



The Moringa Tree
Moringa Oleifera
Moringaceae Family

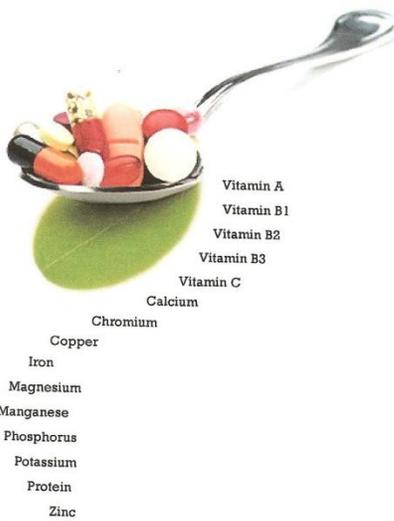
By Bethany Albert

“A major advantage to Moringa is the fact that it is a local resource. This contrasts with many of the ongoing programs designed to fight malnutrition which depend on imported products and outside support. ...Moringa is a very simple and readily available solution to the problem of malnutrition.”

- Lowell J. Fuglie, in The Miracle Tree - Moringa oleifera: Natural Nutrition for the Tropics

The Tree

Also known as the “miracle plant”, the moringa tree is ideal for its extensive health benefits and its ability to thrive in harsh conditions. It is native to India but is now grown all over the globe in tropical and sub-tropical environments to combat malnutrition. Its leaves, pods, and flowers are edible and nutritious. The pods are high in protein and fiber. It is fast-growing and resistant to conditions of drought, high altitude, disease, and heat.



Comparative Nutrition

Fresh leaves contain:

1. Four times the calcium of milk
2. Two times the protein of yogurt
3. Seven times the Vitamin C of oranges
4. Three times the potassium of bananas
5. Seven times the Vitamin A of carrots

Also contains Vitamin B1, Vitamin B2, Vitamin B3, chromium, copper, fiber, iron, manganese, magnesium, phosphorus, potassium, and zinc.

(http://www.treesforlife.org/documents/moringa/moringa_brochure.pdf)

Uses

1. Human food
2. Animal fodder
3. Water purification
4. Natural medicines
5. Fertilizer
6. Living fence
7. Alley cropping
8. Natural pesticide
9. Wood fuel



Growing Conditions

Moringa trees grow best in 25 to 35 degrees Celsius, but can withstand temperatures up to 48 degrees. It can grow in altitudes up to 1200 meters and tolerates a pH range of 5.0-9.0, meaning it can grow in acidic and basic soil. Only 250 to 3000 mm of annual rainfall are required. It can be grown even in dry clay, although well-drained sandy loam is best. It can be grown in mud, but can't tolerate prolonged flooding or poor drainage. It can be grown from seeds, or cuttings. Leaves can be harvested within a year of planting and flowers and pods can be harvested after two years. Within three years, one tree will produce 300-400 pods while a mature tree can yield up to 1000. It grows up to 12 meters in height. More information on how to grow and harvest moringa is available in the resources section of this document.

The Parts of the Tree

Pods: The vegetable pods grown on the tree are the most valuable part of the tree. They can be eaten raw or cooked or roasted like nuts. They are a good source of calcium and phosphorus.

Flowers: The cooked flowers are edible as well, alone or mixed with other foods or fried in batter. They are a good source of nectar for honey-producing bees. Boiling them in water makes tea.

Leaves: Moringa leaves are extremely healthy because they contain all nine essential amino acids when usually only animal products contain all these essential nutrients. The leaves contain significant amounts of beta-carotene, Vitamin C, protein, iron, and potassium. The leaves can be prepared in a variety of ways: they may be cooked, eaten fresh,

http://www.dglenn.myzija.com/canada/discovering_moringa.html

or dried and powdered for soups and sauces. The anti-bacterial and anti-inflammatory properties of the leaves are useful when applied to wounds or insect bites. Putting moringa leaves into the soil can prevent "damping off disease" (*Pythium debaryanum*) in seedlings. Crushed leaves are used to clean cooking utensils and even walls.

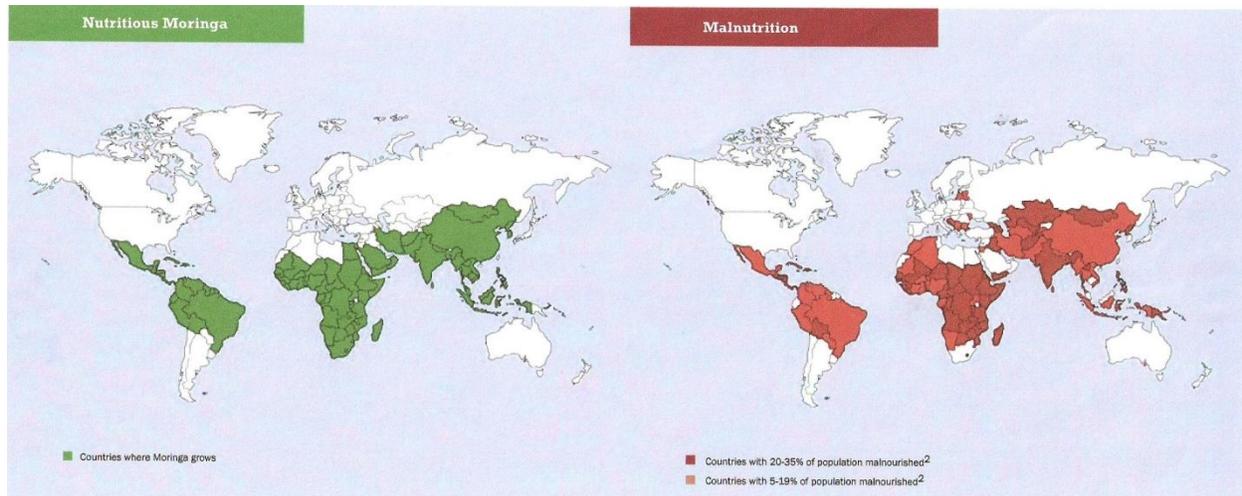
Seeds: The seeds yield edible oil that is clear and odorless. It burns without smoke and will not turn rancid. The seeds are 35% oil and the remaining seed cake can be used as fertilizer or to purify water.



Roots: The roots are sometimes consumed shredded as a condiment, but they contain an alkaloid called spirochin that is a potentially fatal nerve-paralyzing agent so the roots should not be eaten.

Wood: The wood is useful for burning but it is light and not suitable for building. The fibrous bark can be pounded to make material for rope or mats. The wood also produces a blue dye.

Combating Malnutrition



In 1997-98, Alternative Action for African Development (AGADA) and Church World Service tested the ability of Moringa leaf powder to prevent or cure malnutrition in pregnant or breast-feeding women and their children in Senegal. Malnutrition was a major problem in this area, with more than 600 malnourished infants treated every year. During the test, doctors, nurses, and midwives were trained in preparing and using Moringa leaf powder for treating malnutrition. Village women were also trained in the preparation and use of Moringa leaf powder in foods.

This test found the following effects to be common among subjects taking Moringa leaf powder:

1. Children maintained or increased their weight and improved overall health
2. Pregnant women recovered from anemia and had babies with higher birth weights
3. Breast-feeding women increased their production of milk

To Dry Moringa Leaves

How to Dry the Leaves

1. Remove leaves from stems
2. Rinse in clean water
3. Optional: If possible, it is good to blanch the leaves before drying. To blanch, place the leaves in boiling water for just a few seconds, and remove them immediately.
4. Spread leaves out in a thin layer to dry in the shade, on fabric if available.
5. If humidity is high, turn the leaves often to prevent molding.

When leaves are dry enough to crumble easily, they can be stored in an airtight container. Protect the leaves from sunlight to preserve the nutrients.

Water Purification

From HDRA – The Organic Organization

http://www.gardenorganic.org.uk/pdfs/international_programme/Moringa.pdf

Seed powder can be used as a quick and simple method for cleaning dirty river water. The powder joins with the solids in the water and sinks to the bottom. This treatment also removes 90-99% of bacteria contained in water.

Using Moringa to purify water replaces chemicals such as aluminum sulphate, which are dangerous to people and the environment, and are expensive.

Twenty liters of water can be treated in the following way:

1. Remove the wings and brown seed coat and discard any seed kernels that have dark spots or any other signs of damage.
2. Pound the kernels to a fine powder.
3. Add 2 grams (2 small spoons) of powder to one cup of clean water. Pour into a bottle and shake for 5 minutes.
4. Filter the solution through a clean cloth into the bucket of dirty water that is to be treated.
5. Stir the water quickly for 2 minutes and slowly for 10 – 15 minutes (do not use metal implements)
6. Leave the bucket undisturbed for one hour or until the water becomes clear and the impurities have sunk to the bottom.
7. Filter the water through a clean cloth.
8. Boil the water before drinking.

Water from varying sources will need different amounts of powder because of the impurities present will not be the same. Experiments with a jar will help in working out the correct amount needed.

Both the seeds and the seed powder can be stored but the solution made in stage 3 should not be stored. It should be freshly made every time water is to be purified.

Honey and sugar cane juice can also be cleared of impurities using the powder.

Note: Moringa stenopetala seeds have better water purifying properties than Moringa oleifera.

To Get Moringa Seeds

For optimum resilience to local conditions, it is best to obtain moringa seeds as close as possible to where they will be grown. If there are already local moringa trees, look for dry, brown pods and collect seeds before the pods split and fall to the ground. Keep in mind that moringa can also be grown from cuttings.

Ghana:

Excellent Exploit Group (EEG)
P.O.Box MDd. 8
Madina
Accra, Ghana
Ph: 0233-208842764
Email: aleri24@yahoo.com

India:

Annai Enterprises
1914 Pudupalli St.
Santhome, Chennai (Madras)
Tamilnadu 600004
India
Contact Person: Michael Raj
Ph: 91-44-2462-0505
Fax: 91-44-52101596
Email: info@annaienterprises.com or
michaelraj@catholic.org

Asian Power Cyclopes
Contact Person: Paritosh Gulati, Project Manager
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Ph: 91-135-2620488
Fax: 91-135-2620961
Mobile: 989-722-6101
Email: asian@nde.vsnl.net.in or
paritoshgulati@yahoo.com

Chandrakant Chougule
near Pune, India
Email: chandrakant_chougule2003@yahoo.com

Kenya:

John Amisi
Moringa Development Organization
Email: ayodef03@yahoo.com

USA:

Educational Concerns for Hunger Organization(ECHO)
17430 Durrance Rd.
N.Ft.Myers FL 33917 USA
Tel. 239-543-3246
E-mail: echo@echonet.org
Supplies free, trial packets of seeds to its overseas development network.

Sources and Resources

For instructions on how to grow moringa:
AVRDC. 2003. Suggested Cultural Practices for Moringa. AVRDC the World Vegetable Center: <http://www.moringanews.org/documents/Mcultivation.pdf>

Trees for Life
<http://www.treesforlife.org/our-work/our-initiatives/moringa/how-to-grow>

For nutritional and medicinal information:
Trees for Life.
http://www.treesforlife.org/documents/moringa/English%20moringa_book_view.pdf

For instructions on when to harvest and how to cook moringa products:

Moringa Oleifera, a Multi-Purpose Tree

http://www.gardenorganic.org.uk/pdfs/international_programme/Moringa.pdf

Trees for Life

<http://www.treesforlife.org/our-work/our-initiatives/moringa/faq/using-moringa/using-moringa>

For educational materials:

Trees for Life International (Moringa website) <http://www.treesforlife.org/our-work/our-initiatives/moringa>

For Instructions on Water Purification

Tree of Life

<http://www.treesforlife.org/our-work/our-initiatives/moringa/other-uses/water-purification/water-purification>

For Other Information:

ECHO <http://www.echonet.org> Seeds and Technical Notes on Moringa, Moringa Leaf Powder and Moringa Recipes. (Available in Spanish, French, and English!)

Tree for Life Journal: Moringa Wiki.

<http://www.tfljournal.org/wiki.php/2008102411575438>

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