Garden’s of Hope
Lesson Plan for
Cultivating Food Democracy
FRUIT GATHERING, 1916

WHO AMONG you will take up the duty of feeding the hungry?’ Lord Buddha asked his followers when famine raged at Shravasti.

Ratnakar, the banker, hung his head and said, ‘Much more is needed than all my wealth to feed the hungry.’

Jaysen, the chief of the King’s army, said, ‘I would gladly give my life’s blood, but there is not enough food in my house.’

Dharmapal, who owned broad acres of land, said with a sigh, ‘The drought demon has sucked my fields dry. I know not how to pay the King’s dues.’

Then rose Supriya, the mendicant’s daughter.

She bowed to all and meekly said, ‘I will feed the hungry.’

‘How!’ they cried in surprise. ‘How can you hope to fulfil that vow?’

I am the poorest of you all,’ said Supriya, ‘that is my strength. I have my coffer and my store at each of your houses.’

Rabindranath Tagore
Acknowledgements

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Foreword

“FROM QUESTIONS THAT HAVE often been put to me, I have come to feel that the public claims an apology from the poet for having founded a school, as I in my rashness have done. One must admit that the silkworm which spins and the butterfly that floats on the air represent two different stages of existence, contrary to each other. The silkworm seems to have a cash value credited in its favor somewhere in Nature’s accounting department, according to the amount of work it performs. But the butterfly is irresponsible……

The poet may be compared to that foolish butterfly. He also tries to translate all the festive colors of creation in the vibration of his verses. Then why should he imprison himself in an interminable coil of duty, bringing out some good, tough and fairly respectable result? Why should he make himself accountable to those sane people who would judge the merit of his produce by the amount of profit it will bring? I suppose this individual poet’s answer would be, that when he brought together a few boys, one sunny day in winter, among the warm shadows of the sal (shorea robusta) trees, strong, straight and tall, with branches of a dignified moderation, he started to write a poem in a medium not of words.”

Rabindranath Tagore
Essay ‘The Poet’s School’

Education has been a much debated word. The meaning, the purpose and the essence of education is one of the most primary and existential question for a person and human society. Are we who we are because of nature or nurture? This constant human angst and paradox is something educators have grappled with for eons and will continue to engage with. However a few have ventured into the field and courageously tried to define some aspects of this conundrum. One such man who has not only in his lifetime deconstructed and critiqued the education system but has also tried to provide an alternative or structure of how it should be is Rabindranath Tagore, through his school and university Visva Bharati at Santineketan.

The 150th Birth Anniversary of Gurudev Rabindranath Tagore was an opportunity for many of us to refresh and renew ourselves by delving into the oeuvre of the nation’s
Poet Laureate. This book is inspired by the poet’s vision and praxis to rekindle the “sympathetic man.” Gurudev once said: “The highest education is that which does not merely gives us information but makes our life in harmony with all existence. But we find that this education of sympathy is not only systematically ignored in schools, but it is severely repressed.” (Rabindranath Tagore, Personality, 1917: 116-17)

The guiding force of Tagore’s pedagogy was to instill a sense of wonder; as a child he felt that the isolation of the city life where he grew up did not give one enough opportunity to gaze and experience wonder. The mechanical interaction between people further robbed ability to feel empathy thus reducing a person’s humanity. It was these experiences of growing up in the city and being subjected to sterile education which made him seek his own system of education. Tagore believed that: “Children have their active sub-conscious mind, which, like the tree, has the power to gather its food from the surrounding atmosphere. For them the atmosphere is a great deal more important than rules and methods, building appliances, class teachings and textbooks. The earth has her mass of substance in her land and water. But, if I may be allowed figurative language, she finds her inspiration of freedom, the stimulation of her life, from her atmosphere. It is, as it were, the envelopment of her perpetual education.”

It is to salute this spirit of Tagore that we offer this manual so that teachers and students alike can reconnect with the earth, its values and create a world based on the principle of Earth Democracy. Food for us is an everyday reminder of our interdependence on the planet, its creatures and on each other. The manual thus helps us to be inspired by the wisdom of Gurudev, as we celebrate his 150th birth anniversary. As we reflect on our daily lives and our relationship with the earth, let the wisdom of Tagore be our guide.

Dr Vandana Shiva
Founder and Managing Trustee
Introduction

The world stands on the brink of a downward spiral of hunger and access to water. According to the FAO, the number of people on the brink of starvation was set to reach a record high of 1.02 billion – or one-sixth of the global population – in 2009.

Almost a quarter of the world’s children, especially in Asia and Africa, do not get adequate food. In India, almost half the children, less than 5 years of age, suffer from malnutrition; this is 1/3rd of all the malnourished children in the world.

The way we consume food has an impact on not only our own health and life but also on the producers, the earth and the community that we live in. The journey of food from the seed to the table is one which involves every human being on earth; yet the story is not told as often as it should. Through this initiative, we, at Navdanya, wish that students from primary, middle and high schools understand the process undertaken for the food to reach their table everyday. The hope is that by exposing them to various modes of farming, food processing, distribution system and waste disposal system we would equip them to make better choices for themselves, the farming community, their health and the earth at large. We also hope that this overview of the impact the simple act of eating has on earth and society will encourage them to take up actions which will promote a just, equitable access to food which is healthy for oneself and the environment as well.

The key objective of this manual thus is to press upon its user the following:

1. Ensuring the food and nutrition rights of all people, especially marginalized communities and sections within their city.
2. Designating areas, big and small, in their city for it to grow its own vegetables and herbs and ensuring that agricultural land within the city does not get usurped anymore for any reasons what-so-ever.
3. Ensuring food which is safe, free of chemicals, synthetic contamination and genetic modification for the people.
4. Adequate and clean drinking water is a basic necessity and governmental responsibility. The excessive money spent by citizens on accessing and ensuring water purity is avoidable. We demand safe, adequate and drinking water for all the denizens of the city without any corporate led marketing of water.
5. Taking effective steps to prevent all avoidable concretization and contamination of the city’s soil with needless paving, tiling, stoning, malba dumping etc. in all areas. This will ensure that rainwater can percolate and replenish groundwater levels; moreover thriving plants and soils can play their full role as pollution absorbers and carbon sinks.

One of the key tools that we think can achieve our objectives above is educating young and old about these issues. Thus our focus through our Young Ecologist Program is to reach out to as many young mind as possible and engage them in a dialogue for sustainability. Education for sustainable development has been based on its three Rs – Recycle, Reuse and Refuse; the Young Ecologist Initiative of Navdanya proposes a third vital R to be added to this education, that is REFLECT- for without reflection a mindful society cannot be created. The crisis of environmental action today is also a crisis of consciousness and how people perceive their relationship with one another and the earth. It is our hope that through our program the students will become more aware of themselves and that their lifestyle choices will be in harmony with the earth. Drawing the connection between the micro action and macro manifestation, our hope is that the program will empower students to make decisions which respect the notion of Earth Democracy.

This manual thus is an invitation to educators across the country to walk with us as we, inspired by Gurudev Rabindranath Tagore, embark on the journey to seek the “sympathetic man” and to evoke in ourselves and our young learners a sense of wonder, creativity and oneness that only Mother Earth can provide. We hope that through the lesson plans, activities and reflections that we have shared here, they will be able to write their own story of discoveries and harmony with the earth.

The manual is divided into 5 parts based on learner age groups or what we have thought would be most appropriate for a certain age group; however the activities are such that an intelligent educator can easily simplify or complicate them depending on his/her learner groups. These activities are launch pads for reflection on issues of food security, accessibility and availability. They force us to ask difficult questions like why is every fourth Indian hungry? But they also act as incubators of hope and knowledge that can help us overcome these rather daunting realities with regards to ecology, food security and hunger.

One of the last sections of this book seeks to bring basic tools to start a Garden of Hope and to deal with common pest-control, harvesting, and seed saving issues. It is based on Navdanya’s practices, which embody the accumulated agricultural knowledge of many generations of farmers, adapted to the modern context of urban agriculture. This section does not guarantee a successful harvest. Gardening is a learning process and it is with patience and critical reflection that you will find the techniques that work.
for your particular location; but it will give you valuable guidance on your journey to build a Garden of Hope.

We hope this book will enrich your personal development too. It is difficult to introduce teaching techniques that break with the conventional curriculum and that you may be unfamiliar with. But often it is the spirit of innovation that brings the greatest rewards. You will discover a new framework to contemplate your role as a teacher. For example, you may find that your students begin to teach you through their engagement with these issues!

Then, your task will be to support them through the challenges they face figuring out how to farm for the first time. First, provide them the structure and the material required to start the garden. The book will help you to plan your garden set-up. Secondly, you can help them to articulate the problems they are facing during their project. The dialogue you create, with their dynamic participation, will give rise to solutions. Finally, you can broaden the reflection about environment, health and social responsibilities to help kids become critical thinkers in their daily lives. These conversations don’t have to happen only in a classroom; there are many field visit possibilities that would allow students to connect their garden to larger initiatives. Watch them blossom alongside their garden!

The last section of our book is an offering, an inspiration in the spirit of Tagore, from schools which have worked with Navdanya in the past couple of years to promote the rights of Mother Earth and establish a world based on earth democracy!! As see the painting made by them and photographs of garden of horu Haining we are gladdened that hope still exists for a planet which has so much love and empathy still to share.

**Earth Manual Lesson Plans at a Glance**

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SCOPE OF EXPLORATION

Health

Mind

Body

Nutrition

Soul

Interconnectivity

Soil

Chemical Farming Vs Organic Farming, landfill and waste disposal

Environment

Seed

GMOs and terminator technology Vs Seed Democracy

Air

Global warming and Food miles

Production

Industrial agriculture Vs Organic farming

Food Processing

Multinational food industries Vs Cooperatives and Self Reliance

Consumption

Free trade Vs Fair trade, Slow Food Vs Fast Food, protecting food diversity, access to food and media and food industry
Primary School Lesson Plans

“The Earth gives us food in such a way that it gladdens our eye and enraptures our mind. The golden sunlight, flung from sky to sky, finds a response in the golden harvest from horizon to horizon. This splendor makes man think not only of his meals, but of festive rejoicing. In the storehouse of the Earth there is, above the provision for our hunger, the nectar of joy.”

Rabindranath Tagore
LESSON ONE : PRIMARY SCHOOL

Subject Areas: Economics, Social Sciences (Food, Individual and Social Dimension), and listening comprehension.

Duration: 1 hour 20 minutes

Materials: For the Focus Learners activity, one medium-sized container of heavy Cream and one medium-sized jar are needed. For the main activity, students should bring the ingredients they are assigned the previous day (see below).

Objectives:
• Students will recognize the relationships amongst food, farming, farmers, food industry workers, and themselves.
• Students will analyze how the foods they eat reach them.
• Students will learn about production networks.

Introduction: (5 minutes)

Often we eat too quickly to appreciate all of the time and effort that went into creating our food. Think of making a sandwich. It’s simple, right? Think again. We know that someone has to place two pieces of bread on a plate and put the ingredients on one slice before placing the other slice on top. But these are not the only steps in making a sandwich! Who made the bread? Who grew the vegetables? Who took care of the cow whose milk became the butter?

Today we are going to think about where food comes from and how it gets to the plate in front of us. You may think food comes from the market, but this is only one of the many stops it makes on its long journey to your belly.

Focus Learners: Making Butter (10 minutes)

1. Let’s find out how much energy it takes just to whip butter!
2. Ask students to form a circle.
3. Pour heavy cream into a medium-sized jar until it is 3/4 full and seal it tight.
4. Next, demonstrate by shaking the jar for 10 seconds.
5. Pass the jar around the circle, each student shaking it for 10 seconds.
6. After a few minutes, open the bottle to show the students how the cream is changing.
7. Continue passing the bottle around until the cream is fully whipped into butter.
8. Open the bottle and bring the finished butter around the circle to show the students. Set the butter aside until the next activity.
Main Activity: The Journey of Food (45 minutes)

1. Ask the students to bring ingredients to make a sandwhich.
2. Divide them into groups.
3. Give a bit of fresh butter to each group.
4. Next, help students combine their ingredients to make a sandwich.
5. When they are finished, cut the sandwiches into four equal parts.
6. Then, instruct the students to eat in silence, concentrating on each bite. They should take the first four bites very slowly, chewing each bite until it dissolves in their mouths.
7. While the students eat in silence, ask them to listen and reflect on the following:
   - Did you know that there is a cloud in your sandwich?
   - Can you taste it?
   - Can you feel the baby seed in your sandwich?
   - Can you taste the rain that fell on the seed?
   - Can you smell the soil that the vegetables in your sandwich grew out of?
   - Can you feel the sun that warmed their leaves?
   - Can you smell the smoke from a truck that brought the vegetables to the market?
   - Can you feel the shaking of the bottle that whipped the cream into butter?
   - Can you smell the bread as it baked in the oven of the bread maker?
8. Once the students have reflected on these questions, tell the journey of the bread:
   The main ingredient in bread is wheat. Wheat is a tall grass that bears especially delicious grain. Ground into flour, wheat is used to make bread and roti. The wheat in your bread comes from seeds that a family of Punjabi farmers kept dry and cool in a special jar in their house for almost a year. When the rains came in May, the family planted the seeds in a wide open field of rich, healthy soil.
   For four months the family took care of the wheat as it grew from a seedling into a tall, proud stalk. Under the golden September sun, the family harvested the wheat and later ground it into flour. Then they sold the flour to a bread making factory. There, people from a nearby village worked all day mixing the wheat flour with water, salt, and yeast. Then they kneaded the dough until it was fluffy and dry.
Next, they separated the dough into loaves and baked them in a giant oven. Finally, they packed the hot loaves of bread into bags and loaded them into a truck. A truck driver drove for two days with very little rest until he reached a shop in your market. There, a boy and girl only a little older than you, unloaded the bread and put it on the shelves of their parents’ stall. The next day, you bought a loaf from them and brought it home to make a sandwich.

As you can see, many people, places, and steps are part of bread-making. Right now there are little seeds waiting in a jar to be planted, to drink the rain, and grow towards the sun. There are farmers walking their fields to watch over their wheat. There are bread makers forming loaves. There are truck drivers moving bread all over the country. Making a sandwich is not so simple after all!

**Check Understanding:**

What are the steps for making bread? Can we guess how many people helped make our bread and bring it to the market? Can we guess how long it took from the time the farmers planted the wheat seeds to the time we bought the bread? How many places did the wheat stop before it arrived in our kitchens?

**Closure: (20 Minutes)**

Ask the students to work together in their groups to imagine the journey of one of the other ingredients in their sandwiches. After a few minutes, one person from each group tells the class the story. Note: If time is running short, skip the closure activity and move right to explaining the homework assignment described below.

**Application:**

As a homework assignment, ask the students to draw a visual story that shows the journey of one of their favourite foods from the farm to the table.

Organize one day each week when the class eats together in silence for 10 minutes, appreciating everyone who helped get their food to their table.

**Additional Resources:**

*Bawara Beej*, Navdanya/Tulika Publication.
*Rani and Felicity*, Navdanya Publication.
*The Story of the Seed*, Navdanya Publication.
Subject Areas: Environmental Studies

Duration: 1 hour

Materials: A few days before the lesson, ask students to bring aluminium cans or plastic bottles from home. Each student will also need scissors, mud, old cloth, compost, water and one of the following types of seeds: coriander, rajma (kidney beans), channa (chickpeas), or pulse.

Objectives:
- Students will participate in analyzing a given social issue.
- Students will understand the processes involved in food production.
- Students will learn to appreciate the role of various people in chain of food production.
- Student will be able to draw the link between environmental care, social interconnectivity and its importance to human existence.

Introduction: (5 minutes)
In the previous lesson we learned about how our food reaches us. We know that grains, vegetables, fruits, and dals all come from seeds kept by farmers until the right time for planting. We also know that those seeds grow into food-bearing plants over the course of a season or, in the case of fruit trees, during many years. In our last lesson we learned to make our own butter. Today, we will learn to plant and care for our very own herbs and pulses!

Just like you spend most of your day at school, farmers spend most of their time with the plants they grow and the animals that help them work their fields. Every morning your parents wake up and immediately think of you. They get out of bed, make you breakfast, and help you get to school. When farmers wake up they certainly think about their families, but they must also get out of bed to care for the farm. The animals are hungry. The plants are thirsty. Seeds need to be planted. Plants are ready for harvest. The fields need to be checked for bugs that like to eat vegetables before they are picked. Being a farmer is hard work! But, as you will see, it’s also very rewarding.

Focus Learners: A Poem about Farming (10 minutes)
1. Write the words to the poem “Oats and Channa and Mutter Grow” (located at the end of this section) on the board or pass out copies of the poem to the students.
2. Read the poem together a few times until the students are comfortable with it.
3. Ask students to rise and either demonstrate or elicit repeatable motions to dramatize the song.
Main Activity: Planting the Seeds

1. Ask the students to take out their can or plastic bottle. Students with plastic bottles should cut off the top quarter where it narrows towards the cap. All cans and bottles should be well-rinsed.

2. Using a hammer and nail, make drainage holes at the bottom of each student’s can or bottle. As this is happening, explain that it creates a way for the water to leave the container so the seed does not rot.

3. Ask the students to decorate their pots with paper, drawings, paint, or writing.

4. Pass out the rest of the materials, giving each student just enough for one planting.

5. Demonstrate the steps for planting a seed as follows:
   - Place a layer of stones at the bottom of the pot to allow for good drainage.
   - Fill the pot to around two thirds full with moist compost. On top of this, add a thin layer of mud.
   - Gently push a few seeds into the soil.
   - Pat the compost down, leaving an inch or two of space at the top of the pot for watering.
   - Water the soil and cover it with a wet cloth.
   - Place the pot in a sunny location like a window.
   - During the next few weeks, make sure the cloth and soil in the pot are moist. If they begin to dry out, sprinkle a little water on top. Do not, however, water the seed so much that the dirt becomes mud.

Check Understanding:
Planting just a few seeds takes many steps and lots of concentration. Ask students if they can imagine what it must be like to be a farmer who has to cover a whole field with seeds and take care of hundreds or thousands of plants.

Closure:
The journey of seed to become a plant helps us appreciate the toil and trouble the farmer goes through to grow food for us. It helps understand the importance of looking after nature as nature looks after us.

Application:
Teachers can engage their students in weekly observation sessions to track the growth of the seed into a plant. If a magnifying glass is available, the students may take turns looking very closely at the different parts of the seedlings. They can also keep a seed journal in which they document their observations through drawings. This is an excellent activity to pair with introductory lessons on botany.

Additional Resources:
Miguel the Tomato http://www.feedingminds.org/level1/lesson2/tomatostory.htm
BBC—Gardening with Children http://www.bbc.co.uk/gardening/gardening_with_children/
Poem—Oats and Channa and Mutter Grow

Oats and channa and mutter grow.
Oats and channa and mutter grow.
Can you or I or anybody know why oats and channa and mutter grow?

First the farmers sow the seeds.
They steer their oxen with such ease.
They stamp their feet and clap their hands and bow their heads to thank the lands.

(Repeat Chorus)

Second the farmers water the seeds.
They empty buckets with such ease.
They stamp their feet and clap their hands and bow their heads to thank the lands.

(Repeat Chorus)

Third the farmers hoe the weeds.
They clean their farmland with such ease.
They stamp their feet and clap their hands and bow their heads to thank the lands.

(Repeat Chorus)

Last the farmers harvest the fields.
They sing a song about its yields.
They stamp their feet and clap their hands and bow their heads to thank the lands.

Adapted from www.agclassroom.org
SEED JOURNAL

Student’s Name: ____________________________________________________________

Kind of Plant: ______________________________________________________________

Documentation of Growth: ___________________________________________________

Draw a picture of the growth; measure the height of the plant, and record the height next to your picture.

WEEK ONE

WEEK TWO

WEEK THREE

WEEK FOUR

WEEK FIVE

WEEK SIX
Subject area: Environmental Studies.

Time Frame: 1 hour 20 minutes.

Materials: Vasundera and the Farm handout, markers and paper to make posters.

Objectives:
- The students will gain awareness of the connection between personal choices and the health of ecosystems.
- The students will understand that different methods of farming have different consequences for human health, rural communities, and ecosystems.

Introduction: (5 minutes)
Imagine if mummy gave you a glass of kitchen cleaning solution with a bowl full of detergent for breakfast instead of milk and cereal? You would question mummy why she gave you such food and then go straight to the sink and flush it down the drain. But why? Because you know that is not what little kids should eat as they are poisonous chemicals which would harm your body.

You must have seen the gardener put foul smelling powders or sprays on your garden plants. If you cannot bear its odour think what must be the condition of the plants. For them (the plants) these powders and sprays are what the detergent and cleaning solution are to you. POISON. But the poor plants cannot stop the farmer and the gardener from applying these poisons to them. Neither can they go flush it into the drain like you. So what can they do? Maybe ask for some help from little boys and girls like you.

Focus Learners: Web of Life (20 min) Outdoors

Material: A ball of yarn and the chits (please see end of lesson plan for the chits).

Procedure:
- 24 students form a circle
- Each student picks up one of the chits (from the handout above)
- The Facilitator stands in middle and introduces him/herself as the Sun.

Facilitator:
Our planet is full of different kinds of life. There are plants, animals, fungi, and very small life forms, called micro-organisms. Plants, of course, include trees, vines, grasses,
and vegetables. Animals include everything from bugs to fish to humans. Fungi include mushrooms, mold, and yeast. Micro-organisms, which live almost everywhere and even inside your body, include bacteria and algae. You can only see micro-organisms without a microscope when many of them are living close together. For example, when a pond looks green it is because millions of algae have gathered together on the surface. Even though there are many different types of life on our planet we all have a lot in common. You probably don’t think you and the squirrels that live in your garden are very similar. But actually you, the squirrels, and even the algae that cover ponds have the same basic needs. I am the SUN. I gift my energy to trees so that they may grow healthy and big. (Wrapping one end of the yarn around his/her finger the facilitator throws the ball towards one of the trees). Dear tree now you must gift your energy to another creature which you nourish so the web of life can grow bigger…….

The tree must thank the sun and then after wrapping the yarn around his/her finger pass the ball of yarn on to bird/elephant or any other creature that feeds on it.

The student must be told that they have to pass the ball of yarn by thanking the previous source of their energy and sharing humbly the source with another creature. The ball cannot return to the same person more than twice.

Once the web is woven the facilitator asks the trees to pull their finger towards themselves and asks who all felt the pressure. The facilitator then asks the bacteria to do the same and asks who felt the pressure.

**Facilitator at the end of the session will say:**

Life is not a food chain with someone at the bottom and someone at the top but a web of interconnectivity and inter-being; thus we all need each other and must respect each other even the smallest creature has a role to play.

**Main Activity: (30 minutes)**

1. Read the story of *Vasundera and the Farm*. Students may be assigned parts or the teacher may read the entire story [see below].

2. Facilitate a discussion in response to the story. Ask the following kinds of questions:
   - What kind of a farm did Vasundera live on?
   - What was her special gift and how did she make use of it?
   - What were Aloo Kaka and Chota Batata discussing about? Or Who was Uncle Spud and what problems was he facing?
• Ask them how different plants and vegetables help us stay healthy. (At least the ones mentioned by Chota Batata.)

• What would happen to the plants, the animals and the children if the potato company were to take over Vasu’s farm?

• How would you help Vasu and her friends to promote natural, organic farming?

**Checking Understanding:** (10 minutes)

• List three plants, vegetables or fruits that are helpful to you and also (preferably) the names which are not mentioned in the story.

• How do these plants help you?

• List three things that plants need to produce chemical free and healthy fruits or crops.

**Closure:** (10 minutes)

Using the board or a large piece of paper in the center of the room, ask students to use their imaginations to dream a farm. What kinds of plants would grow? How many? How would the farmers treat the animals that came to the farm? How would the farmers care for the plants and animals? Where would the farmers take their produce to sell? How would the farmers encourage the health of everyone affected by their farm? Make a bubble chart and/or draw pictures to collect the ideas.

**Application:**

• The students can draw a poster or a picture by which they can explain to their parents the importance of organic farming.

• They can also write a poem or a story explaining the need to carry our organic farming.
## FOCUS LEARNERS ACTIVITY CHITS

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<td>Snail</td>
<td>Swallow</td>
<td>Frog</td>
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<tr>
<td>Algae</td>
<td>Snake</td>
<td>Crow</td>
<td>Turtles</td>
</tr>
<tr>
<td>Mango Tree</td>
<td>Moth</td>
<td>Man</td>
<td>Tiger</td>
</tr>
<tr>
<td>Neem Tree</td>
<td>Mosquito</td>
<td>Woman</td>
<td>Elephant</td>
</tr>
<tr>
<td>Banyan Tree</td>
<td>Butterfly</td>
<td>Child</td>
<td>Fox</td>
</tr>
</tbody>
</table>
STORY: Vasundera and the Farm

Narrator: Today we are going to leave the hustle and bustle of the city to visit a girl called Vasundera, who can help us understand the importance of natural, organic farming. Vasundera is a happy little girl, living on a beautiful farm where butterflies fly, flowers blossom, and frogs frolic. She has heard of farms where there are no butterflies, because the caterpillars that become butterflies are eliminated with poisonous sprays. She has heard of farms where there are no flowers, because the many plants that grow are limited to one or two. All others are eliminated with poisonous sprays. She has heard of farms where no frogs frolic, because they are not invited. The farmers make sure no animals have room or want to live in their land. She has heard of these places, but her beautiful, natural farm has always been a place where all creatures are welcome.

A very happy child, Vasundera has a special gift. She can hear and understand what other creatures are saying. So every day she gets up early in the morning with the sun and goes for a quiet, long walk to listen to the chatter of the birds, the gossip of the flowers, and the stories of the river. Most of all, though, she likes to listen to her favorite vegetable, potatoes in their patch on the farm. The potatoes have friends all over the world and have the most interesting stories to tell. Let’s join Vasu as she eavesdrops on the potatoes this morning.

Aloo Kaka: Hey dudes! Mr. Bird just told me that Uncle Spud in the USA is not doing so well. He said that a few months ago his farmer, Billy, sold his farm to a company which makes potato chips. Since then Uncle Spud has been feeling sick and bloated.

Chota Batata: Poor Uncle Spud. He was always so healthy. It was his dream to be a top class potato salad in his old age and now he will be an unhealthy potato chip.

Aloo Kaka: I know! That’s too bad. The worst part is what they are doing to him. Mr. Bird told me that they are putting all kinds of poisons and chemicals on him and all his fellow potatoes. One of the poisons has made his best friend Mr. CP—that’s Mr. Caterpillar—leave town. His buddy Mr. J. Worm has also left the farm. He thinks he is feeling bloated and tired because of the chemicals that the potato chip company is telling Farmer Billy to use. Poor Uncle Spud is now a couch potato. He was so healthy and happy before all this nonsense.

Chota Batata: Oh! That’s so sad!

Top Carrot: Well, why are you crying about Uncle Spud? I heard from Krish the Butterfly that people in our village are also planning to sell their farms to the potato chip company...
Top Carrot: Just think of us folks who are not potatoes. At least your children will see the next season. This, my friend, will be my family’s last season on the farm. We have been so happy here. Such good times! And now what?

Chota Batata: Oh!! No!! This cannot be! Not our farm! We are so happy here. Look at the children who eat us and how happy they are too. If our farm becomes a potato-only farm with poisons and chemicals, we will become unhealthy and unable to have children. All our friends will be pushed out, and these children in the village will no longer laugh and play as they used to. They will become poisoned by the chemicals in the farm and no longer be able to enjoy the many plants and animals of the farm. They count on us, on the diversity of life. Now they are healthy because Mr. Neem makes their teeth strong, Mr. Ginger keeps their stomach well, Amma Amaranth, improves their immune system, Brother Lemon improves their blood circulation, and of course, Top Carrot, you help them see better... Oh, Top Carrot, can’t you help them see that this is a disaster?

Aloo Kaka: Breathe, Pots. I think that someone is watching us and listening to us. Maybe she will be able to help save our farm from becoming a chemical, potato-only farm. Vasu, I know you cannot speak our language yet, but I know you can see us and understand us. Would you help us save the farm? We don’t want to loose all our friends, we don’t want to grow unhealthy, bloated, fat potatoes and become potato chips. We want what’s good for all of us, including you. We want a long healthy life for our dear Vasu. Please help us!

Narrator: Vasu cannot speak vegetable language yet, so she nods and makes a gesture to show she understands. Then she runs home, gets ready, and goes to school. There she asks her schoolmates to help her save the farms and the many diverse plants and animals on the farms. She tells them all about what is happening to Uncle Spud in the USA. The children think about it and realize that if the potato chip company comes to their town and buys all their farms, they would have nowhere to go and play with the butterflies, the flowers, and the frogs. They would not be able to enjoy the delicious salads that their mothers make or the amazing jams that their fathers make. Most importantly, they realize that if they eat fruits and vegetables which are grown with poisons and chemicals, all the vegetables would suffer, all the diverse life—the biodiversity—would suffer, and someday, their own health will surely suffer, too. They decide that they need to share the importance of natural, organic farming and eating with their parents. For this they need to talk to them and show them. They need to make pictures and posters to spread the word. You can too. How can you tell your parents and friends about the importance of natural, organic farming? How can you show them?

Story by Shreya Jani
Middle School Lesson Plans

"The greed of gain has no time or limit to its capaciousness. Its one object is to produce and consume. It has pity neither for beautiful nature nor for living human beings. It is ruthlessly ready without a moment’s hesitation to crush beauty and life out of them, molding them into money."

Rabindranath Tagore
Subject Area: Science, nutrition, media studies.

Time Frame: 1 hour 10 minutes.

Materials: Reflection Sheet: one per student and group hand out for mind mapping.

Objectives:
- To instill a sense of compassion, justice and earth care amidst the students.
- Help students overcome the pressures that encourage an unhealthy diet.
- Promote self-reliance.
- Teach the immediate and long-term benefits of eating nutritious foods.
- Teach how to make the best food choices.
- Encourage an interest in learning more about food and nutrition.

Introduction: (10 minutes)
Food is supposed to nourish our bodies. We need food to live. When eating becomes a source of guilt, shame, or fear then this relationship has become unhealthy. Eating should be one of many activities in an individual’s life. When an individual is preoccupied with food, this relationship is unhealthy. Some of the signs of unhealthy eating are:
- Having difficulty interpreting the body’s internal signals (hunger, satiety, emotions, etc.)
- Valuing body weight and/or appearance as the most important aspect of self-worth
- Having a distorted view of one’s body
- Feeling very dissatisfied and/or unhappy with one’s physical appearance
- Today we will try and understand why we take up unhealthy eating habits and how we can ensure we eat well.

Focus Learners: (10 minutes)
Hand out the Reflection sheet (see end of the lesson plan) to the students; ask them to fill it up individually without talking. (5 minutes)

Main Activity: Peer Pressure and Food Choices (35 minutes)
Divide the class into groups of 8 students each and ask them to share their reflection sheet 1 with each other. (5 minutes)
Each group then fills in the mind map (Handout two) based on their reflection sheet; discussion (15 minutes)

The mind maps are presented in the class by the groups. (15 minutes)

**Closure:** (5 min)

Close by reviewing the kinds of foods students will choose from now on and what kinds of foods they might avoid. Some questions to review:

- What criteria should one use to choose the food that one eats?
- How can we motivate ourselves to eat right for our body and our planet?

**Application:**

Make healthy eating cool by organizing an earth food festival for your class.

**Additional Resources:**

REFLECTION SHEET

Name:___________________________________________ Age: _____ Date: ________

1. Answer the following questions in Yes or No:
   - Have you ever tried a food product because you liked the commercial?
   - Have you ever dragged your family along to a fast food place where you wanted to eat?
   - Have you ever visited a fast food restaurant because of the prizes it gives away with the meals?
   - Do you own any clothing that features food slogans or logos?
   - Are you afraid to appear odd if you make a “health” choice?
   - Can you think of any advertising campaigns for healthy foods that are as popular as advertising campaigns for snack foods?

2. What are some factors that influence your decisions when it comes to food choices?

3. Which kind of pressures influences your food choices and is the hardest for you to resist?

4. Would you risk losing a friend over something you felt strongly about?

Adapted from: Media Awareness Network Lesson Plan
EXERCISE SHEET:
Mind Map – Peer Pressure and Food Choices

MY FOOD CHOICES
Pressure to Make the Right Choices

Sources of pressure when choosing food:

Strategies used to sell junk food:

How to counter these strategies:

Strategies to promote healthy eating:
Subject Area: History, cultural history, home economics, arts/design.

Time Frame: 1 hour 30 minutes (Divided over 2 weeks with 45 minutes sittings).

Materials: Food detective hand out, plates, cups, cutlery; materials (papers, bindings) for making recipe books.

Objectives:
To connect students to the food resources in their own families and to enable them to learn more about their family food traditions.
To educate students about the danger that traditional food knowledge being lost due to modern, fast food culture.
To introduce students to the “slow food” movement.

Introduction: (5 minutes)
Sharing food and cooking is something people have been doing for thousands of years. It is one of the most important community activities we have as humans and is a way of creating bonds between humans. However the modern world is loosing out on this food culture. As a response to disappearing food cultures and as a response to the encroachment of American-style fast food in Europe the Slow Food movement was launched in late 1980s. In recent years there has been a growing awareness that traditional foods are being lost to the fast food industry. This reality has inspired a “slow food” movement in many countries. In India this movement has been started also in the late 80s by Navdanya which represents the slow food culture in India.

Food companies are now presenting their products as improving upon the goodness of healthy, traditional foods. For example, “Magic Masala”—food additives which can ‘make masala better’—are now being marketed. This can spell disaster for India’s rich food culture as we forget the fine art of cooking.

Dr. Vandana Shiva, an eminent ecologist and founder of Navdanya, recognized that the loss of food diversity and seed diversity was a loss of nutrition, ecology and an increase in hunger and malnutrition; thus in 1980s she started her seed saving movement Navdanya. Recognizing this link between our traditional food culture and ecology we need to preserve our food biodiversity. The exercise in the coming two weeks will be towards protecting and documenting this diversity based on the wisdom of our ancestors.

Focus Learners: Session One—Remembering our past (5 minutes)
Ask students to think about their regional dishes, “family favourites,” and “favourite recipes.” Do they remember their grandparents talking about any special foods they ate as children? The teacher may write a list of these dishes on the board.
Main Activity: Session one- Honoring our Past (20 minutes)

1. Class is divided into 4 groups based on draw of lots:
   - Healing Food – Home Remedies (Nani ke Nuskey)
   - Festival Food
   - Daily Diet
   - Sacred Food

2. Instruct students on recipe collection.
   - Students will get a recipe that has been in the family for years.
   - They should also gather any stories connected with this recipe – what part of the country it came from, whether the recipe has changed over time, any special stories connected with this recipe.
   - They might also take a photo of the person who gave it to them.

3. When collecting this recipe students are asked to answer the following questions:
   - How does the nutrition in this recipe compare to a fast food that I like? (analyze ingredients using the Food Rainbow).
   - What has been lost by adopting new fast foods (culturally, nutritionally)?

4. If at all possible students will bring a sample of the food to the next class for the group to share.

5. Each group makes a plan of implementation for their recipe book. They divide the work based on the skill of the group.

6. They spend a week putting the recipe book together.

Closure: Food Detective (5 minutes)

The hand out on the food detective is given to the students so they can bring it next week for session two of the activity.

Focus Learner: Session Two

The food detective handout is discussed and reflected upon by the class.
**Main Activity:** Session Two—Honoring our Past—Presentations (40 minutes)

**Presentations**
1. Students present recipes to the group along with any family stories connected to it and, if possible, a sample of the food.
2. Students evaluate how the nutrition in this recipe compares to a fast food that they like and discuss what has been lost by adopting new fast foods.

**Recipe Book**
1. Teacher and students will create a book containing the recipes. In addition to the recipes themselves this might include family stories, photos or drawings, and an evaluation of the nutritional value of the food.
2. Recipe books may be given away or sold at events relating to Edible Schoolyard.

**Check Understanding:**
In the future, what will you do or think about when you are choosing between a traditional Indian meal or snack and a fast food? Has collecting these recipes helped you to understand the cultural value of our traditional foods?

**Closure:**
The food diversity of this country is as wide ranging as the people of the country. We have food for every occasion. Now imagine Diwali without laddoo and Id without kheer—only kurkure or chocolates to eat. This fast food monopoly over our food may make the recipes that we have collected museum pieces if we do not actively save them by savoring them.

**Application:**
Students are encouraged to continue to collect and prepare food from traditional recipes.

**Teacher Resources:**
Navdanya: www.navdanya.org
*Bhoole Bisre Anaj (Forgotten foods)* (Navdanya Publication)
*Panna: India's Indigenous Cold Drinks* (Navdanya Publication)
*The Meaning of Food* (American PBS program) http://www.pbs.org/opb/meaningoffood/
International Slow Food movement: http://www.slowfood.com/
The Dish in My Family:

Example: My family makes savaya every year in my home for celebrating Id. We normally eat it with milk and cashew.
EXERCISE SHEET: FOOD DETECTIVE

Name: ________________________________________ Age:______ Date: ________

Potatoes:

How many varieties of potatoes can you purchase at the market?

How many varieties (cultivars) of potatoes are known worldwide today?

How many varieties of potatoes are available to the kitchen gardener?

Garlic:

How many varieties of garlic can you purchase at the market?

How many varieties of garlic are available to the kitchen gardener?

Lettuce:

How many varieties of lettuce can you purchase in the market?

How many varieties of lettuce are available to the kitchen gardener?

Grow your own food; it’s better for you and the Earth.
EXERCISE SHEET: FOOD DETECTIVE - Teacher’s Copy

Potatoes:

How many varieties of potatoes can you purchase at the market?
Generally 3 or 4

How many varieties (cultivars) of potatoes are known worldwide today?
Somewhere in the neighborhood of 5,000. (many land races are still being named and registered in South America)

How many varieties of potatoes are available to the kitchen gardener?
121 varieties are listed in the Seed Savers Exchange 2005 Yearbook.

Garlic:

How many varieties of garlic can you purchase at the market?
Generally 1, sometimes 2 or 3

How many varieties of garlic are available to the kitchen gardener?
20 without much searching – 314 of them in the Seed Savers 2005 Yearbook

Lettuce:

How many varieties of lettuce can you purchase in the market?
1 head lettuce (iceberg): 1 romaine, 2 loose-leaf and a couple of other varieties.
Counting those in the bagged salad mixes, maybe a dozen.

How many varieties of lettuce are available to the kitchen gardener?
at least 128 varieties of head lettuce, 191 of leaf lettuce and 43 varieties of romaine
Subject Areas: Economics and Social Sciences.

Time Frame: 1 hour 10 minutes.

Materials: quiz sheet, one mind map per group and handout on ways of production.

Objectives:
- Students will learn importance of evaluating their own food choices.
- Students will understand the relationship between consumers and producers.
- Students will make informed choices about what one eats.

Introduction: (5 minutes)
There is no purchasing decision that does not itself imply some moral choice, and there is no purchasing that is not ultimately moral in nature. Principle 8 of The Rio Declaration on Environment and Development, 1992 says: “To achieve sustainable development and a higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption…”

Our food choices are deeply linked to not only our health but also the health of the community and the planet. From the time the food that we eat comes into being as seed till the time it makes it to our plate, we are making choices. These choices affect the producers of the food, the distributors of the food; the community which is consuming the food as well as the planet itself.

Let us begin by taking a short quiz to understand the gravity of the choices we make.

Focus Learners: (10 minutes)
Hand out the quiz—Which Brand of Consumer are you? Debrief on the quiz.

Main Activity: Impact of Style of Production—Need to Make Informed Choices (40 minutes)
1. Divide the class into groups of 5 to 8 students.
2. Each group is given one mind map to fill along with the handout on food production systems.
3. Each group discusses the product in the centre of their mind map and fills in the boxes given.
4. The groups present their worksheet to the class.
**Closure:** (5 min)

Close by reviewing the kinds of foods students will choose from now on and what kinds of foods they might avoid.

**Application:**

Each chooses one company whose product his/her house uses the most and creates a corporate profile of that company, keeping the indicators of ethical consumption in mind. This information is then shared as write-ups in class to help others make more informed choices as well.

**Teachers Resources:**


Synopsis of AMUL India http://www.sankalpindia.net/drupal/the-solution-amul


Green Peace for corporate profiling: http://www.greenpeace.org/international/
REFLECTION SHEET: Which Brand of Consumer Are You?

Name: ________________________________________  Age:_____  Date: __________

1. While going shopping you…
   a) Always carry a cloth bag.
   b) Recycle your plastic bags.
   c) Mostly carry a cloth bag.
   d) Carry/Recycle bags once a week.
   e) Never use/recycle cloth bags and end up using whatever the shopkeeper gives you.

2. Your favorite restaurant and takeaways are…
   a) Local family style organic restaurants.
   b) Roadside street food.
   c) Local food joints but not too particular about the produce used.
   d) Any fast-food joint like Mc Donald’s, Subway, Domino etc.
   e) Anywhere new in town where the who is who of the town can be seen.

3. Before purchasing any food product you read the label of the product to check…
   a) Fair-trade, animal tested, child labor free, healthy and eco-friendly production always and then buy it when it satisfies all scores.
   b) Animal tested, child labor free, healthy and eco-friendly production most of the time except when you are in a hurry and then buy if it satisfies all scores.
   c) Animal tested, child labor free, healthy and eco-friendly production 50% of the time and buy when at least two are mentioned.
   d) Never look at the label except for expiry date.
   e) Never look at the label; only buy brands whose ads you like.

4. While purchasing food produce for your home you buy…
   a) Only local, organic and in season food produce always which are within a 5 mile radius of your city.
   b) More than 75% of the food produce which are locally grown, organic and in season.
   c) More than 50% of the food produce which are locally grown, organic and in season.
   d) More than 30% of the food produce which are locally grown, organic and in season.
   e) You don’t care where the food produce comes from; you buy what you feel like eating at that time.
Mostly As: You are: Cooperative Farmer Market
You are the poster child for ethical consumption and a radical consumer. You buy fresh you buy local and are very aware that as a consumer you have responsibility towards the earth and living creatures in it. No multinational brands will do for you. Every purchase made by you is thus thought and in favour of a sustainable through future.

Mostly Bs: You are: Navdanya
You are an activist consumer very aware of the impact you have on the planet as a consumer. You keep your self well informed about the effects of globalization on communities, farmers and the planet. Mostly you buy products which reflect this philosophy.

Mostly Cs: You are: The Body Shop: You are a pragmatic and yet responsible consumer. You like consuming but if a convenient more ethical alternative presents itself you don’t mind spending that extra buck for it. You mean well as long as its convenient.

Mostly D: Multinational CSR: You are the convenient consumer. You shop for things that you like and need but not much thought goes into what you are buying and its impact on the earth. Its just another activity of life why think about it how does it matter what you buy as long as you get what you want.

Mostly Es: Multinational Brand: You are Obsessive consumer. You buy with out discrimination for the sake of buying. You often use the word retail therapy buying things which are the fad of the moment. The planet, society and ethics means nothing to you when you consume as long as you get what you want and get to show it off.
EXERCISE SHEET: FOOD IMPACT

Name: ________________________________________ Age: _____ Date: ________

Impact on Self (Consumers):

Impact on Farmers and Other Producers:

People Profiting from the Product:

Impact on Earth/Environment:
EXERCISE SHEET: IMPACT OF FOOD CHOICE

Name: ________________________________________  Age:______  Date: ________

Impact on Self (Consumers):

Impact on Farmers and Other Producers:

People Profiting from the Product:

Impact on Earth/Environment:
EXERCISE SHEET: FOOD IMPACT

Name: _________________________________  Age: ______  Date: __________

**Impact on Self (Consumers):**

**People Profiting from the Product:**

**Impact on Farmers and Other Producers:**

**Impact on Earth/Environment:**
What is Ethical Consumption?
Ethical consumption is buying things (when they are needed at all) that are made ethically. Generally, this means without harm to or exploitation of humans, animals or the natural environment. This can take on the following forms:

- Positive Buying. This means favouring particular ethical products, such as energy saving light bulbs.
- Negative Purchasing. This means avoiding products that you disapprove of, such as battery eggs or gas-guzzling cars.
- Company-Based Purchasing. This means targeting a business as a whole and avoiding all the products made by one company. For example, the Nestle boycott has targeted all its brands and subsidiaries in a bid to get the company to change the way it markets its baby milk formula across the world.
- Fully-Screened Approach. This means looking both at companies and at products and evaluating which product is the most ethical overall.

What is Fair Trade?
Fair Trade involves the following principles:

- Producers receive a fair price—a living wage. For commodities, farmers receive a stable, minimum price.
- Forced labor and exploitative child labor are not allowed.
- Buyers and producers trade under direct long-term relationships.
- Producers have access to financial and technical assistance.
- Sustainable production techniques are encouraged.
- Working conditions are healthy and safe.
- Equal employment opportunities are provided for all.
- All aspects of trade and production are open to public accountability.

What is A Cooperative?
A cooperative is a collaboration of individuals or businesses that work together to gain a benefit through numbers. A cooperative is not a charity but it is a nonprofit. It is jointly owned and democratically controlled. Cooperatives can be found in all industries and in all geographic areas. They have one reason to exist: meeting the needs of their members. All profits (sometimes called margins) are given back to the cooperative’s members. These refunds, also called “patronage dividends,” are paid to each member annually according to the proportion of business each does with the cooperative for that year. Example: Amul India and Lijjat Pappad India.
## EXERCISE SHEET – Corporate Profile Sheet

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<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name of Product:</th>
</tr>
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<table>
<thead>
<tr>
<th>Name of Company:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Names of major investors in the company:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Criteria of Investigation</th>
<th>Finding</th>
<th>Analysis</th>
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<tbody>
<tr>
<td></td>
<td>Production</td>
<td>Distribution</td>
</tr>
<tr>
<td>Universal Human Rights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Impact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal Welfare</td>
<td></td>
<td></td>
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<tr>
<td>Other E.g – Profit VS Social Cost</td>
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**GARDEN OF HOPE: LESSON PLANS FOR CULTIVATING FOOD DEMOCRACY**

46
High School Lesson Plans

“Your mission is proving that a love for the earth, and for the things of the earth, is possible without materialism, a love without greed… I entreat you not to be turned by the call of vulgar strength, of stupendous size, by the spirit of storage, by the multiplication of millions, without meaning and without end. Cherish the ideal of perfection, and to that, relate all your work and all your movements. Though you love the material things of earth, they will not hurt you and you will bring heaven to earth and soul into things.”

Rabindranath Tagore
LESSON ONE: HIGH SCHOOL

LESSON One: Earth and Ethical Consumption

Subject Areas: Economics, Political Science, Sociology and Ecology.

Duration: 60 minutes.

Materials: Handout, one and two.

Objectives:

• To understand the environmental and social impacts of food packaging.
• To understand and seek more earth friendly means of consumption.
• To make the connection between our consumption patterns and the struggle of the indigenous people against mining.

Introduction: (5 minutes)

Packaging accounts for almost 10% of the environmental impact of anything bought. In developed countries like the U.S. and UK, almost 30% of food sold in stores is thrown into landfills without even being touched. It is a complete wastage of money and that waste is filling landfills too.

Today in India, where earlier we relied on our food supplies from local vendors, we are moving more and more towards supermarkets. In these outlets all food is wrapped in plastic or tetra packaging. One may argue that this is more hygienic even though all raw vegetables have to be washed properly before cooking; however the environmental cost of food packaging is very high. The materials used for food packaging are all high on human and environmental cost. Let us examine this assumption a little further.

Focus Learners: (15 minutes)

Fill up the reflection sheet, keeping in mind the use of the listed material for food packaging and share with the class.

Main Activity: Say No To Foil for People and Soil (30 minutes)

1. Read out the story of Niyamgiri mountains and bauxite mining.

2. Divide the class into 4 groups:
   a) Representing the indigenous people of the area.
   b) Representing the government.
   c) Representing the mining company.
   d) Representing the consumer of aluminum products.
3. Ask each group to write pros and cons of such mining.
4. Each group puts forward its reasons for and against the mining.
5. The class votes on whether mining should take place in this area.

Check Understanding:
- What are the materials normally used for food packaging?
- How does it affect our environment?
- What are alternatives to such materials?

Closure: (10 Minutes)
Large scale mining comes at heavy social and environmental costs and may prove to be economically unviable for the larger community in the future. Once an area is mined, it becomes a waste land with very little potential of agriculture possible there. The large scale displacement of people for mining, the pollution caused by such activities which contaminate sources of drinking water are some of the other reasons why large scale mining is not good for people and environment. We need to see why we are mining, what we are mining and at whose cost we are mining. The aim of this exercise is to understand that the foil you use comes at a heavy cost to people, their livelihood and lifestyle.

Read out handout to the class

Application:
Find out more about the packaging industry and its impact on the earth.

Teacher’s Resources:
More information on Niyamgiri Struggle:
http://www.alertnet.org/db/an_art/55867/2010/02/5-122325-1.htm
## REFLECTION SHEET: Food Packaging as I see it

Name: ________________________________________ Age:______ Date: __________

<table>
<thead>
<tr>
<th>Kind of Packaging</th>
<th>Environment and Social Impact</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
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<tr>
<td>Glass</td>
<td></td>
<td></td>
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<tr>
<td>Paper</td>
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<tr>
<td>Other</td>
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</table>

Comments:
Niyamgiri Mountains constitute the ancestral domain of the Dongaria, Kutia and Jharania Kondh tribes who are foraging communities and categorized as ‘the primitive tribes’ under the Constitution of India. They live in about 200 villages, scattered throughout this range, which is situated in the Kalahandi District of Orissa with an altitude of 4284 feet above the sea level. It is the storehouse of rich biodiversity and the source of two major rivers and many rivulets.

For these people, the Mountains are spiritual entities, at the apex of the Natural Order that sustains them. Niyamgiri represents the Konds’ mythical origins and identity. Mountains give Life to all the surrounding areas, through the streams which start from their sides. The Water which emerges out of these Mountains is pure and rich in Minerals. This accounts for Orissa’s outstanding fertility and lush Forest. Bauxite being a porous mineral helps retain water and has a deep connection with abundant plant-life, and Bauxite-rich areas include most of the world’s best tropical and sub-tropical Forests.

In the Mountain of Niyamgiri, Indigenous People have been living with the animals amidst rich vegetation, sharing the earth’s bounty collectively. They are the protectors of Nature and use Nature sustainably. As a result of that the area still boasts of more than 300 species of plants, trees, etc. including about 50 species of medicinal plants. Six of the species are listed in the IUCN Red Data Book. These forests are yet to be surveyed properly for their floral and faunal wealth. More than 75% of the hill is covered by thick forests with an average density of 0.6.

On October 5th 2004, the Orissa Mining Corporation (OMC) entered into an MOU with Vedanta for the Lanjigarh and the Karlapat bauxite mines. This stated that a one million tonne capacity aluminum plant would come up in the next three years. In order to help set up such an aluminum complex OMC entered into a Joint Venture Company (JVC) with Vedanta. The corporation with the help of the government then forcibly acquired and is still acquiring land to start mining despite people’s protest. Mining in Niyamgiri violates two constitutional guarantees.

1. Tribes’ right to territorial integrity and to decide their own path of development (Vth Schedule of the Indian Constitution).

The Ministry of Environment and Forests’ (MoEF) report, on which the judges are basing their judgment, misrepresents the extent of forest and biodiversity on top of Niyamgiri and the other bauxite-capped mountains. It says that all the bauxite deposits are located on plateau tops “with practically no vegetation/scanty vegetation on the mineralized zones”, which is completely untrue, even according to their own statistics.

Bauxite is the core ore for Aluminum and is used by the food packaging industry. So every time you use foil think about the lives it spoilt.

**SAY NO TO ALUMINIUM FOIL AND PACKAGING!!!**
Subject Areas: Nutrition, human biology, media literacy.

Duration: 75 minutes.

Materials: Lifestyle Epidemic quiz, Information handouts, food logs and sheets of paper.

Objectives:

• To introduce students to lifestyle epidemics.
• To alert students to dangers associated with obesity and eating disorders.
• To inspire students to develop a healthy relationship with food.

Introduction: (5 minutes)

As the name suggests, lifestyle diseases are a result of the way we lead our lives. Lifestyle diseases are the result of an ill-relationship of people with their environment. It takes years to develop and then becomes so much a part of our lives that it cannot be easily cured even with allopathic medicines. The fact that our diet is changing day by day, (from high nutritional food, we have moved towards junk food), has contributed to the era of lifestyle diseases. Reduction in physical activity and exercise has also aggravated the scenario. Substance abuse, especially tobacco smoking and alcohol drinking, may also increase the risk of certain diseases later in the life. But unlike other diseases, lifestyle diseases can be barred, as its influence can be weakened by changing our lifestyles, improving diet and making the environment healthier.

The World Health Organisation (WHO) has warned that more than 270 million people are susceptible of falling victim to diseases linked to unhealthy lifestyles. Most of these people are thought to come from China, India, Pakistan and Indonesia. China and India are the emerging economic superpowers. With prosperity have come cushy, but sedentary jobs requiring long hours of work with no time left for exercise. Added to this is the fact that the diets are becoming increasingly focused on ready-made junk food.

In a little over a decade from now, chronic diseases like diabetes, hypertension, cancer and AIDS would account for over 65 per cent of deaths in India compared to 53 per cent in 2005. By 2020, chronic diseases are expected to claim 7.63 million lives in India, compared to 3.78 million in 1990, a study said.

Food is the fuel for the body; too little or too much both can be detrimental to one’s health. It is important to know what a balanced diet is and how one can integrate it in our daily lives. For a healthy body makes a healthy and confident person. Today we will explore through reflecting on our lifestyle whether we are abusing our body or upholding its health.

Focus Learners: (15 minutes)

Start the class with a discussion on students eating habits.

• How many eat while watching television?
• Who prepares his/her own meals?
• How many students help with food shopping?
• What type of snacks do students eat?
Ask students whether they think their lifestyle is healthy. Focus on diet, exercise, sleeping habits, and ways students have of reducing stress in their lives.

Ask the students to complete the Lifestyle Epidemic quiz. Distribute Lifestyle Epidemic handouts and review quiz.

**Main Activity: Lifestyle epidemics—Am I at Risk? (45 minutes)**

1. Distribute Reflection sheets to the students and ask them to reflect on the points mentioned and write their assessment of their current pattern of consumption.
2. In pairs ask the students to share their reflections and evaluate the impact of these consumption patterns on their health.
3. The pair then sets out to make a plan for healthy living for the coming week for themselves with inputs from each other.
4. This plan is written down for future reflection after a week.

**Check Understanding: (5 minutes)**

- What is meant by lifestyle diseases?
- How can one overcome and avoid them?
- What are the indicators of healthy eating and living?

**Closure: (5 Minutes)**

After a week of keeping the food log we will look at the following questions to tally our progress. When they’ve completed the food diary, have students write a 1–2 page report analyzing how their food choices compared to their My Pyramid plan. They should include the following information:

- How many days did what they ate match their diet plan made in class?
- On an average, how much did they eat from each food group? Was that more or less than the recommended amount in their plan?
- How much exercise did they get each day?
- What effect will keeping the food logs have on their eating habits in the future?

**Application:**

1. Lifestyle Log: Over the next week students will carefully monitor their food intake. At the conclusion of the week they will analyze their diet and assess it for potential lifestyle diseases. They will hand in the exercise to the teacher.
2. Students will create a display to educate their school around lifestyle epidemic and healthy eating choices.

**Note to teachers:**

If irregularities are found in students eating habit pointing towards anorexia or bulimia please consult a health care practitioner or a counsellor in the school.

**Teachers Resources:**

1. Drinking only one can of soda each day will not significantly affect my weight.

2. While saturated fats are known to cause heart disease, trans fats may be eaten in moderation.

3. Salt in small quantities is not harmful.

4. Which of the following are NOT associated with obesity:
   - Respiratory difficulties___
   - Chronic musculoskeletal problems___
   - Skin problems___
   - Infertility___
   - Cardiovascular disease___
   - Type 2 diabetes___
   - Certain types of cancers___
   - Gallbladder disease___

5. Crash diets are generally effective if a person will only stick to them.

Name: ________________________________________ Age:_____ Date: ________
1. Drinking only one can of soda each day will not significantly affect my weight.
   False: The average sized soft drink has a whopping twelve to fifteen spoons of sugar. The sugar in one can a day is enough to add four kilos or ten pounds of body fat a year. Drinking more than one can a day increases the chance of obesity by sixty percent.
   The WHO recommends limiting sugar intake to 2 grams a day (the maximum recommended amount in the U.S. is 40 grams).

2. While saturated fats are known to cause heart disease, trans fats may be eaten in moderation.
   False: Consuming either saturated or trans fat raises the blood levels of the so-called ‘bad’ cholesterol (serum LDL cholesterol). LDL cholesterol is a risk factor for high blood pressure, narrowing of the arteries (atherosclerosis), heart disease and strokes.
   Saturated fats primarily come from animal products such as meat and dairy products. Foods high in saturated fat include fatty meats, full-fat dairy products, butter, hard margarines, lard, coconut oil, and palm oil. Trans fats are found naturally at low levels in some animal-based foods, but can also be formed when liquid oils are made into semi-solid fats like shortening and hard margarine.

3. Salt in small quantities is not harmful.
   True: The amount of sodium considered adequate to promote good health in adults is 1,500 mg per day. Health Canada recommends that adults do not exceed 2,300 mg of sodium per day (less than 1 teaspoon).
   However, many fast and packaged foods are very high in sodium/salt. A diet high in sodium is associated with an increased risk of high blood pressure. High blood pressure is a major risk factor for stroke, heart disease and kidney disease.

4. Which of the following are not associated with obesity:
   Answer: All of these conditions are associated with obesity.

5. Crash diets are generally effective if a person will only stick to them.
   False: Crash and fad diets that promise immediate weight loss typically end with the person gaining back all (and sometimes more) of the weight they may initially lose.
Obesity
In recent years there has been a rapid influx of western lifestyle patterns – a diet based on junk and fast foods which are extremely high in unhealthy fats, sugar and salt, as well as a lack of physical activity. This lifestyle is directly linked to skyrocketing increases in rates of obesity amongst Indian children and teenagers.

This rising epidemic reflects profound changes in society and in behavioural patterns of communities over recent decades. While genes are important in determining a person’s susceptibility to weight gain, energy balance is determined by calorie intake and physical activity. Thus societal changes and nutrition transition are driving the obesity epidemic. Economic growth, modernization, urbanization and globalization of food markets are just some of the forces thought to underlie the epidemic.

Impact of Obesity on Health
Overweight and obesity lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance.

The non-fatal, but debilitating health problems associated with obesity include respiratory difficulties, chronic musculoskeletal problems, skin problems and infertility. The more life-threatening problems fall into four main areas: CVD [Cardiovascular Disease] problems; conditions associated with insulin resistance such as type 2 diabetes; certain types of cancers, especially the hormonally related and large-bowel cancers; and gallbladder disease.

The likelihood of developing Type 2 diabetes and hypertension rises steeply with increasing body fatness. Confined to older adults for most of the 20th century, this disease now affects obese children even before puberty. Approximately 85% of people with diabetes are type 2, and of these, 90% are obese or overweight. And this is increasingly becoming a developing world problem. In 1995, the Emerging Market Economies had the highest number of diabetics. If current trends continue, India and the Middle Eastern crescent will have taken over by 2025. Large increases would also be observed in China, Latin America and the Caribbean, and the rest of Asia.

Raised BMI [Body Mass Index] also increases the risks of cancer of the breast, colon, prostate, endometrioma, kidney and gallbladder. Chronic overweight and obesity contribute significantly to osteoarthritis, a major cause of disability in adults. Although obesity should be considered a disease in its own right, it is also one of the key risk factors for other chronic diseases together with smoking, high blood pressure and high blood cholesterol. In the analyses carried out for World Health Report 2002, approximately
58% of diabetes and 21% of ischemic heart disease and 8-42% of certain cancers globally were attributable to a BMI above 21 kg/m².


Fad Diets

Diet plans come and go: low-carb diet, low-fat diet, glycemic index diet, South Beach diet and blood type diet are just a few of the recent plans. More drastic strategies for weight loss include gastric bypass surgery and weight loss drugs. However we need to remember that losing weight takes time – crash and fad diets that promise immediate weight loss typically end with the person gaining back all (and sometimes more) of the weight they may have initially lost.

When starting on a weight loss diet remember that the best way to lose weight is by eating a healthy diet that includes moderate intake of various foods from the major food groups: fruits, vegetables, grains (particularly whole grains), low-fat dairy products, lean protein sources (meat, poultry, fish, beans and other legumes), nuts and seeds.

(For a discussion of diet plans see Mayo Clinic http://www.mayoclinic.com/health/weight-loss/N000616)

Anorexia and Bulimia

The same popular media and advertisers who promote unhealthy products and sedentary lifestyles in order to sell their products also flood the airwaves with images of an ‘ideal’ thin body type.

The compulsive pursuit of an ideal of thinness is characterized by a preoccupation with food and a distortion of body image. Two eating disorders in particular, anorexia nervosa and bulimia, are on the rise among teenage girls and young women. (These two eating disorders also occur in boys, but less often). A teenager with anorexia will starve herself, often to the point of serious damage to the body; the purging of bulimia presents a serious threat to the girl’s physical health, including dehydration, hormonal imbalance, the depletion of important minerals, and damage to vital organs. Unfortunately, many teenagers hide these serious and sometimes fatal disorders from their families and friends.
Read the indicators of healthy living and eating, and reflect on your habits.

- Engage in at least 30 minutes of physical activity each day.
- Eat a variety of foods rich in nutrients from each of the basic food groups while limiting the amount of saturated fats, cholesterol, sugar, and salt consumed. Get less than 10 percent of total calories from saturated fats, and eat fewer than 300 milligrams of cholesterol each day.
- Eat at least two cups of fruits and two-and-a-half cups of vegetables each day. Try to choose a variety of fruits and vegetables, such as citrus fruits and berries, and dark-coloured vegetables, legumes, and starchy vegetables.
- Eat at least 3 ounces of whole grains each day.
- Drink at least 3 cups of low-fat milk each day or eat the equivalent in other dairy products.

Healthy servings of the food groups to meet your nutritional requirements:

- Milk (3–4 servings/cups): Foods include milk, yogurt and cheese. Milk and milk products are high in calcium and protein, which builds strong bones, teeth, and muscles.
- Fruits (2–4 servings): Fruits are excellent sources of vitamins, which heal the body and keep skin healthy, and fiber, which helps your digestion. So stock up on fruits—fresh fruit is best, dried fruit, frozen fruit, canned fruit are good as well, but watch out for added sugar!
- Vegetables (5–7 servings): Veggies are great sources of fiber, vitamins, and minerals. Just remember that darker coloured vegetables, like carrots and broccoli, have more nutrients.
- Dal, pulses, meats (2–3 servings): Foods include lentils, peas, beans, meat (beef, chicken, turkey, fish, pork but not bacon). This group provides iron and protein, which gives you strong muscles.
- Grains (5–7 servings): This food group gives you energy because it contains complex carbohydrates. Includes whole grains, breads, cereals, rice and roti.
- Healthy Fats (3–5 servings): unrefined oils (like mustard oil), nuts and seeds, avocados, and coconuts are the healthy fats. These oils are rich in omega fatty acids—a key nutrient. If you are eating fatty fish or other meats, you can eat less of this category. Stay away from refined cooking oils!

1 serving size/ounce equivalent of bread = plastic CD case
2 servings/ounce equivalents of cooked brown rice = a tennis ball
1 serving size = 1/2 cup of broccoli = a light bulb
1 serving size = 1/2 cup of potato = a computer mouse
Generally, 1 serving size of whole fruit = 1 tennis ball
1 serving size of cut fruit = 7 cotton balls
3 servings/ounce equivalents of fish = 1 checkbook
3 servings/ounce equivalents of meat or poultry = 1 deck of cards
2 servings/ounce equivalents of nuts or oils = 1 roll of 35 mm film or 1 ping-pong ball
# EXERCISE SHEET – FOOD LOG

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Date:</th>
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<tr>
<th>Time</th>
<th>Quantity</th>
<th>Food</th>
<th>Calorie</th>
<th>Fat</th>
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**Total**

Water intake (glasses or litres):

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<tr>
<th>Time</th>
<th>Physical Activity</th>
<th>Minutes</th>
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</table>

Comments:
Subject Areas: Economics, Ecology and Sociology.

Duration: 45 minutes + 45 minutes + Field work

Materials: 2 Handouts and tips on how to carry out community research.

Objectives:
- To understand the meaning of Food Security.
- To learn to assess hand on food security of a community.
- To implement the Asha ke Chaman – Urban food Gardens program

Introduction: (5 minutes)
Food security is defined as access by all people at all times to enough nutritionally adequate and safe food (quality, quantity and variety) for an active and healthy life. Food security is affected by a number of factors including, primarily, the food supply and access to jobs and such basic services as education, health facilities, sanitation, clean water and safe housing. Poverty, social inequality and lack of education are primary causes of hunger and malnutrition and are major obstacles to obtaining food security. Food security cannot be ensured only by producing more food. If, for example, people cannot afford the food that is available, if their diets lack essential vitamins and minerals or if poor handling during processing and distribution makes their food unsafe to eat they will not have food security. Access to food security depends on three pillars, or legs of support:

- Food must be Available, meaning that adequate amounts of good-quality, safe food must be produced or imported at the national and local levels.
- Food must be Accessible, meaning that it must be distributed and available locally and it must be affordable to all people.
- Food must be Used in the best way possible for each person to be healthy and well nourished (sufficient in quantity, quality and variety for each individual’s needs).

Increasingly world over people are pressurizing policy makers to reclaim urban arable land and start small community garden which may be able to provide affordable food to some of the people in the city who need it.

Navdanya’s Asha Ke Chaman project, which is part of the Anna Swaraj campaign, is one such step which you can participate in and plan to make at least your area hunger free.
Food sovereignty (Anna Swaraj) is the right and freedom to grow diverse and nutritious food and the right to have access to save healthy adequate and affordable food. Food sovereignty grows from the household to the community, the regional and the national level.

**Focus Learners: Week One—Assessing the food security of the community**
(45 minutes + field work)

1. Divide the class into groups of 8 students each.
2. The group identifies a community where they will implement their Urban Garden project and understands why.
3. They create a format to assess the food security of that area by visiting 8 households with a questionnaire that will help them assess food security.
4. They draft the questionnaire for this assessment. (Hint or sample has been provided).
5. They write a report based on their assessment on the food security issues in the area and identify people with whom they can implement the Urban Garden project in that community.
6. Please refresh your memory on the pillars of food security and make sure that you have information on the households at all levels.

**Main Activity: Week 2 Asha Ke Chaman Project Planning (45 minutes + Implementation over the month)**

1. The groups are given the Asha ke Chaman tips handouts which they read quietly.
2. The food security assessment and analysis are shared by each group in the class.
3. The groups discuss an implementation plan based on their analysis and the tips on Asha ke Chaman handout.
4. They set dates and deadlines to implement their project in an area.

**Check Understanding:**

- What is meant by food security?
- How can we assess food security?
- How can one overcome urban food insecurity?

**Closure:** (5 Minutes)

In the “century of cities”, a major challenge will be providing food for urban inhabitants, especially the poor. Over half the world’s people today lives in cities. The urban poor
are the most vulnerable population with no means to provide themselves with food security. The problem today is not production of food but access to food. As most of the people living under a dollar a day cannot afford the food prices today. One hopes that through your urban gardens you will be able to contribute a little towards the food security of one community.

**Application:**

Implementation of the *Asha ke Chaman* programme

**Note to teachers:**

The teacher must make the students aware that community buy in is very important in such a project. They need to also be made sensitive about how to interact without offending people with a different reality than themselves.

**Teacher’s Resources:**

*FOR HUNGER-PROOF CITIES, Sustainable Urban Food Systems.* Edited By Mustafa Koc, Rod Macrae, Luc J.A. Mougeot, And Jennifer Welsh.


Navdanya Publication: *Biodiversity based Organic Farming; A New Paradigm for Food Security & Food Safety.* Vandana Shiva, Poonam Panday.
REFLECTION SHEET

Name: ________________________________________  Age: _____  Date: ________

Steps Taken during the Interview:

1. Introduction:
   • Names: Who we are, where we are from, why we are here.
   • How many members live in the household.
   • How do they make their living.

2. Guiding questions:
   • What is your staple diet?
   • How long have you been living here for?
   • What are the changes that you have seen so far in the last 10 years?
   • What do you like and dislike about living in here?
   • What are the primary occupations of the community?
   • What are your main food sources?
   • What difficulties do you face in getting your food?
   • What do your children do for a living?
   • Does your family ever eat together?
   • And if so, how often?
   • How does your husband go to work?
   • What do you do when you are not feeling well?
   • If you could make two wishes now, what would they be?
   • What kind of improvement would you want for the community?
   • How strong are relationships in the community today?
   • Do people in the community use/share their skills and resources for the community in their free time?
   • Is there any government support for the community?
   • Can we take pictures?

Reporting areas:
INFORMATION SHEET – Tips for Planning Your Asha Ke Chaman

1. Could be your school, MCD garden or your own backyard.

2. Identify and measure the plot out: measure the area around the area where the urban garden will be located. Use a tape measure to measure the area. Be sure to plan the urban garden in the sunniest area on the property, if possible.

3. Do research and ask the experts before beginning on what is best suited for your plot.

4. Think about how you will be watering your crops. It’s harder if you have to carry buckets of water over long distances.

5. Think of what you like to eat: one common mistake gardeners make is planting lots of vegetables they think they’d like to eat. However, once harvest comes, they find out they really don’t even like it. Start by writing down the vegetables your family already likes to eat. You can certainly experiment with some new additions - in fact, a great way to get children to try new vegetables is to have them help grow it. However, especially if it’s your first time gardening, focus more on what you already love until you get the hang of growing food.

6. Calculate how many plants you can fit. With plants, you always have to make your plans based on the mature size of the plant. Use the final size along with your measurements to see how many plants you can reasonably fit.

7. Try companion planting. You should also consider companion gardening. Placing certain plants near each other can add benefits such as pest and disease resistance, better flavor, and more.

8. Consider specific urban design ideas dedicated to saving space. Deep bed gardens and raised bed gardens are often used in an urban setting to conserve space and grow more plants.

9. Use graphing paper and a pencil to design the urban garden on paper before implementing. Draw the borders of the bed(s) and where specific plants should be located. Be sure to grow taller plants behind shorter ones to ensure the short plants do not get shaded out.

10. Find the right sources of raw material: make a list of sources for raw material for your garden: from compost, to pesticide and the right kind of seed. They should comply to the organic standards; do not use chemical, GM or eco-unfriendly products.
Garden of Hope

“There is no shortage of space in nature; it is in our minds. See, the seed can contain an entire forest and an organism can carry its own lineage.”

Rabindranath Tagore
A seed, though non-descript at first sight, is full of the promise of growth. Imagine observing the seed grow from its appearance as a plain looking pellet into a full, fruit bearing plant. Inherent in this phenomenon are the wonders of creation, the wisdom of life and hope for living and living well.

By planting a seed not only do you bring something to life but also grant to it a purpose. Be it for your use or for its own flourishing, by planting a seed and tending to it, you deepen your connection with the web of life.

Modern urban life is increasingly alienating humanity from the Earth/Bhoomi. Specific, to this trend is the way we consume food, which is a core concern of Navdanya; contemporary patterns of development act to distance people from the natural environment and thus their right to a healthy living and to the very sources of their food. In an effort to address this concern, Navdanya has initiated a school vegetable garden programme, entitled ‘Seeds of Hope, Gardens of Hope’ (Asha Ke Beej, Asha Ke Chaman), to encourage school age children in India to create their own school gardens.

The overall goal is to address how establishing gardens, whether community, kitchen or school, can assist in improving the students’ access to food in a way that is both mindful of their health and that of the earth. It is hoped that by encouraging students to develop an appreciation for gardening, they will grow to understand the important role that they can play in securing their own food access and in preserving the biodiversity of India’s seed heritage.

Through this program we seek to create an awareness and implement action which will feed more people healthier food while preserving and enhancing the health of the planet. Thus we hope that these gardens that you grow will become a symbol of hope and harness the power of people who grow their own nutritious, delicious, and sustainable food to help others do the same.

So if you love to eat fresh food and would like to grow and eat your own fresh food, but you have neither field, nor cow, nor plough then....

Starting a Garden of Hope is the perfect solution!
The journey of creating your very own garden is particularly important and special. During each step of the journey, from your garden to your plate, you will learn more about the many incredible factors involved in producing the fruits, vegetables, herbs, and spices we love and depend on. But this journey is far more significant than growing fresh and healthy food, though that is a very essential aspect of it.

This journey is also about returning to our roots, to the most important elements in life, such as seeds and soil. It is about taking care of our fellow human beings and most importantly Mother Earth! All students, no matter if they live in a rural or urban area, can partake in this experience of cultivating and protecting mother. If you live in a city you may feel that there are no opportunities to garden, because buildings and roads have replaced our fields and made the production of food an activity that occurs mainly in rural India, hundreds of kilometers away from cities.

Contrary to popular belief, cities are full of opportunities to garden, whether it is on rooftops, windowsills, balconies, or, for the luckiest, in a small garden. The practice of urban agriculture has been growing continuously as the many benefits of fresh locally produced food gain greater recognition.

One of the best places to start an urban garden is in a school. Creating a garden at your school will be a long-term learning experience that is quite challenging, but extremely rewarding. As a student and gardener you will learn many important lessons pertaining to health, food systems, nature’s principles, and social responsibility. The success of your school’s garden will require your long-term commitment and dedication. You should take ownership of your school’s garden and work with your classmates to ensure its health and future. By working with other students you can learn the importance of teamwork and build school spirit. This project will also require you to be creative and curious, practice critical reflection, and handle problems that may arise. For example, when pests come to eat the delicious plants, you will work with your classmates to discuss what actions should be taken by the group to solve this problem.

Tackling these different challenges and enjoying a harvest, which is the concrete result of months of patient work, will bring you and your teachers a sense of personal satisfaction and accomplishment.

We will thus walk you through the four basic steps to establish your Garden of Hope wherever you are, in a city or in a village, in the upcoming pages. These are:
1. Planning your Garden of Hope
2. Preparing the Garden of Hope
3. Tending the Garden of Hope
4. Harvesting and saving Seeds of Hope

This section does not guarantee a successful harvest. Gardening is a learning process and it is with patience and critical reflection that you will find the techniques that work for your particular location. However, this section aims to bring you basic tools to start a Garden of Hope and to deal with common pest-control, harvesting, and seed saving issues. It is based on Nadanya’s practices, which reflect the accumulated agricultural knowledge of many generations of farmers, adapted to the modern context of urban agriculture.
STEP ONE: Planning your Garden of Hope

From the tiny coriander seed to the large mango seed, seeds come in all shapes and sizes. Each seed has its own specific needs from the kind of soil that would best provide it nutrients to the climate, season, light and temperature that would be most suitable for its growth. When starting a garden it is important to pay attention to these details: garden layout, number/type of seeds to be sown, watering amounts, pest and insect remedies, when to harvest and how to save the seeds for future use. All this requires careful planning before starting our journey of actually sowing and planting a garden.

We can start the planning of our Garden of Hope in two ways:

OPTION ONE: Choosing the spot: If you have limited options to grow crops, explore the opportunities offered to you. For example, if you do not have a field, growing crops in pots is a great alternative. Then you can select crops that are adapted to pot gardens.

MAKE ALL THIS MUCH MORE SIMPLE!

If your school has fertile land ready to be cleared, the soil to be nurtured and seeds to be planted then you are fortunate. Many schools do not have access to such space but they can still have a beautiful and healthy school garden. When choosing a space for your garden, keep in mind how you will water it at the selected location and how much sunlight the location receives. Remember: most plants like morning sun the best!

Below you will find ideas for spaces you can create for your school garden. A modest garden that is well taken care of will give a better harvest than a large garden that is difficult to maintain; so in the initial stages you may want to start small and expand as your knowledge and love for gardening grows.
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<tbody>
<tr>
<td>A playground, a backyard with soil</td>
<td>A garden in a plot of land</td>
<td>3 m² for 30 students, already an ambitious project!</td>
<td>Clear the stones, pick up any garbage but leave organic matter (leaves, to build the nutrients in the soil). Check for top soil. If there is not sufficient top soil (10cm) then add top soil.**</td>
<td>Take care this space is safe and that you can protect it from other students’ damages. If it’s in the middle of the playground, they could cross it everyday!!</td>
</tr>
<tr>
<td>Concrete playground, yard, balcony or even roof</td>
<td>Beds or pots</td>
<td>40 cms high!</td>
<td>Use wood, other natural or reclaimed material to create garden beds. The beds should allow for 15-20 cm of top soil, 10 cm of secondary soil (wood chips, branches and other organic matter) and 10 cm of stones and sand for water percolation.</td>
<td>You will have to check for the structural capacity of the rooftop or the balcony to make sure it can support the added weight of a garden. In many cases, you can build a barrier between the roof and the growing medium to prevent root growth.</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------</td>
<td>----------------------------</td>
<td>----------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Not so much space and cemented floor but containers!</td>
<td>Vertical garden</td>
<td>It will depend on the size of the container you find. Start with a small one!</td>
<td>Carefully cut holes in the side of the container. Fill the bottom 1/4 of the container with stones and sand. Fill the rest of the container with nutrient rich soil. If your container is larger than 20 liters it will be helpful to insert vertical bamboo reeds just above the level of the various seed holes till above the top of the container. Water can be poured down the holes to help with proper water distribution. Plant seeds in the holes cut into the container and at the top of the container.</td>
<td></td>
</tr>
</tbody>
</table>

No book can teach you where to start your urban garden. It will be your personal task to find a great place, in a small piece of land, on a roof, a balcony or in your school’s playground. It is over time, through maybe numerous experiments in different places, that you will figure out the best place for you to grow your plants.
**OPTION TWO: Choosing the crop:** If you have a garden and a lot of space, you can select your crops first. Refer to their needs and it will help you choosing if you need a humid or dry, sunny or shady place.

Figuring out what to plant in your garden is a matter of personal taste – what would you want to eat? - taking into account the growing season, climatic region, and unique environmental conditions of your particular site.

In India, there are two main seasons largely taken into account when farming: Rabi, known as the winter season and Kharif, the monsoon season. The Jaid season, from April to June, makes the link between both seasons.

To start deciding the crops you want to grow, refer to the season you want to start sowing.

<table>
<thead>
<tr>
<th>Month</th>
<th>North India</th>
<th>South India</th>
</tr>
</thead>
<tbody>
<tr>
<td>JANUARY</td>
<td>Brinjal</td>
<td>Lettuce, spinach, gourds, melons, radish, carrot, onion, tomato, okra, brinjal, bean</td>
</tr>
<tr>
<td>FEBRUARY</td>
<td>Apple gourd, bitter gourd, bottle gourd, cucumber, french beans, okra, sponge gourd, watermelon, spinach</td>
<td>Same as January</td>
</tr>
<tr>
<td>MARCH</td>
<td>Same as February</td>
<td>Amaranthus, coriander, gourds, beans, melons, spinach, okra</td>
</tr>
<tr>
<td>APRIL</td>
<td>Capsicum</td>
<td>Onion, amaranthus, coriander, gourds, okra, tomato, chili</td>
</tr>
<tr>
<td>MAY</td>
<td>Onion, pepper, brinjal</td>
<td>Okra, onion, chili</td>
</tr>
<tr>
<td>JUNE</td>
<td>All gourds, brinjal, cucumber, cauliflower (early), okra, onion, sem, tomato, pepper</td>
<td>Gourds, solanaceae, almost all vegetables</td>
</tr>
<tr>
<td>JULY</td>
<td>All gourds, cucumber, okra, sem, tomato</td>
<td>Same as June</td>
</tr>
<tr>
<td>AUGUST</td>
<td>Carrot, cauliflower, radish, tomato</td>
<td>Carrot, cauliflower, beans, beet</td>
</tr>
<tr>
<td>SEPTEMBER</td>
<td>Cabbage, carrot, cauliflower, peas, radish, tomato, lettuce</td>
<td>Cauliflower, cucumber, onion, peas, spinach</td>
</tr>
</tbody>
</table>
It is important to understand the particular needs of different plants when planning your garden. Knowing the botanical relationships between different vegetables, herbs, and flowers can help you determine the layout and particularities of your garden. In fact, you can practice intercropping in your garden, which is the mix of different crops on a same unit of land. The aim is to combine complementary crops to improve soil fertility and support good yields.

**Companion Planting Chart for Vegetables**

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Good Companions</th>
<th>Bad Companions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>Carrot, cabbage, cauliflower, cucumber, celery, corn, marigold. <em>(Corn protects against wind, sun and provides climbing support. Squash has deep roots, beans are shallow and squash smothers weeds and provides a living mulch)</em></td>
<td>Chives, leek, garlic, onions, tomatoes, peppers</td>
</tr>
<tr>
<td></td>
<td>Cucumber, strawberries <em>(Particularly go well near dwarf beans)</em></td>
<td></td>
</tr>
<tr>
<td>Broad Beans</td>
<td>Carrot, celery, corn, lettuce, potato</td>
<td>Fennel</td>
</tr>
<tr>
<td>Beets</td>
<td>lettuce, onion, sage</td>
<td>Bean (pole and runner)</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Beetroot, bush beans, celery, mint, onion, potato, oregano, dill, chamomile, sage <em>(Aromatic plants like onion, celery and herbs help keep cabbages pest free)</em></td>
<td>Strawberry, tomato <em>(Although tomatoes and cabbages usually repel each other, the solanine in a few nearby tomatoes will help deter diamond back moth larva)</em></td>
</tr>
</tbody>
</table>
| **Carrot** | Bush beans, pole beans, lettuce, onion, garlic etc, parsley, rosemary, pea, radish, tomato  
*Onion family plants, parsley and rosemary deter carrot rust fly* | Dill, parsnip |
| --- | --- | --- |
| **Cauliflower** | Peas, beans, celery, oregano  
*Peas and beans help fix nitrogen to supply to cauliflowers* | Nasturtium, peas, potato, and tomato |
| **Celery** | Cabbage, cauliflower, leek, onion, spinach, tomato  
*Leeks like similar high potash growing conditions as celery and celeriac* | Parsnip, potato |
| **Corn** | Beans, cucumber, melon, peas, pumpkin, potato, radish  
*Peas and beans supply nitrogen* | Tomato  
*The same worm (tomato worm and corn earworm) likes both plants* |
| **Cucumber** | Beans, peas, celery, lettuce, pea, radish, nasturtium, corn  
*Nasturtium deters cucumber beetles and harbours beneficial spiders and beetles. Corn protects against bacterial wilt virus* | Cauliflower, potato, basil and any strong aromatic herbs |
| **Eggplant** | Beans, capsicum, potato, spinach, peppers |  |
| **Lettuce** | Carrots, radishes, strawberry, cucumber | Beans, beetroot, parsley |
| **Onion** | Broccoli, cabbage, carrots, lettuce, beets, tomatoes, | Beans, peas |
| **Pea** | Beans, carrot, corn, cucumber, radish, turnips, spinach, mint, potatoes | Onion family |
| **Potato** | Radish, beans, corn, cabbage, pea, eggplant) | Cucumber, tomato, pumpkin, sunflower |
| **Pumpkin** | Corn, beans, peas, radish | Potato |
| **Spinach** | Celery, cauliflower, eggplant, radish  
*Leaf miners prefer radish leaves rather than spinach* |  |
| **Tomato** | Celery, carrot, parsley, basil, marigold, garlic  
*Garlic protects against red spiders* | Corn, potato, fennel, and cabbage |
After choosing the spot and the crop, let us also make sure we have the required tools to undertake the planting. Keeping the earth and community in mind, it is best if we can use simple tools that we can create ourselves or find locally. Below you will find a list of tools that may help you create and care for your garden. All of these tools may not be necessary in your garden and if you do not have the traditional tools see if you can be creative and make your own garden tools using recycled or natural materials.

<table>
<thead>
<tr>
<th>Traditional Tool</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed cleaning</td>
<td></td>
</tr>
<tr>
<td>Basket, wooden pan</td>
<td>For transporting weeds, carrying manure in the field</td>
</tr>
<tr>
<td>Sprinkler water can or pipe with sprinkler</td>
<td>To water your garden</td>
</tr>
<tr>
<td>Weeding tools: kudal, fawara, khurpi, etc.</td>
<td>Plowing or Weeding. Cultural operations</td>
</tr>
<tr>
<td>Bucket or drum for making preparations</td>
<td>To make various solutions such as liquid manure and plant pesticides.</td>
</tr>
</tbody>
</table>
Quick Summary

Planning the Site: The best site for a vegetable garden is in a sunny spot, perhaps not in full sun all day, but getting a good amount of sunlight. Easy access to water is also very important for a successful Garden of Hope.

What to Plant: When considering what to plant, the first consideration is what you and your friends want to eat! Next think about the soil and climate that you have and what will grow well in it. Some plants make good buddies and seem to thrive from being planted next to each other. These are called companion plants. Examples are marigolds (or basil) and tomatoes (or peppers). Cucumbers, corn and beans are another good combination.

Where to Plant What: It is easiest if plants are grouped according to their harvesting period. So for example everything that will be harvested early is in the same area, so that when they are all over you can clear the area and plant something else there. It is always good practice to rotate your vegetable garden planting. This helps to prevent pests from becoming established, and returns certain nutrients to the soil.

Thus at the end of this section you should have chosen and measured the site and plot and made a sketch of it to scale on your copy or notebook. Look at the companion plant table and the sowing chart to plan which plant you sow where.
STEP TWO: Preparing the Garden of Hope

After carefully planning your garden on paper it is time to get your hand dirty. Gardening is after all about tending to the earth and soil so that you can witness the miracle of life in your backyard.

Prepare your soil
The preparation of the soil may be the most important step of your garden experience to guarantee good crops. If you want to improve your soil and make it more suitable for your vegetable garden, you first have to figure out what you’re dealing with. Is your soil sandy or clay-based? Is it too acidic or too alkaline? This you can learn through testing you soil.

Soil Testing:
Soils are classified as clay soils, sandy soils, or loamy soils.
- **Clay** is nutrient rich, but slow draining.
- **Sand** is quick draining, but has trouble retaining nutrients and moisture.
- **Loam** is generally considered to be ideal soil because it retains moisture and nutrients but doesn’t stay soggy.

To determine your soil type, take a handful of moist (but not wet) soil from your garden, and give it a firm squeeze. Then, open your hand. One of three things will happen:
- It will hold its shape, and when you give it a light poke, it crumbles. Lucky you—this means you have luxurious loam!
- It will hold its shape, and, when poked, sits stubbornly in your hand. This means you have clay soil.
- It will fall apart as soon as you open your hand. This means you have sandy soil.
- Scoop some soil into a container. Then, add a half-cup of vinegar. If the soil bubbles or fizzes, it’s alkaline.

Now that you know what type of soil you have, you can work on improving it.

6 vital components of excellent soil preparation
- Remove compaction and avoid walking on the soil.
- Dig/ cultivate only when it is dry/ moist (never if wet).
• Regularly add organic material especially compost to build the number of garden worms that help your vegetable garden soil preparation.

• Dig/ cultivate only what/ when you need to.

• Keep the good fine soil on the top and the sub-soil at the bottom.

• Always firm up the soil with the back of a rake or fork.

Good soil is 50 percent solids and 50 percent porous space, which provides room for water, air, and plant roots. The solids are inorganic matter (fine rock particles) and organic matter (decaying plant matter). The inorganic portion of the soil can be divided into three categories based on the size of the particles it contains. Clay has the smallest soil particles; silt has medium-size particles; and sand has the coarsest particles. The amount of clay, silt, and sand in a soil determines its texture. Loam, the ideal garden soil, is a mixture of 20 percent clay, 40 percent silt, and 40 percent sand.

In the interest of harvesting a bigger and better crop of vegetables, you’ll want to improve the texture and structure of your soil. This improvement, whether to make the soil drain better or hold more water, can be accomplished quite easily by the addition of organic matter.

Fertilizers strip soils of their natural fertility. Inorganic fertilizers, like nitrogen based fertilizers, kill soil fauna that recycle nutrients naturally. Fertilizers also cause degradation in the form of nutrient depletion, salt accumulation and acidification; thus to ensure healthy and organic soil we must learn to compost and make our own manure and natural fertilizers.

How to Create Your Own Natural Fertilizers

The best fertilizer is most certainly cow dung. Over centuries, farmers have used this animal manure to improve their soil fertility. However, in a city, it is not always an easy task to find this natural input. Compost with dry leaves, stalks, kitchen wastes and any green garden residue is accessible to everyone and thus a substitute for cow dung in the cities.

Why to compost?

To compost is to help the cycle of life. Plants mine the soil to obtain the nutrients they require for healthy growth. If what the plant takes from the soil is returned to it, the fertility of the soil can be maintained. Composting is an easy method to give back to the soil what has been taken from it during plant growth.

What to compost?

Plants use nutrients they have absorbed to grow. While growing, old leaves, branches and flowers fall from them. These can be used for composting. You can also use straw,
kitchen wastes, ashes, coir pith, saw dust, all agricultural residues and any other organic substance that is degradable.

**Where to compost?**

In order to protect your compost, pick a shady place protected from the sun, wind and rain.

**How to compost?**

Everything you put into the compost is primarily made of carbon, nitrogen, water and oxygen in varying amounts. Carbon compounds (browns) are present in plant residues (through lignin and cellulose) and more nitrogen compounds (greens) in kitchen wastes and animal wastes (dung and urine). The ratio of browns to greens should be 20:1 or 30:1 for successful composting.

**Create your vermicompost unit.**

For 1 square meter, you need 5 kg of compost. An adapted size for an urban garden would be a 10*4 feet vermibed.

Prepare two beds or two tanks to do your vermicompost.

<table>
<thead>
<tr>
<th>Vermicomposting beds</th>
<th>Vermicomposting tanks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both will have to be in a shady place, protected from sun, rain and wind.</td>
<td>You can also build your vermicompost unit in wooden or cement tanks. It can be useful if you have a bit less space.</td>
</tr>
<tr>
<td>Start building your vermicompost unit on a cemented floor or on a poly sheet if it is directly on the soil, to avoid the migration of the earthworms.</td>
<td></td>
</tr>
<tr>
<td>Build a 10*4 feet vermicompost unit with two compartments.</td>
<td></td>
</tr>
<tr>
<td>Below, you will find the steps to follow in your vermicomposting activity.</td>
<td></td>
</tr>
<tr>
<td>Preparation</td>
<td>With cow dung...</td>
</tr>
<tr>
<td>- Find local epigeic and anecic earthworms ((those you can find on the surface layer and in the top soil). For 5kg of organic matter, you will need around 2 kg of earthworms. At the beginning, it may be difficult to find earthworms but once you will have created your vermicompost unit, they will multiply very quickly.</td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>Harvest</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>- Get organic matter such as green or dry leaves, kitchen and agricultural wastes, etc and leave it in the bed 1 or tank 1 so that it starts decomposing. Get also dung from cow, goat or pig, either dry or fresh. - Once the organic matter is half decomposed, mix 40% of it with 60% of cow dung. Leave it in the bed 1, making a heap that shouldn't be higher than 1.25 feet. - Put 1 kg earthworms and cover it with some jute cloth or dry organic matter. - Collect your kitchen waste, green weeds and other organic matter that are biodegradable and leave them in the bed 1 so that it starts decomposing. - Get the same quantity in weight of soil you have. - Add the soil to the bed and mix it with the green matter. - Put 1 kg earthworms and cover it with some jute. Mix it and add some earthworms. For 5 kg of organic matter, prepare 2 kg of earthworms.</td>
<td>- Add some earthworms and cover with jute bags. - The first vermicompost should take 2 to 3 months to convert the material to vermicompost. Once earthworms start to multiply, it should take only 35 to 40 days. - After 15 days, reverse all the compost. The lower layer should reach the top and the top one should be on the ground. Wet it and cover it with jute cloth. - Take care to keep it wet.</td>
</tr>
</tbody>
</table>
**Do your vermiwash:** Worms digest the organic matter and so produce nutrients that the water takes to the bottom of the recipient. The rocks and the sand act as a filter that let only the water full of nutrients reach the tap.

<table>
<thead>
<tr>
<th>Vermiwash</th>
<th>With cow dung</th>
<th>Without cow dung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find a container</td>
<td>-A plastic or a metal bucket with a tap at the bottom. Put it in a high place so that you can put a recipient under the tap.</td>
<td></td>
</tr>
<tr>
<td>Create a filter</td>
<td>-Put in the container a layer of brick pieces, a layer of sand and a layer of loamy soil as illustrated on the following diagram. -Water it till everything is wet. -Let it stand during 12-24 hours to set up the filter. -Open the tap to drain off the excess water and close it.</td>
<td></td>
</tr>
<tr>
<td>Earthworms</td>
<td>-Add a layer of earthworms that you can find in your vermicompost.</td>
<td>You can add a layer of earthworms but you will have your earthworms directly from the vermicompost which you can add.</td>
</tr>
<tr>
<td></td>
<td>-Add a layer of cow dung -Add a layer of organic matter</td>
<td>-Add a layer of vermicompost not fully finished</td>
</tr>
<tr>
<td></td>
<td>Cover it with a jute cloth and sprinkle water on it to keep it wet. Keep the moisture in the vermiwash unit during 20 days.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After 20 days, sprinkle 4 lts of water on the unit. The tap must remain closed. If you do it in the evening, open the tap the next morning to collect the residue. Repeat the process (4 lts of water in the evening and vermiwash collection the next morning) till the residue obtained gets white in colour; this means there is no more nutrients to get from your container. Mix it with 5-6 lts of water and spread it on the field. If you don’t mix it with water, you can use the solution as a pesticide and fertilizer. Also, if you have cow urine, add 10% of cow urine and it will avoid pests in your garden.</td>
<td></td>
</tr>
</tbody>
</table>

Once your soil is prepared and duly revitalized with the help of the organic compost that you have made, it is time to revisit your garden plan. Draw out the plan on the soil. If you want, you can use stakes and strings and lay out your rows.
Raised garden bed: Consider making a raised garden bed in your yard or on your patio. There are several advantages to this type of garden. Again, there is more preparation and effort in the beginning, but many rewards to come!

- Raised garden beds are easy to plant and tend.
- You can fill the raised bed with an ideal mixture of garden soil, mulch and compost.
- You can also grow more vegetables in a smaller area, as you do not need to leave room for walking between the rows of plants.
- Raised bed gardens should be about 48” across, so that you can reach into the center of the bed from either side.

Useful Tip: Plant taller growing vegetables such as corn and green beans on the north end of the garden to prevent them from shading shorter plants. Medium height plants such as tomatoes, cucumbers, peppers, eggplants in the center, and shorter vegetables such as lettuce, radish and onions on the south end of the garden. Your garden layout can run from east to west, but the rows of vegetables you plant should always run from north to south for maximum sun exposure.

Many vegetables, including peas, pole beans, squash, cucumbers, gourds, and melons will naturally climb a support and grow up rather than out, leaving more ground space for other crops. Support structures include trellises, strings, tepees made from poles, chicken wire, or a chain-link fence. Tomatoes also can be trained to grow upright in wire cages or tied to stakes.

Sowing the seed

In the garden or in flats, sow seed generously to ensure germination. When sowing, you can scatter the seeds or plant them in furrows or hills. As a general rule, plant a seed to a depth of not more than three or four times its thickness. If planted too deeply, the seeds may germinate but die before reaching the surface. If planted too shallowly, wind or rain may blow or wash the seeds away before they sprout. In sandy or lighter soils, plant a little deeper. Light mulch over the newly planted row will help conserve moisture.

Thus plant your heirloom seeds based on your garden plan and add a layer of mulch to help retain water and help prevent weeds.

Mulching is one of the most natural and easiest gardening techniques used to protect an organic vegetable garden from weeds, drying out, pests, extreme weather, and erosion.
High-quality mulch adds invaluable nourishment to the soil as it safeguards microorganisms.

Mulches help keep the soil alive by attracting earthworms and microbes, which help loosen soil structure and supply essential nutrients.

- Before mulching, weed and water your organic vegetable garden. Fertilizer should also be applied before mulching, as organic materials will decompose quicker under a layer of mulch.

- Mulch should not be layered on so heavily that it blocks moisture, air circulation, or sunshine from penetrating the soil. Apply smaller grade organic mulches such as wood chips or sawdust up to 3 inches in thickness. Spread lighter mulches like leaf mold, straw, hay, as much as 6 inches in depth.

- A rain barrel is a practical addition to an organic vegetable garden, to collect water for your plants.

**Transplants—buy or grow them yourself**

Many crops, such as tomatoes, eggplants, peppers, and cabbage, can be started indoors and later transplanted into the garden. This head start permits the long season crops to grow and mature better. Some people choose to grow their own transplants. This allows the gardener to select specific cultivars and control seedling growth. In addition, many gardeners get personal satisfaction from germinating and growing their own transplant.

Your garden is now ready for you to look after it, water and keep it healthy as you watch the miracle of life take place before your very eyes!! In 3–6 weeks time you will be tending the plants of your Garden of Hope.

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**Quick Summary**

- Check your soil type and understand the health of your garden.
- Make your own organic compost to enrich the soil.
- Make raised seedbed to plant your garden.
- Always plant from North to South and from tall to short to ensure better sun and health of your garden.
- Mulching is important for water retention of the garden.
STEP THREE: TENDING THE GARDEN OF HOPE

It has been a month nearly since you planted your Garden of Hope and now you see a burst of activity and little tender plants sprouting from the earth. Your joy knows no bound as you admire your precious plants which, through good care and proper maintenance, will blossom into your harvest of hope.

Watering the Garden of Hope is very important in the growing stage of the plants. Watering the garden doesn’t have to be a chore. Keeping some basic concepts in mind can make it less time consuming and more efficient.

• Remember that high temperatures, low humidity, wind and the sun contribute to the evaporation of water. Water droplets from a sprinkler head or hose nozzle may evaporate before they touch the soil. To minimize evaporation, water the garden when the air is still, in the early morning hours or during the cool evening (*keep leaves dry to prevent the spread of disease). Use a nozzle that produces large droplets rather than a fine spray. As plants grow, they need more water because more leaves equals more loss of water from these leaves. This is known as transpiration.

• As the season progresses most plants will need more water. If too much water is applied, however, soluble fertilizer can be leached from the soil. When plants are small, only the soil around their root systems should be kept moist; toward the end of the growing season, soil down to 1 foot or more should be kept moist. Avoid frequent, shallow watering because this hinders deep root development. Apply water uniformly and slowly to prevent runoff and erosion. If in doubt about when to water, check your soil by sampling it: dig down carefully, making a narrow deep hole 1 foot or more away from the plant and about 4 to 12 inches deep to where the plants’ roots grow. Squeeze some soil into a ball in the palm of your hand. If it holds together, there is enough moisture. If it crumbles, it’s time to water. If the hose has been lying in the sun, let the water run for a few seconds on a stone or on a mulched area until the water comes out cool.

Regular checks, surveys and monitoring are good ways to get to know the nature of your plants and their surroundings. Talking to and touching the plants have proven to be healthy for their well being.

The layout of the patch and the positioning of the pots also make a world of difference. Plenty of breathing space and a free flow of nutrients are necessary for the plants. Weeds are plants that may compete for nutrients from the soil. They can restrict the necessary nutrients from reaching the plants we are growing. Some weeds can also grow larger than the plants and not let sunlight reach them. Therefore, to ensure the health of plants we need to remove weeds when we see them.
Tending and caring for your plants is vital. The adage, you reap what you sow, implicitly suggests the nurturing and patience required between the sowing and reaping. But there are certain challenges that you may have to face before the harvest reaches its fruition. They will come in the form of pests and weeds. These will be the defining moments as struggle in your mind to use chemical to save your plants or stick by the principles of organic farming and let Mother Nature look after your plants naturally. As your guide and friends from Navdanya, we have put together some simple remedies from nature’s kitchen to help you fight pests and weeds in your garden naturally.

Insects and pests also require our attention as some can be harmful to the plants. Usually insects such as butterflies, beetles, caterpillars and spiders are positive signs of the health of your garden. But sometimes a harmful insect or pest can also take an interest in your patch. So it is advisable to take preventive measures to avoid getting into a situation of loss. Flowers are the best way to distract the attention of insects. Instead of using chemicals and poisons to quickly eliminate the problem, study and analyse it. There are many natural ways to control harmful pests and diseases. Weak solutions of neem, garlic, vinegar, mint or chili oil sprayed onto the leaves deter aphids and whiteflies. Feeding beneficial bacteria (molasses, cornmeal) into the soil can also make the plants healthier and more resilient. There are also some who believe milk to be the cure-all solution. A weak solution of milk or baking soda in water when sprayed on leaves is said to have a great effect on mold and fungal problems.

**NATURAL SOLUTIONS TO CONTROL PESTS**

If intercropping has not been sufficient to keep away pests, you can also spread on the field a natural mixture of products that drive those annoying insects away.

- **Neem** is commonly used in India as a natural pest control. Its seeds as its leaves can be used to make a natural pest-control. You can also use tobacco leaves, custard apple leaves, walnut leaves, garlic leaves, coriander leaves, onion leaves and vitex leaves if Neem is not available.

**Recipe One**

Dip the leaves into water overnight. Then, pound the leaves and put them in the water for one hour. Filter the water and use as a pesticide. The residue can be mixed with your compost or cow dung. They will thus be used as a pesticide once spread on your garden. You shouldn’t spread this pesticide again on your garden before two or three weeks.
Recipe Two

Ingredients: -1 onion,-1 garlic bulb,-1 teaspoon of chili powder,-1 litre of water -1 tablespoon of natural liquid dish soap.

Chop or grind the onion and the garlic. Add the chili powder and the water. After one hour, strain the liquid and add the dish soap. Spray plants well, covering both sides of leaves. You can refrigerate and store mixture for up to a week. Many of the leaf-eating insects will be stopped in their feast!

Recipe Three

Vermiwash with a 1/5 ratio and cow urine with a 1/8 ratio on fungal diseases. You can use neem also for fungal diseases or just spread ashes on the plant against plant diseases.

Weeding is a job few people like unless it is a team effort. Mulching will help, but some weeds will persevere and will need to be removed by hand. The key here is to be just as persistent in scouting and pulling weeds as the weeds are persistent in finding spaces to invade. The proud and avid gardener goes out into the garden frequently to check the plants’ progress, scout for weeds and insects, see if plants need water and enjoy being outdoors. * Some vegetables need to be trained to upright structures for best results. These include tomatoes that take up less room when supported by cages. Cucumbers, pole beans and peas also can be trained on fences, trellises or poles. Get this task out of the way early since it is difficult to untangle plants once they are older.

Keen observation can save your garden from pests and weeds as well as increase your concentration and help you enjoy nature more so keep observing and helping your garden grow!!!

Quick Summary

1. Be a pal of nature and water your Garden of Hope without wasting water.
2. Keen observation will help you notice weeds and pests which may attack your crops; always seek organic and natural solution to combat both the problems.
3. Fertilize your Garden of Hope with natural compost for better growth.
In contrast to the busy harvest time at a farm, harvesting vegetables in your garden can be quite a fun experience. After great patience and care, the feeling of holding fresh vegetables that are an outcome of your own effort is rewarding. Eating them is a whole other mouthful, beyond words, experience.

The time to harvest is different for different vegetables. The simplest way for you to judge is to compare your plant with the same you’d purchased from a market. But here are some pointers that will give you an idea about when and how to harvest the plants you would have grown.

Cauliflowers take about three to three and a half months. The fruits may vary in shape, size and colour but don’t take the lack of uniformity to mean a decrease in taste. You may consider them ready when the fruit is hard and doesn’t press easily. They need to be cut with a sickle about an inch or two from the ground.

Mustard too takes the same amount of time. However, after a month leaves that grow may be harvested once, then give them time to grow again and harvest a second time for use. Thereafter, the plant should be permitted to grow its full three to three and a half month span till it flowers and provides seeds.

Carrots and radishes take about two months. As they are root vegetables, an indication to know they are ready is when one or two carrots or radishes will start pushing their tops out of the ground. One can wiggle them out of the soil rather than pulling forcefully as they break easily.

Spinach and leafy greens grow relatively fast. The initial growing of the sprout requires patient waiting but thereafter it grows fast. Their leaves can be harvested for the first time a month, month and a half or so after sowing. Thereon, their leaves can be allowed to re-grow and harvested about three times before the plant exhausts its capacity to give.

Coriander and fenugreek take about a month and a half to two to be ready for consumption. Coriander takes a longer time to sprout after sowing but grows quickly once it has taken root. Fenugreek, on the other hand, sprouts quickly but takes a while to grow into its mature edible form. Both will be ready around the same time. They too give at least three to four rounds of produce before living out their span. To have these greens re-grow their leaves for our use, we should be careful not to damage the roots or stems while collecting the leaves.

If one wants to save seeds for the next season, then the plants should not be harvested. A few healthy plants should be allowed to live out their entire life span. The plant will thereafter bud, flower and finally give seeds. These seeds should be collected and stored in air tight containers.

After harvesting the vegetables need to be washed under running water before being consumed. They can be eaten raw for a healthier diet or can be pickled or cooked in mouth-watering ways from here and around the world.

As this is an experiment for learning, feel free to innovate with your garden. Designing the layout, planting patterns, companion plants, tending, monitoring, recipes and cooking
can make this experiment an interesting learning process. While some plants may fail you, you may be pleasantly rewarded by the others.

**Save your seeds**

<table>
<thead>
<tr>
<th>Guarantee genetic purity with...</th>
<th>Conserve physical purity with...</th>
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<tbody>
<tr>
<td>1. Taking care of the source of the seeds.</td>
<td>1. Taking care while harvesting the crops, collecting the seeds and threshing.</td>
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<td>2. Maintaining isolation distance.</td>
<td>2. Rotating your crops</td>
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<td>3. Avoiding cross pollination by removing off types before they reach the flowering stage.</td>
<td>3. Drying and storing the seeds well</td>
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**COLLECT THE SEEDS:** The collection of the seeds differs from one plant to another.

**DRY THE SEEDS:** Grains should be dried under sun light. For drying, lay the seeds in the sun, on a mat or a plastic sheet and spread them thinly. Mix and turn the seeds 4-5 times in a day.

**CLEAN THE SEEDS:** Once dried, clean the seeds removing all the stones and the broken, malformed, under-sized or diseased seeds.

**STORE THE SEEDS:** Challenges of seed storing are to regulate moisture and avoid pests. Traditionally, people used airtight containers, made of bottle gourd, wood or bamboo if possible, covering them with cow dung and mud to avoid pests. According to the resilience of the crops, anything, from glass to bamboo containers and gunnysacks, can be used to store seeds and control moisture.

To control the pests, you can add various components to the container.

**Neem:** Neem leaves are dried in shade and powdered. This powder is added to the bags or containers in which the seeds are kept. Using neem oil is easier and more efficient. The quantity of oil used should be one percent the weight of seed.

**Garlic powder:** 1 or 2 garlic in 2 kg of seeds. Crush one clove of garlic and put it with the seeds.

In some areas, they also put one whole onion with the seeds.

Wood ashes: add 25% of ash in the container. For every kilo of seed to be stored, add 500gms of fresh dry wood ash that has cooled. After the seeds have been put in the container, add more ash to cover the seeds.

**Lime:** for every kg of seeds stored, add 50gms of lime.

Besides, you can also plaster the room where seeds are stored to keep away pests.

Finally, take care to write on the container the name of the plant, the place of the collection and the time of the collection.

**GET READY FOR THE NEXT SEASON OF FUN!!!**
In the Footsteps of Gurudev Tagore

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