



Trees for Life International  
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(316) 945-6929 [www.treesforlife.org](http://www.treesforlife.org)

## Call for partners: Studies of Moringa leaves to increase milk production in India

The leaves of Moringa (*Moringa oleifera*) have become known for their high nutritional content, widespread use in traditional medicine and potential benefits for human health.

In addition to the potential benefits of direct human consumption of Moringa leaves, recent studies have found that adding Moringa leaves and green stems to the feed of milk cows increased their milk production 43-65%.<sup>1,2</sup> The cost of producing the leaves was minimal related to the great gains in milk production.

If even a fraction of these results could be reproduced in India, it would be a great boon to the people. Trees for Life is thus fostering localized investigations of this potential in various regions of India before the concept can be popularized. We will be partnering with five institutions in India to perform such research.

Institutions interested in performing a study of this subject are welcome to apply for funding.

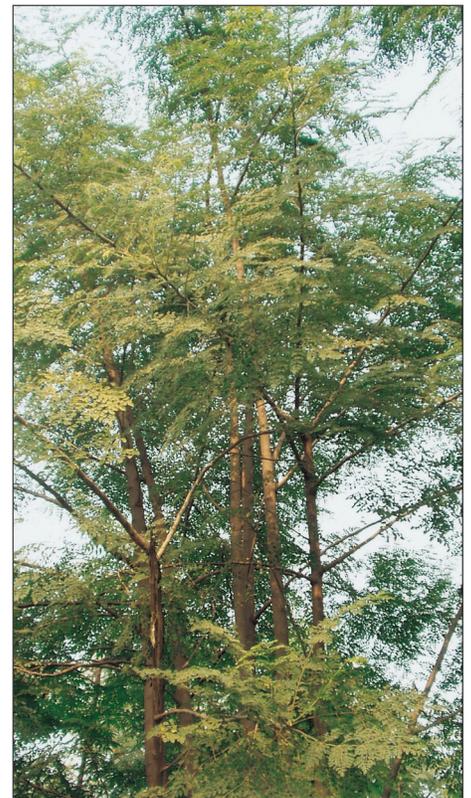
### About Moringa

Moringa is native to India and has become naturalized in tropical and subtropical areas around the world. People eat its pods and flowers as vegetables. Every part of the tree, from the bark to the leaves to the roots, is used in traditional medicine. However, most people are not aware of the great variety of potential benefits of the leaves.

Nutritional analyses indicate that Moringa leaves have immense nutritional value. In particular, they are very high in vitamin A, vitamin C, calcium, potassium and protein. In fact, rare for a vegetable, Moringa leaves contain all of the essential amino acids—including two that are especially important for infants.<sup>3,4</sup>

Moringa leaves are eaten as a green leafy vegetable in some areas of Africa, Asia and Latin America. However, their dietary use is limited. In recent years, scientists and organizations around the world have begun to study the effects of dietary use of Moringa leaves and to promote their use, especially in areas where malnutrition is widespread.

The Moringa tree grows rapidly and bears fruit within 8 months after planting. It produces fruit and leaves for more than nine months in a year, takes up very little space, does not require any artificial fertilizers or pesticides, and can be grown with relatively little care in marginal soils.



For additional information, visit:

[www.treesforlife.org/moringa](http://www.treesforlife.org/moringa)

[www.treesforlife.org/moringa/book](http://www.treesforlife.org/moringa/book)

## Moringa and milk production

Two recent studies in Nicaragua have shown that, in addition to direct human consumption, Moringa could also be useful in increasing milk production in animals. The results of these studies were as follows:



*Nikolaus Foidl and Leonardo Mayorga in Nicaragua*

### ***Mr. Nikolaus Foidl***

Nikolaus Foidl, an Austrian scientist living in Nicaragua, and his colleagues have been conducting research on various uses of Moringa since the early 1990s. He has collaborated with the University of Hohenheim, Germany and the Swiss Federal Institute of Technology in Zurich, Switzerland.

In one test by Foidl and his coworkers, milk cows were fed 15-17 kg [fresh matter] of Moringa leaves daily, mixed with their regular feed. The results were:

- Without Moringa: 7 liters of milk per day
- With Moringa: 10 liters of milk per day (increase of 43%)<sup>1</sup>

### ***Dr. Nadir Reyes Sánchez***

In 2006 a study was conducted in Nicaragua by Dr. Nadir Reyes Sánchez of the Swedish University of Agricultural Sciences in Uppsala, Sweden. In this study, Dr. Reyes compared the milk production of dairy cattle fed *B. brizantha* hay only with that of cattle fed hay supplemented with Moringa.

The results were:

- Hay only: 3.1 kg milk per day
- With 2 kg [dry matter] Moringa: 4.9 kg milk per day (increase of 58%)
- With 3 kg [dry matter] Moringa: 5.1 kg milk per day (increase of 65%)<sup>2</sup>



*Dr. Reyes at his Moringa farm*



*Moringa seeds can be planted 10 cm apart.*



*The green matter can be harvested every 35 days.*

### **Intensive cultivation of Moringa**

In order to produce enough Moringa green matter for use in milk production, it can be grown intensively as a field crop. Foidl and Reyes have also experimented with methods of intensive cultivation of Moringa.

Foidl planted Moringa 10 cm apart, and found that the green matter could be harvested every 35 days, or up to 9 times a year, on irrigated and well-fertilized land. Yearly production yields, per hectare per year, were:

- 650 to 700 tons of green mass
- Equivalent to 100 to 110 metric tons of dry mass<sup>5</sup>

Reyes' study was done without irrigation and with much less fertilizer, and resulted in a harvest of four crops per year, yielding a total of 100 tons of green mass.<sup>2</sup>

Later tests were conducted in Senegal and had similar results to those found by Dr. Reyes.<sup>5</sup>

### **Need for further studies**

Milk is a major source of protein for a very large segment of the Indian population. Thus, if Moringa could significantly increase milk production, it would be a major boon for the people of India.

To move toward this goal, Trees for Life would like to facilitate scientific studies to determine:

- How effective is Moringa at increasing milk production?
- What is the best methodology, i.e. ratio of Moringa to other feed material?
- How does Moringa impact the nutritional content of milk produced?
- Are results consistent and sustainable over a longer period of time?



## Call for applications

Trees for Life plans to partner with five institutions in various parts of India to conduct coordinated studies of Moringa's impact on milk production. Such support shall include funding and coordination with other scientists.

These studies will be:

- Masters level
- Following a scientific protocol that will be provided
- Starting in June-July 2009

## Qualifications

The partners we are looking for should have the following qualifications:

- Experience and infrastructure for doing a milk cow study
- Land for cultivation of Moringa
- Veterinary facilities
- Ability to analyze milk samples
- Background in scientific research

### For more information

Those interested in becoming part of this research project may contact:

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