

# Organics and Agriculture

3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> Grade

Time	Contents
<b>Introduction</b> 5-10 minutes	Introduce staff and share behavior expectations and guidelines. Provide information that pertains to where restrooms, water refilling, etc. take place. Express that there are good times to be had so long as they fulfill their side of the deal. RESPECT
<b>Human needs</b> 5-10 minutes	Address basic human needs, water, air, food and shelter. Address why they are needed and the repercussions of going without.
<b>Food</b> 5-10 minutes	Discuss food and some of their favorite foods and the ingredients that create these foods. Where the foods originate by naming those places. Address what else besides humans eat food. List creatures that consume food that grows on farms. Define with students that these animals are often referred to as pests. Have them share their feelings about some pests they know of.
<b>BUG importance</b> 5-10 minutes	Often times “bugs” are seen as pests to crops and people. People may not realize the extreme importance of insects. List and reenact things that bugs do for humans.
<b>Food Chain</b> 4 items Popsicle sticks 30 minutes	Allow students to recognize that these creatures support an entire slue of organisms, provide an example and play game that demonstrates the food chain and what can happen when chemicals are used against the bottom of the food chain.
<b>Pesticides and Organics</b> 10 minutes	Explain to students the purpose of pesticides, herbicides, fungicides consequences of their use, etc. Share alternatives, specifically organic production.
<b>Buggin’ Out</b> Corn field cards Diverse field cards 4 items Clothespins 20-30 minutes	Students will demo what goes on with the insect-plant interactions on a farm field that has one crop (monoculture) versus a farm field that has a diversity of crops (polyculture). The game is timed and requires students to tag their food source if they are an insect and evade the insects if they are a plant. You will asses with students the “damage” to the fields and which made it out better without using pesticides.
<b>Diversity</b> 5minutes	Students will gain an understanding of how a variety of things working together creates balance and can be more effective than one.
<b>Scavenger Hunt</b> Grocery store 30-45 minutes 1 volunteer per 5 students Money	If time affords it walk with students to grocery store to search for organic products, purchase, taste the difference? Discuss difficulty finding, various labels that aren’t organic, etc.
<b>Conclusion</b> 15-20 minutes Field area Questions enough for half the group	Game that will review lessons learned and allow for some crazy, run around time. See who learned what and what they can do with this information.

## **Lesson Plan Organic Food 2006**

### **Basic needs**

Begin a question and answer interaction with students. Request that they inform you of what the basic needs of a human being is. Water, air, food and shelter or the WAFS. Without these WAFS there will be no living for the human that tries to go with out them.

Today the focal “need” will be food and what our food goes through before we eat it.

### **Importance of Bugs**

Who else or what else needs food for its survival? Allow students to list some creatures, eventually sway them to begin to list some bugs of sorts or pest species, e.g. spiders, flies, slugs, worms, birds, groundhogs, etc. Ask students how they feel about bugs and the other pests mentioned. Share that the feelings they have for such bugs as flies, spiders, etc. are shared amongst certain farmers.

Ask why these farmers might feel this way towards the bugs. The farmers sometimes feel that the bugs or pests will be a threat to their crops. The bug and or pests could eat or make them sick, and they can loose their source of income.

However, are the students aware of the importance of bugs to all people? Provide an explanation of the many things provided to humans by bugs and the other pests mentioned.

Share that they would not be alive without bugs because bugs eat other bugs. Pests help make the soil that helps grow the plants, they pollinate, and they are a primary food for virtually all animals directly or indirectly.

Pollination can be demonstrated by volunteering two students a boy and a girl, having them act as beautiful flowers. Have each student stand on either side of you at the front of the class.

Narrate a scene in the world of pollination for the two volunteers to act out. Nominate one person to be a bug and have that person visit the boy flower and get “nectar” and also “accidentally” get pollen, and then the same volunteer can buzz over to visit the girl flower and express that when boy and girl “pollen” get together they make a seed. Without seeds, there are no plants and without bugs, there would not be hardly any plants.

Ask if they were aware that bugs had so much to do with their personal needs or WAFS. However a lot of the time the same attitude the students shared earlier about the bugs will cause people to use pesticides, herbicides, fungicides and other “cides” that act as a sort of poison. Be sure to clarify that the purpose of these chemicals is to kill.

### **Food Chain**

The students will have the opportunity to play a game that will show just how this whole food chain thing works.

Set up four boundary markers, make the boundaries no bigger than 20'x40' have students stand in a straight line between two of the four markers. Spread Popsicle sticks throughout area.

Explain that the area inside the boundaries is a farm and each of the sticks represents one plant e.g. corn, soybeans, etc. Bugs will eat the plant and those bugs are eaten by rodents and the rodents by a hawk (This is just an example, use whatever food chain suits your needs but the top predator must be a raptor). The boundaries represent the area in where an animal gets all its needs from or its habitat if they go outside of the habitat they automatically die and feed a higher predator.

Demonstrate the way the game works. Tell students what they will be (as a whine prevention technique for this part, inform them that the less you hear the more likely they are to get the role they want). Appoint species depending upon numbers of students 60% bottom, 30% mid, 10% top get as close as possible. Once the students are informed of what they are you will call each type of animal from bottom to top, they may only go when their animal is called.

The first to be called will be the bottom and their goal is to gather as much food (popsicle sticks) as possible. Once the mid is called, the mid can either tag=eat a bottom or pick up food. Once animal is tagged they pass off the food they had gathered and then sit down to represent their deadness (they are welcome to be dramatic about dying if they would like).

Once the top is called, they may only tag other animals they may not pick up food. Inform them once you yell a word or phrase of your choice they must freeze, meaning no more tagging or picking up of food, and gather round the teacher as fast as possible.

Release the bottom of your food chain, give them about one minute to gather as much then allow the mid to have thirty seconds and the top twenty seconds.

Once you have called the end of the round regroup by having the living on one side and the dead on the other. Ask the survivors what animals they represented. Revisit how many there were of each group at the start of the game and then the numbers at the end and why numbers were this way. Was there any significance in the number of each animal, and what would happen were there more top than bottom.

Have students disperse the food in the habitat and play another round. Select new students for each role. At the end of this round address where all the food went to and if the top ever eats the farm food directly. The answer is no.

Play a third round, again with new students for each role. At the end of this round have the living separate the sticks based upon those with markings and those without. Have the dead collect the remainder of the sticks while the living are dividing.

Have the survivors hold unmarked sticks in one hand and marked in the other, so that they are visible to all students.

Inform students that you have some bad news. That is that the marked sticks represent a poison or pesticide in this case, DDT and that the higher predators have been affected to the point that when they go to lay eggs and sit on them, they break (fun fact a chickens egg can typically hold 100 pounds).

If there are no more babies will there be any adults? No, is the answer, ask why it affected the top and not the bottom. Demonstrate to clarify explanation. Take one predator divide sticks two ways and have those two divide to two others show that there

is less pesticide in the lower animals but by the time it reaches the top it is in abundance. This process is called bioaccumulation or biomagnification.

The wrap-up for this game is age dependent you may stick with DDT for attentive students or skip to general pesticide use for the inattentive

**ATTENTIVE:** If DDT is responsible for killing animals that is was not meaning to kill do you think this is a problem? Other people thought it was and it was outlawed in the US. Hooray, however the number one maker of DDT is still the US and we send it to a bunch of other countries. We get our food from most of these other countries and migratory birds also come back to the US from these countries and the whole cycle starts again. ) SO do you think that this may be a problem? If so what could some solutions be? Kids will provide you with an array of possible solutions, share that one solution people have discovered is if they use different methods of farming where they need not use “icides” and do not make living things sick, this is referred to as ORGANIC what is it called ORGANIC spell it for me O R G A N I C and what does it mean! Fun statements come from the last question. Reiterate what it is and the health it represents throughout.

**INATTENTIVE:** Did you know that pesticides created these kinds of problems? Do you think they could affect humans if it affects other higher predators? (Depending on pesticide of choice, such things as brain, liver, heart malfunctions as well as developmental disorders can occur; close contact can cause paralysis and death) SO do you think that this may be a problem? If so what could some solutions be? Kids will provide you with an array of possible solutions, share that one solution people have discovered is if they use different methods of farming they then do not need “icides” and do not make living things sick, this is referred to as ORGANIC what is it called ORGANIC spell it for me O R G A N I C and what does it mean! Fun statements come from the last question. Reiterate what it is and the health it represents throughout.

## **Buggin’ Out**

Let’s play another game!

In this instance the students will be introduced to concepts farmers use to avoid pesticide use. Express that they will be role-playing either an insect or a plant on a commercial farm and then on an organic farm. Ask them to use their observation skills to seek out the differences and why certain choices are made.

Set boundaries of “farm field” this will be in accordance to your group size. Group size of fifteen 15’x20’ should be plenty more than this double the size. Express this is the space in which they live.

The students will receive a card on this card will be one of two possible roles; they may be either an insect seeking a plant or a plant. They will also receive a clothespin that should be attached to a sleeve and is easily accessible. The bugs will have a picture of themselves and a picture of a plant they need for survival, the plants will simply receive a picture of the plant they are. They are not to expose their identity unless their clothespin is pulled.

The bugs will need to pull clothespins to find their food source and the plants will want to avoid this and they may use whatever tactics they like to do this, however they must reveal themselves if pin is pulled. If a successful match is made they will then sit down with their counterpart.

In the first round you are to hand out the monoculture or only one plant species and thereby only corn and pursuers of corn.

Express they may not begin until all have their cards and you make them aware of this. You will also signal when this is over.

End first round quickly as it will by nature. Have a few students share what they are and ask them what sort of a farm this was and what crop was being raised. Observe how many crops are left express this is one of the reasons farmers use pesticides it endanger their finances.

Ask students to line up again for the second round and this time the polyculture or variety of plants and insects will be used tell them to start. This round will be inherently longer. Ask them to stop after some time when there is still a strong remainder. Have students observe how many remain and expose the diverse array of crops that were planted. Ask them which field they feel would thrive better without pesticide use.

Explanation: Diversity restricts insect from flourishing and often times prevents them entirely. This is the method used and because of it natural areas and humans can benefit from the health on a personal level.

### **Diversity Stand**

Have students gather in an orderly manner and explain that as humans we have many things that we utilize to allow us physical balance. Ears, legs, arms, eyes and so forth when we take away this diversity or variety we lose balance. Have students stop using these one at a time by jumping on one leg covering eyes and ears and so on. This imbalance is true of many things and in this instance farming. When there is diversity or variety balance is more achievable just as it was exemplified by the game.

### **Scavenger Hunt (Optional)**

The students may if time allows for it be walked to a local grocery store to investigate organic products. Take safety measures such as walking in pairs and having a leader and sweep. Upon arrival explain the motive for their search. They are to find grocery products that are organic and they will be provided with 15 minutes to do so (If unmotivated group say the one with the most wins X). Split students into reasonable sized groups and utilize volunteers/chaperones to supervise each. Also explain that organic is a certification and so therefore is labeled as such and must pass many “tests” to prove this status. Send students on their way and meet them in front of the cashier stands once time has expired. Coordinate when to meet and plan of action regarding child management ahead of time. Examine products with students as a group. If certain products seemed similar were found share again about the strict codes enforced to designate organics and that products that say all natural, etc. have no proof of their claims. After looking at these products discuss the ease with which they found the found the organic products, location, labeling, etc. Next have a volunteer purchase one organic product produce is preferable. Take students to an appropriate area in which they can

gather and taste the organic product. Allow them to share their feelings on taste, etc. Ask students if after all they have learned would they like to eat more organics and share how they may be able to have access to them, by telling grocers their desires, telling their parents, others, etc.

## **Conclusion**

As a final hoorah the students will participate in a relay in which they will be “quizzed” on what they learned that day. The list of questions should be prepared ahead of time and some ideas are listed below for the purpose of brainstorming said questions. The relay works like so: Students will be divided in half and each group is to stand in a straight line facing the instructor (students will line up so that they are staring at the back of another student) The student in the back will either crawl through the legs of all other participants or can S through all. Once the student from the back comes forward they will approach you where you will be standing a fare distance away. You will then ask a question and the students either answers it right then and there or they may return to the rest of their group to figure out the correct answer. Once you have received the correct answer students will run to the front of the group and the next person to crawl through will do so. This will happen until all have passed through and answered a question. At end of game thank them for their participance and you can cheer organic or some fun ending that leaves the word impressed in them.

### Possible Questions:

Define Organic: No use of pesticides

Are there less pest problems with a variety of crops or just one crop? Variety of crops

What are some other labels that may lead you to thinking that it is organic? Natural, etc.

What is a pesticide? A type of poison used to rid pests in a particular area

Name one animal that is not considered a pest that can be affected by pesticides?

Where are toxins/pesticides stored in the human body? Fat cells

By what proceeds do bugs help make seeds? Pollination

Name one-way bugs help people? Make soil; eat other pests, pollination, etc.

Give an example of a food chain.

Name the basic needs of every living thing. Food, water, shelter (air)

What happens if the top predators eat all the food? They starve.