Science Of Compost Made Fun

SCD Probiotics®

FROM TABLE TO SOIL!

2nd Edition - March 2013

Composting Food Waste with All Seasons Bokashi™ and SCD Bio Ag®

www.SCDProbiotics.com

A Practical Guide for Parents & Teachers

From Table to Soil

Recycling Food Waste Using SCD Bio Ag® & All Seasons Bokashi™

2nd Edition - March 2013

SCD Probiotics
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This book intended for informational purposes only

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Municipal Solid Waste Facts

What is Municipal Solid Waste?

Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses. MSW does not include industrial, hazardous, or construction waste.

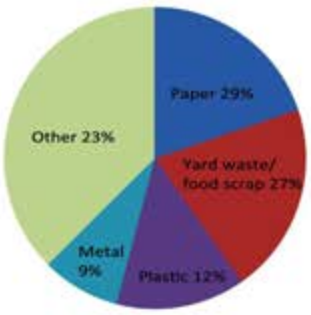
In 2010, Americans generated about 250 million tons of trash and recycled or composted over 85 million tons of this material, equivalent to a 34.1 percent recycling rate . On average, we recycled and composted 1.51 pounds of waste out of 4.43 pounds of waste generated per person per day.

Trends in Municipal Solid Waste in 2010

In 2010, Americans recovered almost 65 milllion tons of garbage (excluding composting) through recycling. Composting recovered over 20 million tons of waste. We burned about 29 million tons for energy recovery (about 12 percent). Subtracting out what we recycled and composted, we burned (with energy recovery) or discarded 2.9 pounds per person per day.

Over the last few decades, the generation, recycling, composting, and disposal of MSW have changed substantially. While garbage has increased between 1980 and 2010, the recycling rate has also increased—from less than 10 percent of MSW generated in 1980 to about 34 percent in 2010. Disposal of waste to a landfill has decreased from 89 percent of the amount generated in 1980 to about 54 percent of MSW in 2010.

Materials in Municipal Solid Waste



*Note: This is complex language for kids. I would suggest removing unnecessary details and simplifying language.

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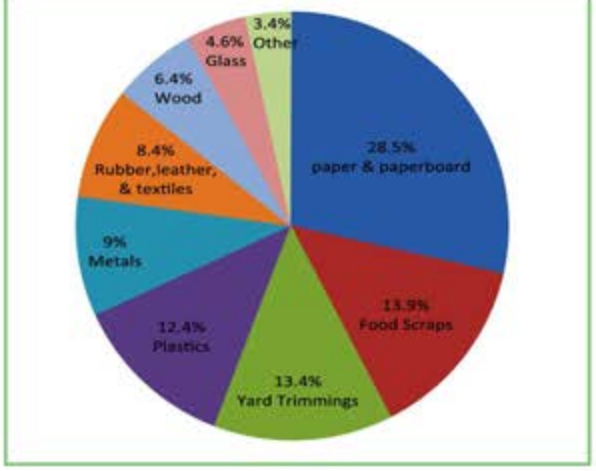
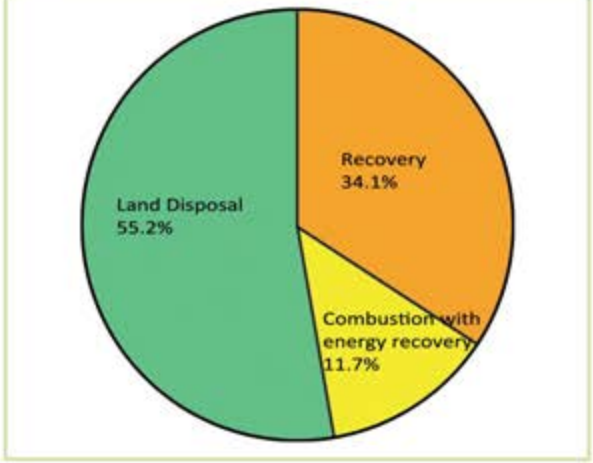
Total MSW Generation (by material), 2010 250 mission Tons (before recycling)



Management of MSW in the United States, 2010



How can we help to reduce Municipal Solid Waste?

EPA (Environmental Protection Agency) encourages practices that reduce the amount of waste needing to be disposed of, such as waste prevention, recycling, and composting.

- Source reduction, or waste prevention, is designing products to reduce the amount of waste that will later need to be thrown away and also to make the resulting waste less toxic.
- Recycling is the recovery of useful materials, such as paper, glass, plastic, and metals, from the trash to use to make new products, reducing the amount of new raw materials needed.
- Composting involves collecting organic waste, such as food scraps and yard trimmings, and storing it under conditions designed to help it break down naturally. This resulting compost can then be used as a natural fertilizer.

Recycling and composting prevented 85.1 million tons of material away from being disposed of 2010, up from 15 mission tons in 1980. This prevented the release of approximately 186 million metric tons of carbon dioxide equivalent into the air in 2010—equivalent to taking 36 million cars off the road for a year.

According to EPA Analysis, the highest recovery rates (recycle rates) were achieved in paper and paperboard containers and packaging with 71% being recovered. The 69% of steel packaging (mostly cans), and 36% of aluminum packaging were recycled. However, **"FOOD"** recovery rate is only **2.8%**

SO, LET'S RECYCLE MORE FOOD SCRAPS!!!!

Source: www.epa.gov

What is SCD Probiotic Technology?

Probiotics are live microorganisms which, when administered in adequate amount, confer a health benefit on the host.

SCD Probiotics is on the cutting edge of developing technology to apply the concept of "probiotics" in a variety of industries and applications - from human health, to agriculture, to industrial waste management and beyond.

SCD Probiotics Technology utilizes beneficial and effective microbes to repopulate environments with healthy microorganisms. It is a natural, organic technology that provides the following benefits:

- Improves the human immune system
- Aids the digestive tract in people
- Provides eco-friendly cleaning solutions
- Improves soil and increasing crop yields
- Improves livestock health
- Provides odor control in commercial, industrial, hospitality and residential sites
- Natural solution in waste management for re-use and recycling
- Restores healthy balance to polluted sites
- Increases production of fish in commercial applications
- Disaster relief efforts
- Contributes to carbon credits projects by saving energy

SCD Probiotics Technology is based on the principles of Beneficial Microorganism technology developed in Japan over thirty years ago. From there, SCD's research and development team has spent the last ten years refining the process, using a selected number of microbial strains in consortia (co-growth environment) to produce a variety of proprietary, probiotic products. These microbial strains include lactic acid bacteria (found in yogurt and cheese), yeast (found in bread and beer), and phototrophic bacteria (cousins of blue-green algae).

SCD Probiotics Technology creates products that work in the opposite manner from antibacterial products, in that they introduce beneficial microorganisms in to a living system rather than killing the bad bacteria. The repetitive introduction of beneficial microorganisms in any living system will ensure that the healthy microbes dominate the disease-causing populations. Consequently, SCD Probiotics Technology provides sustainable solutions to the system without creating any downstream problems.

PHOTOSYNTHETIC BACTERIA

The photosynthetic or phototropic bacteria are a group of independent, self supporting microbes. These bacteria synthesize useful substances from secretions of roots, organic matter and/or harmful gases (e.g., hydrogen sulphide) by using sunlight and the heat of soil as sources of energy. Useful substances developed by these microbes include amino acids, nucleic acids, biactive substances and sugar, all of which promote plant growth and development. The metabolites developed by these microorganisms are absorbed directly into plants and act as substrates for increasing beneficial populations.

LACTIC ACID BACTERIA

Lactic acid bacteria produce lactic acid from sugars and other carbohydrates, developed by photosynthetic bacteria and yeast. Therefore, some foods and drinks such as yogurt and pickles have been made with lactic acid bacteria for decades. However, lactic acid is a strong sterilizing compound and suppresses harmful microorganisms and enhances decomposition of organic matter. Morevover, lactic acid bacteria promote the decomposition of material such as ligin and cellulose and ferment these materials, there by removing undesirable effects of undecomposed organic matter.

YEAST

Yeasts synthesize antimicrobial and other useful substances required for plant growth from animo acids and sugar secreted by photosynthetic bacteria, organic matter and plant roots. The bioactive substances such as harmones and enzymes produced by yeasts promote active cell and root division. These secretions are also useful substrates for effective microbes such as lactic acid bacteria and actinomycetes.

Applications and Benefits of Using SCD Bio Ag® for Soil and Plants

All living systems - including soil, plants, and trees - have a microbial ecology that can be managed and improved by the constant delivery of SCD Probiotics. Regenerating good bacteria produces a microbial ecology where beneficial bacteria dominate harmful bacteria, creating a healthier, more vibrant environment.

Typical applications in these industries result in:

- Increase seed germination
- Improved crop performance
- Improved nutritional uptake efficiency of plants when applied direct to
- Improved nutrition uptake efficiency in hydroponic applications
- Accelerate large scale composting efforts
- Odor control in large scale composting operations
- Enrich the soil in residential lawns and gardens

SCD Bio Ag® is an all-natural, environmentally safe solution for use in organic farm and garden applications. Produced through a natural fermentation process, SCD Bio Ag® serves as a cost-effective alternative to chemical additives. SCD Probiotics Technology offers an increasingly effective product for a number of agricultural-based applications. Enhanced levels of phototrophic non-sulfur bacteria (PNSB) have powerful detoxifying, anti-oxidants properties that help enrich the soil and improve plant performance.

Household and Residential Uses

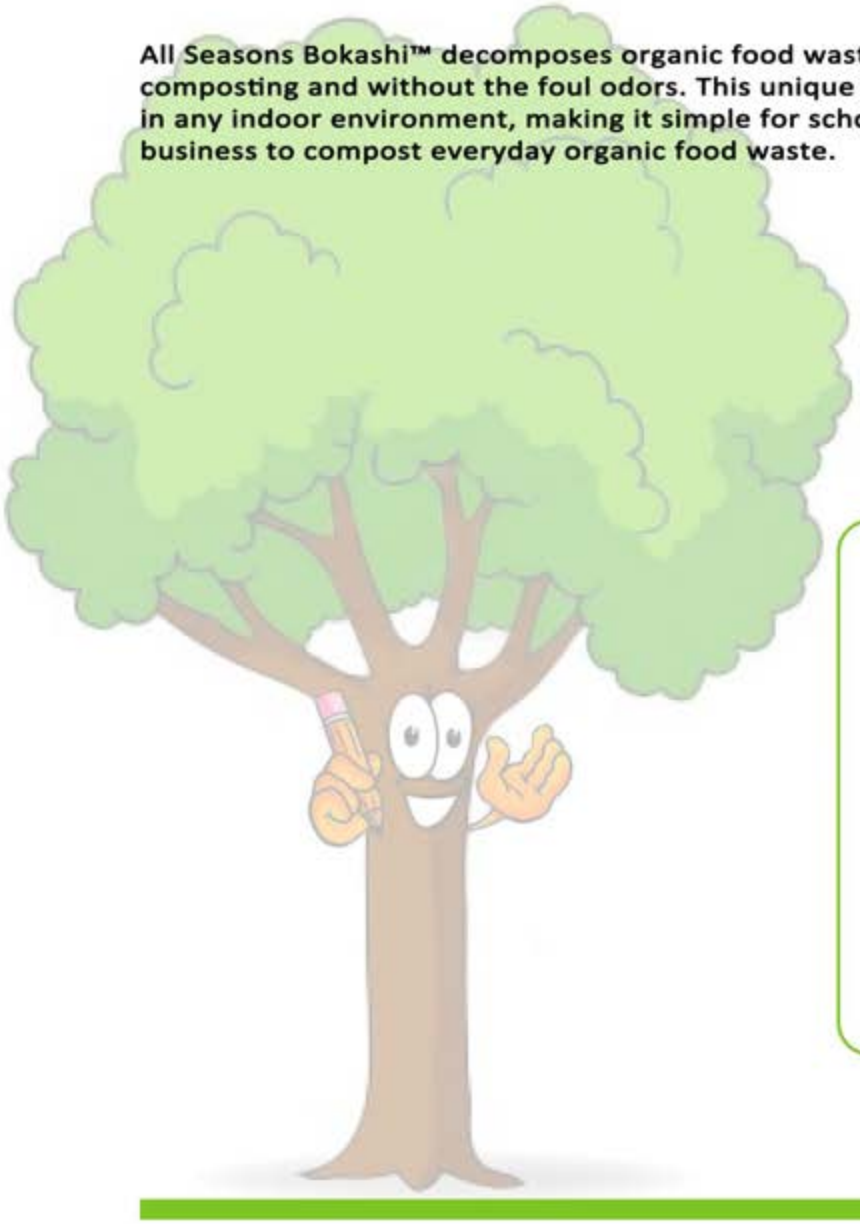
Application:	Dilution Ratio Probiotics : Water	Dilution Example	How to Apply:
Window Boxes and Inside Plants for Healthier Plants	Undiluted	½ Tbsp. per 16 oz. spray bottle or watering container.	Add SCD Bio Ag to watering can or spray bottle. When planting, prepare dilution in spray bottle and mist planting holes and surface of loosened soil before placing and covering seeds. Mist surface. Do not spray blooms.
Yard Compost for Accelerated Composting	1:100	2½ Tbsp. per gallon	Spray first and last week of pile or every 2 weeks as needed. Moisture should not exceed 35%. May cause high temperatures in aerobic piles. Turn as needed.
Lawn and Garden for Pest Control and Soil Fertility	1:1,000	¾ tsp. per gallon	Apply in the spring and fall as a spray or as an additive to watering system
Trees and Flowering Shrubs for Healthier Plants	1:1,000	¾ tsp. per gallon	Spray soil and foliage with dilution for every season. DO NOT spray blooms or they may drop. Prepare soil and let sit for one month before seeding. Add probiotics monthly while watering. Apply to soil when preparing for fall season.

What is All Seasons Bokashi™?

All Seasons Bokashi™ is used as a starter for compost. This compost starter is made from fermented wheat or rice bran and SCD Bio Ag®, a combination of probiotic cultures of natural beneficial, soil based, microorganisms which work to repopulate the environment with good bacteria.

SCD Bio Ag® is a food grade, non-pathogenic microbe like those used to make cheese, bread, yogurt and other foods. When the ideal conditions are present, it places into motion a process of fermentation that alters food waste and other organic materials into nutrient rich compost. Bokashi is term used in Japanese agriculture. It means organic matter that has been fermented.

All Seasons Bokashi™ decomposes organic food waste in half time of conventional composting and without the foul odors. This unique composting method is easily ultilize in any indoor environment, making it simple for schools, households, restaurants and business to compost everyday organic food waste.



All Seasons Bokashi™

Composting with SCD Bio Ag® and All Seasons Bokashi.

Composting is a natural process of decaying organic materials by microorganisms. It can be both aerobic (need oxygen) and anaerobic (do not need oxygen). There are variety of environmental benefits for composting. The following are a few of the most important benefits.

Compost enriches soils

Compost has the ability to help regenerate poor soils. The composting process encourages the production of beneficial micro-organisms (mainly bacteria and fungi) which in turn break down organic matter to create humus. Humus—a rich nutrient-filled material—increases the nutrient content in soils and helps soils retain moisture. Compost has also been shown to suppress plant diseases and pests, reduce or eliminate the need for chemical fertilizers, and promote higher yields of agricultural crops.

Compost helps cleanup (remediate) contaminated soil

The composting process has been shown to absorb odors and treat semivolatile and volatile organic compounds (VOCs), including heating fuels, polyaromatic hydrocarbons (PAHs), and explosives. It has also been shown to bind heavy metals and prevent them from migrating to water resources or being absorbed by plants. The compost process degrades and, in some cases, completely eliminates wood preservatives, pesticides, and both chlorinated and nonchlorinated hydrocarbons in contaminated soils.

Compost helps prevent pollution

Composting organic materials that have been diverted from landfills ultimately avoids the production of methane and leachate formulation in the landfills. Compost has the ability to prevent pollutants in stormwater runoff from reaching surface water resources. Compost has also been shown to prevent erosion and silting on embankments parallel to creeks, lakes, and rivers, and prevents erosion and turf loss on roadsides, hillsides, playing fields, and golf courses.

Using compost offers economic benefits

Using compost can reduce the need for water, fertilizers, and pesticides. It serves as a marketable commodity and is a low-cost alternative to standard landfill cover and artificial soil amendments. Composting also extends municipal landfill life by diverting organic materials from landfills and provides a less costly alternative to conventional methods of remediating (cleaning) contaminated soil.

Source: www.epa.gov

Aerobic vs. Anaerobic Composting
with SCD Bio Ag®

Aerobic Composting: Using SCD Bio Ag®

Key Factors

Particle Size: The smaller the size of the particles of organic material, the greater is the surface area available for decompose by the micro- organisms. If the particle size is very large, the surface area for decomposed is much reduced; the reaction will then proceed slowly or may stop altogether.

Nutrients: The composting process depends upon the action of microorganisms, which require a source of carbon to provide energy and material for their developments and nitrogen for their cell proteins. It is desirable that the ratio of carbon to nitrogen(C/N) is in the range of 25 to 35 for 1. If it is much higher, the process will take a long time, if it is lower, then nitrogen will be given of as ammonia and lost for us. The simplest method of adjusting the C/N ratio is to mix together different materials of high and low carbon and nitrogen contents. For example, strawy, woody and fibrous materials which have a high C/N ratio can be mixed with materials such as manure, dung, kitchen waste, greens, which have a low C/N ratio.

Moisture: All organisms require water for life. For practical purposes, the materials should be as damp as a squeezed-out sponge. Wetting the mixture and ingredients initially and spray SCD Bio Ag during the process. The pile of composting should not be in direct sunlight (under a tree or cover it with mulch or big leaves)

Aeration: An adequate supply of air to all parts of a compost heap is essential in order to supply oxygen for the organisms at work. Absence of air (anaerobic conditions) will lead to different types of microorganisms, causing either acidity or putrefaction. Aeration is achieved by natural movement of air into the heap and by turning the heap once a month.

Temperature: Some of the energy released by the breakdown of the organic material is given off as heat. In the first stage, the microorganisms multiply rapidly and the temperature rises (Warming up). A high temperature is necessary to kill all weeds and disease causing organisms (pathogens). During this period sugars, starches and fats are broken down. When the temperature reaches 60 c the fungi stop working and the breakdown is continued by actinomycetes. When the heap has been through the temperature peak, the material is no longer attractive to flies and vermin. When cooling down, the straws, leaves, fibers and stalks are decomposed mainly by the fungi, which reinvaded the heap from its cooler regions. They will breaks down the lignin and cellulose in simple sugar. Then antibiotics are released and the larger soils animals, especially the worms move in.

Use SCD Bio Ag to accelerate composting

2 ½ Tbsp of SCD Bio Ag per gallon. If the dry matter is very moist, use less water but same amount of SCD Bio Ag. Spray first and last week of pile or every 2 weeks as needed. Moisture should not exceed 35% or as damp as a squeezed-out sponge. May cause high temperatures in aerobic piles. Turn as needed.

Anaerobic Composting: Using All Seasons Bokashi™

The most effective way to turn the food waste from kitchen with no foul odors in the process and require no turning! It requires All Seasons Indoor Composter in conjunction with All Seasons Bokashi. All Seasons Bokashi is an all natural, easy to use and compost accelerator

Bokashi is a Japanese term that means fermented organic matter. When Bokahsi is added to food waste, the fermentation process begins. The specialized composting bucket excludes oxygen, while the healthy microbes in the Bokashi start to feast on the food.

The healthy microbes (or probiotics) are living organisms so small that they are only visible with a microscope. The Microbes in All Seasons Bokashi include Lactobacilli, fungi/yeast, and phototrophic bacilli. This combination has been proven to rapidly degrade (ferment) organic waste while suppressing the growth of other potentially dangerous organisms which explains why there is no foul odor during this process.

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Anaerobic Composting: From Table to Soil

ALL SEASONS INDOOR COMPOSTER™

To get started - You will need the All Seasons Indoor Composter™ and All Seasons Bokashi™.

First, lightly dust the bottom of your All Seasons Indoor Composter™ with All Seasons Bokashi™. Be sure not to block the small holes in the bottom of the tray.

Before you add food scraps, chop everything into small pieces. This allows for greater surface area for the microbes to feast on. You can use (small) bones, cheese, coffee grounds and meat as well as all fruits and vegetables.

Add food scrapes to the bucket, in layers (up to 3"). (Do not add rotten or moldy waste)

Dust each layer with a healthy handful of Bokashi. When putting in meat, bones, cheese, coffee grounds or other hard to decompose materials, use more All Seasons Bokashi™ than normal.

Use a wooden spatula or spoon to mix the food scrapes and All Seasons Bokashi™. Once mixed, sprinkle a little more Bokashi on the top.

Minimize exposure to air by placing a plastic bag or plate over the top and press down. Leave in place until the next use.

Close lid tightly. Repeat steps 4-7 each time food scraps are added and All Seasons Indoor Composter™ is full.

Drain compost "tea" every 2-3 days or as needed. Dilute the "tea" (one tbs./gallon of water). Use immediately on indoor plants or outside in the garden.

When the bucket is full, dig a hole in the yard and bury the compost. The fermented compost will break down in approximately 2 weeks in the summer and one month in the winter time. Appearances of a white growth on the surface of the waste, as well as the presence of a sweet and sour pickle-like smell, are good indicators that fermentation is in progress.

Transfering All Seasons Indoor Composter™ Fermented Compost into the soil

With All Seasons Indoor Composter™ & All Seasons Bokashi™

For your vegetable & Flower

Dig a trench 6-12 inches deep to bury the compost and cover it with 3 inches of soil

In between beds, the distance between the plant and fermented compost should be 8 inches.

Do not seed or transplant seedlings for a least one week after burying the fermented compost.

The fermented compost will break down approximately 2 weeks in the summer and one month in the winter.

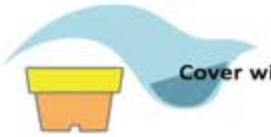
For trees

Dig a hole about 8-12 inches deep around the tree and then 2 feet apart cover with 2 inches of soil.

Using planters

How to layer the soil in the planter

soil
Fermented Compost
Soil
Gravel

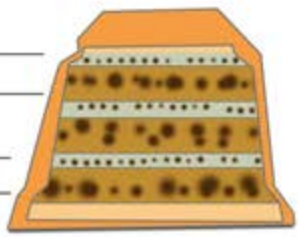


Cover with a plastic sheet

Make sure that the planter has a good drainage! To maximize drainage, place about 1 1/2 inches of gravel in the bottom of the planter. Fill 1/3 of container with potting soil. Add fermented compost and lightly mix together with soil. Finally, sheet. Wait two weeks before planting your favourite veggies etc.

Using a conventional composter

Soil
Fermented Compost
Soil
All Seasons Bokashi™: 1lb



Caution: It is important that the plant roots do not touch the compost directly. Most animals are attracted to the odor of fermented compost and may dig it up. So you need to bury them in a foot deep or more.

Signs of Success & Failure

After waiting for the 2 weeks fermentation period to be over, check to see if the compost is ready to be used. Open up the airtight container. There should be no unpleasant odors. There should only be a sweet and sour pickle like smell.

You will notice the actual food waste is not totally decomposed. The full decomposition process takes place once the compost is transferred into the soil. The following are signs of a successful decomposition process:

ODOR

The fermented food waste should have a sweet odor like that of apple cider or sweet pickles. Any strong odors such as a rotten or spoiled smell, indicates the process has failed.

APPEARANCE:

White cotton, fungi like growth, may appear on the surface of the food waste compost. This is a sign of a good fermentation process in progress.

However, any insects of blue-green, fungi like growth, indicates the process has failed. This is generally a result of contamination of the food waste compost because:

The Bokashi is not high quality.
An adequate amount of Bokashi hasn't been sprinkled on top of the food waste.
Forgetting to replace the container's air tight lid after each use.
Not properly draining the liquid or "Juice" from bottom of the compost bucket.
Adding items to the food waste compost that are spoiled or rotten.
Allowing frequent extreme temperature changes, too hot or too cold.
Leaving the compost bucket in direct sunlight or outside during extreme cold.

HOW TO RECYCLE A BAD BATCH OF COMPOST

1. Locate an area away from trees and plants. Dig a large hole, approximately 1 foot deep. A large 10 gallon planter may also be used.
2. Spread approximately 1/2 lb of Bokashi in the hole. If you must use a planter, place a layer of soil down before adding the 1/2 lb of Bokashi.
3. Transfer the bad compost batch into the hole or planter and mix with some soil. If any insects are in the compost use boiling water first to remove them.
4. Sprinkle another 1/2 lb of Bokashi over the compost and cover with another layer of soil at least 3-inches deep.
5. Spraying a 1:100 diluted solution of SCD Bio Ag® over the solid and compost mixture. Wait at least one month before using the soil or planter for gardening.

This is a new approach to composting. Do not be afraid to experiment with it until you get a feel for how this process can work for you.

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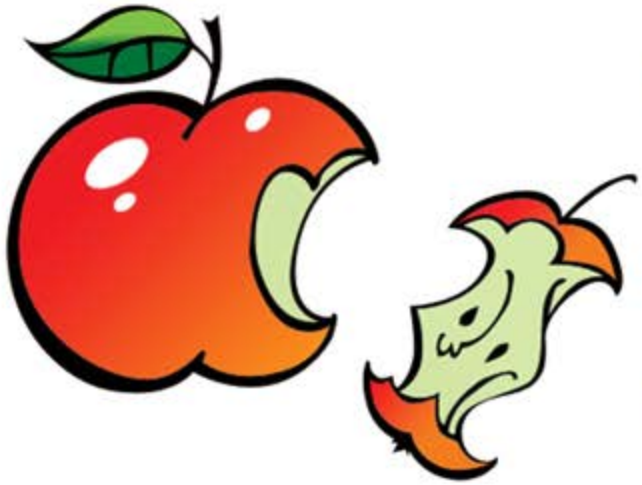
Identifying Compostables

Decomposition is Nature's way of recycling and turning waste into rich soil. We can learn a lesson from Nature by Composting our every food waste. Any type of leftoverfood can be composted with Beneficial Microorganisms and Bokashi, including meat, fish, bones, dairy products, as well as booked and oiled saturated foods.

DIRECTIONS: Circle all items below, which **CAN** be compost with All Seasons Bokashi™. Draw a line through those items which **CANNOT** compost with All Seasons Bokashi™.

Banana peels	Juice boxes	Peanut Butter
Bacon	Cake	Pretzels
Candy bar Wrappers	Fruit Rollups	Pudding cups
Egg shells	Sandwich bags	Ketchup packets
Ham salad	Fish bones	Twigs
Cheese	Mustard	Onion Rings
Hot dogs	Bread	Paper lunch bag
Potato salad	Rocks	Tater Tots
Tomatoes	Milk Cartons	Pork chops
Soda cans	Meatballs	Lettuce
Macaroni	Hamburger	Rice
Pizza crust	Apple core	Popcorn



FOLLOW UP:
Discuss your answer.
Review why certain things cannot be used in composting.

Change to Comparison Between Potting Soil and All Seasons Bokashi™ Compost

Purpose:

To show a comparison between plants growing in traditional potting soil and those plants growing in potting soil (super soil) treated with All Seasons Bokashi™ compost.

Key Concepts:

Potting soil treated with All Seasons Bokashi™ compost is full of beneficial nutrients and plants growing in this soil will grow healthier than in regular untreated potting soil.

Skills:
Science, Math and Writing

Materials:

- All Seasons Bokashi™ compost tea solution from All Seasons Indoor Composter (diluted 1 tablespoon to 1 gal water)
- Drill with small dirt
- Plant seedlings (tomato or strawberry works well)
- Vegetable seeds (radish or carrots)
- 4 Regular garden planters
- 4 bags of organic potting soil
- 1 small bag of gravel
- Labels
- Comparison Sheets

Procedure:

1. Label the two planters to be used for the regular potting soil and the two planters to be used for the All Seasons Bokashi™ treated soil.

2. Create small holes in each of the garden planters using the drill. The holes are necessary for drainage.

3. Place enough gravel in each planter, just to cover the bottom to keep the soil from preventing drainage.

4. Fill each planter with organic potting soil.

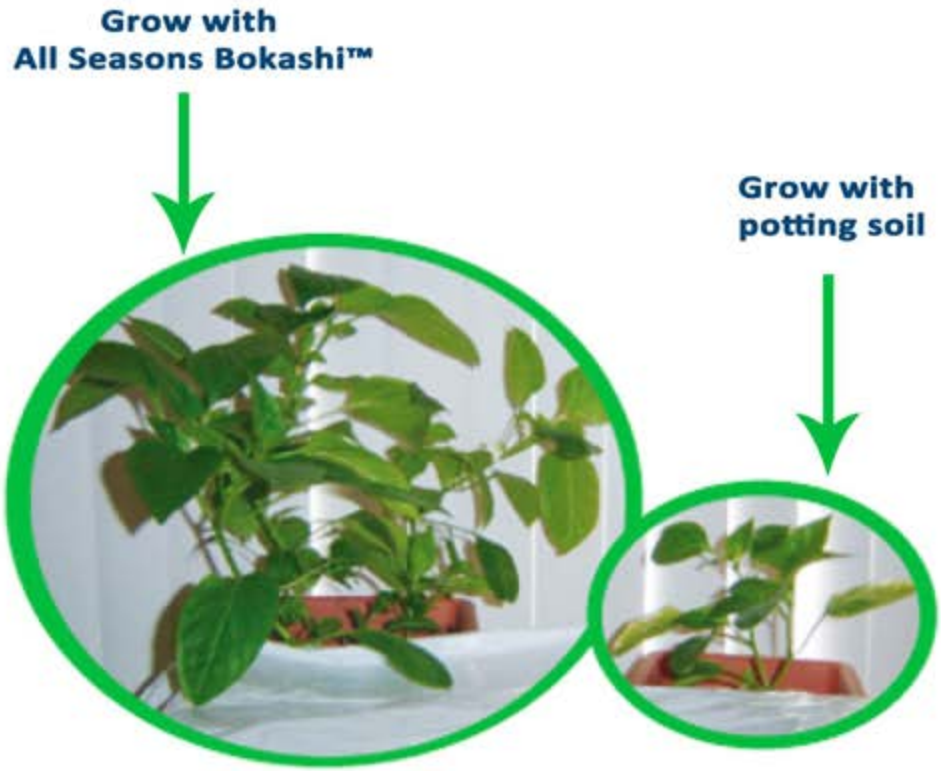
5. Place in each planter the same number of seeds and seedlings.

6. Water the two planters labeled All Seasons Bokashi™ treated soil, with the All Season Bokashi™ compost juice solution and water the remaining two planters, labeled for untreated soil with regular water.

7. Review daily, each of the plant groups. Indicate and record all comparisons, using the Comparison Sheet.

Follow Up:
Document all observations in comparison sheet, showing the difference between the plants grown in the All Seasons Bokashi™ soil vs. the plants grown in traditional potting soil. Create a poster to display how Beneficial Microorganisms help plants have a better rate of germination, growth, yield, etc.

Tips:
Create a better understanding of the All Seasons Bokashi™ compost process by discussing the Bokashi anaerobic method compared to the usual recycling methods.



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Comparison Sheet

Student Name:

Comparison Date:

Compare the following	All Seasons Bokashi™	No All Seasons Bokashi™
Date of planting		
Quantity planted		
Germination required		
Plant height		
Size of foliage		
Amount of foliage		
Color of foliage		
Bud present		
Amount of buds		
Yield present		
Amount of yield		
Size of yield		
Complex root system		

Additional Comparisons:

From Wasteful to Wonderful

Purpose:
Raise awareness of food waste generated by schools on daily basis.

Key Concepts:
Composting of food waste in your school can make a significant environment contribution

Skills:
Science, Math and Writing

Materials:
All Seasons Bokashi™, All Seasons Indoor Composter™, spatulas or large spoons, and labels.

Procedure:
Review the ongoing dilemma created by food waste and landfills. Review the 3'R Concept: Reduce, Reuse, and Recycle. Discuss how composting can be part of the solution.

During a lunch period, collect cafeteria food waste. Prior to collection, inform everyone of the project. Place the Kitchen Composter with a FOOD WASTE ONLY label next to the other collection bins, i.e. soda cans, plastic and paper.

Have two people at a time, in charge of the collection process. Be sure to explain the project to any interested students of facility. After everything is collected, weigh the buckets and record the result. Date each bucket and store them in a dark, cool place, for a period of two weeks.

Determine the total amount generated in one day, one week, one month, etc. Share this information with the entire school. Discuss and explain the value of composting food waste in the campaign to reduce landfills. Emphasize the concept of waste reduction, i.e. do not waste food and serve yourself smaller portions in order to finish what you can eat.

Organic Food

Follow Up:

Check the All Seasons Indoor Composter™ after two weeks. Relocate the food waste into the garden or garden planters. Remember to drain any of the compost tea that has accumulated at the bottom of the All Seasons Indoor Composter™ and use this according to directions.

Tips:

Discuss the impact of establishing other waste management programs such as permanent food waste collection programs, setting up gardens, waste diversion programs, in order to bring about environmental sustainability.

Back to Nature

Purpose:
Learn how Beneficial Microorganisms Break down compost food waste into the soil.

Key Concepts:
Recycling organic material in Nature is done by the way of natural decomposition. Using SCD Bio Ag® in our composting is our key to recycling food waste.

Materials:
- Food Waste from All Seasons Indoor Composter™.
- Clear plastic container 8-12 inches deep with lids (to better observe the decomposition process).
- Plastic wrap to seal container, if lids are not available.
- Regular garden planters. (If containers are not available).
- 2 bag of organic potting soil.

Procedure:
Create small holes in the plastic container using a drill. The holes are necessary for drainage. Place enough gravel in the container just to cover the bottom to prevent soil from draining out. Place a layer of soil, about one third of an inch into the container. Then layer with one third of an inch food waste compost. Cover this layer with one third of an inch soil and close the container lid tightly or cover with plastic. Allow the food waste compost material to continue fermenting in the soil, completing the decomposition process. This usually takes 2 week to one month, depending on the weather. The warmer the weather, the faster the process. Observe the fermented food waste compost and record the decompostion process.

Follow Up:
Set up your own Beneficial Microorganism evaluation process by building two identical compost piles. Apply solution of SCD Bio Ag® 2½ Tbsp per gallon rate to one of the piles. Check and record the decomposition rate of both piles. Measure each compost piles temperatures, breakdown time, smell, appearance, etc. Create a decomposition time line for each.

Tips:
Create a better understanding of the Benefical Microorganisms compost process by comparing the Bokashi anaerobic method with the usual recycling methods. Build an outdoor compost pile. Track the decomposition process of organic matter in an aerobic vs. anaerobic compost environment. Compare the temperature, time it takes to breakdown, smell, appearance, etc. Create a chart to show the decomposition process over time.

Compost Collage

Purpose:
An artistic way to give students an opportunity to creatively express how they see the environment; through Bokashi composting, gardening and general recycling. Explain the art of collages by showing one you have made before hand.

Skills:
Art, Social Science,
Environmental Studies

Materials:
Large table or work space, magazines, newspapers, anything the students might want to bring from home to use in their collage. Poster board (one for each student), glue sticks, scissors, felt tip markers, tape.

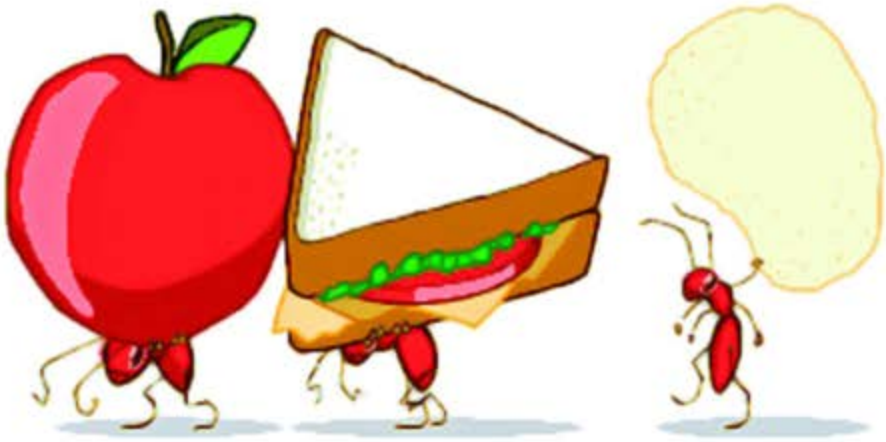
Procedure:
1. Have students bring whatever they need
i.e., twigs, leaves, and pictures from home or cut out pictures from the magazines or newspapers provided, expressing their ideas regarding the environment, Bokashi composting or general recycling.

2. Using the poster board, glue on the pictures or items they have chosen to express their ideas.

3. Be sure each student writes their name and grade on the back of their collage.

Follow up:
Collect all the students' collages and set up an exhibit for their art work. Allow each of the students to explain their individual project and discuss with the rest of the students. This would also give the entire school an opportunity to see their work and reflect on recycling.

Litter Free Lunch



Purpose:
Use litter collection projects to introduce the use of SCD Probiotics as a way to recycle food waste.

Key Concepts:
Recycling food waste occurs in nature as decomposition. All Seasons Bokashi™ plays a key role in the decomposition of organic matter.

Skills:
Science, Social Science, Environmental Studies

Materials:
Picnic lunch, All Seasons Bokashi™, All Seasons Indoor Composter™, large garbage bags, reusable cloth gloves are optional.

Procedure:
1. Organize a preplanned field trip to help clean up the environment. Plan the outing to a local park or public recreational area, where picking up litter by the public is allowed. This project can work for all age groups. Prior to the outing, remind students to prepare their lunches. Assign a different food item for each student to bring.

2. While walking and picking up the litter, review the 3'R Concept: Reduce, Reuse, and Recycle. Discuss how composting is a big part of this concept. Ask for examples of how using other waste management programs, such as permanent food waste collection programs, setting up gardens, waste diversion program aid in environmental sustainability.

3. Collect the litter items and place into two bags, one for recyclables and one for non-recyclables. Check for decomposition on each piece of litter collected.

Discuss the different ways that decomposition takes place. Point out the presence of microorganisms such as tin can rust, bacterial action on paper, and mold and fungus on food. Discuss if an item is not decomposing and why? Be sure to include any organic matter such as plant or animal remains.

Following Lunch:

Clean up picnic area. Place all recyclable items into the designated bags and all food waste into the All Seasons Indoor Composter™. Sprinkle All Seasons Bokashi™ over every layer of food waste as the students fill the compost bucket. Discuss why it is important to follow this process and introduce the use of All Seasons Bokashi™ to decompose waste.

Follow Up:

After the outing take all the recyclable items to the recycling bins or recycling center. Dispose of any non-recyclabe items appropriately.

SCD Probiotics®

Frequently Asked Questions

1. How does the All Seasons Composter™ kit work?

SCD Probiotics' composting kit includes an All Seasons Composter™ and a package of All Seasons Bokashi™. The system uses beneficial microbes in the bokashi to FERMENT organic waste as it accumulates in the composting bucket. The bucket fits easily under most kitchen sinks, so it is convenient to access - right when you need it.

Fermentation (or pickling) retains all the energy (no heat loss) and most of the nutrients in the waste with no foul odor normally associated with food waste.

2. What is All Seasons Bokashi™?

All Seasons Bokashi™ is naturally fermented bran that is primarily used for composting. Ingredients include wheat bran, rice bran, purified and structured water, sugarcane blackstrap molasses, mineral rock salt and SCD Probiotics Technology. All Seasons Bokashi™ allows for an odorless composting system, speeding up the fermentation process of food waste. When the fermented food waste is added to the soil, it breaks down completely and adds valuable nutrients to lawns and gardens.

3. How long does All Seasons Bokashi™ last?

All Seasons Bokashi™ can last for years. There is no expiration date. The wheat bran and drying process allow the microbes to become dormant until they are introduced to their ideal environment and food source. Keep tightly closed for maximum effectiveness.

4. How do I know if my All Seasons Bokashi™ has gone bad?

If there is green, blue, black or brown mold on the bokashi, this indicates putrefaction, and it should be thrown out. However, if kept sealed and with minimal exposure to oxygen, All Seasons Bokashi™ will last for years. (Not resealing your bag after you use it may cause a white mold to grow. This mold does not mean your All Seasons Bokashi™ is bad. Continue to use as directed.)

5. I saw some white growth on the surface of my compost. Has my compost gone bad?

No. This is a good indicator that the fermentation is in progress. White mold is a sign of beneficial bacteria. Continue to use as directed.

6. Can we compost during the winter season?

Yes. In many areas of the world, the ground is too frozen in winter to bury the compost directly in the soil. There is an option. The secret is keeping the compost moist. Cover the entire compost pile with a thick sheet of clear plastic. Not only will it heat the compost pile, it will also prevent rain from leaching all the nutrients out of the pile. You can also insulate the pile with a foot or more of hay or straw instead of plastic, if you can protect it well enough to keep it moist. .

7. Do you sell replacement parts for the composter?

Yes we do. Please call customer service at 913-541-9299 to get a replacement part or email at customerservice@SCDProbiotics.com.

8. How much should I dilute the "compost" tea?

The correct ratio is 1 tablespoon per gallon.

9. My compost (food waste) has retained some of its original, physical properties. Can I still bury it in the ground?
Yes. The fermenting food waste in the All Seasons Indoor Composter™ will retain much of its original physical properties but will have a pickled appearance. Complete breakdown of material will occur once it's transferred into the soil and has been in the soil from two weeks to two months - depending on climate and soil conditions.

10. The waste hasn't broken down in the bucket. Is something wrong?
The waste will NOT decompose while in the composter - it will only ferment (or pickle). If you can imagine a pickled onion - it will still look like an onion, but because it's pickled, it will have changed its internal structure. The single criterion to determine if the process is working is the odor. If there's no rotting odor, then the fermentation process is working. The physical decomposition of the waste only occurs when the material goes into the soil. Here, it breaks down very quickly because the material has been pre-conditioned (i.e. fermented).

11. What do I do with the "compost" tea that I drain from the bottom of the composter?
This liquid is teaming with microbes and nutrients! After you dilute the tea, you can use it directly on your garden or potted plants. Or, you can add the liquid to the toilet or a septic tank. The microbes will work to make the septic system more efficient. One other use is to simply pour it down the sink. The microbes will go to work on your drains and keep them clean.

12. When the compost is buried in the soil, will foxes and other wild animals be able to smell it and dig it up?
Animals might be able to smell the fermented waste if you have not covered the compost completely with soil to assure further fermentation. You need to dig a trench 18" to 24" deep to bury the compost and mix the fermented material with soil as you add it to the trench.

13. Is the fermented waste in the soil harmful to my pets?
No. The beneficial microbes necessary to the fermentation process and found in the food waste are all natural and chemical free. However, you'll want to make sure the compost is buried deep enough (18" - 24" deep) so all your good efforts end up where they belong - in your soil and gardens.

14. When I bury the compost, should I leave it in that same spot and then later plant on top of it, or should I dig it up after a few weeks and spread it throughout the garden?
As long as you allow the proper amount of time for the compost to become like soil, you can plant on top of your compost (two weeks to two months - depending on climate and soil conditions.) If you plant too soon, your scraps will be highly acidic as they decompose, possibly damaging tender roots of new plants.

An alternative is to dig it up after the several weeks and spread it throughout the garden.

15.What is the composition of the plastic used in the manufacture of the indoor composting buckets? Are they manufactured with PCB (PolyChlorinatedBiphenyl's)? Should I be concerned about PCB's and any potential contamination of the food waste?
We do not use PCB's (PolyChlorinatedBiphenyl's) in the manufacture of our buckets. The black and white buckets are made from 70% post consumer plastic and 10% recycled plastic and the tan bucket is "virgin" plastic. There is no danger of any material leaching from the plastic and contaminating the food waste and therefore the not harmful to the downstream by-products of composted food waste.