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A SITUATIONAL ANALYSIS OF WOMEN WORKERS IN SERICULTURE OF WEST BENGAL

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Abstract

Women workers constitute one third of the world labour force performing two thirds of working hours but their contributory role remains invisible. Sericulture is such an activity where most of the work is performed by women alone in terms of operations performed and time invested. Despite showing tenacity and persistence, the women workers remain as unpaid family workers or low paid hired workers. The core objective of this paper is to make a situational analysis of these women workers in sericulture sector of West Bengal against the backdrop of their impoverished condition. It is observed that with the increase in household size, more number of male workers are getting attached to sericulture activities while women workers are being crowded out. Actually, domination of women workers are rather observed when less of working days is performed. This paper has designed women empowerment index both in family sphere and social sphere and have shown how this empowerment is influencing the female dominance in sericulture activities. This investigation is based on a primary survey analysis in sericulture rich villages of Malda district in West Bengal.

Keywords: *Female Dominance, Sericulture, Silk-worm, Silk-reeling, West Bengal*

JEL Classification: *J-16, J-82, R-13, R-23, R-68*

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I. Introduction

Women workers constitute one third of the world labour force performing for nearly two thirds of aggregate working hours but their contributory role in vital productive work-share remains still invisible. It is estimated that India is home to 12.7 crores women workers while 90 per cent of them are working in the unorganized sector. Specifically, they are found in marginal and casual employment in agriculture, where the gender-bias in wage differential is substantial. In India, women are also concentrated in agro-based household activities, where they often serve as unpaid family labour and thereby, remain imperceptible. Sericulture is one of such activities where most of the activities are carried out by women alone, both in terms of operations performed and time invested. Thus in a way, they play a very significant role in the activities spectrum as well as in decision-making in household business. While in general perception, women's role is mostly confined in silkworm rearing, in reality it goes far beyond this. Leaving the shackles of gender-stereotyping, women in sericulture often take part in mulberry planting, weeding, manuring, irrigating, leaf picking, leaf transporting and storage. In silkworm rearing, they are engaged in leaf-cutting, feeding, bed cleaning, worm spacing, mounting, harvesting and disinfections. Some also participate in decision-making of crucial household business activities.

Usha Rani (2007), in one of her studies have shown that the establishment of one acre mulberry garden for rearing 300 dfls (disease free layings) of silk worms in two months generates 96.36 man days of employment, of which 72.70 percent are by women. Not only this, she has also shown that cocoon cutting and sexing and egg incubation is exclusively done by women labour. According to one statistical analysis submitted at a National Conference on "Women in Sericulture" (held at Mysore on 16th and 17th March, 2007), it can generate employment up to 11 persons (mandays) of every kg of raw silk produced, out of which more than 6 persons (mandays) are women. In India, more than 60 lakh persons are employed as full time workers in the production chain, out of which 35-40 lakh persons are women¹. Ever-increasing demand to meet the domestic handloom industry requirements and equally increasing potentials for exports provide tremendous opportunity for the women to avail sustainable income generating activities.

The dominance of women workers in sericulture is historically evolved. Despite showing tenacity and persistence at work, their efforts remained unnoticed and they continued to work as unpaid family workers. However, this perception has changed for the better in recent years regarding the role of women in sericulture owing to the significance of the critical operations that they perform as well as their share in the production value.

The paper makes a modest attempt to portray a picture of the state of women workers in the sericulture sector and investigate the factors, among others, that explain the predominance of female workers (i.e., intensity of women labour is higher within the workforce of a household) of any sericulture farm in West Bengal. Apart from the economic situation of the farm workers, wage differential across gender, hired-domestic female ratios and women empowerment factor, there exist several other factors that influence the female dominance criteria. This dominance is usually translated into distributive impact, which is also known as spillover effect of women employment. Employment of woman raises the nutritional level and educational level of her children irrespective of their sex at a greater level compared to male employment. Report of the working group on Empowerment of Women for the XI th Plan (MWCD-GoI, 2006) states that lack of women's employment not only impedes growth and poverty reduction but also welcome a host of negative impacts including less favourable education and health outcomes of children. This prioritizes our objective in this paper, i.e., to identify the explanatory factors behind such female dominance in sericulture sector of West Bengal. This paper would also try to shed some light on the specific characteristics of women workers in sericulture of West Bengal which would be relevant for diagnosing and thereby recommending few region specific development policies for West Bengal.

II. Reasons for dominance of women workers in sericulture: Literature Review

Sericulture is practiced in villages of India as a family-based occupation and thereby provides women a major role to play with, in various activities of this household-industry. Nearly 60% of the labour

requirement is met by the women (Acharya, 1993) in almost all the traditional sericulture agencies² (Sandhya Rani, 2006) in the world. Here, by sericulture agencies we mean the nature of production organization, whether it is a small household unit or large corporate organization. Women's precision and patience make their presence more invincible in silk-worm handling. Since, traditions and customs of society in Indian rural context do not encourage the majority of rural women to work outdoors; sericulture proves to be a boon. It gives a wide opportunity where women can carry all their contributory work even after attending to their own regular household chores. Thus, sericulture is ideally suited for family women in the rural areas.

Jayaram et.al (1998) showed that every acre of sericulture practiced under irrigated conditions had a potential to employ 247 men and 193 women round the year. They also have shown that the small scale mulberry farms provided ample scope for employment of owned family labour and suggested its potential to solve the problem of seasonal unemployment. Lakshmanan et.al; (1999) found that female labour is quite dominant in all sericultural activities, to an extent of nearly 50%. [Saraswathi and Sumangala \(2001\)](#) observed that in the indoor activity of silkworm rearing women participation was as high as 94.67 % and that except for the peak period the entire sericultural activity is conducted using family labour.

Farm women have certain unique attributes, which are of special relevance to sericulture development and that these characteristics make the female dominance in sericulture indispensable:

- (i) A farm woman is the sheet anchor of the farm family. She is the foremost member who is concerned all the time about the well being of the family. So when women dominance is seen in any activity that has to be turned out to be a successful one. Silkworm rearing calls for intensive attention as well as mother's care, especially, for the larva stage. Identifying and then collecting mature silkworms and putting on spinning trays required a great deal of specialized skill and patience. Women members can ideally fit into the round-the- clock schedule of sericulture with intervals (Banerjee, 1990).
- (ii) Women are proved to be an efficient home-maker from the time immemorial. So whether as an artisan or a household industrial worker, she is supposed to give her best as it is involved with her

family. Sericulture is such farm enterprises that have a great share of indoor components and demand enough tenacity and sufficient attention (care & nourishment). Silkworm rearing calls for intensive attention as well as mother's care, especially during the later stage of the larva.

- (iii) According to the Central Sericultural Research & Training Institute, Mysore (See "Focus on Women in Sericulture" in Guide to Sericulture Extension), women have proven themselves to be better learners. CSR&TI, Mysore feels that women have better capacity to concentrate, listen, integrate and recall. They are also easily adaptable which is important for a dynamic world where better sericulture technologies are about to pay better dividends.

III. Major Objectives of Study

Predominance of women workers in different artisanal activities of sericulture has been found in earlier studies. Literature reviews helped us to trace out that around 60% of the aggregate work-activities in sericulture is handled by women in almost all the sericulture producing states, irrespective of their regional variations (Acharya, 1993; Kumar 1993; Usha Rani, 2007; Sandhya Rani, 2006). However, determinants of female labour dominance in total workforce are perceived to be different from region to region depending upon several social and cultural criteria. Lakshman and Geetha Devi (2007) have analysed the women employment opportunities of sericulture vis-à-vis other agricultural crops in Tamil Nadu and have shown that 62.33% of workforce is shared by female labour force, where domestic women share has been seen as 34.06% while hired female workers share is 28.25% of the total workforce. Sinha (1989) asserts that women power in sericulture gets intensified as family labour employed in sericulture increases. But the contribution of unpaid family labour ultimately reduces intra family power balance specially in the low income earning classes. Charsley (1988) pointed out that since middle-class domestic women have zero opportunity cost as wage-earners, their participation in the sericulture household industry does not affect their power balance, as in the case of lower income household. Regarding family power balance in lower income earning families, Charsley (1988) commented that if sericulture activities expand

the scope of paid employment opportunities (as hired female labour), then ultimately it improves the power balance in low income households.

In West Bengal, the reported female work-participation rate in agricultural work is substantially low due to 'statistical invisibility' of this class. This is particularly because neither the survey process includes the work of domestic women who are in household industry, nor are their productivities truly recognized inside the domestic space (Bagchi, 2005).

Even after being the third largest silk producing traditional state, adequate research work on the women's participation in sericulture activities of West Bengal has not yet pursued. Our specific objective in this paper is to fill this research gap. Along with describing the situation of women workers in sericulture of West Bengal, we specifically try to shed some light on the issues of dominance of women workers in this sector. Census statistics or NSS surveys do not specifically cover the participation rate of women workers in sericulture. Therefore our situational analysis would be based on few micro /pilot surveys attempted by various researchers in different course of time from different corners of the country. All of them individually as well as in aggregate sense would help us to portray a gendered overview of sericulture activity in our country. Our core research work would hinge on our own primary survey analysis on Malda District which produces more than three-fourth of the raw-silk of the state. We wish to find out in this context whether female empowerment in sericulture sector has any connection with female dominance in sericulture sector of this region. As a way ahead, we intend to prescribe some region-specific policies for gender promotion.

IV. Impact of Female Dominance in Sericulture

Women workforce in India has never been truly recognised as substantially significant entity in any productive activity. Macro statistics of women employment always understates the number of women workers in the rural areas. But the actual fact is that without the active (but invisible) role played by the

farm-women, it would have been impossible to practice sericulture in India. It is imperative to categories positive impacts of women participation within our limited scope of analysis.

With increasing rate of participation in work force, women also become decision-making agents. She can actively participate in decision-making activity without being a passive performer. Thus, the income generated by the rural women can be utilized more judiciously for the socio- economic development of the family. Moreover, in the report of the Working Group on “Empowerment of Women for XI Plan” (2006), it was emphasized that empowerment of women has two-fold benefits:

- (a) *Intrinsic Benefit:* A woman is gaining the benefit for sake of herself by joining in family workforce, other than household activity. It raises her self dignity and self esteem. Her purchasing power and decision making power also rise.
- (b) *Spillover benefit:* Involvement of women workers also raises the welfare of her family members. Education level rises, nutrition level rises and thus the spillover effect helps in a holistic development of all the household members of her family.

The spillover benefits from women-empowerment can broadly be categorized into following major heads:

- Rise in education level of children
- Rise in nutrition level of family
- Rise in health awareness (specially among the girl child)
- Rise in the level of social resilience power against different social crimes, like dowry, domestic violence, social abuse, illegal trafficking etc.

A study conducted by CARE (2009) on rural India reveals that economic empowerment via micro finance plan projects of women, raises 125% of expenditure on education of their children and now they spend at least more than 43% on health care of their children. Micro surveys conducted by Ray (Ramesha & Sinha, 2009) also supported the view that women gaining employment from silk-sericulture can take care of their

families more than before. They are able to ensure better education for their children on one hand and help their husbands in running their occupation side by side.

Previous research activities indicate that economic participation of women – their presence in the work force in quantitative terms – is important not only for lowering the disproportionate levels of poverty among women, but it also means a significant step forward in raising household income and encouraging economic development of the society as a whole.

Through application of science and technology appropriate to the socio-economic condition of rural areas, rural women can be made economically self-dependent. There exists a preconceived notion that women do not want to learn new skills and techniques because they are seemed to be engaged only in primary household activities. This age-old belief acts as a bias against their inherent capability of adaptation. This notional bias itself contains some in-built contradiction and needs to be modified. Sericulture is such a family based occupation where women can work while sharing their family responsibilities.

Empowerment of women always makes a match between economic opportunities and their capabilities. Most of the time due to lack of concern, economic opportunities are lagging behind the capabilities of women in different social sectors. Increased women's participation and earning have not only helped them to raise their self-esteem, but also it has helped in reduction of poverty and accelerating growth. It also has a favourable impact on education and health outcomes of children.

V. Involvement of women workers in Indian Sericulture

In India four major states traditionally involved with mulberry silk production are (i) Karnataka , (ii) Andhra Pradesh, (iii) West Bengal and (iv) Tamil Nadu. Due to the absence of secondary data regarding women work force involvement in sericulture sector, we would analyze women work force involved in all those states as proxy variable, as sericulture is supposed to be a women-labour intensive industry. However, participatory role of women workers in sericulture is mostly confined within their domestic territories and thus it constitute a part of the informal and un-organized sector. Female participation rate in four traditional states across the yeas are shown in Table-1.

Table 1: RURAL FEMALE WORK PARTICIPATION

Silk Producing States	1971	1981	1991	2001
Andhra Pradesh	31.9	44.9	34.22	34.93
Karnataka	19.0	30.8	29.39	31.88
Tamil Nadu	20.4	34.5	29.89	31.32
West Bengal	4.6	9.4	11.25	18.08
ALL INDIA	15.8	23.5	22.25	25.68

Source: Census of India 1981, 1991, 2001

Except West Bengal, other three states exhibit their prominence as well as higher growth in work participation rate of women workers. Within West Bengal, Malda, Murshidabad, Bankura and Coachbehar districts are only prominent districts for sericulture, silk production and silk weaving. Murshidabad is famous for silk weaving, where female participation in household industry is 64.7%, followed by Malda (37.17%) (GoWB, 2001-02)³. Malda is the leading district in silk production and holds a golden legacy since the time of the Mughal period. According to 2001 census, women participation rates as agricultural and marginal workers in the district are 31% and 53.5% respectively.

A study by Rajapurohit and Gobinda (1981), in contrast, revealed a completely different picture about female to male work participation ratio in Bihar, West Bengal and Karnataka in raw silk production, where female employment (at over 58 percent) appeared to be the highest in West Bengal.

Table 2: Female Labour Ratios in Raw Silk Production

States	Female/ Male Labour Ratio
Bihar	0.14
West Bengal	1.42
Karnataka	1.15

Source: Raja Purohit et. al. (1981)

Sericulture creates the highest job opportunities compared to other principle crops. Not only that, in terms of women employment opportunities it creates greater man days from one acre land compared to other

food crops (Lakshman & Geetha Devi, 2007), where a substantial per cent of workforce is drawn from own family source ⁴. Therefore, sericulture is often called as one such vocation where the family-females can be utilized at a higher scale. Usually, the work participation of female rural labour is mostly obstructed by their domestic obligations; in this context, sericulture can break the barriers faced by women from participating as workers while continuing their household activities. Few pilot surveys and literature review have helped us to reach the conclusion that women worker participation is nearly 50 per cent in mulberry cultivation, silkworm-rearing, silk worm reeling and silk weaving, while it is 80 per cent in case of silk spinning (Gangopadhyay, 2008).

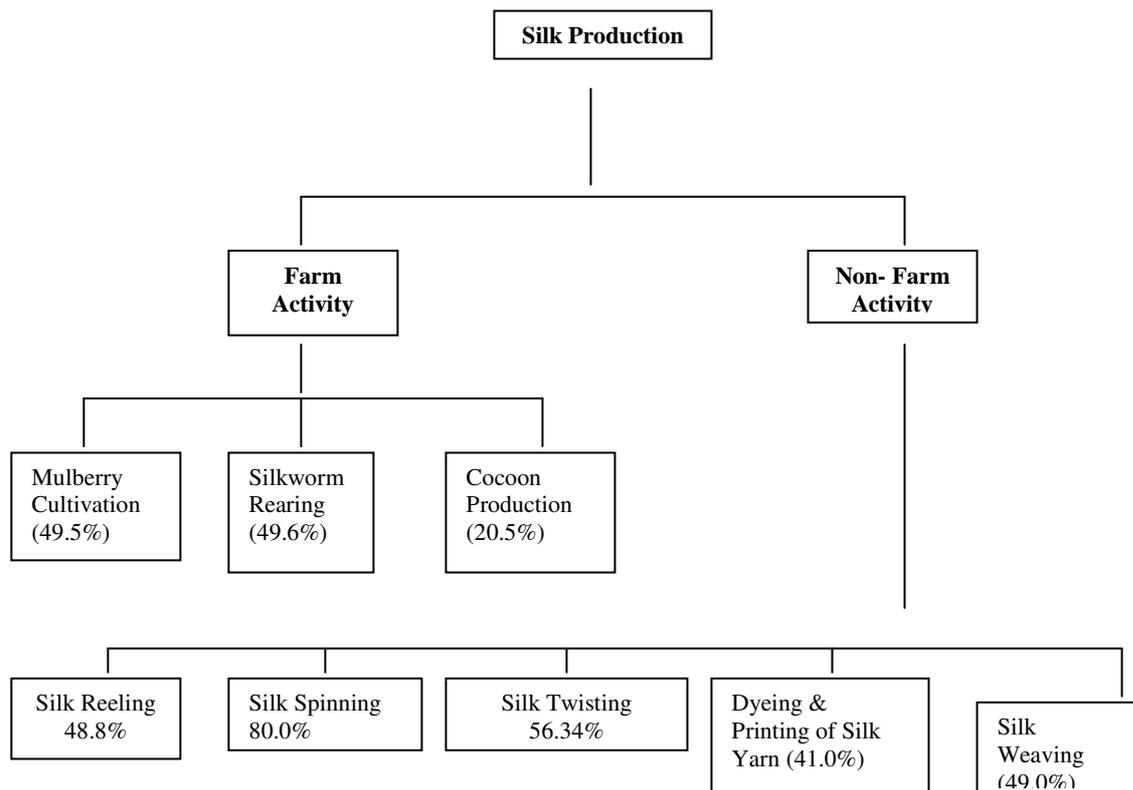
The chart furnished (see Fig-1) below provides a schematic representation of involvement of women in various stages of silk production. Involvement of women is higher in all activities of sericulture except in field preparation of mulberry; cocoon cutting, sexing and egg incubation are done exclusively by women labourers. Weeding, transport of mulberry-leaves (which is food of silk worm) to the rearing sheds and rearing worms are the important activities where woman involvement is also higher and these activities usually create employment of 11.18, 10.75 and 7.13 man days, respectively, per acre of mulberry crops. Feeding of worms and planting of mulberry create employment of 6.93 man days and 6.49 man days per acre crop to the women. Transfer of worm to *chandrikas*, cocoon sorting, leaf harvesting, chopping and other important activities create employment of 6.01, 4.51 and 3.7 man-days, respectively, to the worm. Preparation of field for growing mulberry creates an employment of 7.81 man-days of which 5.13 man-days are for men and 2.69 are for women. This is the only activity where employment of men exceeds women (according to the field survey report in Hindupur and Madakasira Divisions of Anantapur District in Andhra Pradesh, Usha Rani, 2007) ⁵.

Sandhya Rani (2006) explained that almost all activities of sericulture are carried out by the women except some which are mostly done by male labourers (e.g., cutting of mulberry leaves, pruning, etc.). There are certain activities like weeding, leaf harvest, silk reeling, which are exclusively handled by women labourers. As per her calculation, about 2562 women work-days are created in all activities of sericulture from one hectare of irrigated mulberry area per annum out of a total 4225 working days. During the first

years of establishment, it generates about 5.8 work years for women out of a total of 9.5 work years per hectare under irrigated condition. On the other hand, after the establishment, under irrigated mulberry (third year onwards) 7.0 work years are generated from women out of a total of 11.5 work years. Thus the female dominance in workforce as well as in employment generation is intrinsic characteristic of sericulture activities.

Figure-1

Women Involvement in Silk Production



Source : Central Sericultural Research and Training Institute, Mysore, Gangopadhyay (2008)

VI. Involvement of women workers across variable scales of farms

Sericulture provides both the family female labour (who belong to mostly middle class) and hired female labour (who are drawn from lower income class families) a wide opportunity of employment. Middle class female labour always bears a greater domestic burden. They do not suffer from acute poverty, thereby, can never join the hired labour force as done by female worker belonging to lower economic classes. Therefore, we may argue that paid employment opportunities of hired labour are much larger than the middle class housewives of sericulture families. Charsley (1976) pointed out that silkworm rearing represents a suitable domestic activity for the women folk of the middle class sericulture families, who would not be expected to work outside home.

Theorists of women studies state that economic empowerment can truly create an emancipating environment for the women, because it always helps the women to participate in all the decision making processes regarding household (Bagchi, 2005). Family labour in that case can be assumed as the second best option vis-à-vis wage labour, because monetary transaction remains invisible in case of family labour payment. In case of hired female labour, we have observed in literature huge cases of exploitation and wage discrimination (Lakshman & Geetha Devi, 2007; Sinha, 1989; Reddy, 1994; Nayyar, 1987; Chavan & Bedamatta, 2006; Mukherjee, 2004;). Thus, regarding the question of emancipation, sericulture opens opportunity for this unskilled working force to claim wages from their working place and that will surely raise their intra family power balance (Charsely, 1988). Charsley also (1976) said that both mulberry cultivation and silk worm rearing employ household labour, but the latter provides respectable, domestic occupation for ladies of the upper agricultural classes.

Again, in the activities like reeling and weaving, scale of business varies widely. When a poor man operates a single simple machine using his family labour (i.e. his wife), the female labour gets attached with an artisan belonging to lower economic class. This particular woman attached to her small scale family firm is devoid of much opportunities and freedom. On the other hand, a wealthy businessman running 1500 or more complex machines employs hired labour from local communities, who are generally poor and of low traditional status. The women workers attached with this rich business class artisan enjoy access to greater economic opportunity and, thereby, enjoy greater spirit of freedom.

Table 3: Women Labor Involvement in Sericulture
(Per acre of mulberry crop for rearing 300 dfls of silkworms in two months)

Operation	Male Labour (man days)	Female Labour (man days)	% of Female Labour Involvement
Field Preparation	5.13	2.69	34.4
Planting	4.09	6.49	62.0
Fertilizer Application	1.76	2.95	62.6
Weeding	3.08	11.2	78.3
Harvesting, Chopping	1.73	3.7	68.1
Transport (mulberry leaves)	2.15	10.8	83.7
Cocoon, Sorting of seed	0.16	2.11	97.6
Cocoon Cutting Sexing	0	1	100
Egg Incubation	0	1	100
Rearing	1.78	7.13	80.0
Brushing	0.17	1.93	91.9
Feeding	3	6.93	69.7
Transport to Chandrikas	1.45	6.01	80.5
Cocoon Sorting	1.57	4.51	74.2
Mounting & Cooking	0.35	1.67	82.7
Total	26.3	70.1	72.7

Source: Usha Rani, Journal of Social Science 14(3), 249-255, 2007

Amartya Sen(1999) has opined that Indian society wants to see women less as passive recipients of help and more as dynamic promoters of social transformation, which is only possible through greater ways of

emancipation. For this, their self esteem has to be raised at much higher level. Empowerment of women should, therefore, be viewed as a catalytic element of social transformation.

VII. Gender bias in wages

Discriminatory practices in the labour market of rural India are reflected in the actual low wages of payment to women workers despite having provisions of minimum wage laws. On the other hand, male wage earners are always paid above the stipulated wage. Due to existence of this marked wage differentials, these two different categories of labour respond to the wage rate in different ways. Official statistics like Agricultural Labour Enquiry and Agricultural Wages in India, which provide data on wage rates of male and female casual labourers, confirms this phenomenon. ([Pandey et. al, 2007](#)). The increase in gender disparity, especially in agricultural wages, has been quite marked in India through out the planning period⁶. For majority of women engaged in paid activity, the fact being female means being paid less than men for same work. It is most evident in the cases of agricultural labourers. Agricultural daily wages are, in general, low, though they vary by type of agricultural operations (ploughing, sowing, weeding, harvesting etc), by the typical nature of state and, most importantly, by gender. Some operations, like ploughing, do not involve women at all, whereas others, such as weeding, are women-intensive activity.

All the previous analyses bear the testimony that if men and women perform the same function, men will be paid at a much higher rate. For India as a whole, for each of the farm operations, the male wage rate is higher than the female one. Even if the wage rate for female workers is lower, employers usually prefer to hire male workers due to pre-determined socio-cultural prejudices. Each state has a Minimum Wage Legislation, whereby wages are statutorily fixed. However, in the early 1970s, after much deliberation, some state governments deliberately fixed differential wage rates for men & women and two prominent silk producing states Tamil Nadu and Andhra Pradesh were two of these states. By 1980-81, the differentials seemed to have narrowed down, though the change was perhaps not the real one because in spite of demand

for equal remuneration across gender, women are still ill-paid than their male counterpart. Sericulture and silk involve both agricultural and household industrial work. We have talked about the plight of the women in agricultural sector. In HHI sector women are exploited by intermediaries and middlemen who provide raw materials, machineries and market the final product, but pay the women meager amount.

According to NSSO (2004), Among four traditional silk producing states, actual wage differential (for ploughing, weeding etc.) between men and women is highest in Tamil Nadu (i.e., Rs. 77.60), followed by West Bengal (Rs.34.85), Andhra Pradesh (Rs. 23.06) and Karnataka (Rs.27.17). The female work participation⁷ in all three major states (except West Bengal) reflects that higher wage differential always leads to lower work participation of female labour. However, we have to be aware about one thing that exclusion of the family workers in the data collection always gives rise to persistent problems of under counting and statistical invisibility of women (Mukherjee, 2004).

Wage of labour depends on different terms and conditions of the work, duration of work, nature of work and so on. Though minimum wage legislation has been enacted to ensure equality in terms of wage irrespective of sex, wage differential in unorganised sector depends on hard reality of different efficiency parameters, including physical labour productivity, i.e., hired female labour is more casual than permanent and, therefore, wage rate varies.

The mode of payment also varies across gender. While male labourers are paid in cash or in kind or both, or even in the form of a share of the crop, payment to female labourers, at least where there is exclusive female employment, is either solely in kind, or in 'cash and kind wages'.

VIII. Women Dominance in Sericulture: A case study in Kaliyachak Block of Malda District

In order to examine the status and nature of female labour participation in West Bengal, we undertook a field survey in Malda district as a case study. Sericulture is a traditional avocation in Malda district with 75% of state's share and 6% of national share in raw silk production (Ali et al, 2008; Official Statistics - Deputy Director- Sericulture, Malda, 2010). The status of Malda justifies the reason of choosing this

district. The district has more than 20,000 acres of land under mulberry cultivation and nearly 60,000 families are directly or indirectly earning their livelihood from sericulture. Out of total sericulture farmers, reelers and traders, 80-85% belong to Muslim minority. Women play a pivotal role in this activity as 60% of work force come from women members of the family or hired labour. Our core research interest here is to trace out those factors which cause this female dominance in sericulture sector of this region.

We have chosen Kaliyachak Block for our primary survey region as mulberry cultivation in Malda district is mostly localized in Kaliyachak-I, Kaliyachak-II and Kaliyachak-III Blocks comprising 90% of the total mulberry cultivation area. Kaliyachak-I itself occupies 61% of the total cultivated area under mulberry in the district (See Ali et. al., 2008). 20% of total sericulture farmers of the district live in this block; (Official Statistics, Deputy Director Malda, 2010). Stratified random sampling has been done to choose few sericulture rich villages namely, *Gayes Bari, Sujapur, Mothabari, Marupur, Alipur, Sershahi, Feranchak, Joshkabil* from this block. Twenty five to thirty households involved in sericulture activities have been chosen from each village using stratified random sampling. Thus a total 212 households constituted the sample size of our study.

A list of questions regarding their age, education, religion, size and structure of household, annual earned income, occupied mandays, cost of instruments and raw materials, size of female participation, number of hired workers' involvement, credit to access, wages paid to male and female hired workers, degrees of freedom and power of decision making enjoyed by the female members within households as well as in sericulture activities were asked to all respondents, randomly chosen from these villages. Feedback received from the respondents helped us to tabulate the data and carry forward our analysis in desired direction. Our basic objective was to trace out the influencing factors behind the female dominance in workforce employed by the household. According to our pre-notional hypothesis (based on literature reviews) the major influencing factors i.e., the explanatory variables are:

- (i) Wage differential between male and female (WD_MF): Higher the wage differential between male and female, higher is the chance of female dominance in household farms. Poor household will substitute costly male labour by cheaper female labour, causing higher female dominance. So

grater the difference between male and female wage, greater is the chance of the sericulture labour activities of the household being female dominated.

- (ii) Ratio between hired female workers to domestic female workers (HF_DF): A general hypothesis is that if the ratio of hired to domestic female labour rises that is expected to dominate the whole labour force in female dominated one.
- (iii) Economic situation (INCOME): Economic situation of a farm may also influence the female dominance of the farm. Richer farms can afford to employ costly male labours instead of its cheaper female substitute. Whether richer farms are affected by Veblen effect and may prefer costly male labour as better productive labour is subject to investigation. Therefore, economic situation of a farm can be expected to exert a negative influence on female dominance status of the farm.
- (iv) Household Size (HH_SIZE): The household size may have a greater influence in controlling the degrees of female dominance in household industry like sericulture. Therefore, whether a smaller household has a greater or lesser degree of influence on female dominance in sericulture is an interesting point of study. It depends upon different psycho-socio parameters too. Women in large households are often observed as captivated, where her freedom is restricted by many social factors.
- (v) Number of Female in Household (F_FMLY): Higher numbers of females in a household always act as a liberating factor for women. Therefore, higher degrees of female dominance should be visible in those households.
- (vi) Mulberry Area (MBRY_ARE) : Women workers are supposed to dominate in rearing activity while the mulberry cultivation is performed by male members of the household. Therefore, if the household possesses greater area of mulberry field, it is likely that the female dominance in labour force would decline.

- (vii) Years of School education of the principal earners (EDNYR_PE): If the head/principal earner of the family has higher educational back ground, it is expected that he would not allow his daughters to get involved with household business neglecting and/or abandoning their education. Therefore, an inverse relation is a plausible relation between education years of the head of the household and female dominance of sericulture farms.
- (viii) Number of children in family(CHLD_FMLY): Increase in number of children in the family makes their mother more concerned. She likes to dominate the workforce making the labour force female dominated, as she gets more worried for the health and education of her children.
- (ix) Wage of male labour (WG_MLBR): As the wage of male labour rises, the obvious consequence is increase in demand for female labours. Therefore, female dominance is the natural consequential outcome.
- (x) Wage of female labour (WG_FLBR): As the wage of female labour rises, the outcome is uncertain. Since female wage is much lower in this unorganized market, rise in wage rate may hardly influence labour composition. Besides most of the work in this sericulture activity requires mother-care.
- (xi) Mandays (MANDAYS): If the total number of days of work of any farm is higher compared to another farm, it is likely that female dominance in labour force of the former farm will be lesser. We make this hypothesis on the basis of our experience in field survey. Women labour force is essential in particularly rearing and artisanal work. But when the income ⁸generation activities expand (say in number of days involved in it), female domination in labour force is lost.
- (xii) Cost of raw material (CST_RWMT): Female labour force is usually more associated with low-budget household business activity. Therefore lower cost of raw materials indirectly implies higher female dominance.
- (xiii) Loans (LOAN): Loans taken in higher level implies a household aspiring for high income status, therefore female dominance is supposed to be lower in this household.

- (xiv) Daily working hours of female (WRRK_HRS): Where the female members are able to spend more time on household business activities, the obvious outcome would be female dominance in labour force.
- (xv) Family empowerment Index (FML_EMP): Following the construction of ‘Women’s Empowerment in Agricultural Index’⁶ (Alkire et. al., 2012), we have constructed a similar index in sericulture, viz, Family Empowerment Index of Sericulture Women (C_f)

$$C_f = w_1I_1 + w_2I_2 + w_3I_3$$

Where, $I_1 = 1$, if the household women participate in decision making of running daily family expenditure;

= 0, otherwise;

$I_2 = 1$, if the household women participate in decision making about the health and education of her children in the family (including her own reproductive health);

= 0, otherwise;

$I_3 = 1$, if the household women participate in decision making about her household business, i.e., sericulture.

$\sum w_i = 1, i= 1, 2, 3$ (w_i being the weightage)

We feel all three decisions in a sericultural family are equally important. So we assume equal weights to all three decisions, i.e.,

$$w_1 = w_2 = w_3 = 1/3$$

- (xvi) Social empowerment Index (SCL_EMP): To assess the social and political power of a woman sericulturist, we introduce an index namely Social Empowerment of Sericulture Women (C_s) following the computation method of ‘Women’s Empowerment in Agricultural Index’⁷.

$$C_s = w_4I_4 + w_5I_5 + w_6I_6$$

Where, $I_4 = 1$, if the household women actively participate in NGO (Non-Government Organisation) being a member of the NGO;

$= 0$, otherwise;

$I_5 = 1$, if the household women participate in any Self Help Group as a member of that group;

$= 0$, otherwise;

$I_6 = 1$, if the household women represent any political party either in local or zonal or in higher constitutional body .

$\sum w_i = 1, i= 4, 5, 6$ (w_i being the weightage)

We feel all three social fields are equally important for any household woman involved in sericulture for expressing and controlling her social views. So we place equal weights to all three social participation factors, i.e.,

$w_4 = w_5 = w_6 = 1/3$

Having specified female dominance, a separate regression equation has been framed for running regression under OLS. In the following model, we assume the share of female workers (including both household and hired women labour) in total labours employed in a sericulture farm as a parameter of female dominance and interpret that dependent variable as **FM_WRKSHR**.

$FM_WRKSHR = (\text{Household Women Workers} + \text{Hired Women Workers}) / \text{Total Workers}$

The econometric results of Model-1 of Female Dominance are furnished below. The estimated F-ratio of the model is statistically significant, which ensures the goodness of fit of the regressors. The VIF ratios are indicating that there is no significant multicollinearity problem in the model and low standard errors are also indicators of good specificity of the model. The R^2 and Adjusted R^2 are 0.571 and 0.536 respectively; it implies that even after taking into account the number of predictor variables in the model, approximately

54 % variability of the dependent variable (i.e.,FM_WRKSHR) is explained by the explanatory variables of the model.

Coefficients						
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
B	Std. Error	Beta			VIF	
CHLD_FML	5.06E-02	0.009	0.461	5.727	0	2.931
INCOME	-3.38E-08	0	-0.074	-0.72	0.472	4.761
WG_MLBR	-9.90E-04	0	-0.523	-8.081	0	1.892
WG_FLBR	9.20E-04	0	0.23	3.733	0	1.72
MANDAYS	-3.03E-04	0	-0.144	-2.39	0.018	1.633
CST_RWMT	1.02E-07	0	0.097	1.206	0.229	2.925
LOAN	-1.15E-07	0	-0.088	-0.984	0.326	3.65
FML_EMP	5.24E-02	0.024	0.115	2.207	0.029	1.234
SCL_EMP	-3.26E-02	0.067	-0.025	-0.49	0.625	1.157
WRRK_HRS	1.52E-03	0.003	0.028	0.566	0.572	1.102
WD_MF	6.09E-04	0	0.074	1.521	0.13	1.082
HF_DF	3.82E-03	0.003	0.073	1.285	0.2	1.466
HH_SIZE	-3.61E-02	0.005	-0.768	-7.401	0	4.872

Dependent Variable: FM_WRKSHR

The estimated equation of this model is:

$$\begin{aligned}
 FM_WRKSHR = & 0.585 - 0.004*EDN_PE + 0.064*F_FMLY + 0.051*CHLD_FML - 0.001*WGMLBR \\
 & (0.056) \quad (0.002) \quad (0.000) \quad (0.009) \quad (0.00) \\
 & + 0.001*WGFLBR - 0.0003*MANDAYS + 0.052*FML_EMP - 0.036*HH_SIZE \\
 & (0.000) \quad (0.000) \quad (0.024) \quad (0.005) \\
 & (Adj R^2 = 0.536)
 \end{aligned}$$

Interpretation of Coefficients

A unit rise in education year of principal earner in the household will reduce the female domination in domestic work sphere by 0.4 percent. An educated head of a household will naturally try to involve his/her young female members of the household to get more involved in education rather than being engaged in

early employment. Naturally this would have a significant effect on reducing of female workforce in household.

A one unit rise in the size of household will reduce the female-labour share in total labour force of a sericulture farm by 3.6%. This unequivocally reinforces the traditional myth and feminist claim that in a large household woman carry the domestic burden, while responsibility of economic work is being shouldered by male member of the household, which corners the chance of emancipation of women members of the household as such. Therefore the result is not surprising in rural sericulture too.

On the other hand, rise in number of females in household by 1 unit rises the chance of female dominance in workforce is raised by 6.4%. This result is also fairly logical, as female dominated households are always expected to exert their dominance in work-sphere too.

A rise in child member of the sericulture household also raises the female share in total work force of sericulture by 5.1%. We have experienced a positive association between the mother's income and child's work-experience ([Roy & Barman, 2012](#)), which indicates mother is feeling safe to keep her children (specially her daughters) even in the work sphere. That raises the female share of the total work force in the sericulture as sericulture farm is principally dependent on women workers.

A rise in wage of male labour reduces the female share in workforce by 0.1%, which is bit difficult to justify from common perspective. We need to use more cautious foresight and our field experience to explain this anomalous behaviour. When wage rate of hired male labour rises in sericulture sector, it indirectly declines female hired workers' relative wage rate. Female hired workers feel deprived in this sector and try to shift their labor to some alternative works (e.g., bidi binding, jute work, polythene bag manufacturing etc.) where their relative wage is comparatively higher.

A unit rise in wage of female labour naturally increases the female labour supply in the workforce and female dominance in seen in the workforce of sericulture by 0.1%.

Though impact of this male and female wage rate change is not very high on female dominance (i.e., only 0.1% in each case) but one thing is observed from this explanation, i.e, the sericulture labour force is rather supply driven and not demand driven. It is the supply of work force which ultimately determines what

would be the composition of workforce. This is quite astonishing in a labour surplus economy and needs further separate investigation.

A rise in 100 mandays of working (which means actually sericulture work for two seasons) actually reduces the work-share of female labour by 3 percent. It is also seen that income and female dominance in labour force has an inverse relation, which indicates that richer farms prefer male hires labour more than female labour force may be due to their greater productivity according to general perception. It is perhaps because of the reason domestic female are not willing to work in richer sericultural farms. Higher mandays is indicative of a firm being richer (Roy, RoyMukherjee and Ghosh, 2012). Therefore increase in mandays naturally leads to reduction in female domination in work force.

The most interesting result of this model is the link between female dominance in workforce of sericulture and Family Empowerment of Sericulture Women. The result reveals a significant and direct relation between them. A rise in Family Empowrment Index (C_f) by 0.1 unit would increase the female share in work force by 0.52 percent. Though the impact is not very high, but still it indicates an important relationship.

Besides the significant explanatory factors, the “sign” of the insignificant variables are also important indicators to explain the model. Female dominance is inversely affected by several explanatory variables, e.g., mulberry cultivation area possessed by household, income, loan, social empowerment. Although, the regression coefficients of these variables are not significant, it is important to explain the inverse relation and the rational logic behind them.

A higher area of mulberry cultivation by farm actually raises the male labour work share in total work hours and that indirectly declines the female dominance in work force. Higher loans taken by the households are having higher level of income status who can keep male hired work force. This justifies inverse relation between higher amount of loan advance and female dominance in sericulture labour force. Increase in social empowerment of household women has an inverse relation with female dominance in workforce of sericulture farms. More the household women gets attached with diversified social organization and political organization, more she becomes extrovert. Her natural inclination to keep

attached with day to day house-chore activities falls. This declines the female dominance in workforce of sericulture activities.

IX. Conclusion

Sericulture is ideally suited for land and labour abundant economy like India as well as in West Bengal, not only because it is low capital intensive but also because it is women labour intensive. Gender promotion and thereby social transformation along with poverty eradication is another major feature of this particular sector. In case of West Bengal, the survey analysis shows that higher percentage of female members in the household can raise the gender dominance of the sericulture farms and gender dominance is associated with higher level of female members in the household, wage of female labour, family empowerment of domestic women. But, if the size of household rises and greater number of male workers are being attracted to join the sericulture farms, possibly due to higher returns, they crowd out the female workers.

But the welfare impact of a female dominated farm is always redistributed to different sections of the society and a gross level of up-gradation in nutrition and education level of the household is possible only through the spillover effect of this female employment generation. Therefore, holistic level of development is possible via gender promotion only. Situational analysis of women workers in this sector provides a scope to review the actual condition of the working women in sericulture and recommend few measures thereof.

Family Empowerment in household can be raised through rise in health, education level of female members of the households, which again reinforces their dominance in income generating household activities. Ensuring female education in remote areas and female health care in rural household (including their reproductive health) the government can make this breakthrough. Sen (1999) stated that women should not be a passive recipient of institutional help but a dynamic promoter of social transformation. This requires a change in outlook of the society as a whole.

Gender discrimination against women workers in wage payment has to be legally banned and rightfully implemented, which requires good governance. The Women's Rights Commission may adopt positive roles

in this direction. More incentive schemes (like concession in taxation, etc.) if provided to the employers is expected to raise the involvement and recognition of women workers in sericulture farms. Solely women workers dependent sericulture farms require some primary institutional support and initiatives so that sole-women household members can survive and sustain this livelihood. Women workers in West Bengal as a whole should be given proper recognition. Then only their rights can be ensured. Low levels of education and low skill have obstructed their inner potentials to come out. Sericulture opens up a vast scope for them to extend their work abilities and expand their participation domain. Institutional support requires to be extended to these poverty stricken rural women so that they can be initiated to adopt sericulture as a source of earning their own, besides their domestic chores of activities. However, all these will be mere rhetoric unless the gap between policy suggestion and actual implementation is eliminated. Therefore, restructuring the process of implementation is also urgently required at this time. Then only the status and existence of the invisible, unrecognized and unremunerated women workers can be promoted. Drastic change in the mind-set is also required while implementing equal remunerations and ensuring female dominance in farms. The Equal remuneration Act of 1976 should be seriously adhered to and ensured by local governance. Presently, monitoring and reviewing of the employment scenario in case of sericulture has become imperative. Socio-economic regional policies have to be remobilized in such a manner that various government policies and schemes to promote women's social and economic welfare may be dovetailed to maximize such gains in welfare of women workers in this sector. This only can address the poverty situation of the workers and empower them to have a voice of their own.

Notes

1. See the Keynote Address of Commissioner of Sericulture, Government of India (i.e., "Potential for Participation of Women in Sericulture Sector) delivered on National Conference on "Women in Sericulture" held at Mysore on 16th, 17th March, 2007.
2. See Sandhya Rani G. (2006) :Women in Sericulture, Discovery Publishing House, Delhi pp-2.
3. See GoWB (2012) : Statistical Abstract- 2011 -12, Bureau of Applied Economics & Statistics, Government of West Bengal
4. Lakshmanan and Geetha Devi (2007) explained women employment generation (in terms of mandays) is much higher compared to other alternative crops like, sugarcane and turmeric in Tamil Nadu. Out of total involvement of 62 percent women worker involvement , 34.06 percent are domestic female involvement and 28.25 percent are hired female involvement.

5. For details see Usha Rani (2007) : Employment Generation to Women in Drought Prone Areas – A Study with Reference to the Development of Sericulture in Anantapur District of Andhra Pradesh, *Journal of Social Science*, 14(3) .pp 249-255
6. See Alkire et al (2012): The Women’s Empowerment in Agricultural Index, International Food Policy Research Institute , Discussion Paper-01240, Dec 2012, p 33
7. *ibid* (2012)

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