

Empowering women through water hyacinth enterprise- An impact analysis

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■ **ABSTRACT :** Water hyacinth (*Eichhornia crassipes*), known as Pani meteka in assamese, is a free-floating aquatic weed found in almost every state including Assam with vast water bodies where in it causes havoc especially in the fisheries, choke lakes and provide a breeding ground for mosquitoes. However, the stem of water hyacinth can be used as the raw material for making the most important value added products like ladies hand bags, purse, mobile covers, file covers, hand fans etc. This can not only boost up the handicraft sector and the artisans but also create employment avenues and can also fetch good foreign exchange. In this context, a study was attempted to examine the participation of rural women in water hyacinth enterprises for uplifting the economic status of their families with special reference to the Darrang district of Assam. Two nos of localities namely- Hussain chuburi and Duni from Pachim Mangaldai development block has been purposively selected on the basis of the training, demonstrations and exhibition conducted by Krishi Vigyan Kendra, Darrang for the year 2011-12, 2012-13 and 2013-14. The primary data were collected through questionnaires filled up through personal interview. It was observed that the number of rural women engaged as small entrepreneurs in water hyacinth enterprises after training and demonstration was 9 and 8 in locality-1 and 2, respectively. It can be concluded that 24 per cent, and 27 per cent of income were shared from water hyacinth enterprises into the family's total income from all the sources in locality 1 and locality-2, respectively.

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Water hyacinth (*Eichhornia crassipes*) known as *Pani metekain assamese*. is a free-floating aquatic plant or hydrophyte, native to tropical and sub-tropical South America (Waterhouse, 1994). Water hyacinth is a very common water weed found in almost every state including Assam with vast water

bodies where in it causes havoc especially in the fisheries, choke lakes and provide a breeding ground for mosquitoes. Water-hyacinth is most troublesome weed of the world (Gopal and Sharma, 1981). It is native to Brazil and has been introduced in India as an ornamental plant by a British lady for beautification in

West Bengal in early 20th Century (Whitten and Whitten, 1996; Wolverson and McDonald, 1979). Water hyacinth is justifiably called the world's worst aquatic weed due to its ability to rapidly cover whole water ways (Toft, 2000). If otherwise not utilized, controlling water hyacinth is very difficult. Water hyacinth can also be incorporated in the ration of pig as an energy source. (Borpuzari *et al.*, 2013 and Manh *et al.*, 2002). The leaves and stems of water hyacinth are rich in crude protein and are found to be soft and palatable to the pigs (Men *et al.*, 2002). Apart from various uses like compost and mulch; animal feed as hay and silage; bio-fuel etc., a number value added decorative products can be made from water hyacinth. Decorative water hyacinth products have already gained popularity amongst people globally and have profitable market. Seen in this positive light, the excessive growth of water hyacinth is not only to be controlled, but can be seen as a resource (Lindsey and Hirt, 1986). Water hyacinth is a perennial freshwater aquatic plant that doubles its numbers within four weeks under favourable conditions (Aklnyemkju and Bewaji, 1990). Water hyacinth is a easily replenished plant that dries to a soft and strong fibre (Ha and Bo, 2007). The stem of water hyacinth is the raw material for making the most important value added products such as ladies hand bags, purse, mobile covers, file covers, hand fans etc. It is observed that presently only a handful of artisans in Assam are practicing this art of making handicrafts with water hyacinth though the industry has immense potentiality in the region. Such ventures will not only boost up the handicraft sector and the artisans but also create employment avenues.

The products derived from water hyacinth plants have good market potential. They not only have domestic market in the region but also can fetch good foreign exchange. Developing and encouraging such ventures generate rural employment especially among the women. Women constitute at least one third of country's economically active population, particularly in the unorganized sector and specifically in the agrarian sector. (Sobha, 2001). In India only 8 to 10 per cent of the small scale manufacturing units are run exclusively by women entrepreneurs which is proportionately very small as compared to other developing and developed countries. In USA alone, approx. 50 per cent of the business is owned by women (Naik, 2003). In the present day context, when the agricultural community at large is

facing the challenges of climate changes and global warming, such eco- friendly and bio- degradable products can contribute to sustainable agriculture. They can also play a significant role in utilization of natural and human resources for a better and safer tomorrow. Studies conducted by (Holm *et al.*, 1969) indicated that two parent plants of water hyacinth produced 30 offspring after 23 days, and 1,200 plants at the end of four months, thus posing a serious threat to biodiversity

Considering these, a study was conducted with a view to analyze the extent of participation of rural women in training and demonstration programme conducted by KVK, Darrang on engagement of rural women as small entrepreneurs in water hyacinth enterprises after training and demonstration which in turn contributed to their families economic condition and lead towards better livelihood.

■ RESEARCH METHODS

The study was conducted on water hyacinth enterprises in Darrang District of Assam, considering one community development block namely Pachim Mangaldai. Two localities namely- Hussain chuburi and Duni from Pachim Mangaldai development block have been purposively selected on the basis of the training, demonstrations and exhibition conducted by Krishi Vigyan Kendra, Darrang for the years 2011-12, 2012-13 and 2013-14. The primary data were collected through questionnaires filled up through personal interview method.

■ RESEARCH FINDINGS AND DISCUSSION

Number of rural women participated and percentage of participation in water hyacinth training and demonstration programme in two localities were presented in the Table 1. From the table, it was observed that only 11 numbers (22.9%) of women in locality L1 were participated in water hyacinth training, demonstrations and exhibition conducted by Krishi Vigyan Kendra in the year 2011-12. It was increased up to 16 numbers (33.3%) of women in the year 2012-13 and 21 numbers (43.75 %) of women in the year 2013-14. Similarly, it was observed from the Table 1 that in the locality 2-12 numbers (24.4%) of women were participated in water hyacinth training, demonstrations and exhibition conducted by Krishi Vigyan Kendra in the year 2011-12. It was increased up to 15 numbers

(30.6%) of women in the year 2012-13 and 22 numbers (44.8%) of women in the year 2013-14. Krishi Vigyan Kendra, Darrang has been imparting training among rural youth and rural women to develop skills in making different beautiful products for entrepreneurship development (Bhattacharjee and Bordoloi, 2014a). The numbers and the percentage of participation of rural women in water hyacinth training, demonstrations and exhibition conducted by Krishi Vigyan Kendra, Darrang were increased from year 2011-12 to year 2013-14, it may be due to the fact that the interest of rural women to be involved in some income generating activities were increasing and women might understood the fact that more involvement in training make them more skilled in water hyacinth product making. According (Mujiman, 2009) training or training as an activity that is intended to improve and develop the attitudes, behavioral skills, and knowledge of its employees in accordance with the wishes of enterprises.

The percentage of rural women engaged as small

entrepreneurs in water hyacinth enterprise after getting training and demonstration of KVK in the two localities (Table 2) were 11.1 per cent during 2011-12, it grew upto 33.3 per cent and 55.5 per cent during 2012-13 and 2013-14, respectively in locality-1. A similar trend of increasing in percentage of rural women entrepreneur was observed in locality-2 also. These were 12.5 per cent, 25 per cent and 62.5 per cent in the year 2011-12, 2012-13 and 2013-14, respectively. The increasing trend of engagement of rural women for water hyacinth enterprise may be because of growing interest of rural women towards income generating activities following high market demand and less capital investment. Moreover, the rural women got impressed upon observing the performance of the enterprise in the first year *i.e.* 2011-12. (Marzuki, 2009) defines “empowerment as a deliberate effort to facilitate local communities in planning, deciding and managing local resources owned so that in the end they have the ability and economic independence, and social”. Study

Table 1 : Participation of rural women in training and demonstration programme on water hyacinth

Year	Locality-1			Locality-2		
	No of rural women	Percentage of rural women	Average no. of rural women participating in the water hyacinth enterprises	No. of rural women	Percentage of rural women	Average no. of rural women participating in the water hyacinth enterprises
2011-12	11	22.9		12	24.4	
2012-13	16	33.3	16(33.3)	15	30.6	16.34(49)
2013-14	21	43.75		22	44.8	
Total	48	100		49	100	

Table 2 : Engagement of rural women as small entrepreneurs in water hyacinth enterprises after training and demonstration

Year	Locality-1			Locality-2		
	No. of rural women engage as small entrepreneurs	Percentage of rural women engage as small entrepreneurs	Average no. of rural women engage as small entrepreneurs	No. of rural women engage as small entrepreneurs	Percentage of rural women engage as small entrepreneurs	Average no. of rural women engage as small entrepreneurs
2011-12	1	11.1		1	12.5	
2012-13	3	33.3	3	2	25	2.6
2013-14	5	55.5		5	62.5	
Total	9	100		8	100	

Table 3 : Yearly turnover of income through water hyacinth enterprises

Year	Locality-1(Hussain chuburi)				Locality-2(Duni)			
	Average individual income (Rs.)	No. of small enterprises	Total income (Rs.)	Average income in three years (Rs.)	Average individual income (Rs.)	No. of small enterprises	Total income (Rs.)	Average income in three years (Rs.)
2011-12	9600.00	1	9600.00		10200.00	1	10200.00	
2012-13	12000.00	3	36000.00	45200.00	13200.00	2	26400.00	52200.00
2013-14	18000.00	5	90000.00		24000.00	5	120000.00	
Total	39600.00	9	135600.00		47400.00	8	156600.00	

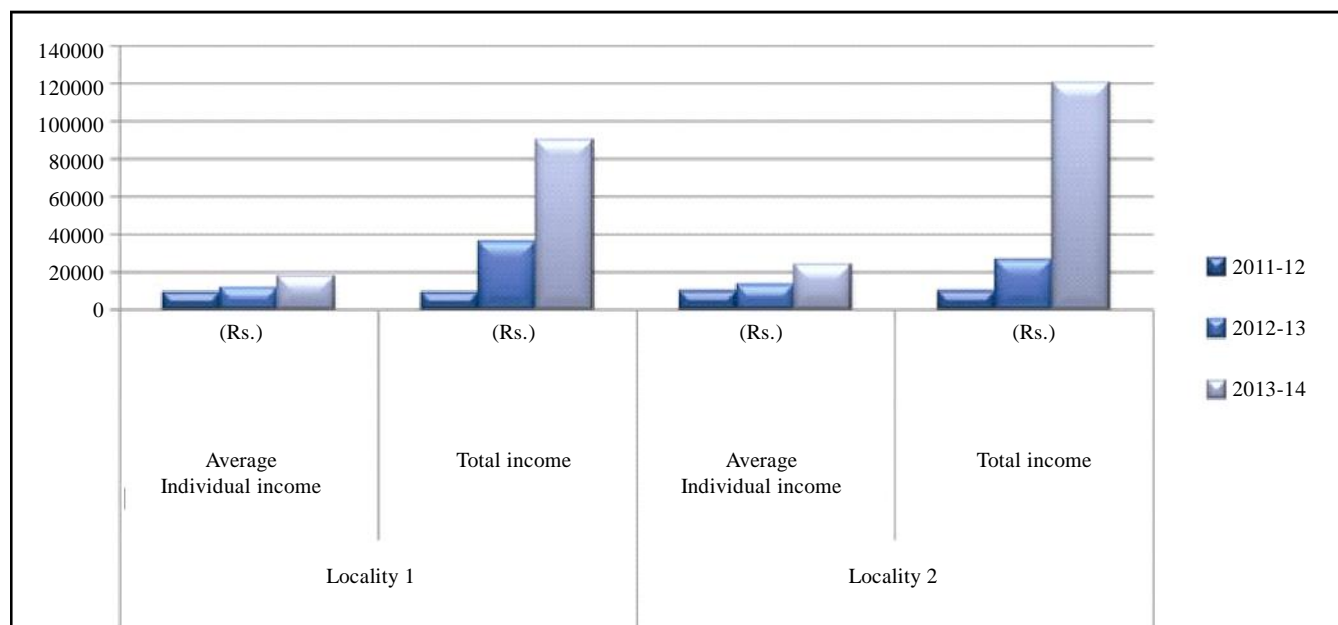


Fig. 1 : Yearly turnover of income through water hyacinth enterprises

conducted by Jerath *et al.* (2011) recommended that to setup resource centres for standardizing the process for gainful utilization of water hyacinth and other weeds for handicrafts, etc and its popularization and to identify SHGs and local artisans around wetlands and provide them training for their livelihood support.

From Table 3 it is observed that the yearly turnover of water hyacinth enterprises were Rs. 9600/- and Rs. 10,200/- in locality 1 and 2, respectively during 2011-12. For locality-1, the yearly turnover increased upto Rs. 12,000/- and Rs. 18,000/- during 2012-13 and 2013-14, respectively. Similarly for locality-2, the yearly turnover grew upto Rs. 13,200/- and Rs. 24,000/- during 2012-13 and 2013-14, respectively. From the table, it is revealed that during the period of three years, the additional income generated was Rs. 45,200/- in locality -1 and Rs. 52,200/- in locality-2 which might uplift the

financial status of the rural women of the localities. Thus, this has become one of the profitable small scale enterprises among the rural women in Darrang district and approx.30 per cent rural women are engaged in various small scale enterprises in which water hyacinth was one of them (Bhattacharjee and Bordoloi, 2014b). Yearly increase of income in both the localities may be due to development in skills, high demand of the decorative items in outside markets, exposure to outside markets, entrepreneurs' participation in various exhibitions organized by different govt depts, agencies and NGOs etc. Water hyacinth enterprises have earning profit may be because of the fact that water hyacinths are smooth by nature and thus need no more additional treatment on the finish product (Bacongo, 2010) explained that water hyacinths are smooth by nature and thus need no more additional treatment on the finish

Table 4 : Per cent share of income from water hyacinth enterprises in family's total income

Year	Locality-1				Locality-2			
	Average individual income (Rs.)	Total income from water hyacinth enterprises (Rs.)	Average individual income from all sources (Rs.)	% share of income from water hyacinth enterprises	Average Individual income (Rs.)	Total income from water hyacinth enterprises (Rs.)	Average individual income from all sources (Rs.)	% share of income from water hyacinth enterprises
2011-12	9600.00	9600.00	48000.00	20.0	10200.00	10200.00	50400.00	20.23
2012-13	12000.00	36000.00	54000.00	22.2	13200.00	26400.00	57600.00	22.9
2013-14	18000.00	90000.00	60000.00	30.0	24000.00	120000.00	64800.00	37.0
Total	39600.00	135600.00	162000.00	24.4	47400.00	156600.00	172800.00	27.43



product.

Table 4 shows the average individual income from water hyacinth enterprise during 2011-12, 2012-13 and 2013-14 were Rs. 9600/-, Rs. 12,000/- and Rs. 18,000/- sharing 20 per cent, 22.2 per cent and 30.0 per cent of family's total income, respectively in locality-1. The table also reveals that in locality-2, the average individual income from water hyacinth enterprise during 2011-12, 2012-13 and 2013-14 were Rs. 10,200/-, Rs. 13,200/- and Rs. 24,000/-, respectively contributing 20-37 per cent of family's total income during the period. This increasing share of family's total income from water hyacinth enterprise might be due to increase of demand for the products in the market, more market exposure of the entrepreneurs, exhibition – where the products get popularized and earn higher price, All these factors lead to profit maximization from the enterprise.

Conclusion:

From the present study it is found that the per cent share of the family's total income from the water hyacinth enterprise were 24 per cent in locality-1 and 27 per cent in locality-2. This reflected the growth of water hyacinth enterprise as an important income generating activity for rural women in Darrang district of Assam. The growth of this enterprise might be due to building up of skills of rural women by the KVK of the district through skill oriented training and demonstrations, increased demand of the products, more exposure of the entrepreneurs to the outside market, exhibition etc. By improving the skill, scientific knowledge and understanding of market strategies for different products, water hyacinth enterprises can occupy a major position in the financial status of Darrang district.

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