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Prospect of Economic Empowerment of Tribal Women throughFreshwater Snail Marketing in Goalpara, India

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ABSTRACT: An attempt was made to examine the contribution of freshwater snail marketing foreconomicempowerment of tribal women in Goalpara district of India. The paper emphasized that freshwater snail marketing is remunerative in tribal dominated area. The paper also emphasized that freshwater snail is a veritable means of complementing the nutritional and medicinal requirements and as a means of income generation especially for women folks. A total of 119 snail retailer and 100 buyers were interviewed using two separate structured questionnaires. Independent variables included seven socio-economic parameters and dependent variables included seven critical technical areasfor both retailer and buyers. The results revealed that retailing of freshwater snails contributes to generation of cash for the women, which empowers them socially and financially.

Keywords: Freshwater snail, food security, women, rural households, snail market and empowerment.

INTRODUCTION

Freshwater snailshave traditionally been a major component of daily diet of tribal and schedule caste people of Goalpara district of India, whichlies between 25^0 $5'$N to $60^010'$NLatitude and $90^000'$to $91^015'$ELongitude. Total geographical area of the district is1824.62 Sq. km. and population is 8, 22,306 with a density of 451 per km^2(Anon, 2009). Male and female ratio of the district is 5.1:4.9. Demographic structure of the district reveals that 36.10% people belong to Scheduled Tribes, which includes *Rabha*,*Boro*, *Garo*,*Hajong*, and 6.55% Scheduled Castes. The district has 0.039 million ha water spread area, comprising of 0.038 million ha (97.44%) of lentic and 0.001 million ha (2.56%) of lotic

waters. This amounts 0.53% of the inland water resources of the country (ARDB, 2011). These water bodies are the main source of freshwater snails. The womenfolk are the main working force in the district. They take active part in agriculture, fishing, cooking, collecting fire-wood and also in agricultural marketing. They collect freshwater snails from natural water bodies and retails in rural markets. Snails are rich source of nutrients which contains high protein, iron and low fat (Agbogidi*et al.,*2008) and almost all the amino acids required for human health (Adeyeye, 1996).This study was conducted to examine the contribution of freshwater snail marketing to economic empowerment of tribal women in Goalparadistrict of India.

METHODOLOGY

The study was conducted in Goalparadistrict,India, during 2012-13.Sixteen rural markets (Rural market yards) in eight rural development blocks were surveyed and 119 freshwater snail retailers were interviewed by usingasemi-structured questionnaire. The questionnaire developed for retailers included seven socio-economic variables(Pareek and Trivedi, 1964) *viz.* (i) age (X_{1a}), gender (X_{2a}), education (X_{3a}), occupation (X_{4a}), income (X_{5a}),access to water body (X_{6a}), interest (X_{7a}) and seven technical areas*viz.*(i) how long you have been involved in snail business?(T_{1a}), (ii) where from you collect the snails? (T_{2a}), (iii) how long you keep the collected snail before sale? (T_{3a}), (iv) what is the volume of sale in a market day? (T_{4a}), (v) is the demand for snail is higher than that you sale? (T_{5a}), (vi) how much you earn in a market day? (T_{6a}) and (vii) how many sellers are there in the market? (T_{7a}).Weight agesof the technical areas were decided by judges rating and responses were assigned. Scores assigned were: 1 for young age group (up to 29 years), 2 for middle age group (29 to 58 years) and 3 for old age group (above 58 years); for gender 1 for female and 2 for male; for education 0 for illiterate group, 1 for low education (primary), 2 for medium education group (high school), 3 for high education group (college level); for occupation 0 for daily wage earner, 1 for agriculture, 2 for pretty business; for income 1 for low income (< INR 50,000.00), 2 for medium (INR 50,000.00 - 1,00,000.00) and 3 for high (> INR

1,00,000.00), for access to water bodies 1 for low (within the village), 2 for medium (within the panchayata) and 3 for high (across the block) and for interest 1 for low (seeking alternatives), 2 for medium (satisfied with present status of business) and 3 for high (wants to grow the business.

Similarly 100 buyers were interviewed using a semi structured questionnaire which was developed purposefully and included seven independent variables(Pareek and Trivedi, 1964) *viz.*(i) age (X_{1b}), gender (X_{2b}), education (X_{3b}), occupation (X_{4b}), income (X_{5b}),interest (X_{6b}),attitude (X_{7b}) and seven questions viz. (i) are you a regular consumer of snail? (Q_{1b}), (ii) is the market price of snail is optimum? (Q_{2b}),(iii) is it availability of snail in retail market is sufficient to meet the consumer's demand? (Q_{3b}), (iv) is the population of snail is depleting in comparison to previous years?(Q_{4b}), (v) do you collect snail from the natural source?(Q_{5b}),(vi) do youthink that snail business can an enterprise like fish or animal meat? (Q_{6b}) and (vii) do you think that snail farming should be introduced in the district? (Q_{7b}).Weightage against the answers wasdecided by judges rating.Sixteen villages were visited and unstructured interview was conducted with 64 elderly (<70 years) for gathering information on ethno-medical and socio-cultural value of the district. Frequency, two steps cluster analysis, mean score, standard deviationand simple correlation were analysed by employingSPSS(version 17.0).

Table 1: Freshwater snails of Assam

Name of Gastropods	Abundance	Remarks
1.Basomatophora		
Family -Lymnaedae		
Lymnealuteolafimpura	+++	Non-edible
L. acuminate f. refuscens	++	Non-edible
L. acuminate f. gacilior	++	Non-edible
L. luteola f. ovalis	++	Non-edible
L. luteola f. typica	+++	Non-edible
Family - Planorbidae		
Indoplanorbisexustus	+++	Non-edible
2.Order- Mesogastropoda		
Family-Bithyniidae		
Digniostomacerameopema	+	Non-edible
Family-Viviparidae		
Angulyagraoxytropis	++	Non-edible
Bellamyabengalensis	+++	Edible
B. bengalensis f. typica	+++	Edible
B. bengalensis f. balteata	+++	Edible
B. dissimilis	+++	Edible
Cipangopaludinalecithis	+	
Family- Pilidae		
Pilaglobosa	+++	Edible
P.scuata	++	Edible
P. theobaldi	++	Edible
P. viren	++	Edible
Family-Thiaridae		
Brotiacostula	+++	Edible
Paludomusconica	++	Non-edible
Thiaralineata	++	Non-edible
T. tuberculata	++	Non-edible
T. scabra	++	Non-edible
Sulcospirahugeli	++	Non-edible
Paludomuspustulosa	++	Non-edible
P. reticulate	++	Non-edible
T. granifera	+	Non-edible
Family- Cyclophoridae		
Cyclophorusbensoni	+	Non-edible
3.Order- Stylomataphora		
Family- Achatinidae		
Achatinafulida	+++	Non-edible
Family-Ariophantidae		
Macrochlamysindica	+	Non-edible

1. Source; State Biodiversity Strategy and Action plane, Assam, 2002.
2. +++ = High; ++ = Medium; + = Poor

Table-2 Nutritional value of snailmeat (per 100 g)

Nutrients	Units of measurement for nutrients	Nutrient content per 100 g of snail
Water	g	79.200
Energy	kcal	90.000
Energy	kj	377.000
Protein	g	16.100
Total lipid(fat)	g	1.400
Ash	g	1.300
kCarbohydrate, by difference	g	2.000
Fiber,total dietary	g	0.000
Sugars , total	g	0.000
Minerals		
Calcium,Ca	mg	10.000
Iron, Fe	mg	3.500
Magnesium, Mg	mg	250.000
Phosphorous, P	mg	272.000
Potassium, K	mg	382.000
Sodium, Na	mg	70.000
Zinc, Zn	mg	1.000
Copper, Cu	mg	0.400
Selenium, Se	mcg	27.400
Vitamins		
Vitamin C, total ascorbic acid	mg	0.000
Thiamin	mg	0.100
Riboflavin	mg	0.120
Niacin	mg	1.400
Vitamin B-6	mg	0.130
Folate, total	mcg	6.000
Folic acid	mcg	0.000
Folate, food	mcg	6.000
Folate,DFE	mcg-DFE	6.000
Vitamin B-12	mcg	0.500
Vitamin B-12, added	mcg	0.000
Vitamin A, IU	IU	100.000
Vitamin A, RAE	mcg-RAE	30.000

Ratinol	mcg	30.000
Vitamin E (alpha-tocopherol)	mg	5.000
Vitamin E, added	mg	0.000
Vitamin K (phylloquinone)	mcg	0.100
Lipids		
Fatty acids, total saturated	g	0.361
4:0	g	0.000
6:0	g	0.000
8:0	g	0.000
10:0	g	0.000
12:0	g	0.000
14:0	g	0.056
16:0	g	0.249
18:0	g	0.051
Fatty acids, total mono unsaturated	g	0.259
16:1 undifferentiated	g	0.048
18:1 undifferentiated	g	0.211
20:1	g	0.000
22:1 undifferentiated	g	0.000
Fatty acids, poly unsaturated	g	0.252
18:2 undifferentiated	g	0.017
18:3 undifferentiated	g	0.000
18:4	g	0.015
20:4 undifferentiated	g	0.000
20:5 n-3	g	0.119
22:5 n-3	g	0.099
22:6 n-3	g	0.000
Cholesterol	mg	50.000
Others		
Alcohol, ethyl	g	0.000
Caffeine	mg	0.000
Theobromine	mg	0.000
Carotene, beta	mcg	0.000
Carotene, alpha	mcg	0.000
Tryptoxanthin	mcg	0.000
Lycopene	mcg	0.000
Lutein + zeaxanthin	mcg	0.000

Table 3: Ethno-medicinal value of Snail

Sl.No.	Snail/snail part	Medicinal use
1.	Snail meat	Whooping cough
3.	Snail meat	Ulcer
4.	Fluid produced by snails	Hypertension.
5.	Snail meat	Asthma
6.	Snail meat	Iron deficiency
7.	Snail meat	Mineral deficiency
8.	Snail meat	Arteriosclerosis
9.	Snail meat	Anaemia, high blood pressure and other fat related ailments
10.	Snail meat	Haemorrhoids and constipation
11.	Snail meat	Poor eye-sights
12.	Snail meat	Heat problems
13.	Snail meat	Kidney related diseases
14.	Snail meat	Stroke treatment
15.	Snail meat	Good voice maintenance
16.	Snail meat	Restores virility and vitality
17.	Snail meat	Reduction of labour pain and blood loss in a pregnant woman during delivery.
18.	Snail meat	Diabetes

RESULT

There are 29 species of freshwater snails available in the district (Table 1) out of which 9 (nine) species are edible (Borkakoti*et al.* 2009). Nutritional values of snail meat as reported by UNDP (1995) are presented in the table 2, which revealed that 100 gm.Ofsnail meat contains protein 16.10g,energy 90 kcal and minerals such as Magnesium 250 mg, Iron 3.50 mg, Calcium 10.00mg, Potassium 382.00mg butnofibre and sugar.Snail meat is also a rich source of vitamins. A recent investigation in the district revealed 11 ethnic dishes of snail *viz.,*(i) Snail with blackgram and alkali, (ii) Snail with *pithaguri*(rice powder)and*kolakhar*(an alkali extracted from banana stem ash) and gingerleaves, (iii) Snail and ginger leaves curry, (iv) Snail with pumpkin, (v) Snail with papaya and *kola khar,* (vi)Snail with ash gourd and *kolakhar,*(vii) Snail fried with onion, (viii) curry of snail meat and potato, (ix) Snail with gramdal, (x)curry of snail with rosella and (xi) curry of snail with lathyrus. These dishes are prepared depending on season,weather,and occasion and ethno-medical requirement. Ethno-medical values are presented in the table3.

Analysis of independent variables of the sellers revealed that only women (100%) are involved in snail retailing. Analysis of frequencies revealed,out of the retailers 47 (39.50%) belonged to middle age group (29-58 years), 72 (60.5%) belonged to old age group (> 58 years) and 32 (26.90%) were illiterate, 66 (55.50%) attained primary level of education and 21 (17.60%) attained high school level of education. None of them attained college level education. Main occupation of the respondents' family were daily wage earning for 29 families (24.40%), small scale agriculture for 80 families (67.20%) and small business for 10 families (8.40%). Income level of the respondents revealed, 49 families (41.20%) belonged to low income group (< INR 50,000.00 per annum) and 70 (58.80%) families belonged to medium group of income (between INR 50,000.00 to 1, 00,000.00). Analysis of access to water bodies revealed, 61 families (51.30%) had lower access to water bodies with the limitation to village boundary only. While 44 respondents (37.00%) had medium level of access (within the Panchayata boundary) and 14 respondents (11.80%) had high level of accessto water bodies (across the block).

While 45 respondents (37.80%) exhibited high level of interest, 63 respondents (52.90%) exhibited medium level and 11 respondents (9.20%) exhibited low level of interest.

Cluster analysis (two steps) revealed two clusters amongst the respondents (seller), cluster-A included 59 (49.60% of the cluster) and cluster-B included60 (50.40% of the cluster). There were two clusters within the age category - 21 (44.70% of the cluster) belonging to middle age and 38 (52.8% of the cluster) belonging to old age fell within the cluster-1; 26 (55.30% of the cluster) belonging to middle age and 34 (47.20% of the cluster) belonging to old age fell within the cluster-2. All the respondents were females. Cluster analysis of education reveals that cluster-1 included 15 (46.90% of the cluster) illiterate, 33 (50.00% of the cluster) of primary level, 11 (52.40% of the cluster) of high school level and cluster-2 included 17 (53.10% of the cluster) illiterate, 33 (50.00% of the cluster) of primary level and 10 (47.60% of the cluster) of high school level. Similarly, occupation wise there were two clusters: cluster-1 included 17 (58.60% of the cluster) of daily wage earner, 35 (43.80% of the cluster) of agriculturist, 7 (70.00% of the cluster) of business women and cluster-2 included 12 (41.40% of the cluster) of daily wage earner, 45 (56.30% of the cluster) of agriculturist and 3 (30.00% of the cluster) business women. Annual income also revealed two clusters of the respondents; cluster-1 included 24 (49.00% of the cluster) belonging to low income group and 35 (50.00% of the cluster) belonging to high income group and cluster-2 included 25 (51.00% of the cluster) of low income group and 35 (50.00% of the cluster) of high income group. According to their accessibility to water bodies, there were two clusters: cluster-1 included 1 (1.60% of the cluster) who had access to water bodies within the village, 44 (100.00% of the cluster) having access within the Panchayataboundaryand 14 (100.00% of the cluster) having access across the block and cluster-2 included 60 (98.40% of the cluster) having access within the village only. According to their interest on snail business, cluster-1 included 6 (54.50% of the cluster) with low interest, 35 (55.60% of the cluster) with medium level of interest and 18 (40.00% of the cluster) with high level of interest and cluster-2 included 5 (45.50% of the cluster) with low level, 28 (44.40% of the cluster) with

medium level and 27 (60.00% of the cluster) with high level of interest.

Cluster profiles revealed that centroids were mean 2.05, standard deviation 0.729 for cluster-1, mean and standard deviation were 2.25, 0.728 included cluster-2 for the Q_1. For the Q_2, mean was 1.73, standard deviation was 0.639 for cluster-1 and mean was 1.85, standard deviation was 0.577 for cluster-2. Mean was 2.03, standard deviation was 0.615 included cluster-1 and Mean was 1.95, standard deviation was 0.699 included cluster-

2 for Q_3. For Q_4, mean was 1.58, standard deviation was 0.675 for cluster-1 and in cluster-2 mean was 1.72, standard deviation was 0.715. For Q_5, mean was 2.75 and standard deviation was 0.439 for cluster-1 and mean was 1.90 and standard deviation was 0.354 for cluster-2. For Q_6, mean was 2.22 and standard deviation was 0.457 for cluster-1, mean was 1.03 and standard deviation was 0.181 for cluster-2. Mean and standard deviation were 2.02 and 0.974 for cluster-1, and in cluster-2 mean and standard deviation were 1.92 and 0.907 respectively for Q_7.

Table 4: Correlation between independent variables of snail retailers

	Age (X_{1a})	Gender (X_{2a})	Education (X_{3a})	Occupation (X_{4a})	Income (X_{5a})	Access to water bodies (X_{6a})	Interest (X_{7a})
Age (X_{1a})	119	119	119	119	119	119	119
Gender (X_{2a})	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
Education (X_{3a})	-0.139	.[a]	1.000	-0.017	0.115	0.031	-0.099
Occupation (X_{4a})	-.0328[**]	.[a]	-0.017	1.000	0.037	-0.056	-0.014
Income (X_{5a})	-0.117	.[a]	0.115	0.037	1.000	-0.034	-0.055
Access to water bodies (X_{6a})	0.061	.[a]	0.031	-0.056	-0.034	1.000	-0.089
Interest (X_{7a})	0.039	.[a]	-0.099	-0.014	-0.055	-0.089	1.000

Table 5: Correlations between independent and dependent variables of snail retailers

	Age (X_{1a})	Gender (X_{2a})	Education (X_{3a})	Occupation (X_{4a})	Income (X_{5a})	Access to water bodies (X_{6a})	Interest (X_{7a})
T_{1a}	-0.115	.[a]	-0.023	0.081	-0.061	-0.099	-0.077
T_{2a}	0.032	.[a]	0.056	-0.075	-0.093	-0.098	0.048
T_{3a}	0.147	.[a]	0.115	0.113	-0.089	0.123	0.026
T_{4a}	-0.015	.[a]	0.039	0.029	-0.081	-0.098	0.039
T_{5a}	-0.029	.[a]	0.077	0.002	0.049	0.696[**]	0.027
T_{6a}	0.006	.[a]	0.071	-0.049	-0.038	0.929[**]	-0.081
T_{7a}	0.155[*]	.[a]	0.104	-0.174[*]	0.116	0.084	0.089

**Correlation is significant at the 0.01 level (1-tailed). *Correlation is significant at the 0.05 level (1-tailed). 'a' cannot be computed because at least one of the variables is constant.

T_{1a}: How long you have been involved in this snail business?
T_{2a}: From where you collect the snail?
T_{3a}: How long you keep the collected snail before selling?
T_{4a}: What is your sale volume in a market day?
T_{5a}: Is demand for snail is higher than that you sell?
T_{6a}: How much you earn in a marketing day?
T_{7a}: How many sellers are there in a market day?

Analyses of simple correlations amongst the independent variables of sellers were done and results are presented in Table 4. Only one positively significant correlation was observed between occupation (X_{4a}) and income (X_{5a}) (r = (+) 0.162, p < 0.05).Analysis of simple correlations between the dependent and independent variables was done and results are presented in Table 5. It revealed positively significant correlation between age (X_{1a}) and (T_{7a})(r = (+) 0.155, p < 0.05); occupation (X_{4a}) and (T_{7a})(r = (+) 0.156, p < 0.05); access to water (X_{6a}) and (T_{5a})(r = (+) 0.696, p < 0.01), access to water (X_{6a}) and (T_{6a}) (r = (+) 0.929, p < 0.01). Negatively significant correlation was observed between occupation (X_{4a}) and (T_{1a}) (r = (-) 0.155, p < 0.05).

Analysis of frequencies revealed that out of 100 per cent snail buyers27(27%) belonged to young age group (up to 29 years), 35 (35.00%) belonged to middle age group (29-58 years) and 38 (38.00%) belonged to old age group (> 58 years). On the basis of gender 52(52%) were female and 48 (48)were male. Out of 100 respondents42 (42.00%) were illiterate, 46 (46.00%) attained primary level of education and 12 (12.00%) attained high school level of education. None of them had college level education. Main occupation of the respondents' family were daily wage earning for 25 families (25.00%), small scale agriculture for 44 (44.00%) and small business for 31 (31.00%). Income level of the respondents revealed 18 families (18.00%) belonged to low income group (< INR 50,000.00 per annum),58 belonged to medium group of income (between INR 50,000.00 to 1,00,000.00) and 24 belonged to high income group ((> INR 1,00,000.00). While 10 respondents (10.00%) exhibited high level of interest, 52 respondents (52.00%) exhibited medium level and 38 respondents (38.00%) exhibited low level of interest. Frequencies on the basis of attitude level of the respondents revealed that 15 (15.00%) exhibited low level, 73 (73.00%) exhibited medium level and 12 (12.00%) exhibited high level of attitudetowards purchasing snail and its consumption.

Two steps cluster analysis revealed that the buyers belonged to two clusters: cluster-A included 71% and cluster-B included 29% of respondents. Cluster analysis of independent variables revealed that according to age, cluster-1 included 22 (81.50% of the cluster) of young age, 17 (48.60% of the cluster) of middle age, 32 (84.20% of the cluster) of old age and cluster-2 included 5 (18.50% of the cluster) of young age, 18 (51.40% of the cluster) of middle age, 6 (15.80% of the cluster) of old age. Within the gender there were two clusters: cluster-1 included 42 (80.80% of the cluster) females, 29 (60.40% of the cluster) males and in cluster-2 included 10 (19.20% of the cluster) females and 19 (39.60% of the cluster) males; as per education the two clusters- cluster-1 included 14 (33.30% of the cluster) for illiterate, 46 (100.00% of the cluster) for primary educated,11 (91.70% of the cluster) for high school level and cluster-2 included 28 (66.70% of the cluster) for illiterate, 1 (8.30% of the cluster) for high school level; according to occupation cluster-1 included daily wage 9 (36.00% of the cluster), agriculture 37 (84.10% of the cluster), business 25 (80.60% of the cluster) and cluster - 2 included daily wage 16 (64.00% of the cluster), agriculture 7 (15.90% of the cluster), business 6 (19.40% of the cluster) respectively; as per income level of the respondents the two clusters- cluster-1 included 9 (50.00% of the cluster) for low income, 40 (69.00% of the cluster) for medium income, 22 (91.70% of the cluster) for high income and cluster-2 included 9 (50.00% of the cluster) for low income,18 (31.00% of the cluster) for medium income, 2 (8.30% of the cluster) for high income of the respondents; based on interest, the two clusters are: cluster-1 within the village 6 (60.00% of the cluster), 30 (57.70% of the cluster) within the Panchayata boundary, 35 (92.10% of the cluster) across the block and cluster-2 included 4 (40.00% of the cluster) within the village, 22 (42.30% of the cluster) within the Panchayata boundary, 3 (7.90% of the cluster) across the block; and cluster-1 included 14 (93.30% of the cluster) for low attitude, 46 (63.00% of the cluster) for medium,11 (91.70% of the cluster) for high level of attitude and cluster-2 included 1 (6.70% of the cluster) for low, 27 (37.00% of the cluster) for medium,1 (8.30% of the cluster) for high level according to their attitude towards snail purchasing. Cluster profiles revealed that centroids were - mean 1.99, standard deviation 0.727 for cluster-1; and mean was 2.31, and standard deviation was 0.712 for cluster-2 for Q_1. For Q_2, mean was 1.76 and standard deviation was 0.641 in cluster-1; and mean was 1.93,

standard deviation was 0.458 in cluster-2. For Q_3, mean was 1.75 and standard deviation was 0.648 in cluster-1 and mean was 1.90 and standard deviation was 0.557 in cluster-2. The mean was 0.224, standard deviation was 0.665 for cluster-1; and mean was 2.52 and standard deviation was 0.634 for cluster-2 for Q_{4s}. For Q_{5s}, the mean was 1.66

and standard deviation was 0.792 in cluster-1 and mean was 1.24 and standard deviation was 0.435 in cluster-2. For the question Q_{6s}, mean was 1.62 and standard deviation was 0.704 in cluster-1; mean was 1.66 and standard deviation was 0.641 in cluster-2. For Q_{7s}, the mean and standard deviation were 2.08 and 0.671 in cluster-1; mean was 1.86 and standard deviation was 0.639 in cluster-2.

Table 6: Table- Correlation between independent variables of snail buyers

	Age (X_{1b})	Gender (X_{2b})	Education (X_{3b})	Occupation (X_{4b})	Income (X_{5b})	Interest (X_{6b})	Attitude (X_{7b})
Age(X_{1b})	1.000	0.294**	0.136	0.006	-0.032	-0.041	-0.137
Gender(X_{2b})	0.294**	1.000	-0.048	-0.131	-0.027	-0.077	0.017
Education(X_{3b})	0.136	-0.048	1.000	0.316**	0.249*	0.080	-0.170
Occupation(X_{4b})	0.066	-0.131	0.316**	1.000	.0346**	0.113	0.005
Income(X_{5b})	-0.032	-0.027	0.249*	.0346**	1.000	0.130	-0.084
Interest(X_{6b})	-0.041	-0.077	0.080	0.113	0.130	1.000	-0.005
Attitude(X_{7b})	-0.137	0.017	-0.170	0.005	-0.084	-0.005	1.000

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Table7: Correlation between independent and dependent variablesofsnail buyers

	Age (X_{1b})	Gender (X_{2b})	Education (X_{3b})	Occupation (X_{4b})	Income (X_{5b})	Interest (X_{6b})	Attitude (X_{7b})
Q_{1b}	-0.135	0.059	-0.053	0.120	0.075	-0.113	-0.046
Q_{2b}	0.032	-0.099	-0.122	-0.149	-0.042	-0.041	0.139
Q_{3b}	-0.014	0.067	-0.007	0.092	0.056	-0.028	0.043
Q_{4b}	-.0199*	0.050	-0.054	0.022	0.025	-0.118	-0.205*
Q_{5b}	-0.016	0.057	0.271**	0.162	0.016	0.084	-0.037
Q_{6b}	0.001	-0.037	-0.002	0.044	.0212*	-0.085	-0.118
Q_{7b}	-0.061	-0.029	0.148	0.199	-0.003	0.225*	0.031

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Q_{1b}: Are you a regular consumer of snail?
Q_{2b}: Is the market price of snail is high?
Q_{3b}: Is availability of snail in retail market is sufficient to meet the consumer demand?
Q_{4b}: Is the snail population is depleting in comparison to previous years?
Q_{5b}: Do you collect snail from natural source?
Q_{6b}: Do you think snail business can be an enterprise?
Q_{7b}: Do you think that snail farming should be introduced in the district?

Analysis of simple correlations of snail buyers amongst the independent variables was done and results are presented in Table 6. Positively significant correlations were observed between age (X_{1b}) and gender (X_{2b}) (r = (+) 0.294, p < 0.01); education (X_{3b}) and occupation (X_{4b}) (r = (+) 0.316, p < 0.01), education (X_{3b}) and income (X_{5b}) (r = (+) 0.249, p < 0.05); occupation (X_{4b}) and income (X_{5b}) (r = (+) 0.346, p < 0.01). Analysis of simple correlations of data gathered from snail buyers are presented in Table 7.The analysis revealed positively significant correlation between education (X_{3b}) and Q_{5b} (r = (+) 0.271, p < 0.01); income (X_{5b}) and Q_{6b}(r = (+) 0.212, p < 0.05); interest (X_{6b}) and (Q_{7b}) (r = (+) 0.225, p < 0.05). Negatively significant correlations were observed between age (X_{1b}) and Q_{4b} (r = (-) 0.199, p < 0.05); attitude (X_{7b}) andQ_{4b} (r = (-) 0.205, p < 0.05).

Discussion

Retailing of freshwater snail in rural markets is an enterprise for financial freedom of the tribal women of Goalparadistrict which have been empowering them socially and economically as well. Freshwater snails represent traditional delicacy for tribal people because of its traditional and medicinal values. Market price of freshwater snails depends mainly on seasonality, occasions and local demand. The market is womendominated (100%). Price varies between INR 60.00 per kg and INR 95.00 per kg. They normally earn INR 500 - 650/day.

Snail collection from natural habitats can be seen as a real means of generating income and to achieve self-sufficiency in hard times as experienced presently. The need to enhance mass production of snails cannot be overestimated because snails can be reared both on small scale and large-scale systems (Elinsile, 1982). The practice needs small space. Besides, snails have been shown to adapt to various environmental conditions hence can be raised in urban, semi-urban and rural areas. In addition, the meat appears as a delight on the table to most families (Omole*et al*., 2002). They can be managed in a small space (Ejidike, 2002).Snail farming is anincomegenerating business (Odunaiya, 1998). The capital required for the establishment of a heliciculture unit is significantly small and the labour requirement is alsoless(Goodman, 2008).In Goalpara district,

snailis an important source of income for some families. They collect snailsfrom natural sources and sell in daily and weekly markets. The money earned from sale is used for many purposes including education of their children and meeting other needs. Usually, snails become scarce during the winter hence price goes high (Amusan, 2002). Farming of snails could make them readily available at reasonable prices and assured income as well.Snailfarming therefore, will go a long way for poverty alleviationandself-employment of the women folks.

Conclusion

Snail farming is anincomegeneratingmeansforaccomplishingself-sufficiency.Rural womenfolk are engaged in collection and selling of snails. For some women selling of snail accounts for significant proportion of their cash income, while for others it is the only source of income. It is observed that a sharp decline of snail population in natural sources of the district which may hamper in this enterprise. The study suggests that natural habitats should be protected otherwise there shall be loss of snail population. Appropriate policy should be framed for conservation of snail habitats and promotion of snail aquaculture in the district. Government should encourage credit institutes in this area for financial support and extension service providers for development of snail aquaculture as an alternative occupation for womenfolks.

Acknowledgement

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