



Availability of Raw Material for Wood Based Cricket Bat Industry in Kashmir Valley, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Kashmir Himalayas is known for its abundant supply of high quality wood suitable for cricket bat industry. The present study aimed to gather comprehensive data on the availability of raw material for the cricket bat industry in Anantnag and Pulwama districts of Kashmir during the specified time period (2017-2018). The main objective of this study was to evaluate the major problems faced by the industry and to assess quality parameters of cleft and the wood used for making these clefts. Shortage of quality raw material, absence of proper marketing channels and irregular electricity supply were the major factors responsible for production shortfall. The units used wood of *Salix alba* var. *caerulea* as main raw material while *Populus deltoides* wood was also used for low quality bats. For the study, latest available official records of Government of Jammu and Kashmir as well as questionnaire based sample survey data were used. The industry produced 15.10 crore clefts that consumed 17,28,532 ft³ of wood. Sample survey revealed that in 2016, the selected 62 units procured 5,84,557 ft³ of wood with an average of 9,428.33 ft³ per unit.

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1. INTRODUCTION

The emergence and growth of the cricket bat industry in Kashmir have been driven by various factors. The region boasts a rich abundance of high-quality willow trees, particularly the Kashmir willow, which is renowned for its durability and flexibility. The availability of this exceptional raw material has created a conducive environment for the development of a thriving bat-making industry. Artisans in Kashmir have honed their skills over generations, passing down traditional techniques and craftsmanship, resulting in the production of some of the finest cricket bats in the world [1].

The socio-economic impact of the cricket bat industry in Kashmir is significant. It has created employment opportunities for a large number of people, particularly skilled artisans and craftsmen. The industry's growth has not only provided sustainable livelihoods but has also contributed to the economic development of the region. The success of the bat-making industry has encouraged other ancillary businesses, such as bat handle manufacturing, bat stickers, and bat accessories, further augmenting the overall economic impact. Wood industry is among one of the most important industrial units [2]. Wood industry utilizes various woods such as willow, poplar, mulberry, walnut etc. for its raw material is known as wood based industry. It is that industry which carries out the mechanical and chemical treatments and processing of timber. It is the industry which produces sawn woods, ply woods, matches, furniture, and sports goods. In Jammu and Kashmir this industry has grown up consistently in the last few years. Out of 22 districts of Jammu and Kashmir, district Anantnag and Pulwama are the only districts where people are largely engaged in this industrial activity. Some important wood based industries in these districts include, wooden furniture industry, wood turning industry, wood beading industry, wooden toys industry, manufacturing of shooks and cricket bats industry. One of the major wood based industries is cricket bat industry [3]. The origin of the industry in Kashmir is supposed to be from Sialkot Pakistan. The technical know-how was imported from England. This trade flourished in those areas of

Kashmir where raw material was substantially available [1]. Keeping in view the above facts, present investigation was carried out in Anantnag and Pulwama districts of Kashmir, during the year 2017.

2. MATERIALS AND METHODS

2.1 Study Area

The present investigation was conducted in Anantnag and Pulwama districts of Kashmir during the year 2017. These districts were chosen as they are known for their cricket bat industry and have a significant presence of industrial units related to bat manufacturing.

2.2 Sampling Technique

Stratified random sampling was employed to select the respondents for the study. The industrial units in the districts were classified into three strata based on the assessed capacity of raw material: big industries, medium industries, and small industries. A sampling intensity of 25% was used, which involved selecting a representative sample from each stratum. The selection of units in each stratum was based on data collected through a field study.

2.3 Data Collection

A well-structured questionnaire was developed to assess the availability of raw material for the cricket bat industry. The questionnaire was administered among the selected respondents, which included owners and employees of the industrial units. The questionnaire consisted of open-ended questions to gather detailed information about various variables related to raw material consumption and other relevant factors.

2.4 Classification of Industrial Units

The collected data was used to classify the industrial units into small, medium, and large categories. This classification was done using simple statistical methods, considering factors such as production capacity, workforce size, and other relevant parameters.

2.5 Informants and Interviews

During the survey, the owners and employees of the industrial units were considered as informants. The owners were particularly involved to gather information about constraints faced by the industry and the raw materials required. Informal interviews were conducted alongside the structured questionnaire, where open-ended questions were asked to obtain additional relevant information.

2.6 Data Collection Instrument

The questionnaire schedule was designed comprehensively to address the objectives of the study. It covered various aspects related to the bat manufacturing process, including the grade of bats manufactured (single or multiple qualities), species/variety of wood procured for cleft making, raw material consumption, supply chain for wood raw material, time of procurement (during winter or round the year), storage of logs before conversion into cleft, and seasoning methods and duration.

Observations were made during the study to record relevant information. These observations were primarily focused on the grade of bats produced, the species/variety of wood used for cleft making, raw material consumption patterns, the supply chain of wood raw material, timing of procurement, storage practices, and the methods and duration of seasoning.

3. EXPERIMENTAL FINDINGS

The parameters related to raw material such as availability of raw material, raw material consumption, production capacity of cricket bats, information of cricket bat manufacturing of selected units, infrastructure facilities, education and age profile of selected unit holders, business experience of selected unit holders and problems associated with raw material is presented in Table number 1 to 3.

The data tabulated in Table 1 shows the quantity of wood procured by the selected 62 units during year 2016. In this table industries are classified into three categories on the basis of consumption capacity of wood in cubic feet (ft³). Total number of 62 units was surveyed. The majority of these units (46 out of 62; 74.19%) were in the lowest consumption category while the large scale units were only 11.29%. It was found that the total wood procured by these selected units in 2016 was 5,

84,557 ft³, with an average of 9,428.33 cubic feet per unit. The small scale units procured maximum (3, 46,476 ft³) wood while medium scale units procured the least (1, 13,219 ft³).

The data on raw material consumption as per the official records 2015 are presented in the Table 2. The units were classified into three categories on the basis of raw material consumption capacity of wood. Seventy five percent of the total units (186 out of 248) in the Kashmir valley fell under the small scale category in terms of raw material consumption. The large units (> 15,000 ft³ consumption) constituted only about 12.09% of the total industry. As per the Government figures, during 2015, the bat industry consumed 17, 28,532 ft³ of wood raw material with an average of 6,969.88 ft³ per unit. The small units consumed about 44.62% of the total wood consumed by the bat industry, while large unit consumed 32.14%. The rest of 23.23% of raw material was consumed by 32 medium scale units.

The information regarding end product of the bat industry, grading of cleft, tree species for making cleft and handle, dimension of log and procurement season are presented in the Table 3. For this information is based on 62 units surveyed for this purpose. The end product of all the units was bat. It was also observed that there was proper system of grading of bats. The basis of grading was number of "grain" present in the cleft. The industry made three different grades of bat: A quality, B quality and C quality bats. The bat which had more than 9 grains in the cleft was graded as A. Grade B has 5- 9 grains while C grade bat had less than 5 grains per cleft. The species used for handle making was cane, elm and poplar. The length of log required for the industry was 30 inch. The season of procurement of wood was mainly winter season (November - January). All these units stored these logs in open space inside their own units and seasoning of these clefts for a period of maximum 8 months.

Table 4 analyses the problems faced by cricket bat manufacturing units with respect to raw material. The 62 units were surveyed. Forty two (67.74%) respondent units told that their main problem was inadequate quantity of raw material availability. Whereas, 13 respondents told that higher cost of raw material was their main problem. Remaining 7 unit holders told that poor quality of raw material was their main problem. The Table 4 also highlights the

problems that were related to marketing. Out of 62 units, 42 (67.74%) reported to have marketing related problems. All of the respondents told that they were facing the problem of inadequate and irregular power supply. According to them, it was the major hindrance for their efficient working.

4. DISCUSSION

An important input without which the bat industry is handicapped is willow wood. The quantity of wood procured by the selected units during year 2016 is given in the Table 4. On an average, total annual wood procured by the 62 units was calculated to be 9,428.33 ft³. Assuming that the wood procured by these units is the wood consumed by them, the present study also reveals that the small units consumed about 44.62% of the total wood consumed by the bat industry, while large unit consumed 32.14%. The rest 23.23% of raw material was consumed by 32 medium scale units. Haq and Bilal [2] reported that on an average, the raw material consumption per unit was 5,150.50 ft³ which is less than that found in the present study. This difference may be due to the fact that their study was based on the older data and the industry might have grown since then. The secondary data as provided by the DIC, revealed that the total wood consumption by the bat industry during 2015, was 17,28,532 ft³ (Table 2). If we extrapolate the finding of present study (based on the survey of 25% of total bat manufacturing units) to the whole bat industry, total wood procured by the bat industry during 2016 would be around 23,38,228 ft³. In a similar study carried out by Nabi et al. [3], the raw material consumed 185 units was 2,72,000 ft³ during year 2005. There is a wide gap between the demand and supply of raw material of the cricket bat units in the valley. Loss of willow plantation areas due to its conversion into other forms of land use has been pointed out as a factor responsible for reducing the areas available for bat production [4]. The present study also revealed that these units were facing problems of raw material in terms of insufficient quantity, poor quality and high cost of raw material (Table 4). From the survey of 62 unit holders it was found that 67.74% respondents units were facing insufficient quantity of wood availability as their major problem. While 20.96% respondents reported that high cost of raw material was

their main problem. Only 11.29% of the respondent reported that poor quantity of raw material as the major problem.

Insufficient supply of wood to the bat industry may be due to the dwindling willow plantation day by day. No incentives, viz., minimum support price, input subsidy, etc., are available to the farmers for raising bat willow plantations. This has resulted in removal of a large number of trees and as such the most preferred variety *caerulea* (*Salix alba* var. *caerulea*, the female white willow variety [5]. Moreover, there has been a significant fall in the cultivation of willow trees as most growers prefer poplars, which is a fast growing species. It takes around 15 years for a willow tree to attain optimum size, whereas poplars grow within five to seven years to its harvestable size. So, the farmers in the valley now prefer poplar over willow [6]. Poor quality of the wood is the next major problem faced by the bat industry in the valley. The plantations of *Salix alba* are grown and managed without following any scientific tree crop management practices. The timber thus produced has poor quality of raw material that has many knots and other defects [7].

The present study revealed that the end product of all these units was bat. Earlier many units were also making cleft and these semi-finished products were illegally exported out of the state. But due to ban on the export of willow as raw-material or semi-finished products outside the state is banned under the Jammu and Kashmir willow prohibition on export and movement Act, 2000. Nowadays all these units manufactured finished bat in their own units.

There was a proper grading system of bats on the basis of grain. Traditionally willows are not graded according to international standards in Kashmir, and that is why the clefts and bats do not attract the global market [8]. Grade "A" is the best looking blade with some red wood evident on the edge of the bat. The grain on the face is straight, and there should be at least nine grains visible.

There should not be a single knot or speck in the playing or non playing area of the bat. Grade "B" is also a very good quality blade, and normally a larger amount of red wood can be seen on the edge of a bat, which has no effect on the playing ability of the bat and is purely cosmetic. Again there should be at least five straight grains on the face of the bat. A Grade "C" blade is normally

over half color or there will be a minimum of five grains on the face of the bat, which may not always be perfectly straight. Again some very minor knots or a little butterfly stain may be present.

As is clear from the data, the cricket bat manufacturing units had quality problem related to raw material. The bat unit holders explained that wood of willow has more knots and more weight. Insufficient quantity of raw material has already been discussed above. So far as the cost structure of cricket bat manufacturing industry is concerned, raw material is the most expensive component in the manufacturing of cricket bats. Most of the bats are exported to Delhi, Jalhander, Meerut, Gujarat, Mumbai, and Karnataka etc. In order to export cricket bats to these States, an industry pays transportation cost. Besides these, costs also include expenditure on grips, thread, ragmal, polish, sticker etc.

The Table 4 also highlights the problems related to marketing. It was observed that 67.74% percent of respondent unit holders were facing marketing problem. It is a very serious problem which hampers the development of industry. The unit holders were not aware of the concept of subcontract. The products were marketed only within India as there is a lack of awareness on advanced technologies and other requisites that are a prerequisite for the

international market. A technology driven intervention can increase the cluster turnover by three to four folds [9]. Also the marketing activities need to be integrated in order to explore the global markets. Due to the small size of the individual units, it is imperative that networks are created in order to go for ISO-9000 certification and thereby capture large export orders. Export consortia can also be formed to ensure brand building, participation in international fairs, buyer negotiations and compete with other countries on quality and price fronts [10].

One of the requirements of an enterprise to work effectively and efficiently is the regular and adequate power supply and these basic facilities are not adequately provided to the bat manufacturing units. The Table-4 shows that all the respondent unit holders (100%) reported that inadequate and irregular supply of power was the major hindrance for their efficient working. It was reported by the unit holders that the erratic power supply i.e. only for 2 to 4 hours in a day results in damage to the machinery and causes suspension of work for long hours, keeping men, materials and machines idle (personal communication President of cricket bat industry. All the entrepreneurs complained that almost every day the production is affected on account of power break down. As such the survey revealed that power problem is most predominant.

Table 1. Quantity of wood procured during year 2016

Categories	Consumption capacity (ft ³)	No. of units	Total annual wood procured (ft ³)	Average annual wood procured per unit (ft ³)
1	2	3	4	5=4/3
Small scale	< 10,000	46	3,46,476	7,532.08
Medium scale	10,000-15,000	9	1,13,219	12,579.89
Large scale	above 15,000	7	1,24,862	17,837.43
Total	All the three	62	5,84,557	9,428.33

Table 2. Raw material consumption capacity of wood

Categories	Raw Material consumption in (ft ³)	No. of units	Total annual raw material consumption in ft ³	Average annual raw material consumption per unit in ft ³
1	2	3	4	5=4/3
Small scale	< 10,000	186	7,71,300	4,146.77
Medium scale	10,000-15,000	32	4,01,616	12,550.50
Large scale	above 15,000	30	5,55,616	18,520.53
Total	All the three	248	17,28,532	6,969.88

Source: - District Industries Centers, Anantnag and Pulwama (2015)

Table 3. Information of cricket bat manufacturing of selected units

Total No. of units surveyed	62
End product of unit	Bat
System of grading	Yes
Different grades	A, B, C
Criteria of grading	Number of grain
Species for handle making	Cane, Elm, Popular
Source of procurement	Contractor
Species for bat making	Willow, Popular
Length of log	30 in
Season of procurement	Winter Season
Time of duration	8 months

Table 4. Problems faced by cricket bat manufacturing units

Total number of units surveyed	Number of unit holders having problems associated with the raw material			Number of units having marketing problem	Number of units having problem of power supply
	Quality	Quantity	Cost		
62	07 (11.29%)	42 (67.74%)	13 (20.96%)	42 (67.74%)	62 (100%)

5. CONCLUSION

It was found that the total wood procured by selected 62 units in 2016 was 5,84,557 ft³, with an average of 9,428.33 ft³/unit. These units were facing problems of raw material in terms of insufficient quantity, quality and cost of raw material. This underutilization was mainly due the problems faced by the unit holders, such as insufficient quantity of wood (67.74%), poor quality of wood (11.29%), high cost of raw materials (20.96%), poor marketing networks (67.74 %) and irregular power supply (100 %). It was also observed that there was proper system of grading of bats. The basis of grading was number of “grain” present in the bat.

COMPETING INTERESTS

Authors have declared that no competing interests exist

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