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ASSESSMENT OF FUEL WOOD REQUIREMENT FOR TOBACCO CURING IN PERIAYAPATNA AND HUNSUR TALUKS OF KARNATAKA

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Abstract

A study was carried out to assess the fuel wood requirement for tobacco curing in Periyapatna and Hunsur taluk in Mysore of Karnataka which is one of the major tobacco growing areas in Karnataka. Studies were conducted to assess (1) socio-economic background of the respondents (2) Landholding position and cropping pattern followed (3) Source of tobacco curing and consumption of fuel wood. The study revealed that the economy of the farming community is dependent mainly on tobacco crop and most of the farmers are dependent on fuel wood for heating barns used for tobacco curing. The average family size was 4 members engaged in agriculture. The average land holding was 6.73 acres. Both men and women collected fuel wood from the nearly forest which is about 1Km from the village, however 2/3 of the respondent farmers indicated that they go for purchase of fuel wood for tobacco barns, rather than collecting from forests, Neem, Eucalypt, Acacia and Mango are the preferred furl wood species. In the absence or shortage of fuel wood, coffee stumps and coconut fronds are used for tobacco barns.

Key Words: *barn, briquettes, fuel wood.*

Introduction

Forest cover in Mysore district is decreasing at an alarming rate due to continuous pressure from the villagers on the forest for fuel wood for tobacco curing is increasing steadily. Some parts of the Mysore district comprises of rain fed 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. Tobacco being a commercial crop, the economy of the farming community is dependent on this crop. Unlike other crops, tobacco needs specific processing method after harvesting. The quality and the price of the product is governed by proper curing after harvesting.

Farmers of the region adopt indigenous methodology for curing tobacco by using barns. Barns are owned individually and in some cases community barns are also in vogue. Barns are the houses constructed for curing 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 lead 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 a 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 following specific 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 alternative sources of fuel wood to reduce pressure on forest

Materials and Methods

To examine the dependency of tobacco growers on forest resources, a detailed survey was made using well-designed questionnaire. The developed questionnaire consists of socio-economic aspects, land holding patterns and their income and also fuel wood consumption pattern.

A Preliminary survey was conducted in Mysore District to identify the major tobacco growing taluks. Among the three taluks of Mysore District, Periyapatna and Hunsur taluks were found to be the leading taluks in tobacco cultivation. Therefore, our study was confined to only to 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).The detailed information such as number of growers & number 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 following criteria

1. Cropping area / cropping pattern/ land holding
2. Farmers cooperation

3. Accessibility to the village
4. Number 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 to represent the entire Periyapatna taluk. 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 an average of 8 to 10 clusters (villages). The detailed information such as number of growers & number 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.

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. The selection of farmers/respondents was done randomly in these 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.

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 was found to be 28843.6 ha. With a total cured tobacco of 32558.6 tones. As per the information available and also based on the respondent's opinion, about 4.5 k.g. of fuel wood 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 fuel wood is required. Similar results have been published by Wegerif *et al*. (1996) and Geist (1997).

To assess the socio-economic conditions and status of living, basic information on their background, land holding 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 respondents from Hunsur taluk.

Results and Discussion

a) Socio-economic background of the respondents

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.

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%) compared 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 was found in Periyapatna compared to Hunsur taluk.

b) Landholding position and cropping pattern followed

As far as the land available for cultivation is concerned, the villagers have both wet and dry lands in which they grow fuel wood trees for curing tobacco. The result indicates that 30.9 percent possess wet land holding between 1-2 acres in which they generally grow fuel wood 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 rain fed 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 was noticed among 20.9 percent of the respondents (Fig -1). It can be seen from the findings that, better land holding position was noticed among Periyapatna region compared to Hunsur region. The data subjected for statistical test to establish the significant (at 5% level) association between land holding and region under study (χ^2 = 27.006 *)

Table-1: **Response of farmers on crops grown in Periyapatna and Hunsur taluks**

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

N= Number of respondents

@ = 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 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-1)

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 also cultivated in the leased lands.

c) Source of tobacco curing and consumption of fuel wood

Nearly 70 percent 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 fuel wood for which majority of the farmers either go for purchasing of fuel wood 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 fuel wood either for tobacco curing or for cooking. Accordingly, only a small proportion of the farmers depend on forest for their fuel wood requirement.

As far as the fuel wood 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 fuel wood (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 (52.8%) are aware 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 fuel wood 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 was found non-significant ($\chi^2 = 0.609^{NS}$).

As far as the proximity of the fuel wood availability is concerned, whenever the farmers are depending on forests or timber depot for fuel wood, they travel to a very small distance to fetch the fuel wood. Accordingly, 68.4percent of the farmers who are depending on forest in addition to Timber depot for fuel wood, travel less than 1 km to collect the fuel wood 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 68percent people who depend on forest in addition to other sources, nearly 10 percent of them exclusively depend on forest. Further, the people also involved in getting fuel wood from other sources (Through commission agents and timber merchants) also. This clearly indicates that farmers are finding their fuel wood source in their close vicinity. Further, the forests those are adjacent to villages (like Titimathi, Anechowkur and Kushalnagar (Dubare), are more prone to be disturbed by the villagers than the forests away from the villages.

Farmers who do not depend on forests for fuel wood use alternate fuel sources like coffee stumps, briquettes, coconut halves, paddy husk and firewood. Nearly 53 percent of their fuel wood 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 fuel wood 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 subsidized rates. These Briquettes are compressed materials made out by using coffee husk, paddy husk, paddy straw, wood powder. Generally, Briquettes are available in the circular form.

Of the respondents who do not depend on forests for fuel wood, 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 fuel wood. It appears only the farmers with relatively large landholding can arrange for fuel wood 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 fuel wood collection. The result subjected for statistical test indicates non-significant association between regions revealing more or less similar status in the region under study.

Though coffee stump is moderate calorie yielding fuel wood because of its accessibility and availability, Majority of the farmers use coffee stumps though they have preference for other calorific valued species like *Casuarina equisitifolia*, *Acacia nilotica* and *Eculyptus.* In Hunsur taluk, majority of the farmers are using *Eculyptus* 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(Casurina) and Gobbli(Acacia) 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. 4).

The result indicates that, 41 percent of the farmers get an average 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 fuel wood. 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 nearby forest area depending on fuel wood which helps for their tobacco curing.

Summary and 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 fuel wood 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 fuel wood 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 realizing a saving of 16 percent in fuel consumption.

(iv) Specialized barns like

Low profile barns

Improved furnace system such as ventury furnace

Roof insulation of barns

Ceiling insulation of barns with thermacoal 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.

Acknowledgement

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Appendix:

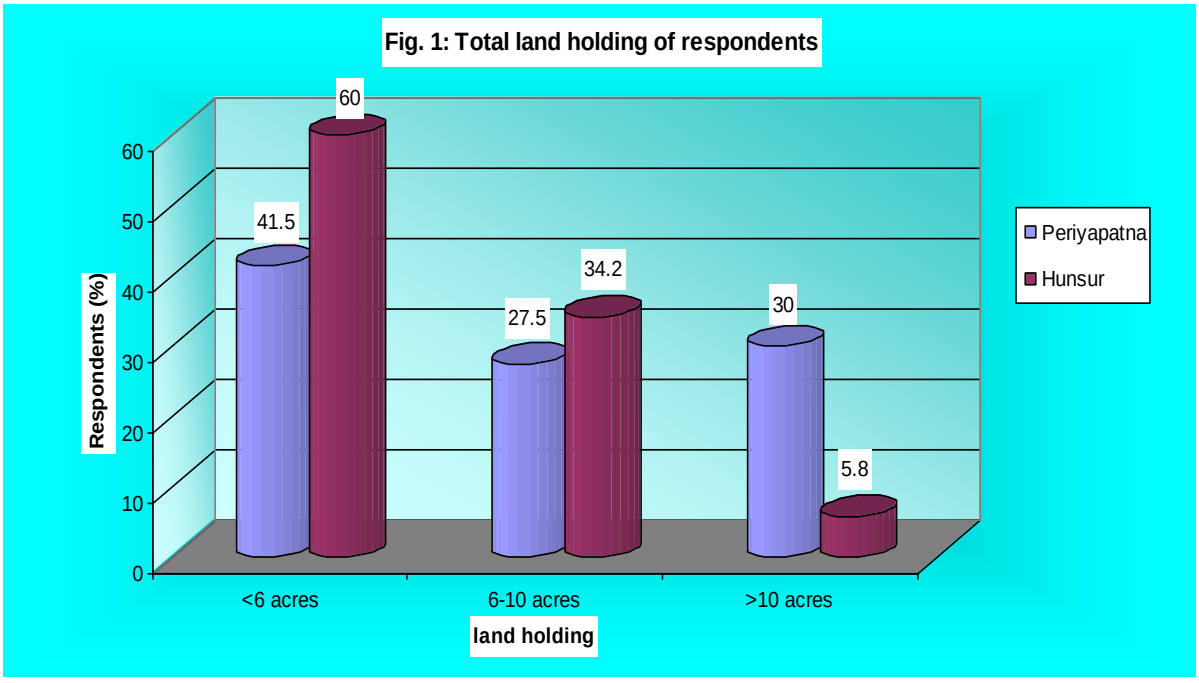

Fig 1. Total land holding of respondents

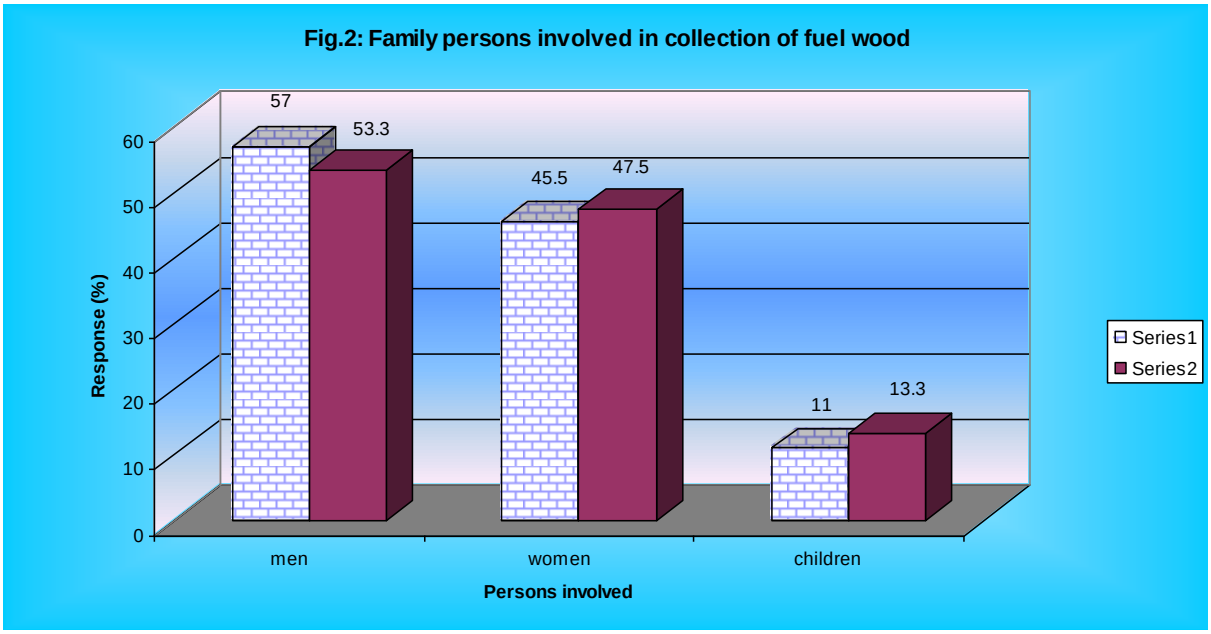

Fig 2. Family persons involved in collection of fuel wood

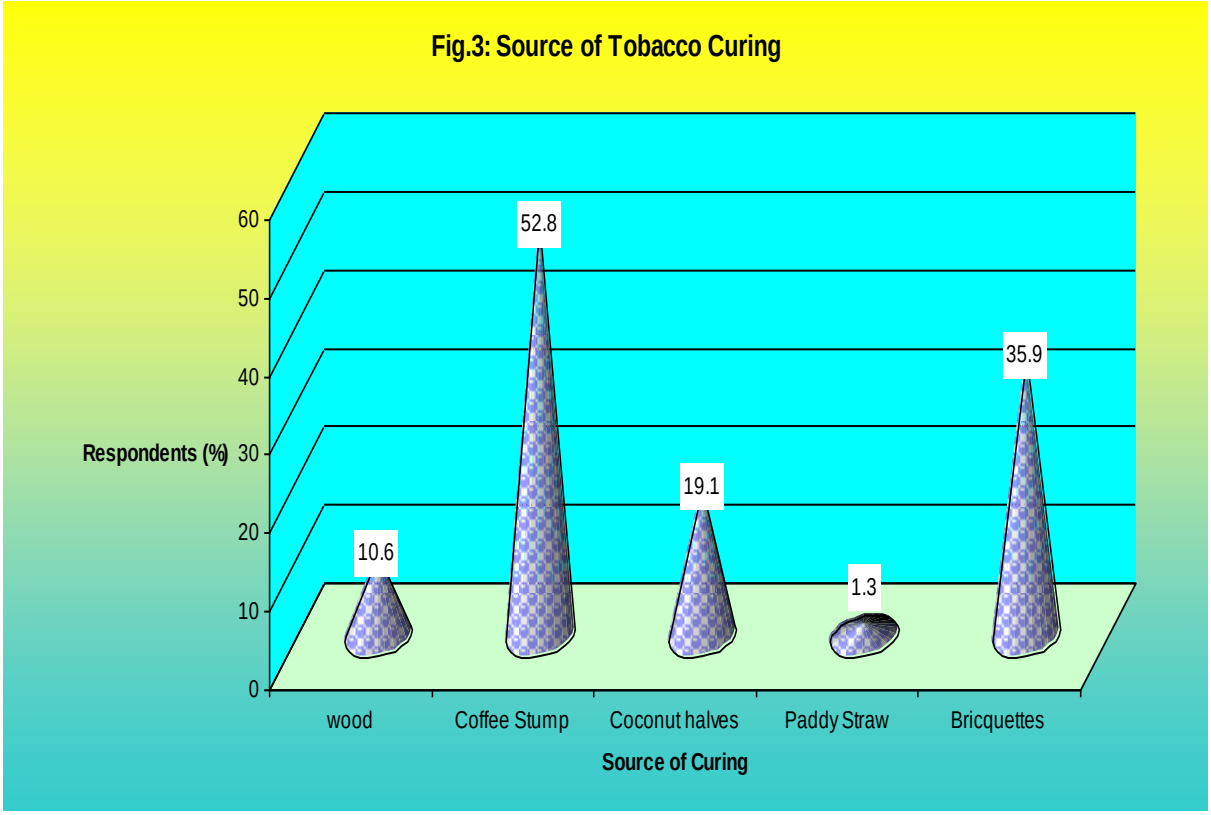

Fig 3. Sources of tobacco curing

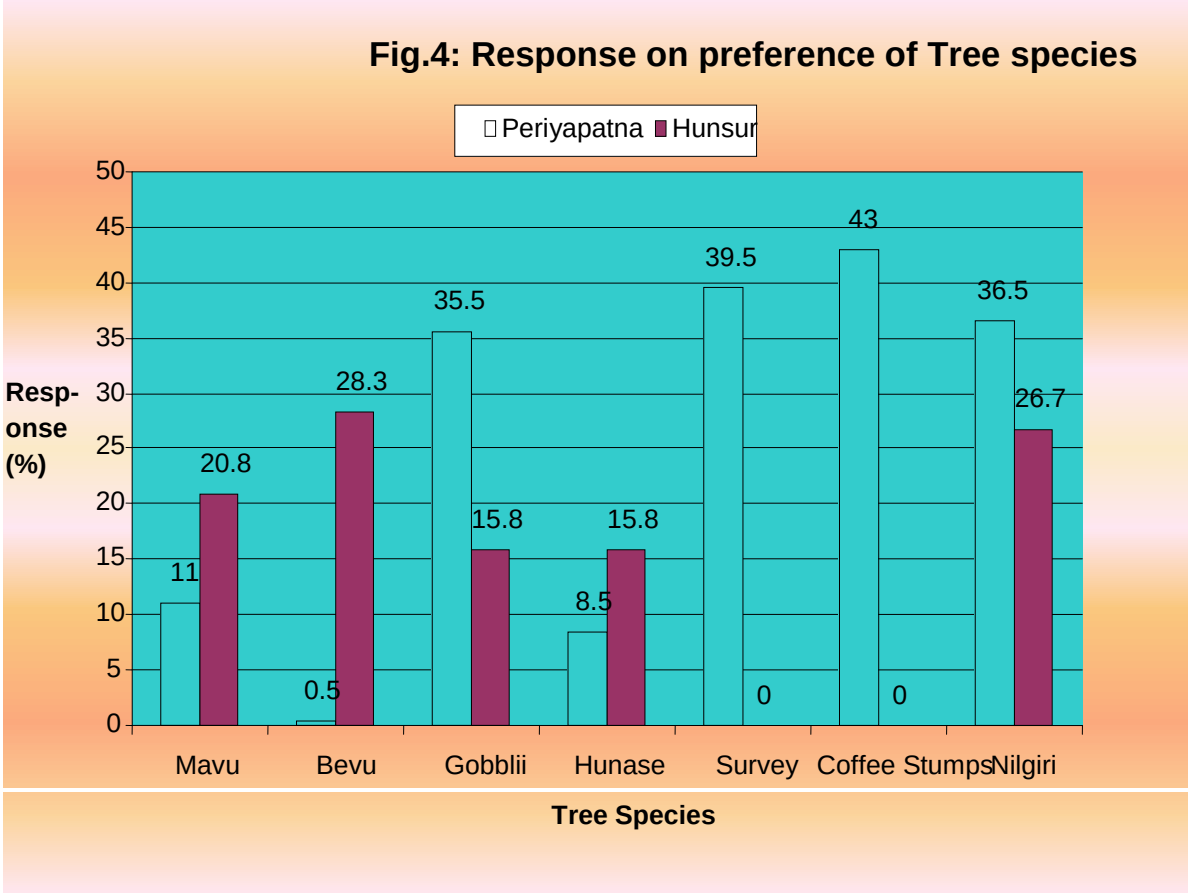

Fig. 4 Response of preference of tree species