredients do you see on the farm that can possibly be used for composting?

How does composting work?



- Composting involves the natural aerobic (with oxygen), breakdown of garden waste and food scraps into a dark, earthy smelling material (soil) by micro-organisms .
- All of these creatures team up to break down different organic materials.

Q. Name three different type of organisms that aid in the composting process.

Is there anything else we may need for composting?

- The answer is YES, there are 5 more very important things we must remember for our compost pile/bin to survive and that is water, oxygen, temperature and patience!
- 1. Water is very important to composting because it helps the micro-organisms get started on the breaking down of organic material. Without it the process will be much slower. Keep in mind that too much water will dampen the materials and make it start to rot!
- 2. Oxygen is another vital ingredient to jumpstart micro-organisms so they can start feasting on the organic material. The main reason why often times you get smells coming from your pile is because you do not have a good flow of air (anaerobic). A good flow of air will ensure good conditions for composting and prevent smells!
- 3. Temperature is also a very important ingredient for composting as different bacteria work best at different temperatures and for the most part, the hotter your compost pile gets, the quicker you will get quality compost!
- 5. Finally patience is an important ingredient to composting because like the saying goes, "good things come to those who wait," and such is true with compost. Depending on the composting system you design, and how often you manage it, you can get compost as soon as 2 months but usually it takes closer to a year.

How long do you think it takes for our compost here at the farm to be ready to use? _____

Types of composting systems

- Compost systems come in all shapes and sizes as there are many types of composting systems and in order to know which one will suit you best you have a few things to consider; space required, cost and overall capacity of bin.
- After you have convinced your parents to start a compost pile at home, make sure you let them know the three most popular and least expensive types of compost systems; piles and holding bins, tumblers and turning bins, and worm composting (yuck!).

What do you think the best compost system for a small backyard garden should be?

What exactly is vermiposting?

• Worm composting is using worms to recycle food scraps and other organic material into valuable soil content called, “vermipost.” Worms eat food scraps which become compost as they pass through the worms body.

• Remember worms are eating nutrient-rich fruit and vegetable scraps, and then turning them into nutrient-rich compost/castings.

• Red worms are ideal for vermiposting because they have a high metabolism as they are able to eat their body weight and our tolerant to environmental variations.

• Vermiposting actually increases the activity of microorganisms in the soil because worms create tiny particles that existing microorganisms in the soil can readily eat.

• Setting up a worm bin is easy. All you need is a box, moist newspaper strips, and bedding. Make sure using a thermometer, the temperature is 55-70 degrees Fahrenheit and there is enough room to allow air to pass through.

How many worms do you think are in one of the composting bins here at the farm?

400 worms 800 worms 1000+ worms

How do I know when my composting is finished?

- The best way to tell when your compost is finished is by using your senses:
- **Look at it:** If the compost is dark in color and it is hard to recognize the original raw materials- it looks ready.
- **Touch it:** If the compost is not hot or warm and has a texture of rich soil, breaks apart easily, and its crumby to the touch- it feels ready.
- **Smell it:** If the compost has a pleasant earthy smell, and it looks and feels ready, then it is ready!

- If the composting material is hot, smells strong, or you can recognize the raw materials in the pile- then it is not ready to use and will need a little more time. Just put it back in, mix it up, and give it some more time!

How do I use compost around my home?

- Compost can be used in flowering beds, vegetable gardens, for planting trees and shrubs as it improves every type of soil by increasing its structure, fertility, water and nutrient holding capacity!
- Compost can also be used for potting and seeding mixes as well as compost tea!

• Composting is often described as nature's way of recycling and is expanding rapidly in many countries as landfill space becomes scare and expensive so reduce your garbage by composting!

• In addition, people are becoming more aware of the impact they have on the environment and must consider alternate ways in which they can have positive effects on the Earth.

• It is an all natural way to harness the organic matter all around you and reuse it to grow healthy and delicious fruits and vegetables!

Thank you for visiting Chicago Lights Urban Farm!

Links

For more tips and tricks on composting, please visit these websites to further expand your knowledge on the benefits of composting!

- http://www.compostsoup.com/brewing-your-own-with-a-compost-tea-maker/
- http://lancaster.unl.edu/pest/resources/vermicompost107.shtml
- http://eartheasy.com/grow_compost.html
- http://greenliving.nationalgeographic.com/composting/
- http://www.ecy.wa.gov/programs/swfa/kidspage/compost.html

Lesson on Compost
K-6th grade

Goals
Students will learn the concepts of decomposition and the nutrient cycle.

Objectives
Students will use teamwork to build a compost bin/ tend a compost pile.

Total Time - 45 minutes (Allow minimal time for follow up observations.)

Materials:
- compost materials (nitrogen/carbon rich)
- shovels
- wheelbarrows
- water access
- packets/handouts for teachers/students
- healthy snack

Background for Teachers

- Before beginning the lesson, talk with farm coordinators in order to designate a spot on the farm for the class to work on either creating a miniature, separate compost bin or working on existing bins.
- For this age group visuals are undoubtedly the best way to invoke interest in composting. Using images with powerpoint handouts are a great way to help kids visualize the scenario of composting and encourages them to imagine the whole composting process.
- Giving complete step by step demonstrations will teach kids more than just discussion. Seeing the steps first person will eliminate any doubts young adults may have and will allow them to ask questions as the demo is being carried out.
- Remember the main purpose for educating kids on composting is to equip them with the skills they need to do composting on their own and maybe even teach their parents.
- In addition for teaching techniques, discussing the benefits for composting will give a greater significance to the overall lesson and how they can make a positive difference in the world in which they live.
- Encourage, encourage, encourage! Everyone remembers how it was to be in big groups and you were called on to answer a question. How nerve-wrecking? Kids get discouraged easily so make sure to promote questions and entertain any questions a student may have.
- Since it's beginning in the early 90's, the reduce, reuse, recycle campaign has had a positive, lasting effect on environmental issues and when combined with the steps of composting will show students the results of their labor. Everyone loves results!

Introduction (15 minutes)
1. Ask the class: Who has ever had to take out the trash for their parents? Who has ever had to mow the lawn or weed the garden? Who has ever thrown away a paper that they received a bad grade on? (the answers to all these questions are materials used for composting). Continue reading from the handout given to the students so they will better grasp the idea of composting. After finishing the mini packet handed out to students (there's to keep) begin the next activity.

Activity (30 minutes)
1. Demonstrate to students creating a miniature compost pile using carbon, nitrogen and soil products prior to building the actual size. Discuss the different ingredients that can be used in the pile that was in the handout during the introduction while stressing the importance of ingredient, water, and oxygen.

2. Divide the group of students based on carbon, nitrogen and soil which can be found by locating color coordinated sticker assigned handouts. Assign one student the task of watering. Equip students with spading forks, shovels, and wheelbarrows.

3. Using the pre-designated compost bin have students based on their assigned tasks gather material that are higher in carbon (tougher in texture, garden plants that have woody stalks/ dry leaves), and those that are higher in nitrogen (softer in texture, weeds, over-ripe or used fruits and vegetables, and thinned plants). Using a shovel, break down materials into smaller pieces.

4. Beginning fill the compost bin with chopped carbon material and chopped nitrogen material and afterwards layering a coat of soil on the top with shovel.

5. Water the layers until the moisture feels wet but not to the point of heavy saturation and after rotate the groups after one round of layering carbon and nitrogen and soil.

6. Continue the processing of layering the compost pile until it reaches the top. Have the students measure the overall height of the compost bin.

7. Have the students work together to cover the top of the pile using one of the designated pallets. If there is time show students how the top of a compost bin is constructed as they would enjoy seeing something being built!

8. Recommend the students to come back during the summer to see how their compost pile turned into environmentally friendly fertilizer or to come back to the farm to help volunteer! Reward the helpful workers in the form of fresh produce straight from the farm for a little snack time!

Lessons on Nutrition

K-6TH Grade

Goals

Students will learn about the benefits of eating organic produce from local urban farms.

Objective

With hands-on experience, students will learn about fresh and organic products.

Total time (20 minutes)

Materials:

- Packets and hand-outs for students
- Fresh snacks from the farm

Introduction

While here at the Chicago lights urban farm you will learn about fun food facts and healthy eating habits, by getting involved in your own food, from choosing seeds, composting to choosing Kale, all here at Chicago's finest local urban farm.

Nutrition is very important for everyone, but especially important for children. Nutrition is directly linked to all phases of growing and development as a child. A child with the right balance of nutrients in their daily diet has a much better chance at creating a more solid foundation for their brain activity and for being a great student. It is also greatly improves your chances to live a long and healthy life.

Local foods from urban farms are more nutritious:

Locally grown fruits and vegetables contain more nutrients because they are picked at their peak of freshness, transported shorter distances and sold directly to the shopper.

Local produce stays fresh longer:

Since the fruits and vegetables were grown here at CLUF and picked the day before, it will last longer in your refrigerator.

Local produce is chemical free:

Since our farm doesn't use pesticides or chemicals, it is much better for the human body to process since it's grown naturally.

Here are just a few vegetables we grow here at the Farm

Kale

Kale is a very all-around and nutritious green leafy vegetable. It is a widely popular vegetable since ancient Greek and Roman times for its low fat, no cholesterol and health benefiting anti-oxidant properties.

Carrots

Carrots are one of the earliest vegetables grown by humans. They are high in Beta Carotene which helps in healthy vision. They help your heart and immune system stay healthy since they are a great source of fiber and Vitamin C.

Tomatoes

Do you like pizza? Well, tomatoes are spread all over your pizza, YUM! The tomato is the world most popular fruit, that's right it's not a vegetable. Tomatoes are rich in vitamins A & C, and are cholesterol free. More than 60 million tons of tomatoes are produced per year; Tomatoes are also used in many foods products, including tomato sauce (ketchup).

Planting Lesson
K-6th Grade

Goals

Children learn how to plant seeds that can be grown at home.

Objectives

Through hands-on activity, children learn and become encouraged to grow plants on their own.

Materials

- any recycled 6-inch/ish containers (milk cartons, plastic soda bottles, yogurt cups etc.)
- seeds (basil, morning glory, pansies, forget-me-nots)
- compost
- handouts (worksheet for 4th-6th grade, info sheet for K-3rd grade)
- pencils (4th-6th grade)
- watering pot
- pictures of plants/flowers

Circle Time (10 minutes)

- Everyone will form a circle and go around and say their name and their favorite thing to do on a warm sunny day (or something about being active outside) and a dance or stretch movement
- Game to get to know others (double wheel game, question/move spots in circle game)

Lesson

Introduction (5 minutes)

- Explain that everyone will be planting something to take home with them. In order to do that, we need to listen and respect each other's questions and discussion.
- Hand out packets and pencils for children to take notes. (4th-6th grade)
- Questions
  Ask children if they have ever planted or grown anything. What did you grow? What did it look like? How long did it take to grow?
- Show the children the different pictures and plants and their stages of growth. Point out the way that the plants transform and the all different shapes, colors and ways that we can use plants and flowers.

Activity (25 minutes)
For the activity, you will pass around a bucket of compost, all of the different types of seeds, and a recycled container to each of the children.

Go through the steps of planting a seed:

1. Fill contain halfway with compost.
2. Place seeds on top of compost.
3. Add a few drops of water on top of the seeds.
4. Fill the rest of container with compost and pat it down at the top.

Explain to the children that these seeds need to be in direct sunlight to grow so put it in the sunniest place possible. Check the compost everyday and make sure it is wet but will most likely need to be watered everyday. Make sure not to create a pool of water because it will not help the seeds to be over watered.

Ending and goodbye (5 min)
Go around the circle and have each child share something that they hope to plant and grow on their own.

How to Plant at Home

1. Plant seeds in middle of container

2. Keep container in sun!

3. Water everyday

4. Give your plant attention and love

This sheet of paper is what is to be handed out to those in grades K-3rd grade. 4th-6th grade would be given this sheet but the four points would be blank so they could write and fill them in herself.

Materials for Planting Lesson

Picture of basil. Can be used in all different types of cooking but is mainly used for pizza and pasta!

Picture of sprouting basil.

This is an example of the ways in which the lesson can outline the ways we use and depend on plants and how we grow them instead of having to go to the grocery store.