



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(5): 161-164
Received: 21-07-2018
Accepted: 24-08-2018

N Kishore Kumar
SMS (Extension), Krishi Vigyan
Kendra, Wyr, Khammam,
Telangana, India

J Hemantha Kumar
Programme Coordinator, Krishi
Vigyan Kendra, Wyr,
Khammam, Telangana, India

E Jyoshna
Assistant Professor, Collage of
Home Science, PJTSAU,
Hyderabad, Telangana, India

P Raghurami Reddy
Associate Director of Research,
Central Telangana Zone, RARS,
Warangal, PJTSAU, Telangana,
India

Impact of eucalyptus cultivation practices on sustainable income of farmers in Khammam district of Telangana state

N Kishore Kumar, J Hemantha Kumar, E Jyoshna and P Raghurami Reddy

Abstract

The present paper highlights the cost economics in eucalyptus cultivation, reasons for farmers going for eucalyptus cultivation, profile characteristics of farmers. Ex post facto research design was adopted for study, total one twenty (120) farmers were selected for study of Impact of eucalyptus cultivation.

Keywords: cost economics, profile characteristics, reasons for farmers cultivation

Introduction

Eucalyptus is a common and widespread tree species. It is a best suitable tree species for the areas which received rainfall from 250 to 600 mm at the same time it can also grow well in high rainfall areas which receives as high as 1250 mm. The success of Eucalyptus is attributed to, its tolerance of extreme drought and high temperature. This species occurs on a variety of soil types from red or black soils to sandy alluvial soils. It can also grow well in salt affected areas. (v. Sivakumar, *et al.*).

Plantation establishment

S.no	Plan of activities	Activities to be followed
1	Selection of Clones	Site specific clones based on soil analysis (307, 3, 7 and 413)
2	Land preparation	Bush clearing, Disc ploughing followed by cultivator
3	Spacing	2.7 m x 1.35m
4	Planting Season	June to October
5	Pit size	45 cm x 45 cm x 45 cm
6	Manuring	Neem based nutrients to avoid termite attack and 250g of Vermicompost or Farmyard manure per pit
7	Irrigation	Protective irrigation is essential. In case of monsoon failure, protective irrigation may be provide
8	Ploughing	One cultivator ploughing at the end of November - Disc ploughing during the month of February
9	Weeding	1 hand weeding and soil working after ploughing
10	Fertilizer Management	One time application of 50 grams of NPK Fertilizer (17:17:17) per plant
11	Singling out	Singling of multiple shoots, by retaining 1 or 2 at each plant in terms of coppiced area after 6 months
12	Causality replacement	Causality replacement within one month after Planting
13	II year maintenance	One Disc ploughing during the pre-monsoon period and one cultivator ploughing at the end of the rainy season - weeding and soil working - Application of 50 grams of NPK Fertilizer (17:17:17) per plant
14	III year maintenance	Two Disc ploughing - Application of 50 grams of NPK Fertilizer (17:17:17) per plant based on site conditions
15	Inter cropping	a. Rainfed - Sowing of Green Manure crop seeds to improve the soil fertility status and also to control weeds b. Irrigated area - Agricultural crops like cotton, chilli etc., as intercrop during the first year.
16	Pest and Disease management	a) Termite – control measures
17	Yields	a. First cutting at 3 rd year (inter crop yield at 1 st year) b. Second cutting at 6 th year c. Third cutting at 9 th year d. Fourth cutting 12 th year

Correspondence
N Kishore Kumar
SMS (Extension), Krishi Vigyan
Kendra, Wyr, Khammam,
Telangana, India

In Khammam, district, majority of farmers cultivating of commercial crops (like cotton, chilli etc). However with rapid changes in market prices for commercial crops, high labor cost and non availability of labor at critical periods of crops. As a response to declining land productivity and profitability, farmers in the district tried up eucalyptus cultivation and expand to new areas in the district, this led to sustainable income of the farmers. Successful adoption depends on favourable convergence of technical, economic, institutional and policy factors (Feder *et al.*, 1985; Rogers, 2003) [2].

According to Rogers (2003) [5], adoption occurs when one has decided to make full use of the new technology as a best course of action for addressing a need. Adoption is determined by several factors including socioeconomic, environmental, and mental processes that are governed by a set of intervening variables such as individual needs, knowledge about the technology and individual perceptions about methods used to achieve those needs.

Methodology

Ex-post facto research design combined with exploratory type of research design was used for study.

Khammam district purposively selected it has highest area in the state and selected two mandals of Julurupadu and enkoor purposively which has highest area in eucalyptus cultivation, each mandals sixty (60) eucalyptus cultivation farmers thus a total of one twenty (120) farmers selected for study.

A schedule was developed assess impact of eucalyptus cultivation in the district

Results and Discussion

Profile of the selected eucalyptus cultivated farmers

1. Age

It is evident from the table 1 that, majority (60.00%) of the eucalyptus farmers were belonged to middle age followed by old (24.62%) and young (15.38%) age this result is in conformity with the result of Bhagwat *et al.* (2003) [1].

Table 1: Distribution of respondents according to their age

S. No.	Category	Eucalyptus farmers (n=120)	
		Frequency	Percentage
1.	Young age (up to 35)	20	15.38
2.	Middle age (36-55)	78	60.00
3.	Old age (>55years)	32	24.62

2. Education

It could be observed from the table 2 that, majority of the eucalyptus farmers were educated up to primary school level (29.16%) followed by illiterate (22.50%), high school (20.83%), intermediate (15.85%) and under graduate (10.00%) and post graduate (1.66%) respectively.

Table 2: Distribution of respondents according to their education

S. No.	Level of Education	Eucalyptus farmers (n=120)	
		Frequency	Percentage
1.	Illiterate	27	22.50
2.	Primary School	35	29.16
3.	High school	25	20.83
4.	Intermediate	19	15.85
5.	Under graduate	12	10.00
6.	Post graduate	02	1.66

3. Mass media exposure

It was noticed from table 3 that, majority (55.83%) of the eucalyptus cultivated farmers had medium level of mass

media exposure followed by high (31.66%) and low (12.51%) respectively.

Table 3: Distribution of respondents according to their mass media exposure

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (7-14)	Medium (15-21)	High (22-28)
1	Frequency	15	67	38
2	Percentage	12.51	55.83	31.66

4. Extension contact

It was observed from table 4 that, majority (49.16%) of the eucalyptus farmers had medium level of extension contact followed by high (29.16%) and low (21.68%) respectively, These findings are in agreement with the findings of Rao *et al.*, (2012) [4].

Table 4: Distribution of respondents according to their extension contact

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (11-17)	Medium (18-25)	High (26-33)
1	Frequency	26	59	35
2	Percentage	21.68	49.16	29.16

5. Innovativeness

It was observed from table 5 that, majority (50.83%) of the eucalyptus farmers had low level of innovativeness followed by medium (35.0%) and low (14.17%) respectively,

Table 5: Distribution of respondents according to their innovativeness

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (6-8)	Medium (9-10)	High (11-12)
1.	Frequency	61	42	17
2.	Percentage	50.83	35.0	14.17

6. Social participation

It was known from table 6, majority (45.00%) of the eucalyptus cultivated farmers medium level of social participation followed by high (31.66%) and low (23.34%) respectively.

Table 6: Distribution of respondents according to their social participation

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (10-16)	Medium (17-23)	High (24-30)
1.	Frequency	28	54	38
2.	Percentage	23.34	45.00	31.66

7. Risk preference

It was stated from table 8 that, majority (46.66%) of the eucalyptus cultivated farmers had medium level of risk preference followed by low (35.00%) and high (18.34%) respectively.

Table 7: Distribution of respondents according to their risk preference

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (4-6)	Medium (7-9)	High (10-12)
1	Frequency	42	56	22
2	Percentage	35.00	46.66	18.34

8. Economic orientations

It was observed from table 9 that, majority (48.33%) of the eucalyptus cultivated farmers had Medium level of economic

orientation followed by high (39.16%) and low (12.51%) respectively.

Table 8: Distribution of respondents according to their economic orientation

S. No.	Category	Eucalyptus farmers (n=120)		
		Low (6-9)	Medium (10-13)	High (14-18)
1	Frequency	15	58	47
2	Percentage	12.51	48.33	39.16

It is evident from tables 1 to 8 on profile characteristics of the

eucalyptus farmers by them had grouped under high category in almost all the selected characteristics. It is quite obvious that there will be strong bondage, among the similar kind of socio-psychological characteristics; it could be understand that high level of social participation, mass media exposure shall drive the individuals to have high level of extension contacts.

The findings are in line with the findings of Tanveer Ahmed (2006) [7].

Cost economics of eucalyptus cultivation

Table 9: Cost economics of eucalyptus cultivation in one acre land up to first cutting

Details of cultivation	Cost of Eucalyptus
Cost of planting material	1400 plants/ Acer (Rs 3.5 plant and 1.5 labour cost per planting) Rs. 7000/-
Varieties /clones	7, 3,306 and 404
Available of plant materials	Private nurseries and ITC
Spacing	2.4-2.70 x 1.2-1.35
Land preparation	Rs 4100/-
Fertilizers used for 1 st year	Rs 4500/-
Plant protection measures	Rs. 1000/- (termite control) for eucalyptus
Intercrop Yield (q/acre)	3.5
Total cost of cultivation of Inter crop (Cotton)	8200/-
Gross returns from Inter crop	14560/-
Net returns From inter crop 1 st year	6360/-
Inter cultural operations for 2 nd year and 3 rd year (Eucalyptus)	Rs 4800/-
Fertilizers used for the 2 nd and 3 rd year (Eucalyptus)	Rs 5600/-
Total cost for 2 nd to 3 rd year	Rs 10400/-
Total production per acre after completing of 3 years	32 tones/acres
Returns from 3 rd year of eucalyptus crops (1 st cutting)	Rs 1,12,000/- (Rs 3500/- per tonne cost for farmer)
Total cost of cultivation (Eucalyptus)	Rs 27000/-
Net return from 1 st cutting	85000/-
Total Cost of cultivation for Eucalyptus+ Cotton	35200/-
Income from Both Eucalyptus+ Inter crop	126560/-
Net returns from both Eucalyptus + Cotton	91360/-
C B Ratio (1st year)	1 : 3.6

It is noticed from the table 9 that the production of eucalyptus (3rd year - first cutting) crop is 32 tones/ac, followed by inter crop (cotton) yield is 3.5 q/ac, net returns From inter crop 1st year is Rs

6360/-, net returns From eucalyptus first cutting crop 3rd year is Rs 85,000/-

From the table shows that, net returns From both eucalyptus and cotton crop Rs 91,360/- and C:B ration of plantation crop is 1:3.6

Table 10: Cost economics of eucalyptus cultivation in one acre land up to forth cutting (12th year cutting)

Cost of cultivation of 4 th , 5 th and 6 th year	Rs 14500/-
Total production per acre after completing of 3 years	38 tones/acres
Returns from 6 th year of eucalyptus crops (2 nd cutting)	Rs 1,33,000/- (Rs 3500/- per tonne cost for farmer)
Cost of cultivation of 7 th , 8 th and 9 th year	Rs 15300/-
Total production per acre after completing of 3 years	37 tones/acres
Returns from eucalyptus crops (3 rd cutting)	Rs 1,29,000/- (Rs 3500/- per tonne cost for farmer)
Cost of cultivation of 10 th and 11 th and 12 th year	Rs 16200/-
Total production per acre after completing of 3 years	30 tones/acres
Returns of eucalyptus crops (4 th cutting)	Rs 1,05,000/- (Rs 3500/- per tonne cost for farmer)

It is noticed from the table 10 that the production of eucalyptus (6th year - second cutting) crop is 38 tones/ac, followed by third cutting (9th year) 37 tonnes /ac and fourth cutting (12th year) 30 tonnes /ac

From the table shows that, returns From eucalyptus (6th year - second cutting) crop per acre is Rs 1,33,000/- followed by third cutting (9th year) is Rs 1,29,000/- and fourth cutting (12th year) is Rs 1,05,000/-

Table 11: Economic Analysis of Eucalyptus cultivation (for 12 years)

Sl. No.	Crop (Planted/Ratoon)	Gross returns (Rs.)	Cost of Cultivation (Rs.)	Net reruns (Rs.)
1	Planted Crop	1,12,000/-	35200/-	76800/-
	1st Ratoon	1,33,000/-	14500/-	118500/-
	2nd Ratoon	1,29,000/-	15300/-	113700/-
	3rd Ratoon	1,05,000/-	16200/-	88800/-
	Total	479000/-	81200	397800/-
	Returns per year	39916.00	6766.0	33150.00

It was evident from the table 11 that the eucalyptus farmers had Rs.39,916/- Gross returns for year followed by Rs.33,150/- net returns and Rs 6766/- for cost of cultivation per year

The tables 9 to 11 shows that farmers cultivating of eucalyptus crop getting sustainable income and getting high

net returns when compared to other rainfed crops, most of the farmers has problem of non availability of labour at critical period of crops, high labour cost, damage caused by animals, rain fed situation, to tackle the situation cultivation of eucalyptus as better alternate to the farmers in the district.

Table 12: Reasons for changing the cropping pattern (commercial crops) to eucalyptus cultivation to the farmers in the district

S. No	Reason for changing the cropping pattern	Frequency	Percentage
1	Non availability of labour at critical period of crop (like sowing, weeding and harvesting)	119	91.53
2	High labour cost (commercial crop operations matching with other farmers)	96	73.84
3	Damage caused by animals / others (monkeys)	83	63.84
4	High cost of cultivation for raising of commercial crops	79	60.76
5	Rain fed situation	76	58.46
6	Crop (eucalyptus) Suitable for different types lands (salinity, and other types)	64	49.23
7	Availability of market facilities and Attractive market price for eucalyptus	56	43.07
8	More pest and disease attack for commercial crops	48	36.92
9	Market rate fluctuations different crops	34	26.15
10	Flood situation	28	21.53
11	Land (Assigned lands) problems	18	17.69
12	Non availability of electricity facilities	12	9.21
13	Non availability of irrigation water	08	6.15

It was seen from Table 12 that ranks were allotted to the farmers based on their expression. The reasons expressed are Non availability of labour at critical period of crop 1st (91.53%) followed by high labour cost (73.84%), Damage caused by animals / others (monkeys) (63.84%), High cost of cultivation for raising of commercial crops (60.76%), Rain fed situation (58.46%), Crop (eucalyptus) Suitable for different types lands (49.23%), Availability of market facilities and Attractive market price for eucalyptus (43.07%), More pest and disease attack for commercial crops (36.92%), Market rate fluctuations different crops (26.15%), Flood situation (21.53%), Land (Assigned lands) problems (17.69%), Non availability of electricity facilities (9.21%) followed by Non availability of Irrigation water (6.15%) respectively.

Conclusion

High net returns and sustainable income of farmers was seen by the eucalyptus cultivated farmers, This could be reasons for high adoption of eucalyptus cultivation in the farmers

References

1. Bhagwat MR, Gohad VV. Adoption of Dryland Cotton cultivation technology by the farmers. Maharashtra J. Extn. Edu. 2003; 22(2):108-110.
2. Feder G, Just RE, Zilberman D. Adoption of Agricultural Innovations in Developing Countries: A Survey. Economic Development and Cultural Change. 1985; 33(2):255.
3. Prashanth P. A Study on adoption of organic farming in cotton in Karimnagar district of Andhra Pradesh. M.Sc. (Ag.) Thesis, Acharya N. G. Ranga Agricultural University, Hyderabad, 2011.
4. Rao NV, Ratnakar R, Jain PK. Impact of Farmer Field Schools in KVK adopted villages on improved practices of cotton. Journal of Communication Studies, 2012; XXX(1):11-17.
5. Rogers EM. Diffusion of Innovations (4th ed.). New York, USA: The Free Press, 1995.
6. Shiva Shankar V. Transfer of tree technologies by Indian Council of Forestry Research and Education to Krishi Vigyan Kendras (KVKs) of Tamil Nadu and Puducherry, book published, 2014, 11

7. Tanveer Ahmed. An economic analysis of paddy based farming systems in southern Karnataka – a case study of Mandya district. M.Sc.(Ag.) Thesis, Univ. Agric. Sci. Dharwad, 2006.