A TREE PLANTING GUIDE

This guide, created by YLI,
an environmental consultancy firm, in order
to support UNEP (United Nations Environment Programme).
The campaign is called PLANT FOR THE PLANET and the target
is to plant one billion trees worldwide during 2007.
Only the summer of 2007, 280.000 hectares were devastated
by wildfires in Greece. Nature is wounded and has to be cured.
Burned forests, degraded land and depleted mountains have to
be filled with the missing vegetation.
We have to reverse the desertification process.
Forests are major natural weapons against global warming and
play the most important role in water conservation.
The planting guide aims to encourage the partitipation of
everyone interested: society, bussinesses
as well as the government.
The UNEP campaign shows the way.
We need to follow.

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Planting Seeding Guide

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Introduction

This planting/seeding guide is drawn up by YLI Ltd, within the framework of cooperation between YLI and United Nations Environment Programme (UNEP) on UNEP's initiative PLANT FOR THE PLANET: THE BILLION TREE CAMPAIGN. This campaign's global target is to motivate organizations, institutions, NGOs, individuals, companies and the government to plant 1 billion trees and smaller plants within the year 2007.

The devastating wildfires of the year 2007 burned 280.000 hectares of forests, forest areas and orchards, thus creating inestimable environmental damage. Reestablishment of vegetation, biotopes and habitats is necessary at any cost, in order to rescue this planet. UNEP's campaign points to the direction we all need to follow. Plants form the basis upon which terrestrial ecosystems are founded. The value of plants coincides with that of the current ecological balance, without which the very presence of humans and other living organisms on the planet would have been impossible. Plants, and especially trees, provide oxygen and shade, they maintain environmental temperature balance, they contribute in the retention of water and the enrichment of aquifers, they "filter" air particles and they also form parts of landscapes of considerable value. Probably the most important service provided by trees is sequestration of atmospheric carbon dioxide reducing the greenhouse effect. This is therefore one more reason why we should plant and protect trees and other plants.

Destruction of plants disrupts natural balance and causes many important and significant problems to life on the planet. These problems are evident and have been escalating in our country during the past few years. Some of the most significant of such problems we are faced with are desertification, temperature rise and deficiencies in natural resource supplies such as water.

This planting guide is addressed to each and every volunteer citizen who as an individual or as a member of a team, wishes to contribute to the success of this campaign. It can also assist groups of, among others, kids who wish to play a role in environmental restoration, improving at the same time their environmental awareness and their understanding of the benefits of participatory programmes.

Background

Plants such as trees, shrub, grasses, flower-plants, need a suitable environment to sprout and grow. Their growth depends on specific local conditions. The most important of these conditions are temperature, moisture, soil and water.

When we plant on a piece of land we try to imitate natural processes so that nature can cover the gaps in the most physical manner. In order to do that, we have to carefully follow the steps prescribed in this brochure.

A. Selection of a planting spot/site

Selection of the appropriate site is the first issue facing those wishing to plant trees. Planting sites are selected on the basis of local conditions, the purpose of the plantation, as well as the size of the intervention.

Plants are directly dependent upon the components of their abiotic environment such as soil and water. Therefore, a plant's survival is determined by the soil depth, the soil quality and its ability to retain water.

The purpose of the plantation is the determining factor for planting site selection. In reforestations, for instance, where the intention is to fill-in the gaps of the existing tree vegetation, plantings should be naturally distributed in the area. In windbreaks on the other hand, linear planting against strong winds (northern) is preferred, in order to cut down wind speeds.

B. Selection of plants

Plants are selected on the basis of species, size, shape and origin, so that the purpose of planting is served. Important selection factors are: the plants' resistance to climatic and soil conditions prevailing in the planting site, as well as their biological demands in water and in soil elements. Some plants can tolerate difficult conditions, others have grater demands in water, and others require higher air humidity.

C. Finding Plants

Seedlings (trees, shrubs, grasses) can be ball-rooted in plastic bags, paper pots, or in paper/plastic containers. They can also be bare-rooted grown in the ground without a bag. They mast have normal and quite well-grown branches or stems, as well as a healthy root. Their appearance must depict their good health and proper growth.

In order for plantations to be successful, seedlings should be taken to planting straight after their removal from the nursery. The more they remain unplanted, the more they loose their rooting ability.

The seedling's roots should not remain uncovered and exposed to sun and air because they will become withered and spoiled. Seedlings and especially bare-rooted ones should be packed in special containers in a shady location.

D. Planting Seasons in Greece

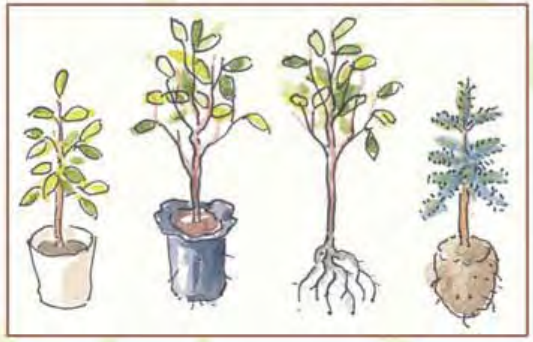
Local weather conditions play a significant role in determining the suitable time for planting. We generally prefer wet seasons with mild temperatures. The most appropriate planting season in Greece is from October to February. In the colder regions of the country and in higher altitudes, plantation can go on up to March, if rain is anticipated during spring and early summer.

The planting season depends also on the selected plant species to be planted. Planting of conifers should start from autumn and up to the end of January, so that enough rain has irrigated the soil up to a 30-40cm depth, whereas for deciduous trees, plantations should start after they loose their leaves and up to one month before they start growing the new ones, which means from end-October to end-February.

E. Plant Spacing

The distance between the seedlings during planting depends on the species and the purpose of the plantation. The distances should be such as to allow for adequate space for young plants to grow. In reforestations, the distance between the trees, the so-called tree-spacing (e.g. 3mx3m) depends on the species and the size of the plants, as well as on the purpose of the plantation.

Planting Procedure



Seedlings planted in a site should come from nurseries of the site's region, so that they are used to local weather conditions. The dimensions of the above and underground parts of the plant should be similar. Otherwise we should either crop the roots or prune the above ground parts.

The planting process helps the plant adapt to the natural environment which forms its new home. Soon after the planting is completed we shouldn't "spoil" the plant. We should aim at naturally integrate the plant to its new environment under worse conditions than those it was used to at the nursery.

Planting

1 Digging the planting hole

The planting hole can be dug with the use of a planting tool or a planting machine. The shape of the hole is usually that of a truncated cone. The size of the hole depends on the size of the seedling and more importantly on the size of the ball surrounding its roots. The depth of the hole should be approximately equal to its diameter at the surface of the ground. The minimum depth of the hole should be at least 10cm larger than the height of the root-ball. These dimensions are important in order for the seedling has adequate space to grow. A common planting hole for a medium size tree is about 40cm deep and 40cm wide at the ground level. Sometimes, when the ground is very rocky and the soil small explosion can be carried out in order to break the rock and create loose soil stuff.

2 Preparing the Seedling

During the preparation of ball-rooted seedlings, namely those grown in a plastic bag with a soil ball, we carefully remove the bag that holds the soil-ball together. This unwrapping of the bag is carried out starting from the removaof the bottom of the bag, slashing a circular line with a sharp knife. We then slash the vertical side of the bag and we remove it taking care not to brake the soil ball. In the case of seedlings grown in paper pots the removal of the pots is not necessary as they decompose naturally.

3 Planting

Planting in the whole should be carried out with care so that the soil-ball is not broken. The seedling should be placed in the whole in an upright position, holding the stem at the point between the roots and the leaves (trunk flare) with the left hand and the base of the soil ball with the right. A layer (10 cm deep) of loose soil should have been placed at the bottom of the hole before we plant the seedling. This layer assists the plant to develop roots during the first phase of its adaptation to its new home.

For barerooted plants, whose roots are not enclosed in a soil-ball, we create a small cone of soil at the bottom of the planting whole. We then spread the seedling's roots around the cone.

4 Adding soil

After the installation of the seedling we fill in the hole with natural soil. The added soil should reach up to 10cm below the ground surface so that an irrigation basin is created. We can use the soil excavated during the hole opening as filler soil, but we need to remove gravel and stones first. In some cases a different more improved soil is used for filling.

5 Irrigation

Irrigation is the necessary next step after installation of the plant is completed. This primary watering dissolves any gaps between the root-ball and the surrounding natural soil and thus smooth integration between them is achieved. More soil can then be added if required.

6 Staking

Tall trees need staking. The stakes should be tightly fixed in the ground, inside the seedling's hole, towards the side of the direction of the prevailing winds. Installation of the stakes should take place before the beginning of the planting procedures or right after the first irrigation dose. The seedling should be placed at a 10cm distance from the stake, strapped tightly on it. There should be 2 strapping points on the stem, located close to the two thirds of the seedling's height. The straps should be robust and tape-formed in order not to scrape and injure the trunk. They should be crossed between the stake and the stem and be tightly fastened at the set height. Once staking is completed, verticality and alignment are examined and corrected if necessary.

7 Conservation - Irrigation

The Seedlings should be irrigated during the dry season for a couple of years following planting, especially in areas with seldom precipitation. Small trees (firs, pines, cypresses etc) need a 5-10 liters' watering dose. Bigger trees (aspens, eycalyptuses etc) need 25-50. Irrigation should be carried out at 15-day intervals, depending on prevailing weather conditions.

8 Fertilisation

Fertilisation is necessary only on nutrient deficient soils. The most commonly used fertilizers are those comprised of equal quantities of Nitrogen (N), Phosphorus (P) and Potassium (K). Soil improvement can also be achieved with the use of peat or a mixture of peat with perlite.

9 Tillage

Tillage is necessary in order to improve the soil surrounding the roots and helps the plant strengthen and grow. It should be carried out every spring following the last rainfalls of winter for at least the first couple of years after planting. If summer irrigation is planned, the basins should be suitably maintained.

10 Weeding

Weeding is carried out frequently after planting so that good conditions for our plant are sustained. Weeding is the process of weeds grown around our plant. These weeds deprive the seedlings of the necessary airing, they limit their space to grow and consume nutrients and water necessary for the seedling's existence and growth.

CONCLUSION

Planting is not a difficult job. Seedlings though go through a very sensitive phase until they adapt to the new environment and until their roots are fully functional. Therefore, planting activities need attention and monitoring.

Lost or destroyed plants can be replaced during the next planting seasons.

A forestry specialist's presence during planting activities is deemed important and necessary so that appropriate expert advice can be provided.

Planting in forests should take place only after and according to a duly approved Reforestation Study.

Every intervention after the first 2-3 years is made on the bases of an approved Forest Management Study.

With the knowledge this brochure provided

Let's plant the gaps

Let's unify nature