Chouri-parta Method of estimating Seedlac Yield

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ABSTRACT

Chouri-parta method of estimating seedlac yield from sticklac is an old method practiced in lac industries/trade. In most of places, *chouri-parta* is determined based on yield of golden seedlac, obtained from samples of raw material taken through indigenous sampling method. Seedlac raw material reaches to processing unit crop and season wise like *aghani* and *jethwi* for *kusmi* crop and *baisakhi* and *katki* for *rangeeni* crop mostly through middleman called *arhatiya*. It varied in terms of wooden material, impurity and to some aspect quality also results in different yield of seedlac. The yield of seedlac from *kachha* lac is 50-60% in *kusmi* and 35-45% in *rangeeni* whereas from *pucca* lac it is 60-75% in *kusmi* and 45-55% in *rangeeni*. This method of yield determination from a stick lac sample gives fair estimation of seedlac recovery agreed by both suppliers and buyers (processing industries) of sticklac.

Keywords : *Chouri-parta,* sticklac, seedlac, sampling, yield, buyers etc.

INTRODUCTION

Lac is hardened secretion of natural resin by lac insect which thrives on tender shoots of host trees like *kusum* (*Schleichera oleosa*), *palas* (*Butea monosperma*) and *ber* (*Zizyphus mauritiana).* It is collected either week before larval emergence known as *ari* or after larval emergence when it is known as *phunki.* Lac encrustations scraped and gathered is known as sticklac and in this form cultivator sale either to manufacturer or to their agents. Processing of sticklac means sticklac is converted to commercial grades of seedlac and shellac. The best lac is said to be obtained from twigs of the *kusum* tree (Mandal and Sarkhel, 2014). Fresh sticklac (particularly *ari*) if kept in a heap or bags is liable to coalesce into big lumps hence it is spread on earthen floor and raked from time to time till dry. Loss due to dry may be as much as high up to 30% in case of *ari* and 5 to 10% for *phunki* (Yadav and Giri, 2015)

The basic raw material for lac industry is sticklac, which apart from lac resin, contains water-soluble lac dye (laccaic acid), wax and some impurities like insect debris, sand and woody material. Removing lac dye and impurities as far as possible by crushing, sieving, winnowing, washing and drying yields the semi-refined product known as seedlac used for manufacture of shellac and other value added products. All lac produced in the country is moved through the lac processing units. Lac processors use the current harvested sticklac or stocked sticklac or imported sticklac (Pal, 2015). Lac growers sell sticklac in the village itself or bring it to the nearest village market for sale to *paikars* (village merchant). Lac growers, nearer to lac processing units, also sell their produce directly to processing units. Prices of lac in the market depend upon the *Chouri* (seedlac) price in processing units. The *paikars* after collecting, whatever quantity they could in the course of the market day, sell it to the wholesaler or *arhatiya* (wholesale merchant) in the same market or nearby manufacturing centers in bigger lots. Simultaneously the wholesalers sell the produce to manufacturers at different lac processing centers (Pal, 2014).

Sticklac reaching to processing unit varied in terms of wooden material, impurity and to some aspect quality also which results in different yield when converted into seedlac. The price of raw material is determined through very old *chouri-parta* method of seedlac yield determination practiced in lac industries. Although not accurate but still it gives fair estimation of seedlac yield for whole lot of raw material. It is in fact said to be estimation of resin content in raw material as in this a small sample is converted in to golden seedlac with impurity content maximum up to 2% and price is paid based on rate of seedlac prevailing in the market. Buyer/processor's concern is to estimate pure resin which will be produced in form of shellac through heat process. At some place *chouri-parta* with 5% impurity content is also done.

This method of yield determination is agreeable to both supplier and purchaser. Quite often the buyer manipulate to strike and *chouri-parta* rate generally in their favour so, lack of scientific method to determine the *'chouri-parta'* rate for sticklac is of great concern. Although this is the only method practiced in lac industries for yield estimation, detailed document/paper on this process is unavailable. The paper discusses the old *chaori parata* method of estimating seedlac yield practiced in lac industries, yield from different types of seedlac, it's advantages, limitations and requirement for improvement.

MATERIALS AND METHODS

The present study has been carried out on this old and important *chaori-parta* method of estimating/determining seedlac yield practiced in lac industries. For this information on chouri-parta method was collected from different lac processing centres/industries situated in Bundu and Khunti district of Jharkhand which are important lac processing centers in leading lac producer state Jharkhand of country.

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RESULTS AND DISCUSSION
Arrival of Raw Material

The raw material i.e. sticklac reaches to processing units in crop season wise namely *aghani* and *jethwi* for *kusmi* crop and *baisakhi* and *katki* for *rangeeni* crop. The raw material of new/fresh crop generally arrives to processing units at an interval of approximately 3-4 months where it is first converted into semi-refined product seedlac (*chouri*) through primary processing of sticklac. The *aghani* crop of *kusmi* strain generally arrives in month November- January and in this period it is called as *kachha* lac due to more moisture in it. Arrival of this season crop after January is termed as *pucca* lac (mature lac) and after January arrival may be in both *aghani* and *jethwi* (of previous season) as *pucca* lac. The *jethwi* crop of this strain arrives in month June-July and in this period it is called as *kachha* lac. Arrival of this season crop after July is termed as *pucca* lac and after July arrival may be in both *jethwi* and *aghani* (of previous season) as *pucca* lac. Similarly, *baisakhi* crop of *rangeeni* arrives in month April-May and in this period it is called as *kachha* and after May it is called as *pucca* lac and *katki* crop of *rangeeni* arrives in September-October termed as *kachha* lac and after October on ward it is called as *pucca* lac.

Yield of Seedlac (*Chouri*) from Sticklac

In lac processing units it was found that yield of seedlac in *pucca* lac is more compared to *kachha* lac of same lot when processed for seedlac making through primary processing. This is mainly due fact that *kachha* lac is not sufficiently dried and has higher moisture content compared to *pucca* lac. The approximate yield of golden seedlac for these two conditions of lac is presented below (Table 1).

Table 1: Yield from different types of sticklac

Type of crop	Condition of crop	Yield of golden seedlac
Kusmi	*Kachha* lac	50 - 60%
	Pucca lac	60 - 75%
Rangeeni	*Kachha* lac	35 - 45%
	Pucca lac	45 - 55%

The processor has to take care of losses associated with stick lac (*kachha lac*) in making seedlac when raw material is stored for processing later otherwise he has to suffer loss due to lower yield of seedlac when raw material is procured in form of *kachha* lac.

Method of Seedlac Yield Determination from Sticklac in *Chouri-Parta*

In this method of determining seedlac yield, a small sample of sticklac is converted into in to golden seedlac through golden washing by manual method. The process of converting sample of sticklac to golden seedlac involves four operations namely sampling, crushing, washing and drying. Three samples of sticklac are prepared out of which one is converted into golden seedlac and rest two are for buyer and seller for dispute if any. In earlier days, preparation of seedlac from collected samples of stick lac is done manually by a person who has expertise in it and agreeable to both parties. Such person are known in lac industry for determining *chouri-parta*. Now a days in some lac industry *chouri-parta* is determined by personal of processing industry and is agreed by supplier of raw material. The details of the whole process practiced in lac industry are discussed below.

Method of sampling

The raw material i.e., sticklac transported and arrived in jute/gunny bags 40-45 kg is spread on floor by alternatively opening and dropping each bag material successively. It is then spread in circular area of maximum 6" height. A sample picker (Fig.1) in form of circular hollow iron cylinder (dia-6", height-1 ft approx.) is placed in circular spread area by pressing the sample picker vertically downward for collecting samples from different places (Fig.2) which may amount to 1.5 to 2 kg in each pick up. By this process samples from different places in circular spread area are collected. The exact numbers of samples drawn from different places depend on quantity of raw material (Table 2).

Table 2: Requirement of samples based on lot size

| Lot size of sticklac	Number of sample needed
Up to 0.5 Ton	4 - 5 samples
0.5 to 1 Ton	6 - 7 samples
Above 1 Ton	8 - 9 samples

Fig. 1: Sample picker

**Fig.2:** Collection of samples through Sample picker

Fig. 3: Mixing and spreading of samples in circular shape

Samples thus collected are mixed (Fig.3) on cemented floor and spread in circular shape of 3" height approx and divided in four equal parts. Out of four only two opposite parts are taken for further sampling. Remaining two opposite parts are discarded (Fig.4).
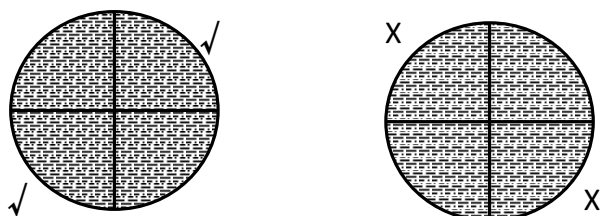
Fig. 4: Selection of two quarter parts for preparing final samples

The two opposite parts thus collected on floor is spread in ring shape of 2ft diameter (approx.). Material is collected in centre (Fig.5) by person using hand finger by removing from 03 places of ring approximately 120^0 apart or 04 places approximately 90^0 apart from ring of material made. Nearly 400-500 gm material is approximately collected in the centre for making final sample (Fig.6). Similar method is again repeated for collecting another sample from the ring. A total of 03 samples are thus collected, one for *chaori parata* determination and one each for buyer and seller for solving dispute if any arrived after that (Fig.7).
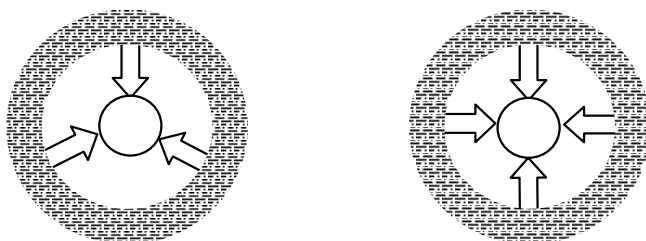
Fig. 5: Collection of sticklac lac at centre for making final samples

Crushing

One sample of 400-500 gm size is weighted and it is screened through 40 mesh screen to remove sand and dust. It is then crushed using stone (*loda*) (Fig.8) and after each pass of

Fig. 6: Collected stick lac at centre for final samples

Fig.7: Three final samples of raw Material

crushing it is screened through 8 mesh size screen and crushed sample of 8-40 mesh size thus collected is used for subsequent processing (Fig.9). Rejected dust and wood particles/items above 8 mesh size is also kept separately for proof or record (Fig.10).

Fig. 8: Crushing of sticklac

Fig. 9: Removal of wood & dust

Fig.10: Sample for washing and rejected wood, dust etc

Washing

The 8-40 mesh size crushed sample prepared above is washed manually for preparing golden seedlac (impurity-2% maximum) through golden washing by rubbing wet lac grains by hand on special horizontal stone made for this

Fig. 11: Sample on washing stone

Fig. 12: Washing of lac by hand rubbing

Fig. 13: Separation of washed lac and dye enriched water

(Fig.11). Sticklac grain is washed two times with water by rubbing on stone by hand to get colour lighter without addition of soda (Fig.12). The impurity content at this stage may be approximately 3%. Now soda is added in quantity 0.4-0.5% by wt. of sticklac and rubbed and washed with water to get golden colour seedlac. A mark in cloth is used to separate washed seedlac and dye enriched wash water in each successive washing (Fig.13).

Drying and weight measurement

The golden washed sample of seedlac (Fig.14) thus prepared is dried properly in ambient air (Fig.15) and weight is measured. The % yield is calculated based on weight of original sample taken for crushing. On the basis of yield of golden seedlac obtained, the price of raw material may be finalized based on price of golden seedlac prevailing in market. So this price of sticklac depends on impurity present in raw material.

Advantage And Limitation Of Chouri-parta Method

This method of estimating seedlac yield is simple, very old and practiced in lac industries since long time. Although it gives fair estimation of seedlac yield from sticklac but not

Fig. 14: Washed grain of seedlac

Fig. 15: Drying of washed sample in ambient air

precisely dealing with resin content in raw material which can be estimated in a lab through lab/chemical process. Apart from this since this is manual process so the result may vary from person to person who is determining *chouri-parta.* Now a days there is also shortage in such type of neutral person in this type of industry who earlier used to work for such activity and acceptable to both buyer and seller and *chouri-parta* in that places is now determined by processor itself on which supplier has to rely and trust on them. In most of places although *chouri-parta* is determined based on golden seedlac but fact is that for actual processing in most lac processing units, raw material is mostly converted into normal grade with impurity content varying from 3 to 5% suitable for further most of application like making of lac based products shellac, bleached lac etc.

CONCLUSION

Chouri-parta method is old practiced method of seedlac yield determination in lac industry for determining raw material price. Although it gives agreeable estimation of seedlac yield, it needs improvement in method and mechanization is needed in terms of small machine/unit for better uniformity of reproducibility of yield results when repeated for subsequent lot and benefit of producer/supplier for getting better value of their produce.

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