



Women's Empowerment Index in Cassava: An Innovative Tool for Gender Mainstreaming

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ABSTRACT

Analysis of women's empowerment in cassava was done among farm women and farmers who are involved in cassava cultivation in Kanyakumari district of Tamil Nadu. Snowball sampling technique was employed for collecting data using semi-structured interview schedule from 50 women and 50 men farmers involved in cassava cultivation. The women empowerment index in cassava was used for estimating the domains of empowerment and gender parity index. Results revealed that cassava women farmers were more empowered than their household male counterparts in the domains of community leadership and time allocation. Whereas, male farmers were more empowered than their female counterparts in production decision making, access to productive resources and control over use of income. It was found that the overall women empowerment score was 0.83 with 28 per cent of women in disempowered category.

INTRODUCTION

In African and South Asian countries, women account for 43 per cent of the agriculture work force. The participation of farm women in cassava cultivation is noteworthy as they are involved in farm operations starting from planting to value addition. Most of the extension interventions in agriculture fail to address the gender specific needs of men and women. Failure to recognise this gender gap will affect the effort to achieve desirable agricultural development. This existing gender gap can be bridged by adopting gender mainstreaming as a strategy while formulating extension programmes.

United Nations exhibited its commitment on gender equality by declaring the UN decade for women from 1975 to 1985. Owing to the efforts of gender activists in this decade, several gender related terminologies were introduced in 1980s. One such term is 'gender mainstreaming' coined in early 1980s which attempts to achieve gender equality. According to the United Nations Development Programme (2004), an approach for making the needs and concerns of men as well as of women a vital part in

policy-making is gender mainstreaming. The context of gender mainstreaming is often misinterpreted in different disciplines. It is considered as a 'women's component' or a feminism concept. The term 'gender' is not interchangeable with 'women'; instead it comprises both men and women (United Nations Development Programme, 2004).

Cassava (*Manihot esculenta* Crantz.) is considered as the future food security crop because of its biological efficiency coupled with ability to sustain climate change. Cassava provides livelihood security to about 10 lakh farm families in India. Almost 43 per cent of the agricultural workforce in developing countries and 30 per cent in South Asia and India were occupied by women in agriculture (FAO, 2008 & GoI, 2018). It is considerably a women friendly crop owing to its optimal cultivation practices. Participation of farm women in cassava cultivation is noteworthy as they are engaged in several cassava cultivation practices like planting, weeding, intercropping, value addition and marketing.

Women's Empowerment in Agriculture Index (WEAI) is a composite index developed by International Food Policy Research Institute (IFPRI) and USAID's 'Feed the Future' in February,

2012. It is a first of its kind index developed from the base index Women's Empowerment Index (WEI). This comprehensive index comprises sub indicators to measure the inclusion levels of farm women (Alkire et al., 2013). There are two sub-indices in WEAI viz., Five domains of empowerment (5DE) and Gender Parity Index (GPI). Women's empowerment has traditionally been studied using education, control over income, gender of the head of household and control over property at the time of marriage (Quisumbing & Maluccio, 2003). WEAI provides an enhancement to existing indicators (FTF & USAID, 2012; Alkire et al., 2013). To understand this crucial role played by women in farming sector, a study has been designed to assess the empowerment of women involved in cassava farming.

METHODOLOGY

An ex post facto research and survey design were adopted for this study. The study was conducted in Kanyakumari district of Tamil Nadu, which is one of the leading producers of cassava in Tamil Nadu. The study area has a healthy sex ratio of 1019 women for 1000 men which emphasises the importance of analyzing the women empowerment in agriculture and allied activities (GoTN, 2017). Three blocks viz., Thiruvattar, Killiyur and Munchirai were selected for the study based on its area under cassava cultivation. Proportionate sampling was followed for selecting respondents from each of the three blocks with 30 (15 men and 15 women) respondents in Munchirai block, 50 (25 men and 25 women) respondents in Thiruvattar block and 20 (10 men and 10 women) respondents in Killiyur block. From these three blocks, 50 men and 50 women cassava farmers were sampled using snowball sampling technique. Primary data were collected using observation and semi-structured interview schedule during June-July 2020. Secondary data were also collected from the published reports of state department of horticulture and statistical handbook of Government of Tamil Nadu. Women's Empowerment Index in Cassava (WEIC) is a modified index obtained from WEAI (FTF & USAID, 2012; Alkire et al., 2013). The following formula was used for computing the index:

$$\text{WEIC} = (0.90 \times 5\text{DE}) + (0.10 \times \text{GPI})$$

Majorly there are 5 Domains of Empowerment (5DE) and, 10 indicators under these 5 domains viz., agricultural production decision-making, access to productive resources, control over use of income, community leadership and time allocation.

5 Domains of Empowerment, $5\text{DE} = 1 - M_0 = 1 - (H_p \times A_p)$
 M_0 – Disempowerment index

Disempowered Headcount Ratio, $H_p = q/n$

q – Number of individuals who are disempowered, n – Total population

Average inadequacy score of disempowered individuals, $A_p = \frac{\sum_{i=1}^n C_i(K)}{q}$

Whereas, $C_i(k)$ - Inadequacy score of individual i , q - Number of disempowered individuals

Gender Parity Index was calculated using the following formula:

$$\text{Gender Parity Index, GPI} = 1 - (H_{\text{GPI}} \times I_{\text{GPI}})$$

Proportion of gender parity inadequate households, $H_{\text{GPI}} = h/m$

Whereas, h – Number of gender parity inadequate households, m – Total dual adult households in the population

$$\text{Average empowerment gap } I_{\text{GPI}} = \frac{1}{h} \sum_{j=1}^h \frac{c'_j(k)^W - c'_j(k)^M}{1 - c'_j(k)^M}$$

Whereas, $c'_j(k)^W$ and $c'_j(k)^M$ – Inadequacy score of women and men, h – Number of gender parity inadequate households

RESULTS AND DISCUSSION

The data collected from the men and women farmers of the same households who were involved in cassava cultivation revealed several noteworthy findings. The male and female respondents were husband and wife, father and daughter or mother and son. From the data collected, several significant results were drawn which are listed below.

Profile characteristics of women cassava farmers

In-depth analysis of the profile characteristics of the women cassava farmers was done using the standard methodologies and procedures. It was revealed that the mean age was 49 years among the respondents which falls under middle age category. Similar results were reported by Jaganathan (2009). More than 75 per cent of the respondents were having agriculture as the main occupation and others were having teaching and home-making as their main occupation. Family types of the respondents were almost equal with regard to joint (54%) and nuclear family (46%). Mean general farming experience of the women respondents was 21 years, whereas it was 11 years for experience in cassava cultivation. Farming experience in cassava was comparatively less, as it was introduced in large scale in the year 2000 in paddy areas because of increasing cost of cultivation of paddy, socio-economic and agro climatic factors. Majority of the respondents (86%) belonged to marginal category of farm size followed by small (12%) and semi-medium (2%) category of land holding. With regard to area under cassava cultivation, all the respondents belonged to marginal category with a mean area of 0.54 acres. About three fourth of the women farmers (74%) were having low level of livestock possession and the mean monetary value was Rs. 15678. Kanyakumari district has 73,510 cattle and ranks second last in the state of Tamil Nadu. Poultry enterprise is widely found among the respondents. Livestock is an important component for providing employment opportunities and generating additional income for the women respondents. Farm women with low extension orientation were employed in non-farm occupation. None of the farm women had participated in extension trainings and programmes. With regard to level of aspiration, cassava is considered as women-friendly owing to its less labour-intensive nature. Exposure to farm magazines was also very less among the cassava women farmers. All these variables are very important for accessing the innovations for adoption in cassava cultivation for higher production and income. Innovativeness is directly related to the risk-taking ability of an individual and is an important trait to adopt a new practice/idea in cassava cultivation. About half of the women respondents (48%) belonged to low level of innovativeness followed by medium (30%) and high (22%) category.

Women empowerment index in cassava

Disempowered Headcount Ratio, $H_p = 14/50 = 0.28$

Average inadequacy score of disempowered individuals, $A_p = 22.30/36 = 0.61$

$5DE = 1 - (H_p \times A_p) = 1 - (0.28 \times 0.61) = 1 - 0.17 = 0.83$

Proportion of gender parity inadequate households $H_{GPI} = h/m = 16/50 = 0.32$

Average empowerment gap is denoted as I_{GPI} . It is 0.69.

$GPI = 1 - (H_{GPI} \times I_{GPI}) = 1 - (0.32 \times 0.69) = 1 - 0.22 = 0.78$

$WEIC = (0.90 \times 5DE) + (0.10 \times GPI) = (0.90 \times 0.83) + (0.10 \times 0.78) = 0.747 + 0.078 = 0.82$

The WEIC score is 0.82 for the cassava women farmers of Kanyakumari district. The domain-wise empowerment values of men and women were computed to identify their strong and weak domains which are listed in Table 1.

Table 1. Domains (5DE) of women empowerment in cassava cultivation

S. No.	Domains (Indicators)	Women Contribution (%)	Men Contribution (%)
1	Production	10	28.54
	Input in productive decisions (1/10)	6.77	16.42
	Autonomy in production (1/10)	3.23	12.12
2	Resources	39.63	26.07
	Ownership of assets (1/15)	5.05	8.26
	Purchase, sale or transfer of assets (1/15)	33.03	10.84
	Access to and decisions on credit (1/15)	1.55	6.97
3	Income	15.90	25.03
	Control over use of income (1/5)	15.90	25.03
4	Leadership	15.89	14.08
	Group membership (1/10)	5.88	3.52
	Speaking in public (1/10)	10.01	10.56
5	Time	18.54	6.25
	Workload (1/10)	9.12	2.73
	Leisure time (1/10)	9.42	3.52

*Weightages of each indicator are given in parenthesis

From the results obtained in 5 domains of empowerment, it can be inferred that women are empowered in the domains of community leadership and time allocation. When the domain of 'Leadership' is judiciously exploited by promoting entrepreneurship among women, it is very useful in empowering women and enabling them to break the barriers that kept them away from agribusiness (Yadav et al., 2020). The domain of time allocation seemed to have this stark deviation from rest of the domains due to the effect of COVID 19 lockdown. Decision making of women is important in a household for the overall welfare of the family (Kumari et al., 2022). Decision making power of women in selection of variety, purchase of inputs and sale of output are found to be limited in comparison with their male counterparts. Summary of the findings is given in Table 2 for both women and men. When a woman has access to resources, she can be empowered not only economically but also socially (Shamna et al., 2022).

Table 2. Indices of women empowerment in cassava cultivation

S.No.	Indices	Women	Men
1	Disempowered Headcount (H_p)	28%	24%
2	Average Inadequacy score (A_p)	61%	57%
3	Disempowerment Index (M_0)	0.173	0.13
4	5 DE Index ($1 - M_0$)	0.83	0.86
5	Percentage of women with no gender parity (H_{GPI})	32%	
6	Average empowerment gap (I_{GPI})	69%	
7	Gender Parity Index (GPI)	0.77	
8	Women Empowerment Index in Cassava (WEIC)	0.82	

Strategies for women empowerment in cassava cultivation

Empowerment of women in cassava cultivation is crucial for the development of cassava farming in Kanyakumari district. The important stakeholders responsible for empowering women are researchers, extension agencies and policy makers. When each of these players executes the specific roles listed below, farm women in cassava cultivation can be empowered in all spheres of development. Hence, these strategies were formulated for women empowerment through gender mainstreaming.

From the research organizations point of view the major strategies are, development of short duration varieties with nutritional qualities and resistant to biotic/abiotic stresses for enhancing the nutritional security of the households, documentation and validation of ITKs followed by women in cassava cultivation development of technologies for crop intensification/cropping system models, generation of sustainable and organic management practices for emerging pests and diseases, development of women friendly technologies to reduce the drudgery, development of technologies for home scale processing and value addition, development of extension models for dissemination of location-specific technology and impact assessment of technologies/crop insurance in cassava on household income and savings. Institutional engagements with respective strengths were found effective in synergising actions and impact on organising interaction meets and focussed group discussion to arrive at common programmes and activities in a collaborative manner (Singh et al., 2014; Singh et al., 2016).

Establishment of FLDs/model plots in the farm lands owned by women for popularization of improved varieties and technologies of cassava, gender sensitive and gender balanced capacity building programmes, utilization of mass media/social media for technology dissemination, farm publications (magazines and books) for meeting the knowledge needs of women, mobilization of village level cassava women groups for better participation of women, awards and recognitions for successful women cassava farmers and promotion of cassava cultivation through subsidies, incentives and supply of inputs with the utilisation of JAM (Jan Dhan, Aadhar and Mobile) trinity are the important strategies with regard to Extension/Developmental organizations. Nain & Kumar (2010) & Slathia et al., (2015) also advocated formation of women self help group for easy communication and selection of women cultivators as contact farmers and organisation in groups for their empowerment.

From the policy makers point of view the strategies viz., strengthening of credit/insurance facilities for cassava, subsidies to

motivate farm women to take up cassava cultivation, promotion of FPOs/SHGs specifically for cassava crop, establishment of marketing facilities, creation of cold storage facilities that are accessible to women farmers and establishment of techno park for value addition in cassava at block/taluk level are to be formulated for strengthening sustainable cassava farming in the long run.

CONCLUSION

The analysis clearly revealed that cassava was a remunerative tuber crop in Kanyakumari district of Tamil Nadu and also predicted the empowerment of women in the domains of community leadership and time allocation. With the exploitation of these two domains by suitable interventions, the adverse effects of the empowerment domains like productive decision making and access to productive resources may be negated to a greater extent. Networking of farm women in the form of farmers' associations/groups and developing their capacities for scientific cultivation, crop diversification, processing and value addition of cassava will generate employment opportunities and income enhancement of the women farmers thereby making them 'self-reliant'. Efforts from research institutes, developmental agencies, farmers and other stakeholders are needed for gender mainstreaming with respect to all domains of empowerment for sustainable development of cassava cultivation.

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