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**JBIC PROJECT  
ON  
A STUDY ON FUELWOOD CONSUMPTION FOR TOBACCO CURING IN  
MYSORE DISTRICT**



FINAL REPORT



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*M. M. 14/13/05*  
(M.MAHADEVA MURTHY)



## EXECUTIVE SUMMARY

- Tobacco being the commercial crop, the economy of the farming community is dependent on this crop.
- Farmers of the region have indigenous methodology for curing tobacco is by using barns.
- Most of the farmers are dependant on fuel wood for heating barns used for tobacco curing.
- Majority of the respondents emerged with family size upto 4 members with years of stay since 76 years.
- Almost all the respondents are engaged in agriculture as a main occupation with little education background and as illiterates.
- Higher percentages of respondents do not possess wetland but almost 1/3 of them had 1-2 acres of land. However, large percent of respondents had dry land between 4-6 acres.
- The average landholding found to be 6.73 acres. In Periyapatna, respondents are higher land holding (7.4 acres) compared to Hunsur (5.61 acres). 50 per cent of the total area is utilized for tobacco growing.
- Higher percent of respondents grow tobacco as a main crop with considerable importance for other food crops also noticed. Cropping pattern found better in Periyapatna compare to Hunsur.
- Land possessed better in Periyapatna compare to Hunsur established statistical significance also.
- Almost equal participation from men and women in collecting fuel wood with half of the respondents aware in seeking permission from forest department.
- Proximity of fuelwood availability of timber depot source place is less than 1 k.m. in both the study area. There exists significant association between the study areas regarding the distance of forests and other source of availability.

- Coffee stumps and coconut halves being the major source of tobacco curing in Periyapatna taluk whereas wood and briquettes in Hunsur region which also showed statistical significance in measuring the association.
- Response on source of fuelwood depicts that 2/3 of the respondents go for purchase of fuel wood.
- Hunsur taluk regarding using and preference of species establish in order of priority viz., *Azadiracta* (Bevu), *Eucalyptus* (Nilagiri), *Acacia* (Gobbli) and *Mangeifera*(Mavu) whereas preference order in Periyapatna are Coffee stump, *Eucalyptus* (Nilagiri), *Casuarina* (Survey) and *Acacia*(Gobbli).
- Tobacco is major source of income (69.1%) among the respondents compared to Crops and fuel wood.



# A STUDY ON FUEL WOOD CONSUMPTION FOR TOBACCO CURING IN MYSORE DISTRICT

## **Introduction**

Forest cover in Mysore district is decreasing at an alarming rate due to continuous pressure from the villagers on the forest for fuelwood. Since Mysore district is one of the major tobacco growing areas, fuelwood requirement for tobacco curing is increasing steadily. Some parts of the Mysore district comprises of rainfed agriculture and less area is under irrigation. Among different crops grown in three important taluks such as Heggadadevana Kote, Hunsur and Periyapatna, tobacco occupies significant area. Other crops grown in the region are Ragi, Jowar, Cotton and Pulse crops. Among these different taluks of Mysore, Hunsur and Periyapatna are the major tobacco growing areas and in H.D. Kote tobacco is grown next to Ragi. Tobacco being commercial crop, the economy of the farming community is dependant on this crop. Unlike other crops, tobacco needs specific processing method after harvesting. The quality and the price of the product is governed by the proper curing after harvesting.

Farmers of the region have indigenous methodology for curing tobacco is by using barns. Barns are owned individually and in some cases community barns are also in vogue. Barns are the houses constructed for using purpose and inside they are fitted with pipes for heating. Most of the farmers are dependent on fuel wood for heating barns used for tobacco curing. The fuel wood required for barns is either purchased from local fuel wood vendors or directly collected by the farmers from

the adjoining forest areas. This has led to the additional fuel wood requirement in the area apart from household consumption. Use of fuel wood for tobacco curing is adding to the already existing pressure on forest for fuel wood and other major and minor products. Increasing demand on fuel wood is dangerous development, which directly causes forest degradation and loss of biodiversity. Against this backdrop, it was thought imperative to analyze the ground situation and to study the fuel wood consumption pattern, most preferred tree species and sources of fuel wood for the farmers of the area. This helps us to pave the way for understanding the problem and to evolve mitigation strategies. In view of this, the present study was proposed with the specific objectives.

### **OBJECTIVES**

1. To survey and collect the basic information on barns used for tobacco curing.
2. To study the sources and kind of fuel wood used for curing.
3. To study the fuel wood consumption pattern followed by the farmers
4. To explore and suggest the alternative sources of fuel wood to reduce impact on forest



## METHODOLOGY

To examine the dependency of tobacco growers on forest resources, a detailed survey was made using well-designed questionnaire. The questionnaire was developed in consultation with the experts from the forest department, statistician and in consultation with the other project associates. The developed questionnaire consists of socio-economic aspects, land holding patterns and their income and also fuelwood consumption pattern.

### **Preliminary Survey**

In light of the objective of the project, the preliminary survey was conducted in Mysore District to identify the major tobacco growing taluks. Based on the extensive survey and also information from the Tobacco Board, Periyapatna and Hunsur taluks are the major tobacco growing areas in addition to Heggadadevana kote taluk. Amongst the three taluks of Mysore District, Periyapatna and Hunsur taluks were found to be the leading taluks in tobacco cultivation. Therefore, our study was concentrated to only in these two taluks. Periyapatna consists of larger area under tobacco cultivation as seen with the fact that, this taluk consists of three major floors or platforms viz., Platform No. 4, 5, 6 and each floor consisting of on an average 7 to 10 clusters (villages).

### **Concept of platform**

Platform is a place where auction should be conducted and it is also an auction floor where sale of tobacco in front of the buyers is taking place. The major aims of platform is marketing of tobacco with guarantee of price, weighment and repayment of cash within 15 days. Recently ,they have considered this place is also a for extension.



There are two Acts i.e. Tobacco Board Act, 1975 and Auction Conducted Act, 1984. Accordingly platform functions.

The detailed information such as no.of growers & No.of barns in Periyapatna Taluk were found to be **6695** and **9223** respectively.

Based on the above data, the villages were selected randomly depending on the criteria such as

1. On the basis of cropping area / cropping pattern/ land holding
2. on the basis of farmers cooperation
3. Accessibility to the village
4. No. of growers and Barns
5. Convenience for transport
6. Dependency on crop (Tobacco) for livelihood

In accordance with the above criteria ten villages were selected randomly in such a way that which is represented the entire Periyapatna taluk. The villages selected for the studies in Periyapatna taluk has been depicted in the table.

#### **Selected villages for the studies in Periyapatna taluk**

S. No.	Name of the Village	No. of growers	No. of Barns
1	Poodanahally	86	122
2	Konasur	110	146
3	Komalapura	124	162
4	Bhuvanahally	80	112
5	Kaggundi	83	107
6	Gorahally	63	81
7	Thammadahally	144	179

8	Chikkanerale	41	62
9	Amblare	93	120
10	Bettadapura	96	136

Similar study was conducted in Hunsur taluk. This taluk consists of two major floors or platforms viz., Platform No. 2 and 3 and each floor consisting of on an average 8 to 10 clusters (villages). The detailed information such as No. of growers & No. of barns in each platform were found out to be 6615 and 8575 respectively. From this taluk also, totally 6 villages were selected for the study purpose. The selected villages is given in the table below:

#### **Selected villages for the studies in Hunsur taluk**

S. No.	Name of the Village	No. of growers	No. of Barns
1	Thattekaere	84	105
2	Niluvagilu	47	56
3	K. M. Wadi	75	111
4	Hunsur	39	50
5	Bannikuppe	66	72
6	Kebbekoppal	162	190

#### **Secondary Survey**

In these two above-mentioned taluks, secondary survey was conducted to identify the villages, tobacco growers and barn holders to collect the data on their socio



economic background, landholding pattern and source of income and specific information on fuel consumption pattern through pre-tested schedule of questions (**Annexure -I**). The selection of farmers/respondents was done randomly in those villages and sampling size was maintained. As a supportive document, data on Area & Production of tobacco in Karnataka Light Soils (KLS) was also collected from the department source.

Name(Taluk)	Area (ha)	Production (Tonnes)
HUNSUR	12974.30	14476.717
PERIYAPATNA	28843.6	32558.6

From the survey made in the villages of Periyapatna and Hunsur taluks and also based on the information obtained from the Tobacco Board, the area under tobacco in Hunsur Taluk is 12974.3 ha. with a total production of 14476.717 tonnes, while in Periyapatna taluk, the tobacco growing area found to be 28843.6 ha. with a total cured tobacco of 32558.6 tonnes. As per the information available and also based on the respondents opinion, about 4.5 k.g. of fuelwood is required to cure 1 k.g. of tobacco. Thus to obtain cured tobacco of 47035.317 tonnes in both the taluks 211658.9265 tonnes of fuelwood is required.

Hunsur	-	14476.717
Periyapatna	-	32558.600
		<hr/>
Total	-	47035.317 tonnes X 4.5 kg. per 1 k.g. of fuel wood
	=	211658.9265 tonnes



## Data collection procedure

### Socio-economic Status

To assess the socio-economic conditions, status of living, basic information on their background, land hold pattern and source of income were collected. As per the questionnaire/schedule, information of the respondents and their family size, years of stay was generated from 320 respondents of which 200 respondents were randomly selected from Periyapatna and 120 number of respondents from Hunsur taluk.

### Results and discussion

The findings of the Research study are established in the following headings.

- (i) Socio-economic background of the respondents.
- (ii) Landholding position and cropping pattern followed.
- (iii) Source of tobacco curing and consumption of fuelwood.

**Table-1: Respondents by Family size and years of Stay**

Characteristic	Category	Respondents					
		Periyapatna		Hunsur		Combined	
		N	%	N	%	N	%
Family size (members)	Up to 4	92	46.0	50	41.7	142	44.4
	5-6	72	36.0	41	34.2	113	35.3
	7 and above	36	18.0	29	24.1	65	20.3
Years of Stay	Below 50	64	32.0	22	18.3	86	26.9
	51-75	64	32.0	25	20.8	89	27.8
	76 and above	72	36.0	73	60.8	145	45.3
<b>Total</b>		<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>

Majority of the family size in the taluks of Periyapatna and Hunsur were up to 4 members (46% & 41.7%) comprising the combined as 44.4 percent and they seems to be were native of that place and staying since many years. i.e. around 45.3 percent of the respondents from both the taluks (36% & 60.8% in Periyapatna and Hunsur respectively) were seems to be staying more than 76 years.

**Table-2: Respondents by Occupation Status and Education Level**

Characteristic	Category	Respondents					
		Periyapatna		Hunsur		Combined	
		N	%	N	%	N	%
<b>Main occupation</b>	<b>Agriculture</b>	199	99.5	120	100.0	319	99.7
	<b>Others</b>	1	0.5	0	0.0	1	0.3
<b>Subsidiary occupation</b>	<b>Business</b>	17	8.5	5	4.2	22	6.9
<b>Educational Level</b>	<b>Illiterate</b>	69	34.5	79	55.8	148	46.3
	<b>Primary</b>	32	16.0	15	12.5	47	14.6
	<b>Secondary</b>	99	49.5	26	21.7	125	39.1
<b>Total</b>		<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>

In the selected taluks, the main occupation of the villagers is agriculture (99.7%). This is evident from the fact that, more than 99 percent of the respondents depend on agriculture for their livelihood. In addition to agriculture, nearly 7 percent of the respondents do also have subsidiary occupation like tailoring, business, shop etc.,

However, the respondents involved in subsidiary occupation found slightly higher in Periyapatna (8.5%) compare to Hunsur taluk (4.2%). The educational status of respondents depicts that ,46.3 percent identified as illiterate. whereas, 14.6 per cent and 39.1percent of the respondents had educational level up to primary and



secondary respectively. It is interesting to note that slightly higher education level found in Periyapatna compared to Hunsur taluk.

**Table-3: Land holding (Dry and Wet) position of Respondents**

Land holding	Category	Respondents					
		Periya patna		Hunsur		Combined	
		N	%	N	%	N	%
Wet land ( acres )	No land	111	55.5	75	62.5	186	58.1
	1-2	64	32.0	35	29.2	99	30.9
	3-4	20	10.0	4	3.3	24	7.5
	≥ 5	5	2.5	6	5.0	11	3.5
Dry land ( acres )	1-3	48	24.0	31	25.8	79	24.7
	4-6	75	37.5	66	55.0	141	40.0
	≥ 7	77	38.5	23	19.2	100	31.2
<b>Total</b>		<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>

**Table-4: Total Land holding of Respondents**

Land holding	Respondents					
	Periyapatna		Hunsur		Combined	
	N	%	N	%	N	%
≤ 6 acres	83	41.5	72	60.0	155	48.5
6-10 acres	57	27.5	41	34.2	98	30.6
>10 acres	60	30.0	7	5.8	67	20.9
<b>Total</b>	<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>

$$X^2 = 27.006^*$$

\* Significant at 5% level

(Chi -square ( $X^2$ ) test is one of the effective statistical test which is used to measure the association between selected regions (Periyapatna and Hunsur) with respect to different characteristics / variables studied. Calculate  $X^2$ -value is compared with  $X^2$ -table value for (r-1) (c-1) degrees of freedom. If  $X^2$  cal >  $X^2$  tab, the association is significant statistically at 5% level.

As far as the land available for cultivation is concerned, the villagers have both wet and dry lands in which they grow fuelwood trees for curing tobacco. The result indicates that 30.9 percent possess the wet land holding between 1-2 acres in which they generally



grow fuelwood trees. More than 58 percent of respondents do not possess wet land while majority of the farmers have dry land in which they generally take up tobacco as economic crop. Further, 31 percent possess above 7 acres of dry land while 40 percent possess dry land between 4-6 acres. This indicates that, much of the areas in these taluks are under rainfed agriculture. With respect to overall land holding, the result indicates that 48.5percent of the respondents are found to have below 6 acres of land. Further, the land holding above 10 acres noticed among 20.9 percent of the respondents (Fig -1). It can be seen from the findings that, better land holding position noticed among Periyapatna region compared to Hunsur region. The data subjected for statistical test establish the significant (at 5% level) association between land holding and region under study ( $\chi^2 = 27.006 *$ )

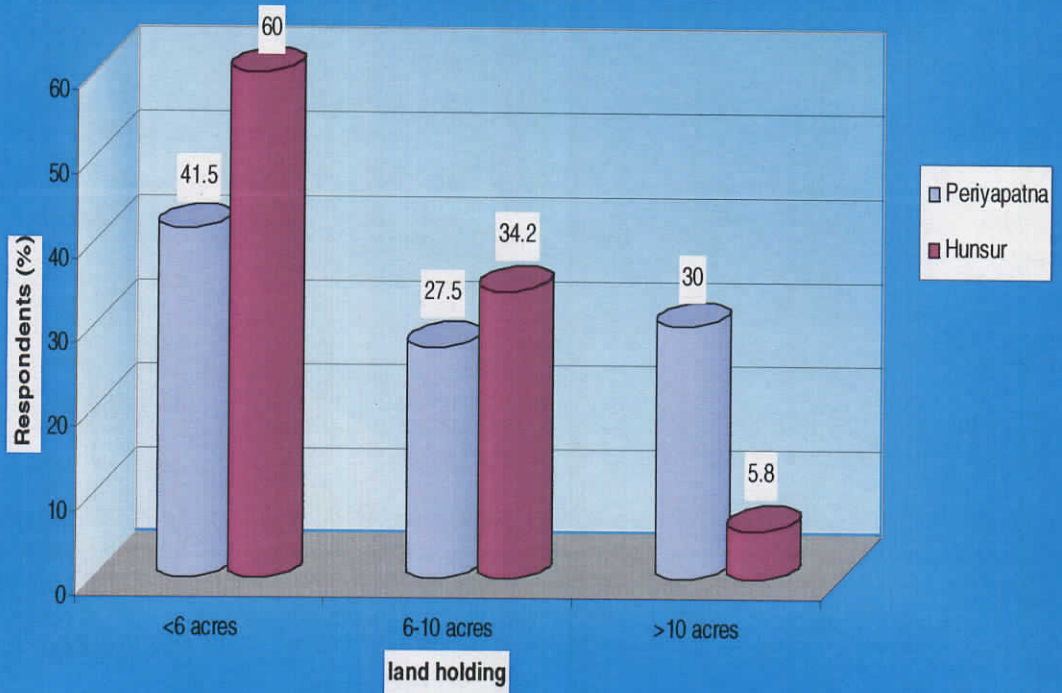
**Table-5: Response on Crops grown**

Crops Grown @	Respondents					
	Periyapatna (n = 200)		Hunsur (n = 120)		Combined (n = 320)	
	N	%	N	%	N	%
<b>Cotton</b>	83	41.5	19	15.8	102	31.9
<b>Paddy</b>	85	42.5	34	28.3	119	37.2
<b>Ragi</b>	111	55.5	21	17.5	131	40.9
<b>Tobacco</b>	135	67.5	78	65.0	213	66.6
<b>Pulses</b>	74	37.0	72	60.0	146	45.6
<b>Chilli</b>	8	4.0	60	50.0	8	21.3

@ Multiple Response

In the available land, the farmers of both Periyapatna and Hunsur Taluk take up both field crops as well as cash crops. Majority of the farmers of these areas grow tobacco as major crop in addition to food crop like paddy, ragi and pulses. Out of 320 respondents 213 (66.6%) farmers grow tobacco as the major crop since their requirement should also be met out of the available lands, the farmers with more

Fig. 1: Total land holding of respondents





than 2 acres of land have also grown food crop in addition to tobacco. Further, 146 farmers grow pulses (45.6%), 131 farmers grow ragi (40.9%) and 119 farmers grow paddy (37.2%) in addition to cotton (31.9%).

**Table-6: Response on Type of Land possessed**

Type of Land	Category	Respondents						X <sup>2</sup> Value
		Periyapatna (n=200)		Hunsur (n=120)		Combined (n=320)		
		N	%	N	%	N	%	
Own (Acres)	No land	4	2.0	4	3.3	8	2.5	12.664*
	1-5 Acres	84	42.0	68	56.7	152	47.5	
	6-10 Acres	62	31.0	36	30.0	98	30.6	
	≥11 Acres	50	25.0	12	10.0	62	19.4	
Leased (Acres)	1-2 Acres	44	22.0	2	1.7	46	14.4	0.309 <sup>NS</sup>
	≥3 Acres	11	5.5	1	0.8	12	3.7	

\* Significant at 5% level

NS: Non-Significant

The farmers of the selected area take up agriculture in majority under their own land or in leased land. Accordingly, 47.5 percent (1-5 acres) and 50 percent (> 6 acres) of the farmers engaged in agriculture in their own land. While meager percent of the farmers were forced to take up agriculture in leased lands. Even some of the farmers (18.1%) in addition to cultivating their own land they also cultivated in the leased lands.

### **Tobacco cultivation and curing**

Nearly 70percent of the farmers of the selected area grow tobacco as their major crop. Whatever may be their landholdings, majority of the farmers take up tobacco as the crop fetches some income. To cure the tobacco they need lot of fuelwood for which majority of the farmers either go for purchasing of fuelwood from outside or grow some of the high calorific fuel yielding tree species in their marginal and waste lands. As the restriction from Karnataka Forest Department,



majority of the farmers are not depending on forests for fuelwood either for tobacco curing or for cooking. Accordingly, only a small proportion of the farmers depend on forest for their fuelwood requirement.

**Table-7 (a): Family Persons involved in Collection of fuel wood**

Persons Involved	Respondents					
	Periyapatna (n=200)		Hunsur (n=120)		Combined (n=320)	
	N	%	N	%	N	%
Men	114	57.0	64	53.3	178	55.6
Woman	91	45.5	57	47.5	148	46.3
Children	22	11.0	16	13.3	38	11.9

**Table-7 (b): Awareness of seeking permission from KFD**

Awareness	Awareness						X <sup>2</sup> value
	Periyapatna		Hunsur		Combined		
	N	%	N	%	N	%	
Aware	109	54.5	60	50.0	169	52.8	0.609 <sup>NS</sup>
Not Aware	91	45.5	60	50.0	151	47.2	
<b>Total</b>	<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>	

NS : Non-significant

As far as the fuelwood collection from the forest is concerned, 56 percent of the men, 46 percent of the women and 12 percent of the children are involved. In comparison of regions in Hunsur Taluk in the involvement of collection of fuelwood (head load) is slightly ahead over the Periyapatna taluk may be because of close proximity of the forest to the villagers. Though majority of these farmers are aware (52.8%) of seeking permission from KFD still because of their poverty they simply venture into the nearby forest area like Titimathi, Anechowkur and

Kushalnagar (Dubare) for collection of fuelwood without seeking permission (47.2%) from the department (**Fig. 2**). The data subjected for statistical test implies that permission of awareness among the selected region found non-significant ( $\chi^2 = 0.609$  <sup>NS</sup>).

**Table-8: Proximity of Fuel wood availability**

Source	Distance From bars	Respondents						X <sup>2</sup> Value
		Periyapatna (n=200)		Hunsur (n=120)		Combined (n=320)		
		N	%	N	%	N	%	
Timber Depot	< 1Km	198	99.0	119	99.2	317	99.1	0.022 <sup>NS</sup>
	≥ 1 Km	2	1.0	1	0.8	3	0.9	
Forest	<1Km	158	79.0	61	50.8	219	68.4	27.547 *
	1-5 Km	42	21.0	59	49.2	101	31.6	
Others	<1Km	44	22.0	60	50.0	104	32.5	26.803 *
	1-5 Km	156	78.0	60	50.0	216	67.5	

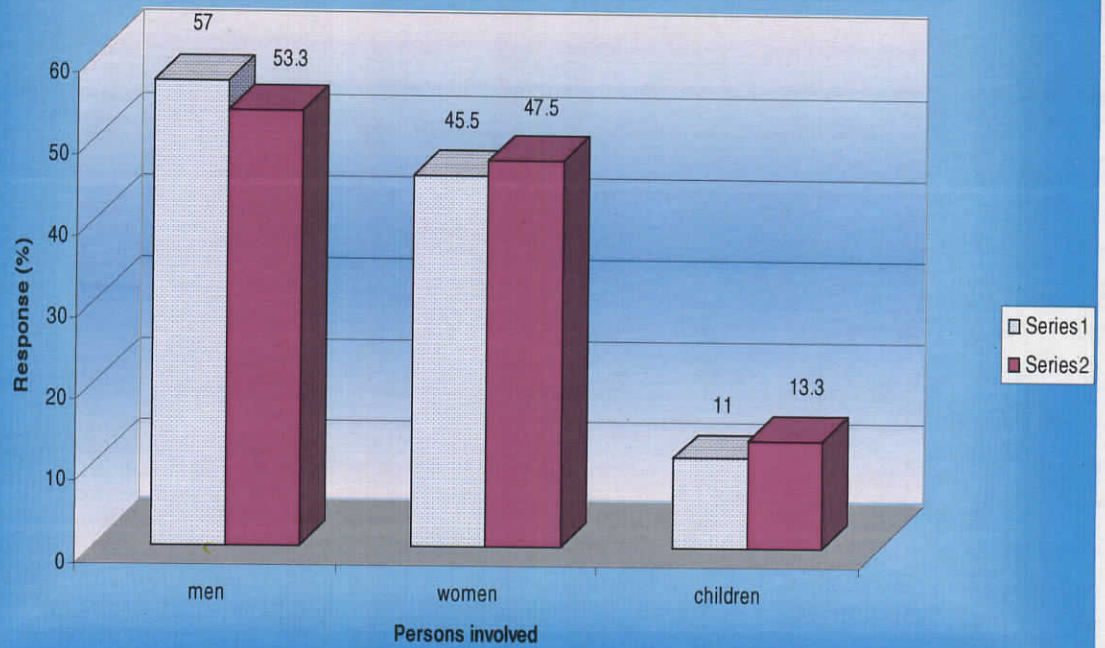
\* Significant at 5% level

NS : Non-significant

As far as the proximity of the fuelwood availability is concerned, whenever the farmers are depending on forests or timber depot for fuelwood, they travel to a very small distance to fetch the fuelwood. Accordingly, 68.4 percent of the farmers who are depending on forest in addition to Timber depot for fuel wood, travel less than 1 km to collect the fuelwood in the forest. While 99 percent of the persons who do not depend on forest, but depending on depot for fuel wood, travel less than 1 km to fetch fuel wood. Of the 68 percent people who depend on forest in addition to other sources, nearly 10 percent of them exclusively depend on forest (Table-9). Further, the people also involved in getting fuel wood from other sources (Through commission agents and timber merchants) also. This clearly indicates that farmers finding their fuelwood source in their close vicinity. Further, the forests that are adjacent to villages (like Titimathi, Anechowkur and



Fig.2: Family persons involved in collection of fuel wood





Kushalnagar (Dubare), are more prone to be disturbed by the villagers than the forests away from the villages.

### Sources of Tobacco curing

Table-9: Source of Tobacco curing

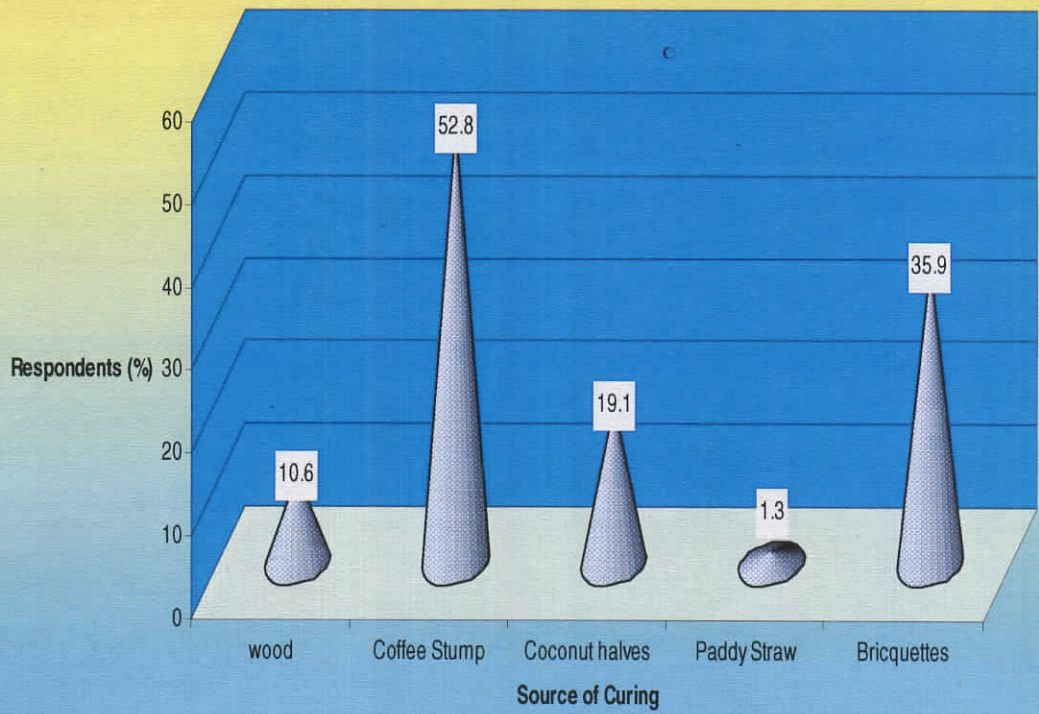
Source of Tobacco Curing @	Respondents						X <sup>2</sup> Value
	Periyapatna (n = 200)		Hunsur (n = 120)		Combined (n = 320)		
	N	%	N	%	N	%	
Wood (Forest)	4	2.0	30	25.0	34	10.6	86.091*
Coffee stumps	145	72.5	24	20.0	169	52.8	
Coconut halves	41	20.5	20	16.7	61	19.1	
Paddy husk	3	1.5	1	0.8	4	1.3	
Briquettes	58	29.0	57	47.5	115	35.9	

@ Multiple Response

\* Significant at 5% level

Of the farmers who do not depend on forests for fuelwood, but purchase elsewhere, use alternate fuel sources like coffee stumps, briquettes, coconut halves, paddy husk and firewood. Nearly 53 percent of their fuelwood requirement to cure tobacco was met out from coffee stumps followed by briquettes (36%) and coconut halves (19%) (**Fig. 3**). This clearly indicates that, their fuelwood requirement is clearly met out of coffee stumps as they have easy access to buy the coffee stumps from nearby places of Kodagu and Hassan districts. Similarly they also procure briquettes from the tobacco board at a subsidized rates. These **Briquettes** are compressed materials made out by using coffee husk, paddy husk, paddy straw, wood powder. Genarally, Briquettes are available in the circular form.

Fig.3: Source of Tobacco Curing





**Table-10: Response on source of Fuel wood**

Fuel wood Source	Respondents						X <sup>2</sup> value
	Periyapatna (n=200)		Hunsur (n=120)		Combined (n=320)		
	N	%	N	%	N	%	
<b>Own</b>	76	38.0	48	40.0	124	38.7	0.126 <sup>NS</sup>
<b>Purchased</b>	124	62.0	72	60.0	196	61.3	

NS: Non-Significant

Of the respondents who do not depend on forests for fuelwood, nearly 39 percent of them meet their energy needs on their own (through coconut halves, paddy husk ,coffee stumps) while remaining 61 percent purchased from other sources (as mentioned earlier). This also clearly indicates that part of their income emerging from tobacco selling goes towards purchase of fuelwood. It appears only the farmers with relatively large landholding can arrange for fuelwood for tobacco curing while the farmers with small land holding invariably go for outside purchase except for those who stay adjacent to forest have access to go to forest for fuelwood collection. The result subjected for statistical test indicate non-significant association between regions revealing more or less similar status in the region under study (**Fig. 4**).



Fig.4: Response on source of fuel wood

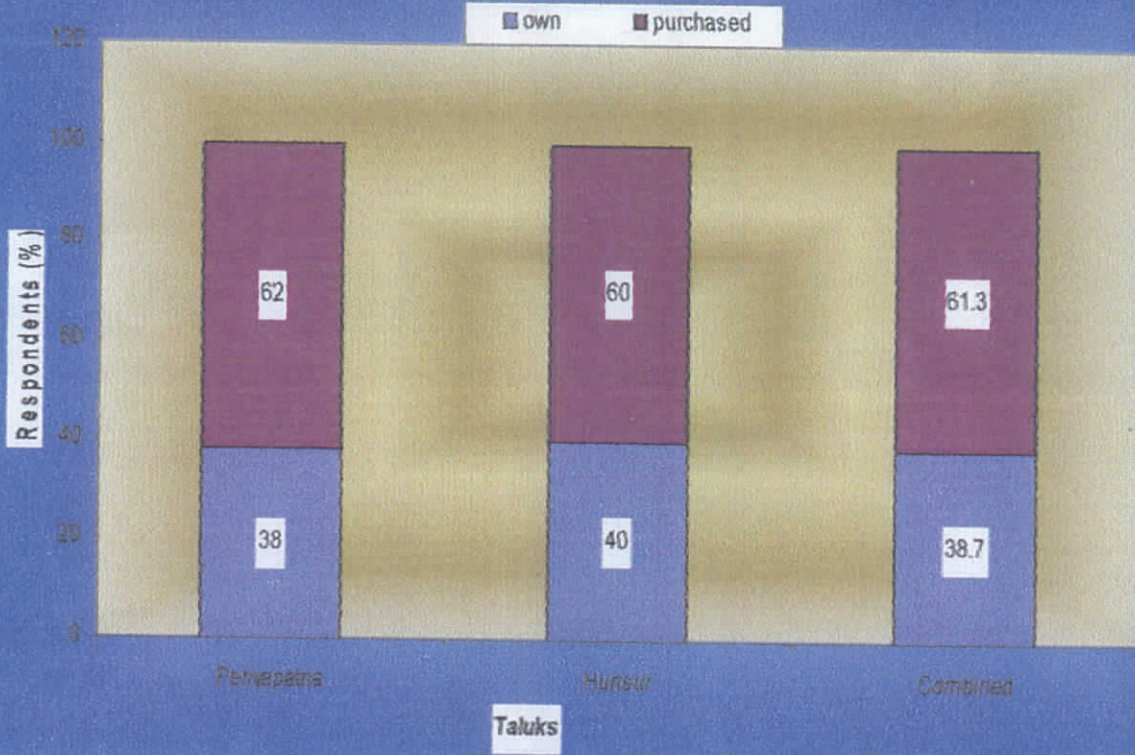
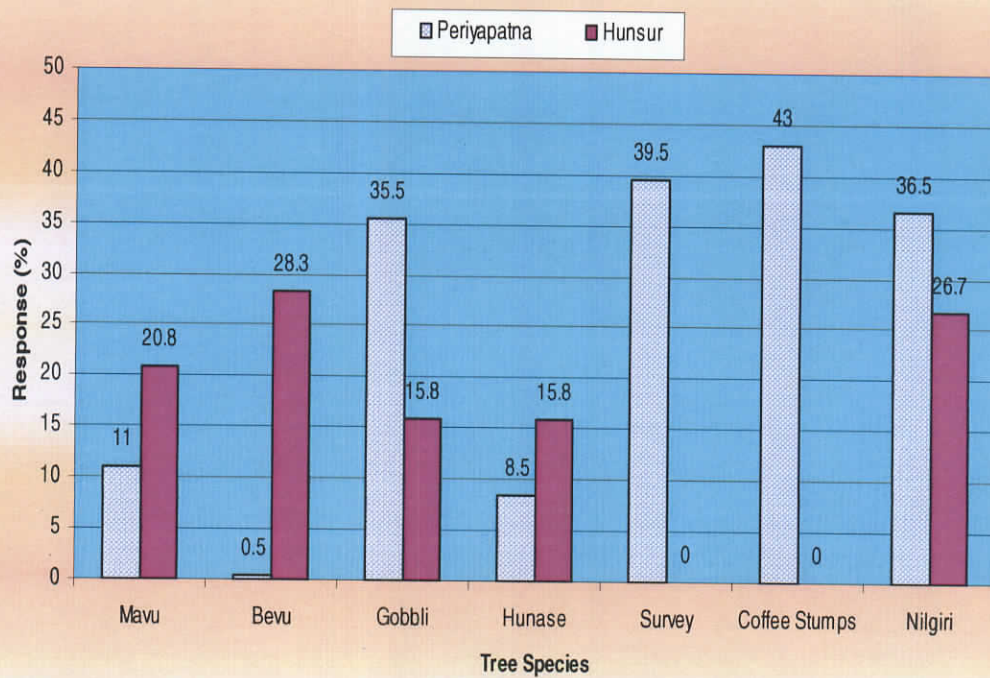


Table-11: Response on presently using and preference of Tree species

Tree Species	Periyapatna (n=200)				Hunsur (n=120)			
	Using		Preferred		Using		Preferred	
	N	%	N	%	N	%	N	%
Mangeifera (Mavu)	56	28.0	22	11.0	36	30.0	25	20.8
Azadiracta (Bevu)	3	1.5	1	0.5	58	48.3	34	28.3
Sizyzyum (Nerale)	21	10.5	10	5.0	0	0.0	0	0.0
Terminalia (Mathi)	9	4.5	1	0.5	1	0.8	0	0.0
Artocarpus(Halasu)	4	2.0	1	0.5	3	2.5	1	0.8
A.nilotica (Gobbli)	89	44.5	71	35.5	51	42.5	19	15.8
Tamarind(Hunase)	24	12.0	17	8.5	36	30.0	19	15.8
Casuarina(Survey)	93	46.5	79	39.5	8	6.7	0	0.0
Coffee(Coffee stump)	136	68.0	86	43.0	5	4.2	0	0.0
Eucalyptus(Nilgiri)	103	51.5	73	36.5	86	71.7	32	26.7
Anogeisis (Dindiga)	7	3.5	4	2.0	0	0.0	0	0.0
A.ferruginia (Banni)	52	26.0	0	0.0	2	1.7	0	0.0

Though coffee stump is moderate calorie yielding fuelwood because of its accessibility and availability, Majority of the farmers are in use of coffee stumps though they have preference for other calorific valued species like *Casuarina equisetifolia*, *Acacia nilotica* and *Eucalyptus*. In Hunsur taluk, majority of the farmers are using *Eucalyptus* over other species probably because of its easy availability. Response on using and preference of species in Periyapatna taluk indicate that the species viz, Coffee ( Stumps), survey and Gobbli found an order of priority in using with high percent of response. However, the preferences in using pattern is also noticed in similar the trend Further, the response in Hunsur taluk regarding using and preferences of species establish the order of priority viz, Bevu, Nelgiri, Gobbli and mavu (Fig. 5).

Fig.5: Response on preference of Tree species





## Income generated from different sources

**Table-12: Respondents Income from different Sources**

Source	Income (Rs)	Respondents						X <sup>2</sup> Value
		Periyapatna		Hunsur		Combined		
		N	%	N	%	N	%	
Tobacco	< Rs 25000	35	17.5	45	37.5	80	25.0	26.219 *
	Rs 25000-50000	102	51.0	29	24.2	131	40.9	
	> Rs 51000	63	31.5	46	38.3	109	34.1	
Crops	Nil	56	28.0	84	70.0	10	43.7	65.247 *
	< Rs 10000	70	35.0	14	11.7	84	26.3	
	Rs 10000-30000	30	15.0	19	15.8	49	15.3	
	> Rs 30000	44	22.0	3	2.5	47	14.7	
Wood	Nil	113	56.5	84	70.0	197	61.6	20.009 *
	<Rs 10000	24	12.0	17	14.2	41	12.8	
	Rs 10000-30000	26	13.0	17	14.2	43	13.4	
	>Rs 30000	37	18.5	2	1.6	39	12.2	
<b>Total</b>		<b>200</b>	<b>100</b>	<b>120</b>	<b>100</b>	<b>320</b>	<b>100</b>	

\* significant at 5 % level

The result depicts that, 41 percent of the farmers get an income of Rs. 25,000 to 50,000 from growing tobacco. While, 34 percent get more than Rs 50,000 by growing tobacco in their land. From the other field crop and tree crops grown in their land they get less income compared to tobacco. It is interesting to note that ,56.3percent of the respondents are getting the source of income from other field crops while 38.4percent of respondents to source of income from wood. The farmers of selected locality prefer to grow tobacco even though they sell down some amount of income towards purchase of fuelwood. Since the crop is not damaged by animals unlike other field crops which requires less supervision towards tobacco. On the whole the study implies that, to some extent the farmers are depending on forest who are living near by forest area depending on fuelwood which helps for their tobacco curring.

## Management recommendations

- (i) To improve the fuel efficiency and to decrease the pressure on the forest, conventional barns have to be modified into an efficient fuel saving barns. It can be noticed that recently modified barns are much efficient and effective, further leading to saving significant amount of fuelwood compared to the conventional barns.
- (ii) Modified tobacco barns with flue pipes made out of bricks and clay tiles will result in 35-40 percent savings of fuelwood and reduction of curing time from 98-70 hours.
- (iii) Barns with improved heat circulation can be energy efficient with an average fuel consumption of about 4.2 kgs.of wood per kg cured leaf realising a saving of 16 percent in fuel consumption.
- (iv) Specialized barns like (**Annexure-II**)
  - Low profile barns
  - Improved furnace system such as ventury furnace
  - Roof insulation of barns
  - Ceiling insulation of barns with thermcol and cement mixture etc.,are found to be highly efficient in energy saving.
- (v) The dependency on wood for curing of FCV tobacco in KLS can be significantly minimized by popularization this energy efficient barn coupled with the alternative fuels like briquettes, coffee husk, coconut halves and other agricultural wastes.



### **Suggestions**

- (i) The forest department can organize training programmes on various forms of non-conventional energy sources for Tobacco curing.
- (ii) Usage of agricultural wastes for tobacco curing should be promoted
- (iii) Usage of Tobacco stumps (After harvest) should be promoted
- (iv) Farmers should be encouraged in using tree species with good calorific value.
- (v) Forest department can take initiation of raising of plantations in the farmers waste lands on tie- up arrangement
- (vi) Tree species with Fast, Medium growing and good coppicers should be recommended for cultivation for their curing. (**Annexure-III**)

## Annexure- I

## UNIVERSITY OF AGRICULTURAL SCIENCES

GKVK CAMPUS, BANGALORE – 560 065

Questionnaire/schedule on “A study on Fuel wood consumption for tobacco curing in Mysore district”

## 1. Socio-economic background

1. Name of the Farmer:

2. Village and Taluk:

3. Family size:	Children (0-14 yrs)	Adults(14+ yrs)	Total
Male	-----	-----	-----
Female	-----	-----	-----

4. Stay since how long : -----years

5. Occupation

(a) Main occupation: -----

(b) Sub occupation:-----

6. Persons involved in collecting fuel wood:

Person	Visits per week	Approx. Qt	Fuel capacity
Men			
Woman			
Children			

7. Educational status: a. No-formal schooling

b. Literate

c. Primary

d. Secondary



## II. Land hold pattern and source of income:

1. Land holding (Acres): a. Wet land -----, b. Dry land: -----  
 c. Tree land/waste land----- Total -----Acres
2. Family income:

Source	Annual yield (per Acre)	Investment (Rs.)	Income (Rs.)	Rate (per Kg.)
Tabacco				
Crops				
Wood				
Others				

3. Crops grown: -----
4. Type of land: a. Own -----acres, b. Leased -----acres

## III. Specific information on Fuel wood consumption:

1. Sources of tobacco curing:
  - A. Paddy straw, B. Using coffee stumps, C. coconut waste,
  - D. Others (specify)
2. Fuel wood consumption per barns: cartload, tones, head loads, depot, others
  - a. No. of barns having:-----
  - b. Fuel wood sources:

Source	Yes/No	Quantity	Cost	Type of forest/ place
Own				
Purchase				
From forest				
From neighbour source				

c. Proximity of fuel wood availability

Source	Distance from barns (Kms.)	Name / Place
Forest		
Timber depot		
Any other source		

d. Are you aware that one should seek permission from KFD? Yes / No

e. Tree species preference?

(a) Type of tree species using

(b) Preference of species

3. Suggestions about reducing burden on forest



## ANNEXURE-II

## Fuel savings in modified barns

Year	Fuel Consumption		Cured leaf yield in Kgs.	Kg. fuel / Kg of cured leaf	
	Modified barns	Normal barns		Modified barns	Normal barns
2001-02	987.50	1550.0	300-350	3.29	5.19
2002-03	937.50	1482.5	300-350	3.12	4.94
2003-04	990.00	1460.0	300-350	3.30	4.86
Average	971.66	1497.5		3.23	4.99

## Fuel use efficiency of improved techniques

Barn size	Fuel conservation method	Fuel use (kg wood/kg cured leaf)	% Saving in fuel use over control	Fuel cost* per kg cured leaf
16'x16'x16'	Control barn	5.0	-	Rs.6.50
16'x16'x16'	Ventury furnace (VF)	4.3	14	Rs.5.60
24'x16'x13'	Low profile barn	4.2	16	Rs.5.45
16'x16'x16'	Paddy straw insulation + VF	3.5	30	Rs.4.55
16'x16'x16'	Modified fuel system + VF	3.4	32	Rs.4.40
24'x16'x13'	Integrated barn	2.4	52	Rs.3.10

- Firewood @ Rs.1, 300 per ton.

## ANNEXURE-III

## Calorific value of certain fuel wood species.

Sl. No.	Fuel wood species	C/NC	Rate of Growth	Calorific value (K cal/kg)
1.	<i>Prosopis juliflora</i>	C	Medium	5000-5500
2.	<i>Hardwickia binata</i>	C	Slow	5421
3.	<i>Pithecollobium dulce</i>	C	Fast	5379
4.	<i>Albizia amara</i>	C	Medium	5049-5306
5.	<i>Tectona grandis</i>	C	Fast	5262
6.	<i>Holoptelia integrifolia</i>	NC	Fast	5228
7.	<i>Acacia catechu</i>	NC	Slow	5193
8.	<i>Cassia fistula</i>	C	Medium	5161
9.	<i>Melia dubia</i>	NC	Fast	5118
10.	<i>Dalbergia sissoo</i>	C	Fast	5040
11.	<i>Acacia nilotica</i>	C	Slow	4950
12.	<i>Casuarina equisetifolia</i>	C	Fast	4950
13.	<i>Eucalyptus hybrid</i>	C	Fast	4880
14.	<i>Acacia auriculiformis</i>	NC	Fast	4850
15.	<i>Pongamia pinnata</i>	C	Medium	4800
16.	<i>Anthocephalus cadamba</i>	NC	Fast	4800
17.	<i>Ficus benghalensis</i>	NC	Fast	4758
18.	<i>Calliandra calothyrsus</i>	C	Fast	4500-4750
19.	<i>Leucaena leucocephala</i>	NC	Fast	4400
20.	<i>Cassia siamea</i>	NC	Fast	4400

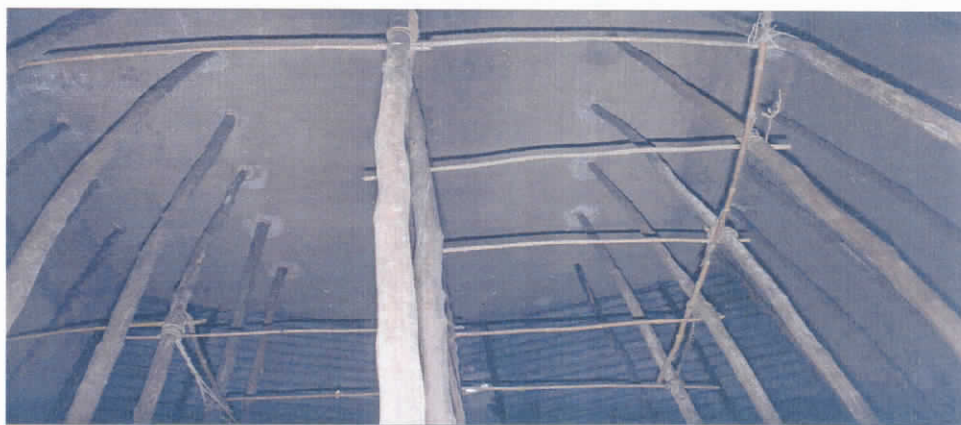
Note: C-Coppicing, NC-Non Coppicing





**Tobacco for curing**

**Furnace**



**Tobacco Leaf tying sticks & cured leaf**