

Socio-Economic Impact of Sericulture: A Study of Casual Workers under Commercialization of Sericulture Technologies Project in Uganda

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Abstract. In the context of implementing any developmental project, labour is a key factor and crucial resource that should be readily available for successful implementation of all activities. With Uganda's agriculture defined by low farm mechanization, use of human/manual labour in form of casual workers is the ideal solution to perform field and farm activities with sericulture inclusive. Sericulture and moriculture are labour sensitive ventures that need timely and constant labour flow therefore a need to hire both temporary and permanent casual workers entitled to salaries, wages and/or allowances. Sericulture is one of the most profitable ventures that are growing steadily in Uganda, directly and indirectly employing people at different stages ranging from mulberry growing, silkworm rearing and silk processing with agriculture providing up to 90% employment opportunities to the population of Uganda. This study focused on assessing the contribution of sericulture towards uplifting the socio-economic status of casual workers employed at different sericultural research stations in Uganda. In all these activities, casual workers have shown resilience and performed their tasks and responsibilities timely amidst some challenges. This article endeavors to show how an agro-based venture like sericulture has improved the well-being and livelihood of casual workers, improved their socio-economic status and generally brought about sustainable development of individual households, village and the community at large.

Key words: Sericulture, Moriculture, Socio-economic, Status, Development

Introduction

Sericulture being one of the agro-based industries in Uganda mainly focusing at rearing of silkworms in order to produce silk and its products. The main product obtained from sericulture is the natural silk fiber got from domesticated silkworms (*Bombyx Mori*) (Singh *et al.*, 2000). A series of activities or stages are implemented under sericulture starting with mulberry production needed for feeding silkworms to silk processing activities including: weaving, dying and marketing ready silk products. Sericulture being a versatile venture covers sectors of agriculture, art and design, textiles, research and innovations (Malik *et al.*, 2008). The industry is considered as an excellent sector that provides employment opportunities for rural and urban communities thus limiting rural-urban migration (Thapa & Shrestha, 1999); these opportunities include planting and management of mulberry gardens, silkworm rearing, production of silkworm seed, reeling of silk cocoons, processing silk fabrics, printing, dyeing and finished product making and their marketing (Thangavelu, 2002; Mahapatra, 2009).

Sustainable economic development and livelihood improvement have been boosted through the booming sericultural industry across the world with Uganda not spared. The ranking of Silk producing countries in the world listed below ranging from best producers: China, India, Uzbekistan, Brazil, Japan, Republic of Korea, Thailand, Vietnam, DPR Korea, and Iran with a few others producing little quantities to include; Kenya, Botswana, Nigeria, Zambia, Zimbabwe, Bangladesh, Colombia, Egypt, Japan, Nepal, Bulgaria, Turkey, Uganda, Malaysia, Romania, Bolivia (International Sericultural Commission, 2018; Nagaraju, 2008). Socio-economic uplift of all stakeholders involved in sericulture business at different levels including casual workers is one of the primary goal of this venture but other benefits are realized to include: utilization of the natural resources, employment and income generation

(Malik *et al.*, 2008), improves the economic status of the farming community and increases foreign revenue (Thapa & Shrestha, 1999). Casual labour is required for smooth running of daily field activities namely: Mulberry food plant cultivation, maintenance of mulberry plantations to feed the silkworms, cocoon production, cocoon reeling, yarn making, weaving and fabric processing (Ahmed & Rajan, 2011). A total of 10 million silkworm rearers and 0.5 million in form of industrial workers in the world are directly employed in the sericulture sector (Seidavi *et al.*, 2005).

Most employees available in the job market lacked required skills, qualifications and capital, which rendered them incapacitated for any form of productive work leading to high poverty and criminal cases (Tregenna, 2015). One of the biggest challenges in Africa and Uganda is the increased rural-urban migration in search for more chances and hopes of finding better paying jobs in towns with failure to find better job opportunities resort to extreme poor conduct namely; prostitution and sex abuse, drug abuse and any other criminal acts (Tangri & Mwenda, 2013). All the East African countries have divergent literacy levels but youth unemployment is indebted to shortage of skills, lack of experience and orientation to deliver quality services (ILO, 2017). The biggest crisis in Uganda is youth unemployment attributed to the overstretched age bracket of (15-30 years) according to National Youth Policy but biggest percentage (77 percent) of Uganda's population (UBOS, 2014). In 2014, Advocates Coalition for Development and Environment estimated unemployment levels of youth in Uganda at 64 percent with over 400,000 youths released into the labor market annually. 30 percent youth not employed though qualified due to lack of skills orientation (ACODE, 2014). Uganda has one of the fastest growing population globally due to high fertility rates has led to increased effects of youth unemployment affecting national economy due to involvement in different forms of violence, social unrest and political turmoil, hence compromising national security (Action Aid, 2012). Therefore, diversification and creation of more job opportunities through sericulture as more youths can be employed as casual workers and staff within the sericulture value chain would help arrest unemployment in Uganda.

The government of Uganda has put in place measures aimed at addressing unemployment mainly the youth including the Youth Livelihood project, Management Training and Advisory Centers in some parts of the country, support to science and innovations through the ministry of science and technology, the introduction of the newly designed parish model, Entrepreneur training by the Uganda Investment Authority, agriculture financing but one of the most evident employment opportunity provider to youth and general population in Uganda in the last three years (2018-2021) is the commercialization of sericulture technologies across the country which has so far been rolled out to more than thirty (30) districts and continue to spread to other districts. The present study mainly explored the role of sericulture in uplifting socio-economic status of casual workers in Uganda. The study focuses on; concept of work done at sericulture research stations, salary/wages/allowances paid, investment plan, mode of employment and payment in relation to sericulture, perception of casual workers towards sericulture. Introduction; which explains the meaning and contribution of sericulture across the globe and Uganda in particular, Methodology; discusses the methods and materials used for the study, Results and discussion; discusses the results and findings of the study and last section shows the summary and conclusion of the study.

Methodology

For the present study, twelve (12) Sericulture research stations out of 26 in Uganda under Tropical Institute of Development Innovations across the country namely Sheema, Kiruhura, Nakaseke, Luwero, Busitema, Mubende, Pallisa, Kayunga, Nwoya, Buikwe, Kween and Bulambuli were purposively selected as they were the first stations to be established in the year 2018-2019 and they had a good representative number of contracted casual workers on both

permanent and temporary basis, the study was conducted between July to September, 2020, this period was considered because most casual workers had made two years working under the project and therefore socio-economic impact could be measured. One hundred fifty-six (156) casual labourers mainly working at the 12 stations were all involved in the study. The survey was conducted through face to face interviews using a pre-structured questionnaire covering all activities of mulberry cultivation, production and management, socio-economic and working conditions, education and knowledge level of casual labourers on Mulberry production. Data was collected on the various activities done under mulberry production by casual labourers, income and livelihood improvement of casual labourers, socio-economic conditions and working conditions at different stations. Data analysis was done using the Statistical Product and Service Solutions (SPSS) 19.0.

Results and Discussion

A total of 156 respondents were interviewed in this study and the findings were discussed as below; the first section of the survey addressed the respondent's background and demographic characteristics, followed by 8 questions which mainly addressed their awareness, knowledge, and understanding of sericulture by casual workers, different activities done by casual workers at different stations, 8 questions addressed social behaviour of casual workers, salaries, wages and earnings at the station, challenges faced while doing activities at different stations under study.

Demographic Characteristics of Respondents

Table 1. Demographic characteristics of respondents

Characteristics	Classification	Percent (%)
Sex of respondents	Male	48.4
	Female	51.6
Age of respondents	Below 18	8.1
	19-35	51.2
	36-60	41.6
	61 and above	0
Marital status	Married	68.8
	Single	12.1
	Widowed	11.3
	Divorced	7.8
Status of casual workers	Permanent	63.9
	Temporary	36.1
Education level	Uneducated	18.3
	Primary	43.0
	Secondary	37.5
	Tertially	1.2

Respondents involved in the study were casual workers selected from all regions of Uganda where Tropical Institute of Development Innovations operates different sericulture activities. The respondents were found across 12 sericultural stations in Uganda where males (48.4%) and females (51.6%) an indication that the project employed more women as casual workers compared to men. The biggest percentage of respondents belonged to age bracket between 19–35 (51.2%) and 36–60 (41.6%), this was due to the responsibilities held by such category of people as most of them were married and widowed hence worked harder to take care of their children and other family needs, also the sericulture activities required an energetic

population to manage for example weeding, spraying, land preparation and silkworm management. In general, the age bracket showed respondents were youth mainly gaining livelihood in form of employment in the sericulture sector as casual labourers under the project titled “commercialization of sericulture technologies and innovations in Uganda” (Table 1). Casual workers were recruited on both permanent and temporary basis as this helped smoothen farm activities as these people were paid both salaries and wages regarding on the arrangement. The results were in agreement with Narsimha, 2003 who noted that Sericulture enterprise generated a remunerative and meaningful employment to the farming communities.

Employment under Sericulture

Table 2. Daily activities carried out at different stations

Variables	Description	Frequency	Percent (%)
Casual workers understand their duties and responsibilities	Know a lot	26	16.7
	Know something	130	83.3
Off farm farming activities done by casual workers	Crop production only	43	27.5
	Livestock production only	28	17.9
	Both crop and livestock production	39	25.0
	None	46	29.4
Mulberry farm activities done	Land preparation	34	21.7
	Mulberry planting	30	19.2
	Weeding	21	13.4
	Pruning and Thinning	41	26.2
	Spraying	30	19.2
	Feeding silkworm	34	21.7
	Cleaning and disinfection	27	17.3
	Cocoon harvesting	43	27.5
	Cocoon drying	30	19.2
	Construction of rearing houses	22	14.1

The casual workers were asked #If they clearly understand the activities they were supposed to do at different sericulture farms#, most of the respondents showed that they understood different farm activities to include weeding, land preparation, spraying, pruning and thinning of mulberry but others knew little about sericulture and its activities hence needed training and guidance from field and extension officers. Casual workers noted that the daily activities carried out at different stations were almost uniform regardless of which station and region, these were divided into mulberry production activities to include; land preparation, mulberry planting, weeding, pruning, thinning and spraying whereas silkworm rearing activities were mainly practiced at those stations where rearing was done to include Busitema, Kween, Nwoya, Sheema, Kayunga, Iganga, Kamuli and Namasumbi, such activities included silkworm feeding, cleaning, cocoon harvesting and drying, construction of silkworm rearing houses. All these activities were carried out by casual workers who were hired on both permanent and temporary basis being paid wages and salaries. Malik et al., 2008 also noted that sericulture played very important role in natural resource utilization for socio-economic upliftment of livelihoods, employment and income generation. Ahmed and Rajan, 2011 also noted that sericulture comprised of different activities to include; mulberry cultivation, garden maintenance, silkworm rearing, reeling cocoons, yarn making, weaving and processing of fabric.

Social Impact of Sericulture

Table 3. Income and expenditure of casual workers

Variables	Description	Frequency	Percent (%)
Salary and wages	Amount earned		
	10,000 – 49,000/=	21	13.5
	50,000 – 99,000/=	86	55.1
	100,000 – 199,000/=	33	21.1
	200,000/= and above	16	10.2
Sources of income	Sericulture employment opportunities	156	100
	Other income sources	73	46.7
Savings and credit	Village Savings and Loan Schemes	48	30.7
	Station saving and credit schemes	0	0
	SACCOs	21	13.5
	Cooperative unions	0	0
Household expenditure	Education	122	78.2
	Health and treatment	156	100
	Family feeding	156	100
	Pay utilities and bills	47	30.1
	Clothing	156	100
	Investment	81	51.9
	Others	34	21.7
Household assets acquired	Radio	15	9.6
	Television	9	5.7
	Mobile Telephones	26	16.7
	Solar panels	15	9.6
	Electricity installation	1	0.6
	Bicycles/motorcycles	3	1.9

Average Monthly Income

Tropical Institute of Development Innovations had an arrangement and mode of payment of casual workers at different stations were a standard payment was constituted for some farm activities for example weeding ranged between 50,000/= to 80,000/= per acre of mulberry. For other farm activities like primary land tillage and preparations, spraying, mulberry planting, payment was after negotiations between casual workers and field officers whereas silkworm rearing team were paid monthly ranging between 150,000/= to 200,000/= on a contract basis while some mainly those engaged in feeding of silkworm were paid on a daily basis due to work done. #Salaries and wages of casual workers# respondents noted that the amount earned depended on amount of work done at the farm. Most casual workers noted that since they were working as a family hence could earn more money for acres weeded and cultivated or pruned compared to those casual workers who worked as individuals. This caused the discrepancies in amount of money earned by different casual worker as it was noted that the biggest percentage of casual workers earned between 50,000/= to 99,000/= per month an implication that they worked on not more than an acre of land but those who earned 100,000/= and above attributed this to multi-tasking at the farm, working as a family hence more acreage cultivated, this implied that casual workers had the capacity to earn more money monthly if they had worked jointly as a family other than individuals as this would increase the acreage worked on monthly. The institute through the field officers supervises the work of casual workers, verifies the work done and payments are done instantly after completion of work at the farm through cash transactions. Respondents noted that sericulture employment was the main source of their daily

income while a few showed that they had other sources of income. Results confirmed that silk industry had tremendous socio-cultural and traditional contributions and played a big role on developing rural economies (Thangavelu, 2002; Mahapatra, 2009).

Sericulture and Family Investments

#Expenditure of income earned# respondents noted that the money they earned mainly helped them to meet all the family needs and requirements namely; health, education, feeding, clothing, investment and others mainly drinking alcohol and other social responsibilities. The saving culture of respondents was very poor as few casual workers saved some money with village savings and loan schemes but most of them didn't belong to any saving scheme which was a challenge hence need for the organization to train casual workers about saving and credit facilities as this will help the casual workers have a reserve saved fund to cater for their needs in case of shortage of funds. Most of the respondents noted that the salaries and wages earned impacted positively on their lives as they managed to change the quality of their lives through meeting the basic family needs but as well acquired different family assets such as solar panels, radios, television sets, mobile phones, electricity installation, bicycles and motorcycles. The assets acquired by different respondents and families eased family life as children could have extended reading hours due to electricity and solar installation hence excelling education wise, eased transport means as families acquired transport means like motorcycles and bicycles, communication was easily impacted due to acquisition of mobile phones, radios and televisions were families and casual workers could easily receive timely information regarding markets, health and other government policies. The results were in agreement with the findings reported by Trivedi and Sarkar, 2015 stated that sericulture was an important labour intensive, agro-based industry providing gainful employment to unemployed/underemployed population in the rural and semi-urban areas and facilitates economic development and improvement in the standard of life of the casual workers.

Table 4. Cross tabulation of employment into sericulture project with livelihood improvement of casual workers

Characteristics	Classification	Livelihood improvement					Significance
		Salary/income	Assets	Child Education	Health care	Investment	
Sex of respondents	Male	75	48	58	75	53	0.5*
	Female	81	21	64	81	28	
Age of respondents	Below 18	12	5	0	7	3	0.5*
	19-35	80	38	65	80	33	
	36-60	64	26	57	64	45	
Geographical location of respondents	Eastern Uganda	71	30	52	71	31	0.5*
	Northern Uganda	23	07	19	23	12	
	Central Uganda	41	23	38	41	27	
	Western Uganda	21	09	13	21	11	

Note: *p<0.05

Cross tabulation and chi-square test was performed between social demographic characters of respondents (sex, age and geographical location) and livelihood improvement of casual workers. Overall results showed that age, sex and geographical location of respondents

had no significant relationship with livelihood improvement with p-value above 0.05 (Table 4), there was no superior difference between sex of respondent an indication that both genders (male and female) almost equally valued sericulture as a project that helped them earn a living and thus improve the status and livelihoods of their families, this relationship was mainly attributed to joint family engagement in farm activities as they worked as most husband and wife. There was no specifically targeted age bracket but the results above have clearly showed that all ages were employed as casual workers ranging from those below 18 years of age who worked under supervision of their parents up to 60 years of age. This was due to the fact the sericulture activities don't discriminate different ages as long as you are capable of working but biggest percentage of casual workers ranged between 19-35 years. All casual workers benefited equally from all regions and the project impacted likewise as the benefits didn't differ to include salaries/income and activities done at the stations, reduced rural urban migration to towns and cities. The chi-square test showed that there was no significant relationship between sex, age and geographical location of respondents to livelihood improvement used with p-value (0.0) below 0.05. Mukwaya et al., 2011 reported that without any employment opportunities provided in rural areas, youth flock urban centers in search for survival ways hence engagement in acts of violence to include; highway robbery, metal iron bar gangs, rape cases and killings, drug and sex abuse.

Challenges Faced by Casual Workers

Table 5

Variables	Description	Frequency	Percent (%)
Lack of equipments at the station	Hoes and pangas	121	77.5
	Gumboots	156	100
	Overalls	156	100
	Protective gears	156	100
Low/under payment	Yes	21	13.5
	No	135	86.5
Delayed Salary/wage payment	Yes	156	100
	No	0	0
Unfavorable working conditions	Weather changes	156	100
	Abusive treatment	23	14.7
	Sexual Harassment	7	4.5
	Discrimination	7	4.5
	Scarcity of water	63	40.4

When respondents were asked about #challenges faced while working as casual workers at different stations#. All the respondents noted lack of working tools and equipments as one of the biggest challenges they faced and among these were garden tools (pangas and hoes), protective garden wear (gumboots, overalls) and any other protective gears. The organization was not providing such tools since most of the casual workers were temporary hence could easily take the tools after or before completion of the work schedules and some would easily claim that the tools were lost. A few of the respondents claimed that they were under paid but this was due to less work done at the farm whereby those who did more work and jointly as a family earned much money. For example one casual worker in Kween district noted that for them as a family, they could weed an average of 6 acres of mulberry in a month at a cost of 70,000/= thereby earning a total of 420,000/= which really good money and on top of that they could do other farm activities like pruning, thinning and spraying which called for extra money

but another youth in Kween who had weeded half an acre of mulberry in a month received a pay of 35,000/= and hence claimed it was little income earned therefore low/under payment depended on the work done at the farm. One of the most pressing challenge casual workers raised was the delayed payment of their salaries and wages as they complained that after completion of work sometimes their payments were delayed but the finance department attributed the delays to verification process done on ground to verify the work done before payment and another cause was that the organization receives funds from other external sources like government of Uganda through Ministry of science and technology therefore they had no control over external factors like late release of funds by the government therefore casual workers needed to be patient at times when such delays happen. Other challenges raised by casual workers included: weather changes which were at times unfavourable to the casual workers in some stations, but some casual workers cried of unfair treatment from their field supervisors to include; sexual advances and harassment while at work, abusive treatment and discrimination but scarcity of water at most of the stations was a bigger challenge that needed immediate attention since water was a basic necessity. The findings agreed with Mukembo et al, 2015 that Uganda has abundance of cheap youthful labour which attracts more investment into the country increasing employment opportunities.

Research Gaps

The study mainly targeted the impact of sericulture project on the livelihoods of casual workers through employment opportunities, income generation, and improvement of economy, women empowerment and sustainable rural development of the rural communities. Below are some of the unanswered research gaps identified during this study;

- There is no or are few studies conducted on the employment and income generation prospect and its constraints in sericulture in Uganda.
- Few studies on the potential of sericulture industry in regards to job creation, youth and women employment, contribution towards poverty eradication and uplifting sericulture farmers' livelihoods and sustaining Uganda's economy.
- There is no clear strategies set out by government of how University graduates and youth can earn a living through sericulture industry.

We forward our recommendations to the government of Uganda, researchers and other interested stakeholders to develop strategies, objectives and hypotheses to cover the above research gaps.

Conclusion

In Uganda youth unemployment has always been associated to different social, political and economic challenges namely; instability, insecurity, protests, high crime rates, and violence thus a threat to state and national economy (National Planning Authority, 2017). The Ugandan constitution defines "the youth" as those between 12 and 35 years of age hence constituting 78% (27 million people) of the country's population but the biggest challenge is youth unemployment which ranges between 64% and 70%. Not forgetting that approximately 400,000 youths annually join the job market to search for the few available jobs (52,000 formal jobs) (Pletscher, 2015). With unemployment rate in Uganda expected an average of 2.50 percent by the end of (Trading Economics global macro models and analysts expectations), 30% of the skilled and qualified youths can't easily find jobs, but more worse for semi-skilled and unskilled youths hence exposure to high incidences of drug abuse and gambling. Therefore, as a strategy towards government initiatives to eradicate poverty, sericulture has proved as the main source of income to all the casual workers and other employees. Sericulture provided 100% employment to the respondent in a year thus controlling rural-urban migration and high crime rates in Uganda resulting from unemployed youth.

Uganda has no set minimum wage but the incumbent Minimum Wage Advisory Board recently recommended a rate of UGX 136,000 per month as minimum wage since vulnerable groups like women, people with disabilities and other historically disadvantaged people have less bargaining power to demand for higher wages in low skilled sectors. But this study has clearly showed that if on average each casual worker can work on approximately two acres, he or she can easily earn 200,000/= per month almost doubling the proposed minimum wage. The study validated the benefit of sericulture to casual workers as either major or supplementary income.

Employment of casual workers at different stations has improved their saving culture as part of income is saved through different saving schemes although this is still lacking, stimulated micro-enterprise, reduced rural-urban migration; improved living conditions of casual workers and their families. Income from sericulture ensured education, health and welfare of children was maintained but also boosted the confidence of women through self-employment and earning income hence taking up leadership roles in the community. This has made sericulture sector qualify as one of the most appropriate agro-based cottage industry for rural development, livelihood improvement and socio-economic development as it is not only important for generating rural employment and preventing rural migration but also protects and preserves ecology and nature, heritage and socio-cultural values of the community.

Recommendation

- Casual workers should be provided with tools and equipments needed in order to ease their work, a working strategy should be discussed whether these requirements can be provided to workers as subsidies or incentives or each station might decide to have its equipments and tools so that casual workers use and leave them at the station.
- Financial training to casual workers is highly needed so that they can understand the importance of saving and credit schemes. Each station should start-up a saving scheme for its workers.
- Each station should recruit a good number of permanent staff who can be available at any time of the year.
- A need to improve living and working conditions of all employees at different stations through provision of water and housing facilities.

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