Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Handbook for educators

www.slowfoodfoundation.com

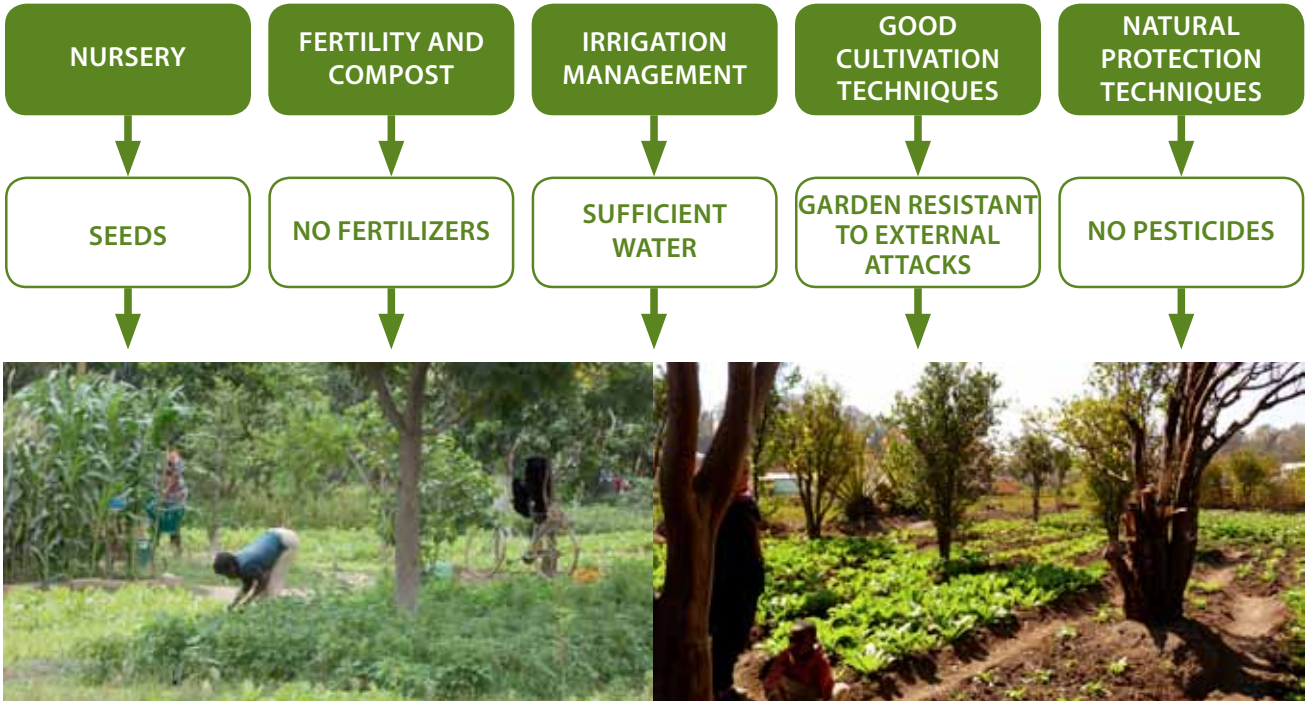
10,000 gardens in Africa project

Handbook for educators

This is a handbook that covers all the topics that are in the Handbook but has been conceived for educators, and, therefore, goes much more into detail. It illustrates the motivations and sense of each operation (why local seeds are selected, why composting or crop rotation is carried out, why many different varieties are cultivated, why educational activities are organized), and explains how to implement each operation (from garden planning to seed selection, from water collection to the making a composter, etc.). This handbook also includes a series of **practical fact sheets** containing examples, photos and illustrations.

The information, suggestions and examples in the Vademecum, handbook and fact sheets are based on the knowledge of real food gardens included in the 10,000 Gardens in Africa project. However, **it is essential that every referent starts from these guidelines and applies them to their individual circumstances, adapting them according to the territory, culture and knowledge of their community. Effective training enables the food garden to become autonomous in the first year, and economically efficient from as early as the second year.**

Creating a seedbed in the first year actually means having free seeds the second year.
Good fertilization management in the first year and making a composter can mean saving money to purchase fertilizers the second year. Proper irrigation management, constructing tanks or gutters and preparing a system of drip irrigation means having a sufficient provision of water the second year. The application of correct cultivation techniques (crop rotation, green manuring, mulching, etc.) means having a balanced garden the second year, with good diversification of yield and plant hardiness. The application of natural protection techniques avoids having to purchase pesticides the second year.



This is not a handbook on horticulture in the traditional sense of the term, but a "collective" text built on the work carried out in these years (which have led to the launching of the first 1,000 gardens), and, therefore, on the basis of all the experience gathered in different countries (positive, though sometimes negative), and on the basis of numerous considerations made with the national and regional representatives of the project. It is a working tool for those on the ground who organize regular training sessions and for those who are called upon to give answers, day by day, to the communities or schools realizing the gardens.

The technical information contained in these fact sheets refer to the main issues of agro-ecology and have a common goal: to create new awareness, new attention to the environment and to people.

When new subjects become involved in the 10,000 Gardens in Africa project, before dealing with each single matter, it is essential to **illustrate Slow Food** (its philosophy, its goals, its projects) and to **involve all** those who intend to create a garden in the basic decision-making: discussing together the reasons for wanting to create a garden, the characteristics of the area in which they are located, what they want to cultivate and what they want to achieve.

The Slow Food garden is an agro-ecological food garden

Agro-ecology integrates agronomy (crop science) and ecology (environmental science).

The agro-ecological food garden is a balanced system in which the intelligence of man modifies nature in order to be able to utilize its products, without harming and impoverishing it, sustaining the physical, chemical and biological mechanisms that regulate nature's cycles.

"Agro-ecology", used as a scientific term, dates back to the 1970s, but many of its solutions have been applied at different times by rural communities around the world, which, over the centuries, have often conceived farming and production systems in equilibrium with the environment. Nevertheless, this ancient knowledge has been systematically set aside and forgotten with the arrival of the so-called "green revolution", which introduced a model of farming based on high external energy types of input, such as a massive use of synthetic agro-pharmaceuticals and powerful machines powered by fossil fuel.
Over the years, it has become more and more evident that long-term farming with high external inputs is unsustainable, both from an environmental perspective and from the viewpoint of the productivity of farming systems.
Today, agronomic practices and science are being reoriented towards more sustainable practices, and are reconsidering the value of traditional peasant farming that often puts into practice conservative methods of fertility, variety selections and practices of crop rotation and intercropping which, even today, may represent the most efficient and effective way to maintain the productive capacity of farming systems.
In general, the agricultural productive process strongly alters the pre-existent ecological balance:
First of all it replaces a community made up of a large number of wild plant species with a low, sometimes very low, number of species selected by man.
The outcome is an ecosystem with a strongly simplified biodiversity, as far as animal and plant species are concerned, but also as regards the populations of micro-organisms (microflora, microfauna, bacteria, fungi).

Reduced biodiversity means a reduced stability of the ecosystem.
Furthermore, while in natural ecosystems, leaves and fruits fall to the ground, in an agro-ecosystem, in the harvest phase, a major part of the biomass and, therefore, organic matter is removed, which must then be restored.
The poor stability of intensive agro-ecosystems comes from reduced biodiversity and from the high number of inputs and outputs of the system, which becomes heavily dependent on the outside.
The main inputs in an intensive farming system are:

- **fertilizers**, to counterbalance the organic matter removed and the consequent reduction of soil fertility;
- **crop protection products**, to reduce the strain of harmful organisms on crops and to increase yield;
- **seeds or other planting materials** which, in most cases, are no longer reproduced in farms but are purchased on the market year by year.

In order to reduce the instability of the agricultural system and its requirements for external inputs, with the economic costs and risks of pollution involved, the agricultural systems can be operated in an agro-ecological perspective: considering crops as part of the ecosystem and choosing a method of cultivation fit to maintain the complexity of the environment, and the relative interactions (positive and balanced) between the different agricultural species and between these and natural species, and the environment.
In this way there is less need of external inputs, and a balance similar to that of **a closed-loop system is created, with less dependence on the outside and more stability.**
In an agro-ecological productive system, the inputs are replaced by resources within the system:

- **compost from plant residues, organic fertilizers** from animal manure and **conservative fertility techniques** (crop rotation and intercropping with nitrogen-fixing species, mulching, green manure…) and not synthetic chemical fertilizers;
- **biological control** and not defense set on the use of synthetic chemical crop protection products;
- **self-production of seeds and planting materials** and not the purchase of seeds.

The main goal of the agro-ecological food garden is not to achieve maximum performance, but to stabilize good, long-term productivity developing small, economically self-sufficient agro-ecosystems, operated by technologies adapted to the local context.
This method is based on the conservation and management of local agricultural resources through the participation, traditional knowledge and adaptation to local conditions.

▸ Envisaging the agro-ecological garden

Before creating a food garden, it is useful to meticulously observe and reflect on the environment, micro-climate, landscape, soil and general context in which the garden will be located.

The environmental characteristics, together with the requirements and preferences as to what we are going to produce, are the coordinates on the basis of which the garden will be created.
Apart from the agro-ecological, agronomic and technical assessments of the plot, it is important to have a historic and cultural picture of the activities -agricultural and non- carried out in the area.

If these aspects are perfectly clear to us and if we carefully analyze the advantages and limitations of the context in which we operate, we will be able to set up our garden in the best scenario possible right from the start.

▸ Aspects to take into account

The aspects always to take into account are predominantly: climate, soil characteristics, plot fertility and position (gradient, orientation, etc.).

It is also important to consider the presence of useful and harmful fauna, the presence of farm animals in the vicinity, the spread of diseases on wild flora or on neighboring plantations, the presence of potential weeds, trees or shrubs to be maintained and integrated into the new system, and so on.

Then there are the technical factors, introduced by man, to be analyzed: the presence and type of irrigation, the tools available for working the soil, the presence of protection structures, the availability of mulching material, the availability of premises for storing tools and materials, etc.

▸ Some considerations on environmental aspects

Climate has an evident and decisive influence on the agricultural inclinations of a territory.

The most important climatic aspects for the farming practice are: **solar radiation, temperature, rainfall, wind and atmospheric humidity.**
If, on the other hand, a plot is specifically assessed, then the **microclimate** is to be taken into account, which can vary significantly depending on **localized factors such as: altitude, exposure, soil vegetation cover,** etc.

Solar radiation is an important factor for any ecosystem, as it represents the **primary energetic input**: it is vital for the photosynthesis of plants and it is also the main environment temperature regulator.
The average seasonal temperatures, just as the daily minimum and maximum temperatures, are limiting factors for the life and development of plants and, as a consequence, they restrict the selection of crops.

Light intensity is also an important factor: there are plants that require a great deal of light and others that are damaged by too much light, or middle ways between the former and the latter. It is important to know which plants have a greater ability to withstand shade and which prefer a sunny location instead and suffer in the shade of other plants. Relative shading, for example, is well tolerated by peas, cabbage and radishes, whereas cereals generally suffer in more shaded locations.

The horticulturist can influence luminosity by choosing planting density, row orientation and carrying out intercropping between plants (herbaceous, trees, shrubs), even according to the posture (erect, expanded, creeping or climbing) and useful edible parts (root, fruit, seed or leaf plants).
The total quantity and distribution of rainfall throughout the year, **rainfall** frequency and intensity are determinant factors for the climate and the availability of water for crops, which can be partially improved with water regulation systems, thanks to the natural availability of underground and surface water reserves (lakes, rivers). These, in the long term and on a large scale, territorially speaking, depend to a large extent on rainfall. There are some plants suitable for drought-ridden environments (e.g. cacti, acacias, baobab, millet, sorghum ...), plants adapted to conditions of high humidity with elevated water demands, and plants adapted to alternating dry and wet periods.

Wind is an aspect that influences the climate, above all if frequent. The climate in a windy area is much different from that of an area without wind. Apart from the frequency and intensity of the wind, the direction from which it blows is important: winds arriving from the sea bring more frequent rains and attenuate temperature excursions; winds arriving from areas with warmer or colder temperatures have different effects. The wind influences the microclimate and, in particular, atmospheric humidity and plant transpiration. It can damage crops or farming structures, it transports seeds, pollen, salt, pollutants and pathogens; it positively or negatively affects the spread of certain crop diseases; it is a hindrance to the distribution of certain treatments, causing the dispersion or the drift of distributed substances (such as herbicides). Wind can erode the fertile surface layer of soil, especially on bare soil, playing a role in desertification.

Farmers can influence the microclimate by keeping and/or planting trees which limit the effects of rain, or reduce temperature, wind speed, water evaporation and direct exposure to sunlight. The use of mulch can limit the level of radiation and heat in newly planted areas, inhibiting the loss of moisture. Furthermore, raised beds contribute to the management of soil temperature and reduce water accumulation, thus improving the drainage system.

Planning the food garden

The **size** of the garden should be appropriate to the needs of those who are going to use the products, but also to their ability to take care of it throughout the year. For instance, it is counter-productive, because of the initial enthusiasm, to set up a very large garden if it can't be attended to properly because the time available is too little. If we know we are going to be away in a certain period of the year (for example, during the holidays in the case of school gardens), the garden has to be planned accordingly, not planting vegetables we won't be able to take care of and harvest in that period; or we must organize ourselves from the start by engaging someone who can continue to look after the garden in our absence.

It is important to separate crop spaces (beds or rows), which must not be trampled on, from passages (paths).

The preferable **orientation** is east-west for warm climates, as it enables the plants to shade the soil better.
The **size of the beds** must be such as to allow all the planting operations to be carried out without having to tread on the plants. Therefore, they should not exceed a width of 100-120 cm and, if we are planning a food garden suitable for children, the width of the beds should not exceed 75 cm: the width should actually be twice the length of the arm of the person working on the garden, while length is discretionary.

The width of the passages should range from 30 to 50 cm, but can be designed wider if more people are expected to have access, as in the case of school gardens, or if you want to provide access to disabled people, considering the width of the wheelchair and its turning space.

In addition to the beds arranged to host vegetables from year to year, spaces can be included for **aromatic plants**, annual or perennial, and for **flowers** and plants which, with intercropping, help against adversity, such as marigold, calendula, vetiver, etc.

Along the borders of the garden, on the other side of the **fence**, hedges and plants suitable for human consumption can be arranged, or even an ecological corridor can be provided to maintain the biodiversity of the environment and to offer refuge to useful animals such as insects and birds of prey.
A border with mixed perennials, always present in the garden giving shelter to birds and other animals, enhances both plant and animal biodiversity and extends the garden's productive season.

In limited spaces, certain **fruit trees** can be included, but we have to make sure they do not interfere too much with the vegetable crops.

In the case of school gardens, by exploiting the inclusion of herbs, shrubs, trees and flowers in a part of our garden, we can create a route based on the **five senses**, a useful tool for sensory education activities.

The garden should normally provide a space for the **nursery**, a space for the **composter** and a space for **water collection**.

It is important that each garden has a clearly visible **sign**, as it becomes its identification card. Some specific information must always be indicated: name of the garden, Slow Food logo and name of the person who has incurred the cost of the garden. But some details on the philosophy of the project can be added, there can be an explanation of how the garden is cultivated, and small tags can also be placed on the plants with the names of each variety grown. The signs can be created with imagination, using recycled materials, involving children and young people for the writing and drawings.

Seed management

The selection of seeds and other means of propagation (seedlings, tubers, roots, cuttings, etc.) is extremely important because it determines the variety of the vegetables and of other plants that are to be grown in our garden.

It is important to choose plants suited to the soil, acclimatized to the environment and with characteristics of our liking. Within the same species, we can choose early or late varieties, more or less productive, typical of the area, resistant to disease, with different tastes, shapes and colors.

Differentiating is one way to guarantee a good harvest. If, for example, a late variety and an early variety of the same vegetable are planted, in favorable conditions we will have the advantage of a longer harvest season and our harvest will be safer in adverse environmental conditions.

Seeds are a wealth of biodiversity that we can help preserve even by cultivating a small food garden, especially if we diversify our production, cultivating many species and varieties and preferring the old or the local ones.

Nowadays many local species are rare and are reproduced by farmers or amateurs or stored in seed banks by universities, institutes or associations, while in markets and shops the supply of seeds is becoming increasingly limited. The most important seeds on the market today have been reduced to a few dozens of varieties marketed throughout the world by the same multinational corporations.
These commercial varieties, in addition to contributing with their diffusion to the reduction of the biodiversity found in agriculture, sometimes are not necessarily an optimal choice because, selected in distant environments, they do not adapt well to all the climates in which they are sold.

After the first year, during which the seeds required have to be found or bought, we can select some plants, the most healthy and attractive, and make them "go to seed". When the seeds are fully developed, they can be picked and stored in a dry place in paper bags from year to year.

If we are forced to buy seeds, it is advisable to avoid F1 hybrid seeds or seedlings because, in the following years, they often become sterile or do not retain the characteristics of the parent plants, with little or no harvest at all.

A good source of varieties comes from the inclusion of perennials, shrubs, hedges and fruit trees in the ecosystem garden, making sure they do not shade the vegetables excessively and that, with their roots, they do not overly compete with the vegetables. Even wild plants, if tolerated along the garden borders, can contribute to plant biodiversity and represent a refuge for useful insects.

Some spontaneous plants can also be useful because they are edible and/or can be used as a defense against adversity (as is the case with nettles). **The easiest method of cultivation is direct seeding (sowing the seeds directly in the soil).** Direct seeding can be carried out **in rows**, arranging the seeds at regular distances in furrows dug in the ground with a hoe, or **broadcast seeding** (for smaller seeds). Another common technique is seed drilling/dibbling, whereby a number of seeds are arranged in **shallow pits**, always at reg-

ular intervals according to the planting system required by the sown species.
The seeds are placed in the soil after this has been dug over then shredded until soft. They must then be covered with a layer of soil the thickness twice that of the seed. Seeds can be lost when placed too close to the surface because of animals or light and because of excessive heat or insufficient moisture. On the contrary, if placed too deep, the seed may not have the necessary energy to sprout. In any case, especially in the cases of broadcasting and dibbling, the seedlings growing in excess must be thinned out.

For many vegetables, the most appropriate and practical sowing method is that carried out in a protected seedbed followed by transplantation in the garden. Open-field sowing does, in fact, put seeds in conditions that are not always favorable, in some cases reducing the percentage of germination.

A seedbed is a small nursery where the seedlings can come out in **ideal conditions**, protected from animals and atmospheric agents, reached by light but not by excessive cold or heat, and always kept adequately watered.
The seedbed can be built, for example, with a raised table filled with inert material (e.g. sand) and protected from the sun's rays and from rain with a canopy made with wood and straw or with a fabric that filters the sunrays.

A series of jars, or directly a bed of earth and manure or compost, are placed in the seedbed in which to sow varieties to be transplanted later in the garden.

The seedbed can also be made simply with boxes or plastic jars or peat, made from recycled materials such as honeycomb egg cartons, or the cardboard cores of toilet paper.
In school gardens, we can keep the sown jars in a bright place near a classroom window, remembering to water them every day, but to move them to a better place if there is too much sunlight or heat.
As soon as they have grown sufficiently (4-5 leaves for vegetables), they should be transferred to the space reserved for them in the garden.

During transplantation, it is important to maintain the block of soil surrounding the roots as intact as possible and the hole in which the plants are located should be double the size of the block of soil. Compost or well-matured dung can be added to the soil at the moment of transplantation, making sure it does not come into direct contact with the roots. We can dig a hole a little deeper, place the compost in it, cover the bottom of the hole with a layer of soil and then plant the seedling.

Soil management

One of the most important factors to be taken into consideration is the soil. The **characteristics of the soil** are factors to which our choices must be adapted, because they are permanent, they cannot be modified, or can only partially be modified, and only with a high expenditure of time and/or resources.

The best thing to do is to select crops that adapt to the soil and not vice versa. Therefore, before starting to sow, it is important to know the characteristics of the soil at our disposal. Each type of soil can be suitable for certain plants and not for others, and it may or may not benefit from a specific crop technique.
Compared to natural soil, agricultural soil evolves according to human activities.
Various work phases (weeding, harvesting, etc.) involve the removal of a part of plant biomass, and therefore of the organic substance that in a natural ecosystem would decompose on the soil, restoring its fertility.

A lower content of **organic matter** has a negative effect on the structure and porosity of the soil, the capacity to retain water and nutrients useful for the plant and the community of decomposer microorganisms present, thus reducing biodiversity and the rate of mineralization of the soil's organic matter.

The reduction of organic substances in the soil due to agricultural activities must be counterbalanced by organic amendments and fertilizers that return to the soil the resources consumed and removed.

Fertility

Every year on our planet, 5.5% of organic matter that is part of the plant world falls to the ground, meaning that a huge mass of organic matter (25 billion tons of carbon alone) enters the phase of decomposition and humification in the cycle of organic matter.
When we go into a wood or forest and stir the mantle of dead leaves, we notice a pleasant smell, and as we go deeper, leaves, branches, animal and insect remains gradually lose their original shapes and colors: beneath the first layer of leaves and debris not yet decomposed, there is an intermediate layer, under which we find soft soil, dark in color, rich in humus and sweet smelling.
Kitchen scraps kept in plastic trash bags (so-called "urban wet waste") emit unpleasant odors after a very short time, and are to be disposed of.
The difference in behavior between the underworld and our organic waste is related to the fact that forest soil is an ecosystem characterized by a food chain, by a cycle of living organisms that thrive thanks to the reutilization and transformation of organic matter that reaches the ground.

Considering a depth of 30 cm, one hectare of natural fertile soil can hold more than seven tons of living decomposers such as bacteria, fungi, protozoa, algae, nematodes, annelids, insects and even small vertebrates. These organisms feed on organic matter, triggering a long and complex sequence of physical transformations involving chemical and biochemical processes of decomposition, mineralization and humification.

In the food chain of decomposers, the organic matter of plant residues is transformed into **humus**, releasing abundant inorganic nutrients, in particular nitrogen for plants, water and carbon dioxide.

The organic substances present in plant residues (starches, sugars, cellulose, lignin, resins, etc.) become nourishment for the decomposers which draw energy from their degradation, producing carbon dioxide (just like when we breathe). These organisms use the energy thus obtained and they use part of the substances to synthesize new proteins, to grow and to multiply.

Organic substances facilitate the accumulation of moisture and, after a process of mineralization, are transformed into **nutrients** that can be absorbed by plants.

The cycle of organic matter knows nothing about the concept of waste, it reuses everything.
Only the human species, particularly in recent decades, has invented and introduced non-recyclable waste and its storage.

To replicate in a garden the cycle of organic matter that regenerates soil fertility by recovering plant residues (from the garden itself, a neighboring garden, a kitchen or a canteen, etc.), we can make use of **composting**. Another example of "recycling" is the direct incorporation of crop residues into the soil.
A similar function of restoring organic matter in soil is that of applying manure, green manure, and in part, mulch.

▸ Mulching

Mulching is a technique by which **the soil is covered** with a layer of material to combat weeds, to keep the soil moist, to protect it from erosion caused by the action of heavy rain or wind, to avoid the formation of the so-called surface crust, to reduce compaction, to maintain a good soil structure, and to increase the temperature.

There is a variety of materials suitable for mulching, and which can also be combined, ranging from **organic materials** (obtained from shredded crop residues: bark, straw, rice husk, dry leaves, grass clippings, husks, shells, cardboard, etc.) to **aggregates** such as gravel, stones, recycled glass.

Mulching imitates what occurs naturally in the woods, where dry leaves accumulate on the ground at the foot of the tree, limiting the growth of other vegetation. The effect is due to inhibition of a physical type (fallen leaves prevent the penetration of the sun's rays and deprive the weeds of space), and to actions of a biochemical type (bark, for example, due to the content of tannin, releases

toxic substances that prevents vegetation from developing). Mulching makes it possible to maintain, at the level of surface roots, a higher temperature in the cold months, while decreasing the need for watering during the hot months.

▸ Green manure

An extremely efficient soil fertilizing practice is applying green manure, which consists of planting certain specially grown **crops in the ground** to maintain or increase soil **fertility**.
Green manure increases organic substances in the soil, slows down erosion, maintains or improves the content of nitrate nitrogen (especially if nitrogen-fixing species are selected, such as legumes).

▸ Crop rotation

Crop rotation maintains and improves soil **fertility**, crop yields, but also the ecological health of soil, without using fertilizers and crop protection chemicals.

Carrying out crop rotation means **not cultivating the same species year after year in the same area of the garden** (e.g. tomato on tomato), but, on the contrary, alternating plants that deplete the soil with plants that enrich it.

Crop rotation interrupts the life cycle of harmful organisms associated with given crops (weeds or parasites). It improves the structure of the soil and replenishes it with nitrogen, thanks to crops such as legumes (nitrogen-fixing). It avoids the build-up of negative substances released by the roots if the same species are always cultivated in the same soil.
Rotation also makes it possible to let a part of the soil rest, without leaving it uncovered (bare soil degrades easily due to erosion) but allocating it to meadow (or fallow). Meadow cultures can then be planted (thus replenishing the soil with organic matter), or they can be used for animal feed.

With crop rotation, crops are divided into two main groups:

- **catch crops** (mainly legumes, alfalfa, clover...);
- **depleting crops** (usually grasses, such as rice and wheat).

There are biennial, three-year and four-year rotations. Each cycle generally begins with a depleting crop and ends with a catch crop.

Water management

Water is an essential element for plant life. It is the reactant of numerous chemical processes that occur in plant tissues (e.g. photosynthesis); it maintains cellular turgidity of the various parts of the plant; it controls internal temperature (thermoregulation); it allows the transport of nutrients within the plant.

Dissolved in water are the mineral elements present in soil, which are necessary for the normal development and growth of plant species. Plants absorb water through their roots which develop deep in the soil. The water rises to the leaves where it is then largely emitted into the atmosphere under the form of vapor (transpiration).
Furthermore, according to the type of **plant cover** (more or less dense), the soil loses more or less water due to direct evaporation occurring on its surface.

Evaporation is extremely important especially in the early stages after sowing, when the soil is characterized by a minimum presence of vegetation. Each crop develops normally and gives its maximum yield only when water loss, due to transpiration of the leaves and evaporation of the soil, is made up for by water that the roots are able to absorb from the soil. There has to be a sufficient quantity of water in the soil to meet the water requirements of the crops.

Two different types of factors influence the loss of water through evaporation:

- weather: temperature, wind, humidity, solar radiation;
- agronomic: type of crop, cultivation techniques, plant cover, soil moisture, soil type.

Water is an asset of inestimable value and not available in unlimited quantities. The availability of water is one of the central elements to be taken into account when planning the garden, and is often one of the most serious problems, especially in the cultivation of species that grow in periods of little or no rain.

The realization and management of wells and irrigation systems involves high costs for the purchase and maintenance of the plant, for the energy consumed and for maintenance.

Furthermore, an irrational use of water can reduce, even drastically, the utility of irrigation itself and, in some cases, lead to serious damage in the field. Excessive watering can cause damage and rotting, compromise product preservation, and result in waterlogging, deteriorating the soil structure and favoring the leaching of soil nutrients.

Although we believe that the subsoil has a certain availability of water, drilling should not take place without a precise plan (studies are needed to assess the nature of the soil, the structural characteristics and the rate of recovery of the water collected). There is the risk that aquifers and reservoirs filled during the course of thousands of years may dry up (and, considering the scarcity of rainfall, may not easily be recuperated).

To plan and manage garden irrigation well, we must first **know everything there is to know about the availability of water**, based on the presence of nearby streams or ponds and on the basis of rainwater that can be stored during the rainy seasons (through gutters, tanks or cisterns).

Irrigation must be carried out with localized systems (drip) and with some precautions: e.g. watering must be **avoided during the hottest hours** of the day.
Even the arrangement of the soil at the moment of sowing can play a vital role for the proper utilization of water resources. Moreover, the selection of species and varieties suited to different areas (even the driest) allows the use of water to be rationalized.

Crop protection

To protect the garden from adversity (crop diseases, harmful insects, weeds) we can choose methods that do not include substances known to be harmful to the environment and to garden users.

It is important to include in gardens **natural enemies** of organisms that are harmful to crops, and to limit excessive weeds, either weeding by hand or mechanically or with measures such as mulching.

In an agro-ecological garden, the defense measures are limited to what is strictly necessary to regulate the equilibrium of the agricultural production system.
Animals can be a positive, negative, or unimportant presence for the crops, we must know them well in order to benefit from the presence of the useful ones, as it would be useless to struggle unnecessarily with inoffensive animals and to keep under control harmful ones, with the least possible consumption of energy and harmful substances.

There are no good or bad organisms, but there are some environments in equilibrium and others that are not: just one caterpillar in a garden can do very little damage, but ten caterpillars on just one cabbage ruin the harvest!
Aphids are harmful to plants, but they are a prey for ladybugs which can keep them under control. Ladybugs, however, are very sensitive to poisons and to pollution.
Many aromatic plants and many decorative species, if planted in the garden, can increase the capabilities of the vegetables to defend themselves from pests and other adversities.

Some crops act effectively simply because they are present in the garden, while others need to go through maceration and decoction.

- Some examples of the **first group**:
- Marigold and calendula release radical substances that fend off nematodes, therefore they are useful for garlic, it being quite sensitive to the attack of these pests;
- Tropeolo, lavender, savory, chili pepper and nettle repel aphids and lice;
- Artemisia, sage, mint and tomato discourage the cabbage butterfly;
- Fern and horseradish are a repellent to the Colorado potato beetle;
- Tansy keeps ants away;
- Mustard, garlic, and hyssop keep snails at bay;
- Watercress repels carrot flies, and garlic contrasts powdery mildew.

Some examples of the **second group**:

- The decoction of Horsetail (100 g of fresh plant in a liter of water) stimulates plant growth and resistance to fungal diseases;
- Macerated bracken combats aphids, scale insects and snails;
- Neem oil is effective against lice, aphids, mites, mealy bugs.

There are many plants and preparations useful for crop protection, and are linked to territories and local cultures

Intercropping

The intercropping of two or more crops, if done well, minimizes the risk of crops competing with each other and stimulates mutual support between the different crops.

Intercropping is a term meaning the **contemporary cultivation of different vegetables in the same space of garden**. Thanks to the characteristics of substances released by roots, resins and the essential oils produced, certain plants are able to stimulate or, in some cases, to suppress the development of the plant species growing in their immediate vicinity, to ward off pests, or to attract useful ones.

The principle of mixed cultivation was introduced in farming on the basis of what happens in nature. In fact, **there are no examples of natural ecosystems in which there is only one plant species.** The agro-ecological method is actually based on the assumption that all plants benefit from growing in a complex agro-ecosystem, which is not limited to a single crop, but in which two or more species

are grown contemporaneously. Not all crops, horticultural or less, can be intercropped; many crops do, in fact, compete negatively, while others benefit from being intercropped. We can speak, therefore, of real models of intercropping, as results from experimental evidence and experience.

Intercropping allows **better exploitation of the various layers of soil**, combining plants with root systems of different depths (an example in this sense is given by intercropping carrots and onions); and it enables the space available to be maximized, combining short-cycle crops with other long-cycle ones.

The soil best used is more covered with vegetation, which limits the proliferation of weeds and reduces soil erosion. Some plants also release substances that have a repulsive action against insects that are harmful to other species. An example of this phenomenon is given by intercropping carrots and onions. The carrot fly, whose larva eats roots, is rejected by the odor of onions and no longer lays its eggs on the carrot collar.

Similarly, the onion fly, whose larvae enters the pulp of this vegetable and rapidly turn it into a rotten and malodorous mass, avoids flower beds in which carrots are grown. In extremely sunny areas, by intercropping tall crops with shorter crops, the former shade the latter. When we create our garden and transplant seedlings, we must respect the seeding order (**optimum distance between plants**) for each species, and take into consideration positive intercropping and avoid negative intercropping.

Intercropping not only between vegetable species but also with trees and shrubs, creates a mixture of vegetables, fruit trees and flowers.

In addition to the methods described above, it is important to know that crop protection (without the use of agrochemicals) is based on a set of practices:

- **Selection of varieties more resistant to pests**, selected by farmers over the centuries;
- **Management of certain weed species** (some weeds, for example, provide an alternative food and/or shelter for natural enemies of pests);
- **Soil care:** soil that contains a good amount of organic matter normally has fewer diseases;
- **Management of shade:** the intensity of certain diseases are reduced or increased according to shading;
- Use of clean and healthy **seeds** and other propagating material;
- Management of the **density of plants or crops:** there is a general increase in diseases in crops grown too densely;
- Management of the **depth** at which seeds and/or propagating material are positioned (sowing on the surface is often effective for the control of diseases, as the plants emerge quickly from the ground);

- Tolerance of **uncultivated periods**, useful to reduce losses caused by plant diseases, especially soil diseases;
- Use of **mulch**, which reduces plant diseases, as it influences the soil's moisture content and temperature, and increases the microbiological activity;
- Creation of **beds in relief (convexing)** and other systems that may improve drainage and increase fertility, thus contributing to the management of soil-related diseases;
- Use of **crop rotation**, which interrupts the life cycle of pests associated with a given crop.

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Planning the garden

www.slowfoodfoundation.com

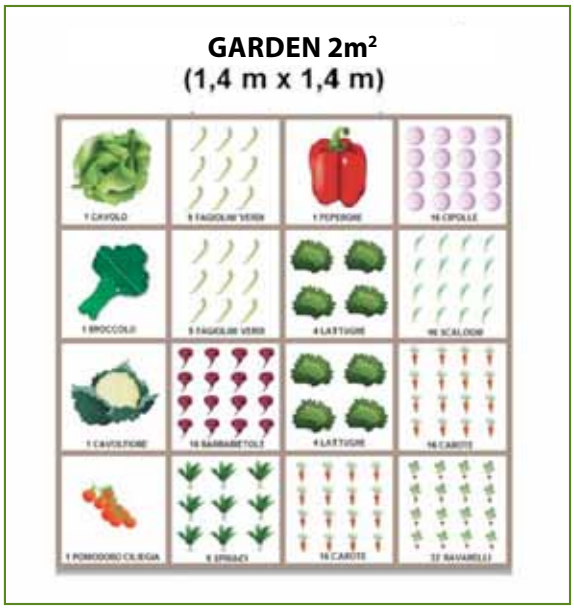
The garden is a system in continual evolution which responds to stress brought about by:

- the external environment, seasons, rains, temperature and wind;
- the farmers who run it and decide to sow, harvest, hoe and irrigate;
- the microorganisms in the soil, plants in the vicinity and animals on the ground, insects and fungal spores in the air.

The IDEAL garden must first of all be planned on paper.

The first questions we have to ask ourselves are:

- How much **space** does the school/community have?
- Is there the possibility of using little or a lot of **water**?
- How much **time** can we dedicate to looking after the plants?
- Is the garden intended for our own consumption only or do we also want to sell and/or transform the products we produce?



Make a drawing of the plot on a sheet of squared paper dividing it into as many parts as there are species that interest us. If there are trees and bushes - that are to remain on our plot year after year - mark them on the map.
Take into account yield scaling and what is needed most for daily consumption. Apart from drawing the garden, it would also be useful to closely examine the succession of sowing or transplantations. Based on the information gathered while making preliminary observations, we can determine the shape and form we want the garden to have, and the amount of surface area to be dedicated to the different crops (vegetables, fruits, flowers, sweet herbs, etc.), to other useful areas (passages between the different flower beds, storing place for tools, etc.), to the seedbed, and to the composter.
If the garden already exists, it would be useful to repeat the same procedure in any case so as to understand whether something needs to be added or changed.

Type of products

The place where the garden will be realized will possess native flora (grasses, shrubs and trees, intercropping that has developed over time) that can tell us a lot about the climate and from which we can draw the necessary considerations to understand what we can cultivate and what, as of now, we can decide not to cultivate.

When choosing the species and varieties to grow, we should first of all consider the climatic conditions. Cli-

matic variables (e.g. high temperatures, low solar radiation) greatly limit the plant's development (the yield of tomato during the hot and rainy season, for instance, is half that of the cooler season). The cultivation of tomato, cucumber and lettuce can also take place in the shelter of other arboreal plants which, with their umbrella-shaped leaves, shield them from the beating of heavy rains. During the hot and humid season, high temperature and humidity are factors that favor the development of pathogens such as fungi (anthracnose caused by *Collectotrichum spp.*, fruit rots, downy mildew, southern rust caused by *Sclerotium rolfsii*) and bacteria (bacterial wilt caused by *Ralstonia solanacearum* due to soft rot caused by *Erwinia spp.*).

Vegetables normally cultivated can be included between 60 and 100 species.

- **"short-cycle" leafy indigenous vegetables (less than one month):** amaranth, petsay, sorrel.
- **"long-cycle" leafy indigenous vegetables (one – two months):** African eggplant, cabbage, chives, spinach, malabar spinach.
- **"short cycle" leafy vegetables of temperate origin (less than one month):** lettuce and parsley
- **"long-cycle" leafy vegetables of temperate origin (more than two months):** tomato, carrot, purple eggplant, cucumber.

We need to take into account a series of elements that are the heritage of local communities.

Growth period: it is necessary to know, roughly, the number of days that elapse between the date of sowing, budding and maturation.

Plant behavior: it is important to know the type of plant growth (which can be creeping, erect, etc.) in order to establish the practice and management of crop production.

The continuity and the spatial and temporal diversity of the crops: we must not sow everything at the same time, but distribute the crops in different periods depending on the vegetative cycles and requirements (e.g. water) to enable a scaling process of fruit and vegetable ripening, thus ensuring a constant production of food and as long a green cover as possible, to protect the soil.

Optimal use of space and resources: a combination of plants with different growth habits and different root systems (roots that explore different levels of soil) allow a better utilization of nutrients, water and sunlight. Intercropping establishes the most efficient use of light, water and nutrients by plants that have different heights and different behaviors (annual-cycle vegetables, long-term tree

species, tubers). Furthermore, diversified crop systems increase the opportunities of growing natural enemies, thereby improving the biological control of pests.

Soil fertility conservation: it is important to maintain the cycle of nutrients, energy, water and waste (closed-loop system) in the garden, hence the necessity to enrich the soil with yield nutrients (such as forest humus and compost) and by means of crop rotation, intercropping and green manuring. When drawing the garden, therefore, a space must be included for a compost bin, unless the garden is located at the edge of the forest, in which case you can recover humus without having to compost.

Water conservation: it is important to select crops and crop systems according to the quantity and distribution of rainfalls. In areas where humidity is low, it is better to opt for drought-resistant crops (such as cajanus, sweet potatoes, cassava, millet and sorghum), and to include techniques of soil covering and management (e.g. mulching) in order to avoid the evaporation and run-off of water. It is often useful to have a basin (or tank) next to the garden for the collection of rainwater.

Crop protection: it is necessary to consider developing different strategies to combat unwanted organisms. Traditional varieties and intercropping protect against catastrophic attacks of pathogens (fungi) and pests (insects). Moreover, crop practices such as mulching, the modification of sowing times, the presence of repellent plants (such as chili pepper and garlic), and the use of preparations (neem oil, macerated nettles) can minimize the interference of pests. It is important, therefore, to choose plants in this perspective too.

After having decided which plants to grow, it may be useful to fill in some simple "product data sheets" together with the people participating in the training sessions.

Example of product data sheet

Species: GARLIC

Variety: …….

Average crop duration: 20 weeks (from sowing to harvest)

General characteristics and specific care: this plant needs little heat and little water; it prefers deep soil, but not too rich in nutrients. If the soil is compact or crusty, it has to be worked.

Sowing and harvest: for a flowerbed 120 cm wide, plant six rows. The cloves of garlic are to be placed at a depth of approximately 15 cm. The ideal sowing periods are ……. or ……... Harvest is carried out in …… At the end of the harvest period, entwine the plants harvested and store them in a dry place.

Utilization: how to eat, transform, sell it, etc.

Design your garden and write down the various products that intend to grow!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Seeds and seedbeds

© Oliver Migliore

www.slowfoodfoundation.com

How to choose seeds for the garden

It is important to focus on traditional or past seeds, or rather open-pollinated varieties that have at least 50 years of history behind them, and are therefore well acclimatized to their area. These seeds can be retrieved from other farmers, neighbors or acquaintances: the most interesting varieties are those handed down from father to son.

If, on the other hand, we choose to grow varieties belonging to other areas or varieties that have appeared in the area more recently, it is better to avoid hybrids and to privilege the seeds of varieties selected through natural pollination: the latter have greater variability and produce seeds that you can sow the following year. Other farmers or nurserymen may have these seeds or they can be found at farming institutes or gene banks.

Once the variety has been chosen, it is a good idea to plant lots of different seeds. Monotony is the enemy of our garden, table and health.

The seeds are to be kept in optimal conditions because they are living organisms and are always active, even during dormancy: they must be protected from light, excessively high temperatures and humidity. The ideal solution is to store them in paper (on which the name of the variety can be written for safety reasons) then close them in airtight containers, preferably of tin, or alternatively of glass (but in this case, be careful with light).

Why make a seedbed?

It is important to make a small seedbed in the garden to sow, germinate and produce small seedlings. This makes it possible to avoid planting the seeds directly in the garden and is particularly important for certain species, such as tomato, eggplant, sweet pepper, chili pepper, okra.

The advantages of seedbeds:

- The seeds planted give better yield, thus a greater availability of seedlings;
- They are time saving, because they do not need to wait until the external conditions are right for sowing (temperature, water), it can be done a couple of months beforehand, thus obtaining plants that will be ready for transplantation as soon as the external conditions are right;
- They save on the purchase of seeds/seedlings;
- There is the certainty of using only seeds selected and produced naturally from crops of the year before.

How do we make seedbed?

For every country and/or climate zone, some proposals related to seedbed will need to be drawn up during the training sessions together with the local technicians and communities that take into account: local traditions, the possibility of finding/multiplying seeds, and the suitability of the environment. We suggest you involve the community in the elaboration of drawings that will enable you to view some seedbeds that have already been made and that are simple and easy to copy.

Before creating a seedbed, choose the location carefully: it has to be hot, well exposed to sunlight and protected from heavy rains; otherwise, the seeds will not germinate or, without light, the seedlings will be unable to grow well and strong. It is necessary to realize a small greenhouse or a container (with recycled materials) with open sides to let the light in and with a movable cover to facilitate daily watering.

The soil for a seedbed needs to be soft, crumbly and flaky, with a good draining capacity. It must also be as clean as possible (without pests and possible fungi which would damage the seeds and seedlings). To sterilize the soil, some ground can be put in an aluminum container and baked at 130-150° for 5 minutes.
Seeds need moisture, but water stagnation must absolutely be avoided. For this reason, some sand can be added to the ground to facilitate the flow of water and the penetration of the roots in the ground.
An even bed of soil can be arranged in the seedbed, or some pots and jars to contain the various seeds.

In the first case, the soil needs to leveled and the seeds inserted one by one (delimiting the varieties with small furrows), or broadcast (separating the closest seedlings – being careful not to ruin the roots – when they are about 6/7 cm tall).
In the second case, the pots are placed inside the seedbed (even plastic cups or recycled bottles can be used) and one or two seeds are put into each container so that it will be easier to separate the seedlings later).

In colder areas, it is necessary to heat the seedbed. To produce heat, a layer of about 20 cm of non-mature dung can be made under the base of the seedbed. The chemical reactions of its decomposition will heat the bottom of the seedbed and improve seed germination.

Transplantation requires great care and some precautions.

First of all, the seedlings need to become acclimatized to minimize the so-called transplant shock. Here are some basic steps.

- Choose the ideal time: the seedlings will be ready to be transplanted when they have at least 4 or 5 leaves and an adequate root system.
- A few hours before transplantation, gently water the soil that is to host the plants so that the soil and the small vegetable root balls are able to bind.
- Carry out transplantation after sunset or on a cloudy day, never in the sun.
- Sprinkle some well-matured compost in and around the small holes that are to host the young plants in order to make them more hospitable.
- Put the seedlings in the holes, or furrows, with the stem perfectly upright and the roots well extended. The collar (the part of the plant between the roots and the stem) must normally be located at ground level. Be very careful, however, not to damage the roots (that are delicate and thin) otherwise they will be unable to absorb water from the soil. If the roots are too long, it is better to shorten them a little rather than twist or bend them.
- There are some varieties of vegetables (such as leek, tomato and some varieties of cabbage) that are to be planted deeper in the soil, whereas others have to be positioned closer to the surface (such as salad, celery, onion).
- Compress the soil well, but delicately, around the seedlings, making sure there are no air pockets between the root ball and the garden soil; in this way the young plants will acquire stability and take hold easier.
- Water generously and delicately, not over the plant but the soil around the plant. If drought is feared, dig a small basin around the plant so that water will be retained longer; during periods of rain, however, it is better to create a mound which will enable the water to flow faster.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Soil management

© Paola Viesi

www.slowfoodfoundation.com

One of the most important factors to be taken into consideration is the soil.
The **characteristics of the soil** are factors to which our choices must be adapted, because they are permanent, they cannot be modified, or can only partially be modified, and only with a high expenditure of time and/or resources.

Normally, the best thing to do is to select crops that adapt to the soil and not vice versa. Therefore, before starting to sow, it is important to know the characteristics of the soil at our disposal. Each type of soil can be suitable for certain plants and not for others, and it may or may not benefit from a specific crop technique.
Compared to natural soil, agricultural soil evolves according to human activities.
Farming activities modify the process of organic matter degradation. For instance, activities such as harvesting reduce plant biomass and, therefore, the quantity of organic matter - which in a natural ecosystem would decompose in the soil and thus restore fertility.

A lower content of organic matter has a negative effect on the structure and porosity of the soil, the capacity to retain water and nutrients useful for the plant and the community of decomposer microorganisms present, thus reducing biodiversity and the rate of mineralization of the soil's organic matter.
The reduction of organic substances in the soil due to agricultural activities must be counterbalanced by organic amendments and fertilizers that return to the soil the resources consumed and removed.

Fertility

Every year on our planet, 5.5% of the **organic matter** that is part of the plant world falls to the ground, meaning that a huge mass of organic matter (25 billion tons of carbon alone) enters the phase of decomposition and humification in the cycle of organic matter.

When we go into a wood or forest and stir the mantle of dead leaves, we notice a pleasant smell, and as we go deeper, leaves, branches, animal and insect remains gradually lose their original shapes and colors: beneath the first layer of leaves and debris not yet decomposed, there is an intermediate layer, under which we find soft soil, dark in color, rich in humus and sweet smelling.
Kitchen scraps kept in plastic trash bags (so-called urban wet waste) emit unpleasant odors after a very short time, and are to be disposed of.

The difference in behavior between the underworld and our organic waste is related to the fact that forest soil is an ecosystem characterized by a food chain, by a cycle of living organisms that thrive thanks to the reutilization and transformation of organic matter that reaches the ground. Considering a depth of 30 cm, one hectare of natural fertile soil can hold more than seven tons of living

decomposers such as bacteria, fungi, protozoa, algae, nematodes, annelids, insects and even small vertebrates. These organisms feed on organic matter, triggering a long and complex sequence of physical transformations involving chemical and biochemical processes of decomposition, mineralization and humification.

In the food chain of decomposers, the organic matter of plant residues is transformed into humus, releasing abundant inorganic nutrients, in particular nitrogen for plants, water and carbon dioxide.

The organic substances present in plant residues (starches, sugars, cellulose, lignin, resins, etc.) become nourishment for the decomposers which draw energy from their degradation, producing carbon dioxide (just like when we breathe). These organisms use the energy thus obtained as well as a part of the substances to synthesize new proteins, to grow and to multiply.

The constant input of organic substances facilitates the accumulation of moisture and the absorption of nutrients, which are released gradually, satisfying the nutritional needs of the plant in the long term.

The cycle of organic matter knows nothing about the concept of waste, it reuses everything. Only the human species, particularly in recent decades, has invented and introduced non-recyclable waste and its storage.
To replicate in a garden the cycle of organic matter that regenerates soil fertility by recovering plant residues (from the garden itself, a neighboring garden, a kitchen or a canteen, etc..), we can make use of composting. Another example of "recycling" is the direct incorporation of crop residues into the soil.
A similar function of restoring organic matter in the soil is that of applying manure, green manure, and in part, mulch.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Mulching

www.slowfoodfoundation.com

Why carry out mulching?

Mulching is a technique by which the soil is covered with a layer of material. The beneficial effects of mulching are numerous: it combats weeds, keeps the soil moist, protects it from erosion, avoids the formation of surface crust due to soil hardening, reduces atmospheric phenomena effects that may cause soil compaction, maintains structure and helps to raise the temperature of the soil.

How is mulching carried out?

A variety of natural materials can be used for mulching, amongst which shredded bark, straw, dry leaves, mowed grass, shredded pine bark.

Artificial materials can also be used such as cardboard, plastic film and bio cloth. Good mulching often avoids having to aerate the soil before the next sowing.

Mulching is a good technique which keeps weeds under control.

Do not forget: it isn't always necessary to remove everything growing around the plants in the garden, just eliminate the ones most likely to compete with, or even smother the vegetables that you are interested in. Leave those that produce flowers, as they attract beneficial insects. If you decide to let the weeds grow because you think they won't be of too much trouble, be careful not to let them disperse the seeds, collect them before, in this way you will prevent their abundant dissemination.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre®

10,000 gardens in Africa project

Crop rotation

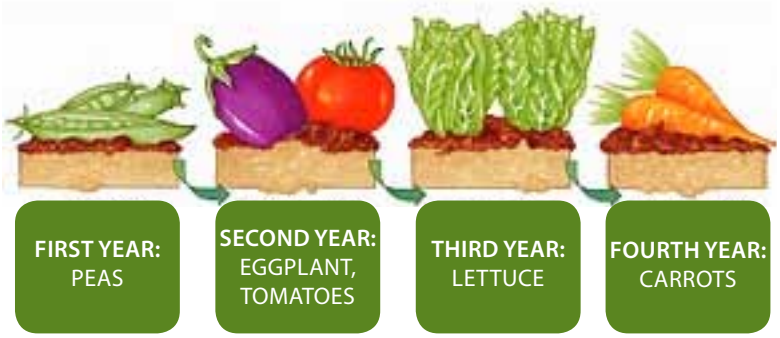
www.slowfoodfoundation.com

Why carry out crop rotation?

It is important to avoid cultivating the same species year after year in the same spot of the garden (e.g. tomato on tomato). Crop rotation is essential because it alternates plants that deplete the soil and plants that enrich it, thus improving the structure of the soil and interrupting the life cycle of harmful organisms associated with certain crops or weeds. This obviously applies to annual species, not to long-term plants.

How is crop rotation carried out?

For every country and/or climate zone, some proposals related to intercropping will need to be drawn up together during the training sessions together with the local technicians and communities that take into account: local traditions, the possibility of finding/multiplying seeds, and the suitability of the environment.
We suggest you involve the community in the elaboration of tables and/or drawings that will enable you to view some simple sequences that can be easily applied to successive crop cycles, for example:



Here are a few practical suggestions.

A one-year rest period is sufficient for the bean. For basil, red beet and sugar beet, artichoke, carrot, cabbage, chickpea, cucumber, string bean, broad bean, fennel, lettuce, lentil, lupine, potato, pepper, pea, tomato, parsley, radicchio, celery, spinach, zucchini, you should wait at least two years before planting them again on the same plot of land. Watermelon, thistle, onion, eggplant, melon and leek need of a period of three years, while garlic and shallot require at least four years.

It is better to avoid successively cultivating varieties that belong to the same family.
It would be better, therefore, to avoid cultivating:

- other liliaceae after garlic, shallot, leek;
- other cucurbits after watermelon and zucchini;
- other chenopodiaceae after red beet and sugar beet and spinach;
- other composites after artichoke, thistle, lettuce and radish;
- other apiaceae after carrot, fennel, parsley and celery;
- other leguminosae after chickpea, string bean, bean, broad bean, lentil, lupine, pea;
- other crucifers after cabbage;
- other cucurbits after cucumber and melon;
- other solanaceae after potato, pepper, tomato.

These are only indications and may at times not be sufficient. If, for example, garlic is affected by a fungus such as the *fusarium*, before planting it again in the same soil, you have to wait at least ten years.

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Water management

www.slowfoodfoundation.com

Why irrigate?

First of all, it is important to identify the more drought-resistant crops and apply good management techniques, such as mulching, which help to reduce evaporation and loss of water.
In many situations, it is necessary however to have a minimum availability of water to irrigate the plants throughout their growth period. Horticultural crops do, in fact, need to be tender and rich in water, but they generally have a superficial rooting system, and, in the higher layers of soil, water is usually scarce, both because of filtering and the effect of evaporation.
In order to grow roots in optimal conditions, drainage is also essential. There are smaller spaces in the structure of the soil that retain water particles, and larger spaces that filter excess water, letting in air. It is imperative that air can circulate and water is always available.

How do we irrigate?

For every country and/or climate zone, some proposals related to irrigation will need to be drawn up during the training sessions together with the local technicians and communities that take into account: local traditions, the possibility of finding/multiplying seeds, and the suitability of the environment.
We suggest you involve the community in the creation of drawings that make it possible to visualize methods that are simple and easy to copy.

It is necessary to identify systems that:

- keep the soil moist, but not soaked;
- do not favor the proliferation of pests;
- distribute water at root level, avoiding runoff and the dispersal of fertilizers;
- are water-saving.

It is important to water the crops in the evening or early morning, avoiding the hotter hours.
Watering should be done at closer intervals in soils that tend to be sandy and at more spaced intervals for soil that tends to be clayey. In fact, water filters easily in sand and ends in the deeper layers, for which the roots soon remain dry; clays, on the other hand, retain more water on the surface. Even the regularity of distribution is important: water surges aren't good for crop development.

How to collect and store water

A tank – which can be made of plastic (lighter and easier to clean) or other material – allows us to accumulate rainwater (perhaps channelized from gutters) and to distribute it at different times. Moreover, water can decant, leaving any impurity on the bottom. If the tank is at ground level or higher up, it is necessary to position the outlet pipe at a height of ten centimeters from the bottom, to avoid collecting impurities and sediments. If the tank is underground, it is necessary to place the recovery pump at twenty inches from the bottom to recuperate clean water.

Water can be stored even with a settling reservoir which fills easily, channelizing rainwater. The banks of the reservoir should be such as to guarantee access and safety, even more so if there are young children in the surrounding areas! The banks can be made stable with canes. In the reservoir water hyacinths (Eichhornia crassipes), for example, can be grown, which, in addition to being ornamental, contribute to purifying the water. The water hyacinths grow rapidly, and if harvested regularly, can also be used to make compost. Other plants that can be planted in water are elephant ears, papyrus reeds, and water lilies. The water can also be used for breeding freshwater fish (such as tilapia).

How to distribute the water

Irrigation can be **lateral** – in this case furrows are filled with water alongside the vegetable plants – or **underground**, through a perforated plastic pipe (hose) positioned on the ground, under the mulch.

As an alternative to the hose, you can use the jars, or rather ceramic cruets, often of terracotta, which are buried close to the plants (at 10-30 cm), filled with water and sealed with a stopper. The porous material releases moisture in the soil in the right quantity. The plants absorb the water they need and the soil remains loose and aerated, not compacted by frequent watering. The cruets can be filled every 5-7 days, according to need. This system has many advantages. By watering the soil at the right depth, root depth, water loss and evaporation can be avoided, and allows the plants to receive the necessary supply of water. What's more, using cruets inhibits the development of weeds which proliferate in moist surface soil, and reduces the use of fertilizers because less water runs off, fewer soluble nutrients are lost. The terracotta cruet can replace plastic bottles or other porous tools or small lateral holes, always dug partially in the soil.

Lastly, still referring to plastic bottles, a **drip irrigation** system can be created. Make a hole in the bottom of a bottle and in its cap. After unscrewing the cap, fill the bottle with water and place it on top of the plants (at 20, 30 cm from the ground) upside down, hanging from trellises or supports by means of hooks or simple wire. The drops mustn't fall on the plants, but to the ground, between one plant and another, where the roots are.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Natural defense strategies

www.slowfoodfoundation.com

Why to choose natural defense strategies

To defend the garden against adversity (plant diseases, harmful insects, weeds), we can choose methods that do not include synthetic chemicals.
Synthetic chemicals are, in fact, dangerous and harmful to people, to the land and to the economy of the garden:

- They are toxic and dangerous for the people handling and using them in the garden;
- They are to be used in the right doses, and therefore farmers become dependent on aid from experts;
- If used in the wrong doses, they cause serious damage to the soil, water, harvest, as well as to the people who eat the treated vegetables;
- They can kill all the insects living in the garden, both the harmful ones and those that are good and useful for pollination and pest control;
- They are expensive;
- Over time, they reduce the fertility of the soil and create dependency from increasing amounts of synthetic chemicals.

Where synthetic chemistry plays an important role in crop management, the aim will be to accompany communities to reduce and gradually eliminate synthetic chemicals. The ultimate goal, in fact, is greater environmental sustainability of the garden activities.

What can we do?

For every country and/or climate zone, some proposals related to natural defence will need to be drawn up during the training sessions together with the local technicians and communities that take into account: local traditions, the possibility of finding/multiplying seeds, and the suitability of the environment.
We suggest you involve the community in the creation of devices that make it possible to apply control methods and recipes that are simple and easy to apply.

It is essential to **prevent** the attack of insects and diseases in different ways:

- Choose crops that have adapted to the area and climate over the centuries;
- Choose uninfected seeds
- Diversify garden crops;
- Apply crop rotation and intercropping;
- Fertilize the soil in a correct manner;
- Manage irrigation correctly;
- Manage planting times and spaces correctly.

In addition to methods of prevention, constant monitoring in the field is to be carried out in order to identify any pest problems and intervene promptly with defense methods against insects, diseases and weeds.

▸ Botanical pesticides

Some traditional products – such as tobacco (containing nicotine), neem (containing azadirachtin), chili, garlic, ginger, baobab, nettle extracts, etc. –are extremely effective in controlling harmful insects.

▸ Pesticides of mineral or other origin

A number of traditional products derive from mineral-bearing sources – such as sulfur, copper, calcium carbonate, etc. – or other components: soap, oil, ash, etc.

▸ Adversity due to pests (mainly insects)

Attacks from insects are often favored by the lack of equilibrium, for instance water stagnation or excessive fertilizing. It is, therefore, necessary to greatly focus on carrying out the best practices

Here are some common insects

Aphids, known as **plant lice**, are very common pests. There are different species and are among the most important vectors of viruses between plants.
Their presence is often due to excessive fertilization. They attack almost all vegetables and are identified by the presence of the aphids themselves and by populations of ants that feed on their honeydew. They attack the plants by nibbling the leaves and buds, sucking the sap and deforming them. The vegetable plants and fruit trees attacked by aphids suffer a state of general decay.

The most attacked plants are carrots, legumes in general, chicory, radicchio, beans, broad beans, lettuce, tomatoes, parsley, radishes and zucchini.

To defend the crops from being attacked by aphids, it is necessary to clean and remove the parts that have been attacked, manually removing both the ants and aphids.
Secondly, the leaves need to be watered well to dissolve the deposited honeydew which could attract other ants. For washing, you can use a mixture of water and Marseilles soap (100 g per 10 liters / 21 pints of water) or macerated nettles (leave to soak 100 g of leaves and stems in one liter/2 pints of cold water) for at least two weeks then proceed to filtering). Do not distribute the macerated solution over cabbage, the strong smell will attract the Cabbage White Butterfly; as for tomatoes and cucumbers, limit distribution to the ground. In the more serious cases, pyrethrum or rotenone can be used.
Macerated garlic is also useful: put 300 g of garlic (fresh or dried) in one liter (2 pints) of water and leave to macerate for one or two days, then spray the aphid-attacked leaves with the filtered solution.

Cutworms are caterpillars that attack the area between the stem and root of the plants (collar) and bore into the stem which often ends up breaking. They are active mainly at night. The damage caused by these caterpillars are substantial, and if infestation is massive, the plants affected have to be destroyed.

The most affected plants are beets, carrots, cabbage, cucumber, chicory, beans, lettuce, tomatoes, radishes and spinach

In order to protect the crops from cutworms, the damaged parts can be destroyed, using poisoned baits and resorting to wormwood treatments. In particularly serious cases, pyrethrum or rotenone can be used.

The cabbage white is a very common butterfly that lays its eggs on the undersides of outer leaves. The caterpillars emerging from these eggs are extremely voracious and feed on the leaves, skeletonizing them; the excrement of these caterpillars, especially in warmer areas, can rot the plant. The Cabbage White is a threat not to be underestimated because it can be devastating.

The plants most threatened by the Cabbage White are cabbage, cauliflower and turnips.

Defense can be carried out by manually removing the eggs. When the Cabbage White attacks in a particularly serious manner, it can be suppressed by a natural enemy, the *Bacillus thuringiensis*, a spore-forming bacterium that produces toxins harmful to cabbage whites and other types of parasites. To prevent the attack of cabbage whites, we can treat the plants concerned with tansy or wormwood decoctions.

Scale insects are sap-sucking pests. The females damage the plants: they usually live on the stems and undersides of leaves sucking sap. Plants attacked by scale insects undergo discoloration, become chlorotic, have deformed leaves; the presence of scale insects is also due to a delay in the late development of both the leaves and branches.

The plants most affected by the problem are chickpeas, fruit trees and shrubs.

Defense strategies against scale insects vary according to the intensity of the attack. In less difficult cases you can try to remove these bothersome parasites by rubbing the infested areas with a piece of cloth soaked in alcohol or with a bristle brush. If the attack is more threatening, a defensive treatment can be tried with white oil which, however, cannot be used in the event of high external temperatures because you run the risk of damaging the plant by burning it.

Snails and slugs damage garden products by gnawing away at and devouring the sprouts. The damage is not only direct but also indirect, because the plants that have been attacked are more prone to fungal, bacterial and viral diseases. The presence of these pests is greater in wet weather.

The most attacked species are beets and leaf vegetables in general, cabbage, fennel, strawberries, lettuce and spinach.

To defend the crops, in addition to natural removal, the crop boundaries can be sprinkled with ash, which absorbs their mucus/slime and prevents them from reaching the plants. Another curious but efficient alternative remedy is to arrange some beer-baited "traps", small containers containing a couple of inches of beer; slugs love beer and fall into the trap without being able to get out.

The **onion fly** is a harmful insect that lays its eggs near the base of the plant. The larvae born from the eggs devour the bulbs; if the plant is attacked early, these pests can kill it. Onion flies even cause indirect damage, as the plants attacked are more vulnerable to bacterial attacks.

The **plants attacked** are garlic, onion and shallot.

To protect the crops from onion flies, the leaves attacked need to be removed. If the attack is particularly intense, treatments containing rotenone or wood quassia are effective. Infusions of tansy or wormwood are also useful. A good tactic is to associate the cultivation of species that can be attacked by these pests with carrots: the onion fly can't stand the smell of carrot, just as the carrot fly can't stand the smell of onion.

Tortrix moths are small butterflies; their caterpillars attack the plants, devouring the tips and nibbling leaves and petals. Apart from garden products, they also attack fruit trees and petals. Tortrix moths that attack peas are particularly harmful: they lay their eggs inside the pods and when the larvae are born they devour the seeds, emptying them.

The most attacked species are carrots, beans and peas.

To defend the crops from the tortrix moths, they can be removed by hand. If the attacks are particularly serious, pyrethrum can be used. Prevention against tortrix moths is carried out by combining with marigold, mustard and tomato the plants that can be attacked. Some also use an infusion of horsetail to water the plants.

Fungal diseases are difficult to diagnose and to fight. We should try to avoid their formation, by following some efficient strategies: for example, we shouldn't water the leaves if we aren't sure they will dry quickly, we shouldn't touch wet plants, we have to remove and destroy rotting fruits.

Recipes for some preparations

Macerated chili
With chili we can prepare a macerated solution to be used in a preventive manner once a week, spraying it on the ground at the base of the plant. Spray the critical points of the plants two or three times a week, using small quantities and always in the evening. If the pests are already present, use the remedy more frequently. The effectiveness of chili is due to its content of capsaicin, a substance that irritates many insects and pests.
Preparation: put a spoonful of dried (pulverized or crushed) chili in ½ liter (1 pint) of water. Leave the macerated solution in a closed bottle for one week, then filter the liquid and pour into a spray bottle.

Onion infusion
The onion is a natural pesticide. It can be useful to plant rows of onions in the garden, between one clod of soil and another, in order to protect the plants from parasites in a natural way; otherwise, an infusion can be prepared.
Preparation: put 20 g of fresh chopped onions (the outer skin can also be added) in half a liter (1 pint) of water. Bring to boil e let simmer for 15 minutes. Wait for the liquid to cool then filter. Lastly, spray it around the base of the plants; once a week for pest prevention, or more frequently to contrast their presence, always in the evening.

Neem
Neem is a powerful, inexpensive and practically non-toxic pesticide. Its active ingredient is *Azadirachtin*, an organic compound extracted from the seeds of the plant, effective in the fight against hundreds of pests (some even say 500), but in particular against mites, beetles, miners, grasshoppers, nematodes, whiteflies, aphids, cutworms, thrips, Colorado potato beetles, scale insects, moths, red spider mites. It is used successfully against fungus (especially rust fungi and powdery mildew fungi), bacteria and some viruses. It carries out a repellent and antifeedant action (i.e. inhibits the normal feeding behavior) against insects, as well as impeding their growth by blocking the molting process. The positive characteristic of products deriving from the neem tree is that - while extremely significant used against pests – they are not harmful to beneficial insects, pollinators, birds and warm-blooded animals (including humans).

Neem is widely used and every local environment has its recipes. Write yours here.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Intercropping

www.slowfoodfoundation.com

Why consider intercropping?

It is important to associate two or more crops in the food garden. By making a good selection, the risk of them competing with each other is reduced to a minimum and mutual support between the different crops is stimulated.
Some can fix nitrogen, others can attract beneficial insects, and others can act as a support (as in the case of corn and beans). There are plants capable of capturing solar energy even if they are located beneath other crops: this is the case of pumpkins, which can capture light thanks to their large leaves. A diverse set of crops is useful for the diversification of food and also to have an availability of market products.
The art of horticulturists is experimenting intercropping on their own land, discovering the best combinations.

How is intercropping carried out?

For every country and/or climate zone, some proposals related to intercropping will need to be drawn up together during the training sessions together with the local technicians and communities that take into account local traditions, the possibility of finding/multiplying seeds, and the suitability of the environment. We suggest you involve the community in the elaboration of tables and/or drawings that will enable you to view some simple sequences that can be easily applied to successive crop cycles, for example:

Vegetables	Suitable for intercropping	Unsuitable for intercropping
Beet	Onion, radish, cabbage, turnip	Climbing bean
Carrot	Onion, radish, pea, lettuce, chicory, leek, rosemary, sage, tomato	Dill
Cabbage	Beet, cucumber, climbing bean, kidney bean, strawberry, lettuce, pea, tomato, leek, spinach, radish, celery	Garlic, onion, potato
Cucumber	Cabbage, bean, corn, pea, radish, sunflower, fennel	Potato, aromatic herbs
Chicory	Carrot, climbing bean, lettuce, fennel, tomato	=
Onion and garlic	Zucchini, beet, strawberry, tomato, lettuce, chamomile	Pea, bean, cabbage
Chives	Carrot	Peas, beans
Bean	Potato, carrot, cucumber, cabbage	Onion, garlic, gladioli
Climbing bean	Zucchini, radish, chicory, cabbage, corn, savory	Onion, beet, fennel, sunflower
Kidney bean	Cabbage, radish, potato, cucumber, corn, strawberry, celery, savory	Onion, beet, fennel, sunflower
Fennel	Cucumber, chicory, lettuce, peas	Climbing bean, kidney bean
Strawberry	Radish, kidney bean, spinach, lettuce, cabbage	=
Sunflower	Cucumber	Potato
Lettuce	Chicory, fennel, cabbage, carrot, radish, strawberry, cucumber	Parsley
Egg plant	Bean	=

Potato	Bean, corn, horseradish, marigold, eggplant	Pumpkin, cucumber, sunflower, cabbage, tomato, raspberry
Pea	Fennel, carrot, turnip, radish, cucumber, corn, bean, cabbage	Onion, garlic, gladioli, potato
Tomato	Radish, chicory, onion, parsley, asparagus, calendula, carrot	Cabbage, turnip, potato, fennel
Leek	Onion, cabbage, celery, carrot	=
Parsley	Radish, tomato, asparagus	Lettuce
Turnip	Pea	=
Radish	Cabbage, beet, climbing bean, kidney bean, strawberry, lettuce, pea, tomato, spinach, parsley, cucumber	=
Celery	Leek, tomato, kidney bean, cabbage	=
Spinach	Strawberry, cabbage, radish	=
Pumpkin	Corn, nasturtium	Potato
Zucchini	Onion, climbing bean	=

Help us to find other products!

Vegetables	Suitable for intercropping	Unsuitable for intercropping
African eggplant		
Gombo		
Amaranth		
Sweet potatoes		
Taro		
Manioc		

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

10,000 gardens in Africa project

Guidelines for Gardens descriptions

Example	How to prepare
Chazon School Garden Chazon Children's Home was established by Samuel Kimathi and Lucy Njenga to assist orphans and street children. Few years ago they decided to sold all their properties and, with the obtained money, they bought the land in the village of Tayari where, subsequently, Chozon Children's Home has been constructed. The School is home to 350 students from 7 to 14 years old and is entirely reliant on private donations. Now, Lucy and Samuel decided to reserve a piece of the school's land to create an half an acre garden with their students. At the moment, the garden is planted with potatoes, kales (a type of cabbage rich in beta carotene and vitamin C) and spinach, but they want to diversify the varieties increasing the number of traditional crops, medicinal plants and fruit trees in the garden. The next steps to take to develop the garden are the purchasing of tank to collect rainwater, organic soil fertilization and organization of training sessions on seed saving and sharing. For more information please visit: www.chozon.blogspot.com	• School or Educational or Community or Family Garden. • When there are many gardens situated in the same area, the name of the garden includes the name of the producer (i.e. Veronica Akunda Family Garden, Esirulo) • The name of the garden in the title should be written with capital letters: Chazon Community Garden. • When it is possibile indicate those who cultivate the garden (if they are students: how many of them, and how old they are; if it's a family, how many members it comprises, their age, who is in charge of which activities, etc.). Make sure the numbers are consistent between texts. Except for texts of a technical nature and for a list of ingredients in recipes (where it is normal to always write actual figures), cardinal numbers are used for numbers under 10, whereas figures as used for those larger than, or equal to, 10. It is often not necessary to indicate the precise number e.g. More than 150 students to say that they are 156. • When it is possibile, indicate the size of the garden maintaining the local measure (the acres do not need explaining but if there is a local unit keep it and then specify 'in acres it's …'). It is also interesting to know about the story of the garden (when it has been started, by who, how the community first met Slow Food, active collaborations, etc.)

Example	How to prepare
	• When it is possible, indicate where the garden or the village is (on the slopes of a hill, montain or flat, by the lake/river, etc.) and add details regarding the kind of soil (i.e. clay, sandy, iron, swampland, rich/poor in organic nutrients, etc.). • Indicate what they farm (both vegetables, medical plants and livestock), the different kinds of crops. It is not necessary to write the English translation of local names of fruit and vegetables, unless it is a common name. Leave it in italics and in brackets or commas clarify what it is. Example: if the local vegetable is a simple tomato translate it as "tomato", if it's a kale, used only in africa, write "kale (a type of cabbage is rich in beta carotene, vitamin C)", if it's "sukuma wiki", then write "sukuma wiki, a local variety of vegetables". • Always specify which are the agricultural and irrigation techniques applied; do they grow in different ways or different kinds of crops for each season? • When it is possible, includes some traditional recipes for food or medical preparations made with the produce from the garden. Always specify how the produce is used (for self consumption and in the canteen, or for selling on local market or restaurants, … how they use the revenue). • Try to turn problems into assets. If the original version says that "the problem is the lack of training", then write that "they want to organize training sessions". • Use the present tense or some neutral forms, avoid the future intention tense if possible. • Indicate the internet adress (websites, blogs, Facebook page, etc.) when available: "For more information please visit: …" (URL). • The description should be written en bloc, do not start new paragraphs.
Area Chozon Children's Home, Tayari village, Molo district	First the garden location and then the coordinator. Mention he village, the district, the region, etc. Write Tayari village, Molo district and no "village of Tayari, district of Molo". Do not use capital letter for "village", "district", "region", etc. Try to remain faithful to the original. For example, if in one country there are provinces and not districts leave "province". Try to standardize the terms for each country.

Coordinators Samuel Kimathi (principal), Lucy Njenga (teacher)	When there is only one coordinator write "Coordinator". When there is more than just one, write "Coordinators". The names should be written on the same line, separated by commas. It is better to put first name then family name. Remove the entries as Mrs., Mr., etc. and do not write "&" between the names. If possible, we add also the role of the coordinator (i.e. teacher, director, Convivium leader)

Final remarks

- Slow Food is always capitalized.
- When you talk about philosophy/ideology, say **the Slow Food philosophy** instead of just Slow Food philosophy.
- Be careful about singular and plural words, like "some of the group members", "cover various topographical regions".
- Animals: when talking about livestock as animals, it is pigs not piggery. But when talking about farming it is piggery, like "reared their poultry and piggery". Eg. you feed the pigs but you raise the piggery…
  Cow manure
  Chicken droppings
  Pig manure
- **We should never have several gardens with same descriptions, even if gardens are founded in the same area, by the same coordinator. Always add some specific interesting details to make each description a special one.**
- When possible, indicate the **GPS localization** of the garden (Google maps: latitude + longitude).
- All the description will be published on Slow Food Foundation website.

Units of measurements	
Square Metre	**m2**
Square centimetre	**cm2**
Are	**are**
Hectare	**ha**
Square kilometre (1.000.000 m^2, for council, regional, provincial, national, continental, global surface)	**km2**
Square Yard (1= 9 square foot = 0,83612736 m^2)	**square yard**
Square mile (1 square mile = 2.589.988,1103 m^2)	**mile**
international acre (1 acro = 4.046,8564224 m^2)	**acre**

i.e. : 20x10m = **200 m2** ; ½ = **0,5**

Pictures

- For each garden, you should provide 5-6 photos in high resolution, showing: the entire garden, some crops, people working on it, the signborad, the agro techniques used, etc.
- **Always indicate the name of the garden and its location when sending pictures.**
- To facilitate the sending, you can use a specific and very useful internet tool called “Wetransfer” (https://www.wetransfer.com/): the free online file-transferring platform allows you to upload and transfer files in big size, without any charge. Ypu just need the internet connection.
- Remeber that when you have some beautiful pictures or specific questions on agricultural issues you can also post them on the **1000 Gardens in Africa Facebook page.**

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

Educational Activities

Seeds

www.slowfoodfoundation.com

Introduction

The following are four examples of activities, divided into age groups, all related to seeding and seed management. Use your creativity to adapt them to your environmental, social, and cultural reality!

▸ Activity 1

Let's plant it!

In brief
Through an approach based on actively involving and stimulating the imagination of children, the names and functions of different traditional objects and characters in the garden are identified. Using the items-characters they meet, the children then engage in the activity of sowing certain local products with the help and supervision of the teachers.

Participants
Children aged 5/6.

Objectives
- Use a playful approach to encourage observation, exploration and direct knowledge of the garden environment, in particular the process concerning the sowing and growing of plants.
- Offer the pupils a space in which they can be proactive and experience personal responsibility and decision-making autonomy.
- Stimulate the children to collaborate with each other, to work in groups, to respect others and their surrounding environments.
- Develop a positive approach to the school garden by conveying botanical knowledge and offering hands-on experience in collecting plant specimens and classifying them.
- Develop a positive attitude towards the school garden by passing on knowledge about horticulture and the concrete experience of sowing.

Coordinators
Teachers, parents, grandparents.

Materials
Soil, shovel, watering can, rake, seeds, cardboard, marker.

Activity description
Part 1: preparing characters and soil for cultivation
The teachers prepare the characters that populate the garden, putting some cards depicting eyes and a mouth on the various tools to animate them. Each tool is decorated to represent the different members of the imaginary family: mummy hoe, daddy watering can, grandma shovel, grandpa rake. A small plot of land within the garden is located and prepared for sowing.

Part 2: introducing the characters populating the garden
The children are divided into small groups of 6-7 participants each, if possible with an equal number of boys and girls in the groups. The teachers try to create an imaginary environment, presenting the garden as an imaginary area populated by strange characters. The various members of the animated tool family are introduced one by one: each tool introduces itself to the children, telling them some funny anecdotes about themselves and describing how important their work is in the garden.

Part 3: how do we sow?
In this part, the children are given an explanation on how to prepare the soil and how to sow.

Part 4: let's try sowing
Each child is given some seeds of a local product.
After sowing, the children take it in turns to water their seeds.

Part 5: final considerations
The activity ends with a short period of reflection, during which the children go over what they have done and what they have learned, leaving them free to talk and express their thoughts, while respecting some basic rules of communication (respecting what others have to say, speaking by show of hands). The final message to be conveyed is that each child is responsible for the seedlings they plant; it is their responsibility to water them carefully in order to allow them to grow well.

Further information
For further information on the activity, contact Valentina Quaranta - Tanzania (valentina.quaranta@gmail.com).

▸ Activity 2

Seed management

In brief
The theme of seeds is explored: what is a seed, what are the different kinds of seeds in nature, what are the characteristics of seeds produced in reproduction centers, which are the methods of seed protection and preservation (selection and preservation, seed bank and seed sharing).

Participants
Children aged between 8 and 16; the activity is also suitable for training sessions with garden producers and communities

Objectives
• Stimulate learning through the direct knowledge of the garden environment, reflecting particu-

larly on the theme of seeds and teaching the different existing types of seeds, their classification and reproduction.

- Increase awareness of the concept of biodiversity of seeds and the importance of their role in nature.
- Facilitate the learning of techniques and aspects to be taken into account in the selection of seeds, in their preservation and conservation.
- Develop a positive attitude towards the school garden and, in general, to the surrounding environment, by passing on knowledge about horticulture.

Coordinators
Science teachers.

Materials
Notebooks and pens, board, slips of paper, glue and adhesive tape, ash, containers, seeds.

Activity description
Part 1: theory introduction and debate
The facilitator (teacher or other expert invited to the activity) initiates a debate with the children on the meaning of "seed", asking them to indicate what types of seeds they know. The discussion goes on to talk about the different quality characteristics and function of the seeds, which factors need to be considered when selecting seeds, and the different methods of protection.

Part 2: recognizing
A small game is organized, a kind of quiz relay. On a plate or table, you have some piles of seeds of different species and qualities, without indicating which. The children are divided into a number of teams in single file.
The teacher indicates one small pile at a time, and at the start signal the first in line runs to the point established. The order of arrival at the finish line also defines the order in which the representatives of the teams give the answer, identifying the seed. The team that correctly identifies the greatest number of seeds wins.

Part 3: a practical demonstration on the different methods of seed conservation.
Each child takes a container, fills it halfway with ash, adds the seeds (any quality will do) and covers them again with ash. The children are explained the benefit of pest protection that ash provides and the importance of keeping the seeds in this manner, in a cool and dry place.

Further information
For further information on the activity, contact John Kariuki Mwangi – Kenya (j.kariuki@slowfood.it).

Come closer

In brief
Through an approach based on stimulating the imagination of children and actively involving them, they learn to understand the practice of intercropping.

Participants
Children from 5 years of age (minimum 15 participants).

Objectives
Memorize the intercropping of some plants.

Coordinators
Teacher, in a large room indoors or outdoors on the grass.

Materials
- Sheets of paper and markers
- Some leaves/flowers or plant flowers if they are easy to identify
- String or adhesive tape

Preparation
Draw:
- the wind on 2 slips of paper;
- ants on 2 slips of paper;
- the rain on 2 slips of paper;
- a vegetable or fruit or flower on slips of paper (the same number as there are children left) or collect some specimens (leaves, flowers…) that they can recognize easily.

Activity description
Part 1: disguising
Use some string or adhesive tape to stick the slip of paper or the specimen on the participant to identify him/her.

Part 2: introducing
The teacher explains the rules of the game: the animals and the atmospheric agents faithfully interpret their identity while those receiving the slip of paper or the vegetable sample have to act the part of the seed corresponding to their vegetable (e.g. the one who receives the basil leaf will play the part of the basil seed). There can be physical contact but very delicately, rolling the classmates but without lifting or tugging at them.
The teacher explains the principles and importance of intercropping activities.

Part 3: interpreting
The teacher puts the participants playing the part of seeds simulating the sowing activity into several rows, according to intercropping.

Each seed takes up a curled up position on the ground.
The participants playing the parts of atmospheric agents and ants, individually or in couples, roll the seed-children with their hands, moving them away.
The seed-children, while rolling, try to get closer to the other seeds that enable intercropping, but being careful not to get near the seeds that would hinder intercropping.
At the stop signal, the teacher checks the intercrops.

Part 4: stimulating verbalization
The teacher asks the children to sum up the intercropping activities experimented and the obstacles encountered.

▸ Activity 4

Balls of clay and seeds

In brief
Some balls of clay and seeds useful for reforestation are prepared that are to repopulate abandoned areas or areas with poor vegetation. Therefore, the seeds will be those of particularly resistant trees or shrubs.

Participants
Children aged between 8 and 15.

Objectives
- Use a playful approach to stimulate observation, exploration and direct knowledge of the natural environment, especially the process concerning the sowing and growing of plants.
- Offer the participants a space in which to be proactive, experience personal responsibility and autonomy.
- Encourage children to develop collaboration among peers, teamwork, respect towards others and towards the surrounding environment.
- Develop a positive attitude towards the school garden by passing on knowledge related to the hands-on experience of sowing.

Coordinators
Science and geography teachers.

Materials
Tree or bush seeds, clay.

Activity description
Part 1: introducing theory and preparing materials
The teachers describe the qualities of the seeds selected (seasonality, adaptation, tradition, non-hybrid seeds…). They also explain the importance of intercropping different crops.

Part 2: preparing clay balls
The students put the seeds selected inside the clay mixture and form some balls. Clay plays a vital role because it is resistant over time (even for years in sparsely wet areas), gradually dissolving as sufficient water is absorbed to germinate the seeds.

Part 3: throwing and monitoring
The children choose the points from which to throw the balls, in different directions in the area identified. If they are thrown on an area easy to reach, or where some varieties that grow quickly are sown, the teacher and children periodically go and monitor the progress the seeds are making. A diary/poster can be made to monitor progress according to the conditions observed (which types of seeds develop sooner, if this depends on the conditions of the soil into which they have been thrown).

Further information
For further information on the activity, contact Sara El Sayed – Egypt (sara@nawayaegypt.org).

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

Educational Activities

Plants and leaves

www.slowfoodfoundation.com

Introduction

The following are three examples of activities related to the identification of plants and their characteristics. Use your creativity to adapt them to your environmental, social, and cultural reality!

▸ Activity 1

Herbarium

In brief
Through an approach based on actively involving and stimulating the imagination of children, the names and functions of different traditional garden plants and medicinal herbs are identified. The ideal thing to do is to play this game when plants are in full bloom; the first part of the activity lasts about an hour and a half, the second about an hour and takes place after one month.

Participants
Children aged between 8 and 16.

Objectives
- Use a playful approach to encourage observation, exploration and direct knowledge of the garden environment, in particular the characteristics and properties of medicinal herbs and traditional plants in the garden.
- Stimulate children to collaborate with each other, to work in groups, to respect each other and their surrounding environments.
- Develop a positive approach to the school garden, by transmitting botanical knowledge and offering hands-on experience in collecting plant specimens and classifying them.
- Create a local catalog of traditional plants, herbs and spices.

Coordinators
Teachers and a family gardener with experience also in the field of medicinal herbs.

Materials
- Notebooks and pens
- Scissors, sheets of paper, pieces of stiff cardboard, string, needle-and-thread
- Newspapers
- Penknives or scissors
- Colored pens/pencils, adhesive tape or glue
- Some heavy stones

Activity description
Part 1: identifying medicinal herbs and traditional plants in the garden
The teachers – with the help of a family gardener– identify the different plants in the garden and

verify with the children the ways in which they are commonly used.

Part 2: collecting plant specimens
With the children, detach from each plant the different sections of which it is composed (leaf, bark, flower) to identify them. Be very careful not to pluck them (use a penknife or scissors if possible) or wrinkle them.

Part 3: describing specimens
Place the perfectly dried leaves and other parts of the plants on a blank sheet of paper and describe them using the four senses (smell, hearing, sight, taste); write the characteristics down in your notebook, and on the sheet of paper next to each fragment write down which plant it is from.

Part 4: drawing up the herbarium
Place a second blank sheet of paper on top of the first; then put the 2 blank sheets (containing the plant fragments) between some newspaper pages, on top and underneath; then put them between 2 pieces of cardboard. Put the packets in groups of about 10 one on top of the other (better if grouped according to the type of material: leaves with leaves, flowers with flowers, etc.) and bind them with the string as tight as possible. Put them in a clean and dry, sunny and sheltered place, each under the weight of some big stones.
After about a month, untie the packets and press the leaves or the other parts of the plants pressed on sheets of paper, stuck to the sheets with glue or adhesive tape. Next to these, on the paper, draw up a sort of identity card (name and species, characteristics, use, etc.) using the notes written in the notebook the month before, adding new notes if possible. The sheets are then joined by sewing the edge with thread. Having thus completed your herbarium, hang it up in the classroom.
The final message to be conveyed is that each plant has specific characteristics and properties, and it is the responsibility of each child to know them in order to be able to grow them and put them to the best use possible.

Variants
If you want each child to have their own personal specimen, they are to be responsible, from the very start, for collecting specimens from a single plant, which will then be classified in each one's notebook.
If you have the possibility to carry out the activity in one full day, you can benefit from the presence of the experts in botanical / herbal medicines to carry out a practical demonstration of how these can be used. In this case, materials such as mortars and pestles will also be required.

Further information
For further information on the activity, contact Sara El Sayed – Egypt (sara@nawayaegypt.org) and John Kariuki Mwangi – Kenya (j.kariuki@slowfood.it)

Leaves puzzle

In brief
Children can learn to recognize plants from the characteristics of their leaves thanks to an approach based on stimulating their imagination and involving them actively.

Participants
Children from 5 years of age, divided into groups of 3.

Objectives
- Use a playful approach to encourage observation, exploration and direct knowledge of the garden environment.
- Stimulate concentration, observation, coordination.
- Distinguish and recognize forms and textures.
- Stimulate children to collaborate with each other, to work in groups, to respect others and their surrounding environments.

Coordinators
Teachers.

Materials
- 3 leaves from different plants (vegetables or fruit plants)
- A plate or table
- Glue or adhesive tape

Preparation
The teacher cuts each leaf into three parts and on a flat surface mixes them all up.

Activity description
Part 1: observing
Introduce the activity making some considerations and observations during a trip to the garden or to the orchard. For example, describe the different types of leaves, the plants they belong to…

Part 2: reassembling the jigsaw puzzle and identifying the plant
Each child in the group chooses a piece of leaf from the plate/table.
Each child has to reassemble his/her own leaf, making sure the edges match.
The children are then asked to identify which plant the leaf belongs to.

Part 3: stimulating verbalization
Certain aspects can be verified by observing leaf variations: Do they change? Do they lose liquids? Do they break easily? Do they split? Do they wither? Are they flexible or stiff? Do they have darker parts or lighter parts? Are they dry or moist?

Part 4: leaf art
Get the children to do some paintings or drawings (landscapes and animals) with the broken or reassembled leaves.
Do some tests on some sheets of paper, placing different pieces in the most plausible manner; then stick the works of art to the paper and hang them up in the classroom.

▸ Activity 3

From leaf to leaf

In brief
Children learn to describe, recognize and couple leaves thanks to an approach based on stimulating their imagination and involving them actively.

Intended for
Children from 7 years of age (minimum 10 children).

Objectives
- Practice describing materials and elements found in nature.
- Stimulate concentration, observation, coordination.
- Develop and train the perception of the senses, distinguishing and recognizing shapes and textures.

Coordinators
Teachers.

Materials
Coupled leaves belonging to plants in the garden or orchard.

Preparation
The teacher collects 2 leaves from each plant to obtain a number of leaves equal to the number of children involved.

Activity description
Part 1: observing
Get the participants to sit in a circle and give each of them a leaf, telling them not to show their leaf to the others.
Each child has to carefully observe his/her leaf with the teacher's help, who suggests they consider color, size, shape, texture…

Part 2: identifying
In turn, each participant describes their leaf from a visual, tactile, olfactory point of view, again without showing it to the others. those who, according to the description given, think they have the leaf with the same characteristics, sit in front of the participant who has just described his/her leaf for the comparison.

If they have recognized the leaf correctly, they will go and sit next to the participant with the matching part of the leaf otherwise return to where they were before.
The game continues until all the parts of the leaves have been coupled.

Part 3: stimulating verbalization
Which plant does it belong to? Is it edible?

Part 4: leaf art
With the leaves, get the children to do some paintings or drawings (landscapes and animals).
Do some tests on sheets of paper, placing different pieces in the most plausible manner; then glue the works of art to the paper and hang them up in the classroom.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

Educational Activities

Garden products in the kitchen

© Alberto Prima

www.slowfoodfoundation.com

Introduction

The following are two examples of activities related to the identification of plants and their characteristics. Use your creativity to adapt them to your environmental, social, and cultural reality!

▸ Activity 1

Mystery ingredient… bringing the garden to the table

In brief

Link the garden experience (sowing, growing and caring for vegetables) to vegetable processing according to traditional recipes, ideas from parents, grandparents and cooks. It comes naturally to children to enjoy eating what they have cultivated and cared for in the garden. This can be taken advantage of to promote a varied and healthy diet obtained through the rediscovery of local vegetable varieties and recipes.

Participants

Children of all ages.

Objectives

- Promote a curious attitude to food, first of all by training the senses.
- Understand the relationship of food with the environment, health, culture.
- Promote local and traditional products and the gastronomic culture of the territory, also within the children's families.
- Encourage the passing on of knowledge from older to younger generations.
- Develop manual skills and group work.

Coordinators

Teachers, the school cafeteria cook, the children's parents and grandparents.

Materials

- Kitchen equipped with (oven, mixing bowls, cutting boards, pans/baking trays etc…)
- Posters, paper, pencils for collecting and writing down recipes

Activity description

Part 1: mystery ingredient in secret recipe

Teachers divide the children into three or more teams: each team creates a recipe with different vegetables from the garden, without revealing the recipe to the other teams.

Part 2: tasting
For lunch or for the afternoon snack, each child is served a dish containing a taste of each recipe cooked.
The children are asked to guess the ingredients.

Part 3: recipes collection
The recipes are described in the notebook, carefully indicating the ingredients, quantities and method of preparation.

Variants
Cooks, parents and grandparents can be involved in providing recipes, but also in preparing them the day on which the activity is organized.
A party can also be organized, during which the recipes can be prepared again, inviting the children's families to the celebration. The "Master Chef" certificate can be awarded to each child.
At the end of the school year, all the recipes can be collected and the children can decorate the pages of these recipe books with their drawings. Photocopy about a hundred recipe books and put them on sale to raise funds for the continuation of the garden project.

▸ Activity 2

The garden recipe book

In brief
This is an activity to help children recognize and share family recipes.

Participants
Children aged between 9 and 13.

Objectives
- Knowing tastes, uses, and eating and behavioral habits of their family members.
- Give a symbolic and cultural value to vegetables.

Coordinators
Teachers.

Materials
Notebooks or paper, colored pencils, string

Activity description
Part 1: the questionnaire
The teacher prepares, prints and gives out (or dictates in class) the questionnaire to the class and explains the questions.

Part 2: interviewing
At home the children use the list of questions to ask their family,

writing the answers down in the notebook.
For each interview, the children have to add in the notebook:
• a drawing of the person interviewed;
• a drawing of their favorite vegetable.

Part 3: the recipe book
In class, the children present their interviews and drawings. The teacher gets the children to copy them and, with the copies, creates a recipe book and hangs it up in the classroom.

List of questions
• Who?
• Name
• Favorite vegetable
• Preference – raw or cooked?
• A memory linked to this vegetable
• When do you prefer to eat it?
• Recipe (ingredients and preparation)

Example of an interview
• Who: my dad
• Name: Charles
• Favorite vegetable: peas
• Preference: cooked
• A memory linked to this vegetable: It reminds me of when I went to school
• When do you prefer to eat it?: on a picnic with friends
• Recipe: Ingredients: 3½ ounces of peas, 2 eggs, parsley, salt and pepper. Preparation: beat the eggs...

Variants
When the recipe book is completed, each participant can choose a recipe to prepare.
At the end of the school year, all the recipes can be collected and the children can illustrate the pages of these recipe books with their drawings. Make about a hundred copies of the recipe book and put them on sale to raise the funds necessary for the continuation of the garden project.

Further information
For further information on the activity, contact Sara El Sayed – Egypt (sara@nawayaegypt.org).

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

Educational Activities

Compost and compost bins

www.slowfoodfoundation.com

Introduction

The following are two examples of educational activities. Use your creativity to adapt them to your environmental, social, and cultural reality!

▸ Activity 1

Making a compost bin

In brief
There are many examples of composting activities. In addition to offering an alternative use of fertilizers in the garden, this activity can be a starting point for analyzing together the concepts of waste and resources. There is no such thing as waste in nature, and in the garden we can try "closing" the cycle of organic matter, just like in natural ecosystems, so that resources return to the soil that produced them. Let us learn, therefore, to eliminate waste and benefit from doing so. Below we will give you an idea on how to make a compost bin with reclaimed wooden planks and used plastic bottles.

Participants
Children aged between 8 and 15.

Objectives
- Make a compost bin with used materials: it will be used to recycle vegetable waste and to produce compost to restore garden soil fertility.
- Reason with the children on the importance of compost for soil fertility.
- Learn to consider waste (vegetable waste, plastic bottles, wooden planks) as resources.
- Learn to observe the environment and to respect nature's times.
- Develop manual skills and group work.

Coordinators
Teachers, members of the community (e.g. an experienced carpenter).

Materials
- To make the compost bin with used boards: wooden boards, sandpaper, cold tar, nails (7-12 cm / 3-5 in), brushes, a saw, a hammer. Organic waste of different types brought from home.
- To make the compost bin with plastic bottles: used plastic bottles, other bigger containers.

Activity description
1. Making the compost bin with reclaimed wooden boards
Part 1
The pupils retrieve wooden boards from packing platforms (pellets). A tip: the boards can be found at markets, supermarkets or warehouses, building sites, sawmills and landfills.

Part 2
The children plan and design the compost bin in class.

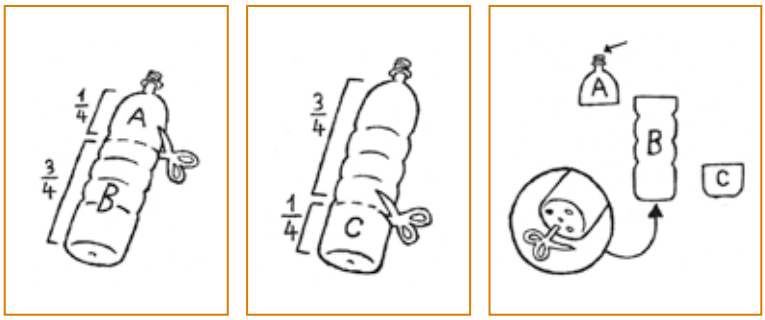
Part 3
The children select the boards, clean them with sandpaper and paint them with cold tar which will make them resistant to decomposition.

Part 4
The compost bin is assembled with hammer and nails.

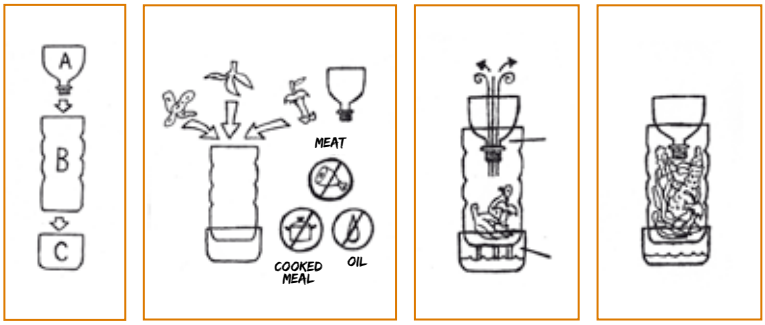
Part 5: team game

1. On the field, the teacher provides some drawings on paper, or directly samples of vegetable waste that will be placed in layers in the compost bin. He/she also prepares some drawings/waste samples or materials that must NOT go in the compost bin. As many (or almost as many) drawings and samples as there are participants are prepared. The children are divided into 2 teams and put in single file. At the starting signal, one child from each team runs to get the sample or the drawing in the order he believes is the most appropriate for the creation of compost. When he/she returns to the line, the next child in line sets off. The winner is the team that manages to collect all the elements that make up the compost and puts them in the right order.
2. Some tests are prepared for the groups of pupils/classes (quizzes, relay races, identification using the five senses, human pyramids, sports tournaments, etc.) which, if passed, entitle them to a sample for the compost: the first team to pass all the tests wins. This can be an activity that occupies a whole day of garden fun and games.

2. Making a compost bin with plastic bottles



Part 1
The students make a small compost bin in their own homes with used plastic bottles. To collect a small quantity of kitchen scraps (preferably raw vegetable waste chopped into small pieces), a bottle cut in half can be used: using the top half as a funnel, and inserting it in the bottom half so that excess liquid drains.



Part 2
the compost material is then put into a bigger bin. In order to calculate when the compost is ready, consider your environment well: climate (hot, humid, arid…); the location of the compost bin and its size determine maturation times.

Variant
Another ideal container in which to mature small quantities of compost (even on a balcony) is a clay pot, closed at the top and the bottom with two saucers. Clay allows material to transpire and filters odors, thus limiting rotting and nasty smells.

Further information
For further information on the activity, contact Sara El Sayed – Egypt (sara@nawayaegypt.org) e Younes Zghari – Morocco (younes.zg@gmail.com).

▸ Activity 2

Let's compost! Recycling in the garden with Bokashi

In brief
The purpose of the activity is to give children a positive attitude and awareness towards garden activities. The activity takes place over a period of approximately 3 months. In order to apply Bokashi – a Japanese technique that allows you to have ready-to-use compost in just 21 days, thanks to already active microorganisms – they use composted material prepared in the Slow Food garden.

Participants
Children aged between 8 and15, divided into groups of 15 students each.

Objectives
- Help to understand the importance of using natural compost instead of inorganic fertilizers.
- Provide the information necessary to recognize natural fertilizers.
- Learn to produce a natural fertilizer with the Bokashi technique.

Coordinators
Teachers, in the garden.

Materials
½ a bucket of corn husks, ½ bucket of ash, 1 bucket of natural soil, 2 sacks of corn stalks or chopped straw, 1 bucket of compost, 1 bucket of clippings or fresh leaves, 1 bucket of water.

Activity description

Part 1: theory
The teacher explains why to prefer a natural fertilizer – which replenishes the soil with nutrients and is inexpensive to produce – to an inorganic fertilizer.
The Bokashi technique is introduced.

Part 2: practical experience
In a bin, or in a hole in the ground, first put the ash, then the fresh leaves, the corn husks and the soil. Mix well and water. Make sure the materials do not stick to each other but are mixed homogenously.
Form a mound (the shape will be similar to that of an anthill) and cover it with banana leaves or mud. Make a hole on top of the mound to allow air to circulate.
After 7 days, check the temperature: if it is cold, this means it hasn't worked properly and, therefore,

the mound has to be heated (e.g. covering it with a cloth) to allow the microorganisms to grow on the organic materials (correctly fermented Bokashi gives off a sweet, pickled odor).
After 21 days, the Bokashi - a fertilizer with a high content of nutrients – should be ready for use in the garden.

Part 3: team play

1. On the field, the teacher provides some drawings on paper, or directly samples of vegetable waste that will be placed in layers in the mound. He/she also prepares some drawings/ waste samples or materials that must NOT go in the pit/compost bin. Prepare as many (or almost as many) drawings and samples as there are participants.
   Divide the children into 2 teams and put them in single file. At the starting signal, one child from each team runs to get the sample or the drawing in the order he believes is the most appropriate for the construction of the compost. When he/she returns to the line, the next child in line sets off. The winner is the first team to collect all the elements that make up the compost and puts them in the right order
2. Some tests are prepared for the groups of pupils/classes (quizzes, relay races, identification using the five senses, human pyramids, sports tournaments, etc.) which, if passed, entitle them to a sample for the compost: the first team to pass all the tests wins. This can be an activity that occupies a whole day of garden fun and games.

Variants

The students can try to make Bokashi at home with their families; the experience will then be documented and discussed in class.

Further information

For further information on the activity, contact Fredrick Msiska (nyadenani@gmail.com) and Manvester Khoza (manvesterackson@yahoo.co.uk) - Malawi.

Help us find more photos!

Slow Food®

Slow Food Foundation for Biodiversity

Terra madre

Educational Activities

Foods
Let's learn to taste and recognize them

Introduction

The following are three examples of activities to help you learn, distinguish and enjoy foods. Use your creativity to adapt them to your environmental, social, and cultural reality!

▸ Activity 1

Where does our food come from?

In brief
This activity is to help children become aware of the fact that all the different foods they eat come from somewhere. A taste workshop and a geographic map allow the children to understand that taste and other sensory properties of certain products are linked to their "territory", place of origin.

Participants
Children aged between 8 and 16.

Objectives
- Understand the meaning of « region ».
- Deepen knowledge of the Presidia, Ark products and other local products from their own Country.
- Learn to identify the differences between products from their own region through the senses (sight, touch, smell, taste).

Coordinators
Teachers.

Materials
- Geographical map (or the teacher can draw one)
- Post-it notes (or normal slips of paper and adhesive tape or tacks)
- Some marker pens
- Samples of local products (even Ark and Presidia products if available)

Activity description

Part 1: research in the family
In the days preceding the activity, the children are asked to do some research work in the family to identify local products and indicate their origin.

Part 2: class debate
In class, the children present their research work; the debate concerns the definition of food origin and, therefore, of region.

Part 3: Taste Workshop
The teacher gets the children to taste Presidia and Ark of Taste products, stimulating them to identify the products and to describe them using their senses.

Part 4: locating regional origins
The teacher explains the meaning and importance of the region, then goes on to ask the children to identify on the map the products identified through their research, using the notes.
The children are given a summary of the characteristics that link each product to its region: the teacher tells the story of the product, illustrates the physical aspects of its place of origin (geology, climate, morphology, etc.), explains production techniques and describes the aspect and taste of the products.
The map and notes are to be enriched with drawings and hung up in the classroom, like posters.

Variants
Field trips can be organized to the places of origin of the food products identified, inviting a producer or one of the children's relatives to class to tell the story and characteristics of a product.

Further information
For further information on the activity, contact Younes Zghari – Morocco (younes.zg@gmail.com) and John Kariuki Mwangi – Kenya (j.kariuki@slowfood.it)

> Activity 2

Fruit jigsaw puzzle!

In brief
This activity is to help children become aware of the fact that all the different foods they eat have specific sensory characteristics that are useful in distinguishing and knowing them.

Participants
Children aged between 4 and 13, divided into groups of 3 children each.

Objectives
• Stimulate concentration, observation, coordination.
• Comparative and tactile tasting.

Coordinators
Teachers, in the classroom or outdoors.

Materials
For each group of 3 children:
• 3 fruits of different colors or varieties (e.g. 3 different qualities of bananas or 3 mangos of different colors)
• A tray
• 3 small plates

Activity description
Part 1: dividing the fruits
The teacher cuts each fruit into 6 wedges/slices and mixes them up on the tray. He/she then repeats the procedure for each fruit group. In the meanwhile, the children have to wash their hands.
The material (tray of fruit, plates) is then given to each group and each participant is given a wedge of a different color.

Part 2: reassembling the jigsaw puzzle
All members of the group have to:
- reassemble each fruit, making sure the parts match perfectly
- taste a wedge of both their own fruit and the fruit of their group mates (comparative tasting)
- inspire verbalization (making comparisons and considerations: e.g. which of the three fruits is sweeter, more sour, more compact or mealy, etc.)

Part 3: stimulating verbalization
The teacher gathers the children's impressions and invites them to make comparisons, focusing on the aspects of biodiversity: shapes, non-uniform colors, flavors and textures…

Variants
Field trips can be organized to the orchards, inviting a producer or one of the children's relatives to class to tell the story and characteristics of a product.

▶ Activity 3

Sensing the garden

In brief
This activity is to help children become aware of the fact that all the different foods they eat have specific sensory characteristics that are useful in distinguishing and knowing them.

Participants
Children from 5 years of age, divided into groups equal in number.

Objectives
- Stimulate the sense of smell.
- Group work.

Coordinators
Teachers, in the classroom.

Materials
For 24 children:
- Table or work top
- 24 samples of 12 types of vegetables and/or fruits
- 24 perforated containers, all the same and non-transparent (as an alternative, make some small packets with paper/cloth)
- A sheet of paper and a marker
- 12 small cups or other containers on which to write or to stick some labels

Preparation
The teacher prepares an alpha-symbolic key on a sheet of paper, e.g.:
A = ◊
B = #

…
Match a plant to each letter/symbol, e.g.:
A = ◊ = cipolla
B = # = pomodoro
…

Prepare 3 samples for each fruit and vegetable:
- 1 sample is put into a perforated container/packet marked with the corresponding letter
- 1 sample is put into a perforated container/packet marked with the corresponding symbol
- 1 sample is put into a cup marked letter + symbol + name of the fruit or vegetable and is placed on the table. The cups are then to be covered with paper to keep the contents them hidden from the children's sight and smell.

Example:
3 samples are made from the onion: one marked with the letter "A", one marked with the symbol "◊" and one in the glass marked "A ◊ onion".

Activity description
Part 1: distributing samples and their pairs
Each child is given a secret packet: by just smelling it, they have to identify its twin sample (tell the children that the child holding a packet marked with a letter has to look for a partner among those with the packet marked with a symbol, and vice versa

Part 2: sensorial identification
When all the pairs are reunited, the teacher invites the children to come to the table to indicate which plant the 2 samples refer to, and gives each couple the cup containing the third corresponding part. On uncovering the cups, each pair can touch the content and memorize the scent-shape-tactile feel (preferably with their eyes closed).

© Paola Viesi

Help us find more photos!