

# A Baseline Survey Report of District Bargarh, Orissa

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*The drumstick tree (a common name for Moringa) grows abundantly in all parts of India. However, most people do not include drumstick leaves in their diets and are not aware of the high nutritional value of the leaves. This baseline survey was conducted in western Orissa, India, to facilitate a test of social marketing techniques to motivate people to include drumstick leaves in their diet. The test campaign that followed, conducted by Trees for Life, will be the subject of a "final report" and a "one year post-campaign survey report" in future issues of this journal.*

## Section 1: Introduction

### 1.1 Project

Global research and experience has shown the tragic results of vitamin A deficiency. Experts agree that the change in the dietary practices, that is, utilizing traditional foods rich in beta carotene, a precursor of vitamin A, is a long-term solution to prevent various ailments caused due to vitamin A deficiency.

The leaves of *moringa oleifera* (called "drumstick" in English, "moonga" in Oriya) contain more beta carotene and carotene than even carrots. Drumstick leaves are a rich source of vitamin A, calcium, phosphorus, vitamin C, and iron. Its use in the diet helps prevent night blindness and other childhood diseases. The drumstick tree grows abundantly in all parts of India. However, most people do not include drumstick leaves in their diets.

Trees for Life is an international NGO with headquarters in the United States. It has a counterpart and sister organization in India, Trees for Life (India). Separately and/or jointly these two organizations are referred to in this study as Trees for Life or TFL.

TFL had conducted an informal study in India which revealed that except for the qualified nutritionists and people concerned with the vitamin A deficiency, practically no one was aware of the high nutritional value of drumstick leaves. The results of that study prompted TFL to take the challenge of finding ways to motivate people in India to include drumstick leaves in their diet.

With this in view, TFL conducted a test of social marketing techniques in 20 villages spread over three blocks, (administrative units, similar to counties in the U.S.): Bhatli, Ambhawana, and Ateweera, of District Bargarh of Western, Orissa.

This TFL test of social marketing techniques is initiated in the village schools. Students are presented information about the benefits of the drumstick leaves and vitamin A. The students carry the message to their community. Although the message is brought to the community at large by the students, mothers are the real target of the messages since they are responsible for cooking and managing food at home.

### 1.2 Aim and Objectives

#### The Aim

The aim of this TFL campaign is to test the social marketing techniques that will motivate people to increase the dietary use of vitamin A rich drumstick leaves in 20 selected villages of Bargarh district of Orissa.

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**Received:** November 1, 2005

**Accepted:** November 15, 2005

**Published:** December 1, 2005

The electronic version of this article is the complete one and can be found online at:  
<http://www.tfljournal.org/article.php/20051201105228137>

Trees for Life Journal 2005, 1:6

PEER REVIEWED

## **Objectives**

This motivation must be achieved through community and family participation and be self-generated. The motivation should lead people to the following actions:

- Creating awareness in their communities regarding the benefits of drumstick leaves,
- Motivating members of their communities to plant drumstick trees, and
- An increase in the dietary use of drumstick leaves.

The TFL test project was initiated in April '96 and is expected to be completed by the end of March 1997. This baseline study was conducted to establish a benchmark regarding:

- The level of existing awareness regarding the benefits of the drumstick leaves,
- The number of drumstick trees in selected villages, and
- Dietary use of these leaves in the sample area.

What follows in the next section is the methodology of the baseline survey. Section 3 describes the detailed findings of the baseline survey. In section 4 of this report, major findings, conclusions and recommendations are provided.

## **Section 2: Baseline Survey Methodology**

### **2.1 Baseline Survey**

A baseline study is part of the TFL's evaluation design. The effectiveness of the social marketing techniques applied in this test is to be evaluated using a **pretest posttest comparison**.

Although the project was initiated in April 1996, the data collection for the baseline study could not be conducted until November-December 1996. This was due to the overall strategy of TFL to involve and empower local people to conduct such a study. It took more time than anticipated for the local cadre to be identified and properly trained.

This strategy, however, presented a problem for this study because in most of the programme villages at least some information had been provided and a "pure" baseline study could not be conducted.

Since the socioeconomic conditions in the villages of the neighboring block are almost identical to the programme villages, it was considered that this baseline study may be done in the neighboring villages where no inputs had been made.

TFL management made a decision to conduct this study in both sets of villages. A decision was made to establish a baseline in the neighboring villages as well

as a set of programme villages where "least" inputs had been made up to that time.

In these programme villages some inputs had been made to the students, but the community activities and educational programs for the women had not as yet been conducted. Since our real target was the mothers, it was decided to include these villages in the study. The fact that students had probably shared some of the information with their mothers in the programme area was understood and taken into consideration.

### **2.2 Evaluation Design**

Based on the above considerations, the baseline survey was conducted in both programme and comparison areas. The programme area is defined as the area that would receive project inputs. On the other hand, comparison area is similar to the programme area in all aspects except that it will not receive any project inputs.

While the programme villages were selected on the basis of having received the "least" inputs, the comparison area villages were randomly selected from the neighboring block of the district Bargarh.

### **2.3 Issues**

The following issues were studied in this baseline study:

- Inventory of existing drumstick trees in the villages.
- Respondents' knowledge on the types of drumstick trees available in the area.
- Respondents' knowledge of uses of drumstick leaves and reasons for usage.
- Mode of cooking practiced and frequency of drumstick leaves used in the diet.
- Respondents' perception about planting drumstick tree at home.

### **2.4 Data collection**

This baseline study and data collection was conducted under the leadership of Mr. B.R. Poonia. Mr. Poonia is a former employee of CARE, an International Development Organization. He is a post graduate in Sociology, and has 20 years of experience with various national and international developmental organizations of project planning, monitoring and evaluation.

Mr. Poonia made two trips to the field. The first was to study and get acquainted with the area and help design the parameters of the survey. The second trip was to help train the local leadership and supervise the data collection.

The baseline survey was conducted in 8 villages of the programme area and an equal number of villages in the comparison area. In each of the selected villages, 40 women were interviewed. These subjects were **randomly** selected from five different sections of the

village. Care was taken to ask for the lady in the house who was responsible for cooking duties. In all, 636 women were interviewed: 318 from the programme area and an equal number from the comparison area.

The interviews were conducted by **trained investigators** who were residents of the area and quite knowledgeable of the local culture, language and dialect. All the investigators were at least high school graduates, and many of them had college degrees.

The investigators were trained in interviewing techniques, and familiarized with the interview schedule and code book. As part of the training, they were also exposed to the field practice and administering the schedule.

A **structured interview schedule** was used to interview the respondents. The interview schedule was **pretested** in selected nonprogramme villages of the same district. It was modified based on the results of pretesting.

### 2.5 Data entry, analysis and report

All the schedules were checked to correct errors before data entry. Data entry was done in dbase III plus package and data analysis was done using SPSS package. Data entry, analysis and report preparation was done by DAS (Development Assistance Systems) - India in its sub-office at New Delhi, India.

## Section 3: Findings and Discussion

The findings of the baseline survey are as follows.

### 3.1 Family size

Of the 318 respondents interviewed in each area, there were 1699 and 1987 family members in the programme and comparison area respectively. Almost 50 per cent of the respondents had a family of 46 people (table 1).

The average family size was found to be 5.3 and 6.2 in the programme and comparison areas respectively. This matches with the "National Family and Health Survey" study conducted in 1993, in which the household family size in rural Orissa was found to be 5.3, and 50 per cent of the households had a family size of 46 members. (This study was conducted by the Ministry of Health and Family welfare, Government of India. It was designed by the Institute for Populations Sciences, Bombay and funded by USAID.)

The family size of the respondents varied from 1 to 14 members in the pro-programme area and from 1 to 22 members in the comparison area.

**Table 1:** Family size of respondents

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Number</u>				
1-3	65	20	69	22
4-6	161	51	157	49
7-9	76	24	67	21
10-12	12	4	14	4
More than 13	4	1	11	4

### 3.2 Type of Family

This study revealed that about **two-thirds** of the respondents, that is, 68 and 63 per cent in the programme and comparison areas respectively, live in a nuclear family (table 2).

**Table 2: Type of family**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Type</u>				
Nuclear	216	68	199	63
Joint	102	32	119	37

### 3.3 Availability of moonga tree

In the programme area 45 per cent of the respondents had moonga trees, and 51 per cent of respondents in comparison area had moonga trees. (table 3). There were 272 moonga trees in the programme area, and 240 moonga trees in the comparison area.

In the programme area, 52 per cent respondents had moonga trees within their home courtyard, 45 per cent in areas adjoining their homes (kitchen garden) and 14 per cent on the boundaries of their fields. In the comparison area, 47 per cent have moonga trees within their home courtyard, 55 per cent in their kitchen garden and 4 per cent on the boundaries of their fields.

**Table 3 : Availability of moonga tree**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Have moonga tree</u>				
Yes	143	45	161	51
No	175	55	157	49
<u>Availability of moonga tree at*</u>	143		161	
a. Home Courtyard	75	52	76	47
b. Kitchen garden	65	45	88	55
c. Farms	20	14	6	4

\* Multiple response will not add up to 100%

*Note: The following numbers of moonga trees include both fully grown trees and young saplings.*

**Home Courtyard:** The total number of trees found within home courtyards was 102 in programme area and 102 in the comparison area. Of those who had moonga trees in their home courtyards, the average number per household was found to be 1.4 and 1.3 in programme and comparison area respectively. The average number of moonga trees in home courtyards

per household surveyed was 0.32 in the programme area and 0.32 in the comparison area.

**Kitchen garden:** The total number of trees in kitchen gardens was found to be 125 in the programme area and 127 in the comparison area. Of those who had moonga trees in their kitchen gardens, the average number per household was found to be 1.9 and 1.4 in programme

and comparison areas respectively. The average number of moonga trees in kitchen gardens per household surveyed was 0.39 in the programme area and 0.40 in the comparison area.

**Field boundaries:** The total number of trees on field boundaries was 45 in the programme area and 11 in the comparison area. Of those who had moonga trees on field boundaries, the average number per household was 2.3 and 1.8 in the programme and comparison areas respectively. The average number of moonga trees on field boundaries per household surveyed was 0.14 in programme areas and 0.03 in the comparison area.

Of those who had moonga trees, the average number per household was found to be 1.9 and 1.5 in the programme and comparison area respectively. The average number of moonga trees per household surveyed was 0.85 in the programme area and 0.75 in the comparison area.

### 3.4 Uses of moonga pods (fruit)

Moonga pods (also called moonga) are widely used as a vegetable in the diet by almost all (99 per cent) of the respondents interviewed.

97 per cent of the respondents in the programme area and 99 per cent of the respondents in the comparison area said that they use moonga pods as vegetables (table 4). The traditional way is to fry the pods with onions and spices.

85 per cent and 77 per cent participants in programme and comparison areas respectively said that they add moonga to daal (pulse or lentils). 50 per cent of the respondents in the programme area and 29 per cent in the comparison area told us that they use moonga as a part of their dish called daalmah, which is a mixture of lentils and seasonal vegetables.

Few respondents prepared moonga by mixing with wheat and gram flour. Very few respondents also prepare pickle and chutney with moonga.

**Table 4 : Use of moonga pods**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Uses of moonga pods*</u>				
a. As medicine	101	32	49	13
b. As vegetable	314	99	314	99
<u>Uses moonga pods in house</u>				
Yes	317	100	315	99
No	1	0	3	1
<u>Uses in house*</u>	317		315	
a. As vegetable	308	97	312	99
b. Made with daal	268	85	241	77
c. Made with daalmah	160	50	90	29
d. Mix with flour	5	2	13	4
e. Make chutney	0	0	3	1
f. Make pickle	19	6	3	1
g. Others	22	7	26	8

\* Multiple response will not add up to 100

### 3.5 Frequency of consumption of moonga leaves

Even though almost 50 per cent of the households have moonga trees (table 3), only 8 per cent respondents in the programme area and 7 per cent of respondents in comparison area claim to use moonga leaves on a daily basis (table 5). 11 per cent respondents mentioned that they consume moonga leaves twice a month. 30 per cent

in the programme area and 17 per cent in the comparison area mentioned that they use moonga leaves 3-4 times a week.

21 per cent of the respondents in the programme area and 20 per cent in the comparison area mentioned that they consume moonga leaves in rainy season only.

**Table 5 : Frequency of consumption of moonga leaves**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Frequency</u>				
Daily	25	8	22	7
3-4 times a week	95	30	55	17
Twice a month	35	11	34	11
Twice a year	13	4	21	7
Rainy season	67	21	63	20
No fix frequency	83	26	121	38
<u>Reasons for less consumption</u>				
Not available	30	9	42	13
Available only in rainy season	39	12	16	5
<u>Cooking of moonga leaves today</u>				
Yes	10	3	4	1
No	308	97	314	99

When asked about the reasons for less consumption, respondents mentioned mainly two reasons. Firstly, that it is not easily available, and secondly that it is available only in rainy season.

The respondents were asked if they have prepared moonga leaves today (on the day of the interview). Only 3 per cent in the programme area and 1 per cent of the respondents in the comparison area answered in affirmation.

### 3.6 Types of moonga tree

There are three most common varieties of the drumstick trees in this area: Moonga, Sajna and

Augusty. All of these three varieties and their pods are traditionally referred to as moonga.

64 per cent of respondents in the programme area and 56 per cent of respondents in the comparison area were aware that there were two types of moonga trees (table 6). 28 per cent of the respondents in the programme area and 13 per cent in the comparison area were aware that there are three types of moonga trees. Only 3 per cent respondents in the programme area and 1 per cent respondents in the comparison area were not aware of any difference in varieties.

**Table 6 : Types of moonga trees**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Types</u>				
One	16	5	92	29
Two	202	64	179	56
Three	90	28	42	13
More than three	2	1	3	1
Do not know	8	3	2	1
<u>Names*</u>	310		316	
Moonga	290	94	237	75
Sajna	276	89	154	49
Augusty	106	34	100	32

\* Multiple responses will not add up to 100%

It is evident that the respondents of the programme area are better informed about the types and varieties of moonga trees than the respondents of the comparison area.

### 3.7 Reasons for consuming moonga leaves

The respondents mentioned variety of reasons for consuming moonga leaves. The foremost reason for consuming moonga leaves was that it has nutrients (table 7). This was mentioned by 51 per cent of the respondents in the programme area and 40 per cent of the respondents in the comparison area.

Another prominent reason mentioned by 27 and 11 per cent of respondents in the programme and the comparison areas for consuming moonga leaves was that it is good for the body. They were also able to elaborate why moonga leaves are good for the body with examples such as: they prevent diseases, good for eyes, good for digestion and helps in delivery, etc.

On the other hand, 21 per cent in respondents in the programme area and 16 per cent respondents in the comparison area mentioned that they consume moonga leaves simply because it is a vegetable and everybody consumes it.

Even though a large number of people were aware that moonga leaves were beneficial, they were not aware of the details of the nutritional value of the drumstick leaves. When asked about the type of nutrients these leaves contained, 8 per cent respondents in the programme area and 6 per cent in the comparison area mentioned that it has vitamin A. Only 3 per cent in the programme and 2 per cent in the comparison area mentioned that moonga leaves has vitamin C.

Similarly, a negligible number of respondents in the programme area as well as comparison area mentioned that moonga leaves have calcium and potassium.

The study showed that awareness about the benefits of consuming moonga leaves is higher in the programme area than the comparison area.

**Table 7 : Reasons for consuming moonga leaves**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Reasons*</u>				
Good for body	86	27	36	11
Everybody eats	75	24	92	29
Has nutrients	163	51	127	40
Vegetable	66	21	51	16
Do not know	37	12	42	13
<u>Has Nutrients*</u>				
Vitamin A	26	8	20	6
Vitamin C	11	3	6	2
Protein	9	3	0	0
Calcium	11	3	8	3
Potassium	6	2	2	1
Others	8	3	2	1
Do not know	139	44	101	32
<u>Good for Body*</u>				
Prevents diseases	49	15	13	4
Good for eyes	24	8	6	2
Good for digestion	25	8	1	0
Easy delivery	45	14	16	5
Others	35	11	18	6
Do not know	13	4	9	3

\* Multiple response will not add up to 100%

### 3.8 Perceptions about growing moonga tree

The respondents were asked if the moonga tree can be grown in or near the house. A very high per cent of respondent, 92 and 87 per cent in the programme and the comparison areas respectively, responded in affirmation.

When asked about the water requirement for moonga tree, as many as 89 and 91 per cent of respondents mentioned that moonga tree requires less water than other trees.

**Table 8 : Perception about growing moonga tree**

Area	Programme		Comparison	
	N	%	N	%
<b>N: Respondents</b>	318		318	
<u>Moonga tree can be grown in house</u>				
Yes	294	92	276	87
No / Do not know	24	8	42	13
<u>Water requirement for moonga tree</u>				
Less than normal	284	89	289	91
More than normal	26	8	22	7
Do not know	8	3	7	2

## Section 4: Summary of Findings

### 4.1 Overview

Trees for Life has undertaken a test of social marketing techniques to motivate people to increase the dietary use of vitamin A rich drumstick (moonga) leaves in 20 selected villages of Bargarh district, Orissa. This test started in April 1996 and is expected to continue till the end of March 1997.

In November-December 1996, a baseline survey was conducted in 8 programme villages and an equal number of comparison villages selected from the neighboring blocks. In each village, 40 mothers were selected at random for individual interviews. In all, 636 mothers were interviewed in programme (318) and comparison area (318) using a structured interview schedule. The interview schedule was pretested and modified accordingly. The data collection was done by local investigators, who were given intensive training in both classroom and field setting. Mr. B.R. Poonia, an experienced development professional, coordinated the overall efforts of the baseline survey for establishing the benchmark about the availability and usage of moonga tree.

Data entry was done in a dbase III plus software. Data were thoroughly scrutinized both at the field and office to ensure the quality of data. Analysis was done using a SPSS package. Data entry, analysis and report preparation was done by Development Assistance Systems (DAS) at its sub-office in New Delhi, India.

### 4.2 Conclusions

Presented below are the major findings and conclusions of the baseline survey.

1. Approximately two-thirds of respondents claimed to live in a nuclear family (table 2). This suggests that the joint family system is changing to a nuclear family structure even in the rural areas of India. This understanding of the family structure in rural areas can have direct bearing on the message and target audience for social marketing. Thus, this issue merits further study.
2. Moonga pods are widely consumed in a variety of ways as a vegetable in almost all the households (table 4).
3. Even though almost 50 per cent of the households possess moonga trees (table 2), the respondents felt that these trees are not adequate to provide ample leaves for inclusion in their regular daily diets (table 5).
4. Since moonga leaves are more available during the rainy season, their consumption also increases during that time (table 5). This suggests that to increase the dietary use of the moonga leaves it will be important to increase the availability of the leaves, especially during the winter and summer season.
5. Even though some people are aware of the fact that moonga leaves are good for them, very few know the details of the nutritional values of the leaves (table 7).

6. The fact that respondents were willing to plant moonga trees in their home courtyards and are aware that these trees require less water than other trees indicates a positive attitude about the planting of moonga trees. This later fact is important in this drought-afflicted area of India.
7. Even though both the programme and comparison areas are of identical socioeconomic conditions, the

awareness about the moonga trees and the reasons for consuming moonga leaves was higher in programme area as compared to comparison area. Since some inputs had been made to the students in programme areas, the higher awareness may be due to students sharing the information with their mothers (table 7).