IMPACT OF FRONT LINE DEMONSTRATION FOR ENSURING HOUSEHOLD NUTRITIONAL SECURITY THROUGH DRUMSTICK PLANT

Abstract

Krishi Vigyan Kendra carried out some interventions for creating awareness about the use of drumstick plant for nutritional security. After the two year of intervention a survey was planned with the objectives; i) to know the impact of demonstration on the awareness about the uses of drumstick plant, ii)to know the impact of demonstration on the consumption of drumstick plant part for nutritional security, and iii) to know the impact of demonstration on the consumption of drumstick plant part for family. The demonstration was carried out in ten villages (Premwalia, lakshmipur, Amwadeegar, Piperaghat, Davnaha, Devipur, Dhuria Kot, Bahnauli, Persaun, Padri piperpati) of five blocks (Kasia, Dudahi, Seorahi, Tamkuhi Raj & Bishunpura) of the district Kushinagar in the year 2017-18 and in fourteen villages(Dhaurahara, Lachia devariya, Gazipur, Naugavan, saphi tadwa, bhatwalia, Sumuhi Mohan singh, gosai patti, Sohnariya, Persauna, Ramsagra, rakba dulma patti,Ajay nagar, Babuyia herpur) of six blocks (Fazil nagar, Tamkuhi Raj, Padrauna, Dudahi, Seorahi & Bishunpura) of the district Kushinagar in the year 2018-19.The result indicated that average per head consumption of green leaves was 32.5g/day , average consumption of leaves per family was 135g/family/day and the average Consumption of pods per family was 6.1kg .It was also found that the most useable drumstick plant part was the pods which was used by 99.83 % farm families as it ranked Ist in the consumption by farm families.

Keywords: drumstick, nutritional security, malnutrition

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I. INTRODUCTION

Drumstick is the member of Moringaceae family, having the scientific name *Moringa oleifera.* Drumstick has been proved to be an effective and sustainable remedy for malnutrition due to its easily cultivable capacity and nutritional sufficiency. Drumstick plant is rich in nutrition owing to the presence of a variety of essential phytochemicals present in its leaves, pods and seeds. Countries like Africa, Senegal and Benin treat malnourished children with Moringa **(Kasolo *et al*,2010).**Drumstick is rich in phytosterols like stigmasterol, sitosterol and kampesterol, precursors for hormones and increase the estrogen production which in turn stimulates the proliferation of the mammary gland ducts to produce milk and cure the malnutrition of children due to deprivation of breast milk. It is used to treat malnutrition in children younger than 3 years**(Titi *et al*,2013)** Considering the profitability and importance of the drumstick plant, Krishi Vigyan Kendra carried out some interventions for creating awareness about the use of drumstick plant for nutritional security. After the two year of intervention a survey was planned with the following objectives:

Objective:

- To know the impact of demonstration on the awareness about the uses of drumstick plant
- To know the impact of demonstration on the consumption of drumstick plant part for nutritional security
- To know the impact of demonstration on the consumption of drumstick plant part for family

II. METHODOLOGY

Krishi Vigyan Kendra (ICAR-IIVR,Varanasi) Kushinagar conducted various training programmes & extension activities to aware farming community about the nutritional and medicinal value of drumstick plant and through survey the awareness about drumstick plant was assessed(Table 1).

Table 1: Awareness about the Drumstick Plant among Farm Families (N=600)

S. No.	Particulars	No Awareness		Somewhat Awareness		Complete Awareness	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	General Use of						
	Plant	559	93.16	27.00	4.50	14.0	02.34
	Leaves	598	99.66	02.00	0.34	00.0	00.00
	Seeds	600	100.0	00.00	0.00	00.0	00.00
	Poda	589	98.16	09.00	1.50	02.0	00.34
2.	Medicinal uses of						
	Plant	574	95.66	22.00	3.66	04.0	00.66
	Leaves	600	100.0	00.00	0.00	00.0	00.00
	Seeds	597	99.50	03.00	0.50	00.0	00.00
	Poda	566	94.33	21.00	3.50	13.0	20.16

3.	Nutritional uses						
	Plant	599	99.83	01.00	0.17	00.0	00.00
	Leaves	600	100.0	00.00	00.0	00.0	00.00
	Seeds	589	98.16	09.00	01.5	02.0	00.34
	Poda	567	94.50	31.00	5.16	02.0	00.34
4.	Culinary uses of						
	Leaves	599	99.83	001.0	0.17	00.0	00.00
	Pods	119	19.83	102.0	17.0	379	63.16
5.	Leaves As a animal feed	600	100.0	00.00	0.00	0.00	00.00
6.	Leaves As a material for compost	593	98.83	06.00	10.0	01.0	00.17

After the survey the front line demonstration on drumstick sapling plantation was carried out in randomly selected villages from the purposively selected blocks of the district. The district was also selected purposively for demonstration The demonstration was carried out in ten villages (Premwalia, lakshmipur, Amwadeegar, Piperaghat, Davnaha, Devipur, Dhuria Kot, Bahnauli, Persaun, Padri piperpati) of five blocks (Kasia, Dudahi, Seorahi, Tamkuhi Raj & Bishunpura) of the district Kushinagar in the year 2017-18 and in fourteen villages(Dhaurahara, Lachia devariya, Gazipur, Naugavan, saphi tadwa, bhatwalia, Sumuhi Mohan singh, gosai patti, Sohnariya, Persauna, Ramsagra, rakba dulma patti, Ajay nagar, Babuyia herpur) of six blocks (Fazil nagar, Tamkuhi Raj, Padrauna, Dudahi, Seorahi & Bishunpura) of the district Kushinagar in the year 2018-19.The data were collected on the consumption of drumstick plant's part for household security in the year 2020-21. Economics of the demonstration was as follows (Table 2);

Table 2: Economics of the Front Line Demontration on Drumstick

S.No.	Particulars	2017-18	2018-19
1.	Cost	400	400
2.	Gross Return	780	810
3.	Net Return	380	410
4.	B:C ratio	1.95:1	2.02:1

III. RESULT & DISCUSSION

1. **Impact of Demonstration on the Awareness about the Uses of Drumstick Plant:** the data presented in table 3 showed a positive increment in awareness about the uses of drumstick plant. Before demonstration only 04.34% farm women were aware about the benefits of drumstick plant and their parts as twenty five farm women out of 600 respondents was aware but after the kvk interventions like training, demonstration and extension activities 88.14% farm women/ families became aware about the uses of drumstick. The total increase of 83.79% in awareness was observed.

Table 3: Impact of Demonstration on the Awareness about the Uses of Drumstick Plant (N=600)

		Before Demonstration		**After Demonstration**		**Increase in Awareness**
		Frequency	Percentage	Frequency	Percentage	Percentage
1	General Use of					
	Plant	0.14	02.34	508	84.66	82.32
	Leaves	00.0	00.00	491	81.83	81.83
	Seeds	00.0	00.00	207	34.50	34.50
	Poda	02.0	00.34	581	96.83	96.49
2	Medicinal uses of					
	Plant	04.0	00.66	537	89.50	88.84
	Leaves	00.0	00.00	526	87.66	87.66
	Seeds	00.0	00.00	573	95.50	95.50
	Poda	13.0	02.16	591	98.50	96.34
3	Nutritional uses					
	Plant	00.0	00.00	501	83.50	83.50
	Leaves	00.0	00.00	566	94.33	94.33
	Seeds	02.0	00.34	541	90.16	89.82
	Poda	02.0	00.34	586	97.66	97.32
4	Culinary uses of					
	Leaves	00.0	00.00	521	86.83	86.83
	Pods	379	63.16	569	94.83	31.67
5	Leaves As a animal feed	0.00	00.00	574	95.66	95.66
6	Leaves As a material for compost	01.0	00.17	590	98.33	98.16
	Mean	**25.196**	**04.34**	**528.87**	**88.142**	**83.79**

2. **Impact of Demonstration on the Consumption of Drumstick Plant Part for Nutritional Security:** the data revealed that total 609 demonstrations were conducted in which 800 drumstick plants were planted. The data (table 4)showed that average per head consumption of green leaves was 32.5g/day which was 25g/day in year 2017-18 and 40 g/day in year 2018-19.It was also observed that average consumption of leaves per family was 135g/family/day which was125 g/day in the year2017-18 and 145g/day in the year 2018-19.The average Consumption of pods per family was 6.1kg which was 5kg/day in the year2017-18 and 7.2kg/day in the year 2018-19.The finding were in agreement with the results given by **Seshadri & Nambiar(2003).**They found that drumstick leaves had great potential to be used for human consumption but were not sold.

Table 4: Impact of Demonstration on the Consumption of Drumstick Plant Part for Nutritional Security

S.No	Particulars	2017-18	2018-19	Total	Mean
1	No of Demonstration of Drumstick (Variety- PKM-1)	359	250	609	304.5
2	No, of saplings planted	500	300	800	400
3	Area Covered	0.8 ha	0.48 ha	1.28	0.64
4	Consumption of leaves per head	25 g/day	40 g/day	65 g/day	32.5 g/day
5.	Consumption of leaves per family/day	125 g/day	145g/day	270	135
6.	Total consumption of leaves in four months	16.8 kg	17.55 kg	34.35 kg	17.17 kg
7.	Saving in money spent on purchasing of green leafy vegetable	25%	10%	35	17.5
8.	Consumption of pods per family	5kg/plant	7.2kg/plant	12.2 kg/plant	6.1 kg/plant
9.	Use for animal fodder	400 g/day	300 g/day	700 g/day	350 g/day
10.	Use for compost making	50.34 kg	61.22 kg	111.56 kg	55.78 kg

3. **Impact of Demonstration on the Consumption of Drumstick Plant Part for Family:** the data given in table depicted that the most useable drumstick plant part was the pods which was used by 99.83 % farm families followed by leaves used for nutritional purpose and culinary purposes i.e., 98.03% & 96.71%.The use of leaves was also supported by the findings given by **Nambiar(2003)**&**Gopalkrishnan *et a*l.,(2016)**.He stated that leaves are rich in minerals, vitamins and other essential phytochemicals.

Table 5: Impact of Demonstration on the Consumption of Drumstick Plant Part for Family Consumption

S. No.	Use of plant part	For Family Consumption(n=609)		Rank
		Frequency	Percentage	
1.	Leaves for nutritional security	597	98.03	Iind
2.	Leaves for medicinal purposes	322	52.87	Vith
3.	Leaves for culinary purposes	589	96.71	IIIrd
4.	Leaves for animal feed	561	92.11	Vth
5.	Leaves for composting	573	94.09	Ivth
	Pods for culinary purposes	608	99.83	Ist
5.	Seeds for water purification	201	33.01	VIIth

It may be concluded from the ongoing discussion that the drumstick leaves are rich in different nutrients .Extracts from the leaves Nutrients of the drumstick trees are exploited for a variety of purposes. More studies are needed to corroborate the primary mechanism of moringa as anti diabetic and anti cancer agents. The tree as a native to India can become a great source of income for the people if this potential for highly nutritional food is exploited to corroborate earlier studies. In the country, the demand for snacks in the market is huge, therefore, drumstick leaves fortification in snacks to eradicate malnutrition has a twin advantage.

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