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Role of food intake in supporting sustainable livelihood

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ABSTRACT

The sustainable livelihoods idea was first introduced by the Brundt land Commission on Environment and Development as a way of linking socioeconomic and ecological considerations in a cohesive, policy-relevant structure. Household level food security- its importance as Sainath (2007) puts it: "Seldom has policy been so forcefully implemented as in the 1990s. For ten years, governments have assaulted the livelihoods and food security of the poor. That security does not lie in mountains of grain but in millions of jobs and workdays for people." Thus,to assess the level of sustainability of livelihood of the respondent farmers.and to assess the interrelationship between food intake and the set of predictor variables of sustainable livelihood the present study was undertaken. The work was conducted with the following variables-age-X_1, education-X_2, family size-X_3, family statement with adult person-X_4, functional education strata (FES)-X_5, cropping intensity-X_6, irrigation status-X_7, animal/bird number-X_8,holding size-X_9,income(Rs) per cottah-X_{10}, spacing(%)-X_{11}, fertilizer(%)-X_{12}, irrigation(%)-X_{13}, pesticide(%)-X_{14}, yield(%)-X_{15}, food intake value.($g^{-1}day^{-1}head^{-1}$) -Y. Purposive as well as simple random techniques was adopted for the study. For selection of district, block, village purposive sampling technique was employed. Respondents were randomly selected. The study reveals that the access to availability of food depends on yield performance, cropping intensity, holding size owned by the farmer. Higher holding size means higher economic security and better purchasing capability. Spacing helps a critical intercultural operation through engagement of optimum labour utilization and these two casual variables have explained 51% variable of the consequent variable.

Key words: Food intake value, food security, holding size, spacing sustainable livelihood

Sustainable rural livelihood has been defined as a livelihood that comprises of the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: A livelihood is sustainable than can cope with and recover from stress and shocks , maintain or enhance its capabilities and assets , and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term, (Chambers and Conway, 1992).

In sustainable livelihood, the support from different capitals is essential. Four types of capital are identified in the IDS (Institute for Development Studies) framework (which does not pretend to be an exhaustive list) which support and sustain livelihood:

Natural capital

The natural resources stocks (soil, water, air, genetic resources etc.) and environmental services (hydrological cycle, pollution sinks etc.) from which resources flensed services useful for livelihood are derived.

Economic or financial capital –

The capital base (cash, credit/ debt, saving's and other economic assets, including basic infrastructure and production equipment and technologies) which are essential for the persuit of any livelihood strategy.

Human capital-

The skills, knowledge ability to labour and good health and physical capability important for the successful persuit of different livelihood strategies.

Social capital- the social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when persuing different livelihood. Strategies requiring co- ordinate actions.

Household livelihood security is defined as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration).

Food is still the single most important commodity in the urban consumer's basket of goods and services, accounting for 55 percent of all expenditures. The volume of food intake in by an individual everyday is an indicator for assessing sustainable livelihood. With the rapid decrease of food availability per capita has been a serious concern towards attaining sustainable livelihood. Over the last decades the decline of food availability has been to the term of 25-30 percent that has been made, the goal of attaining sustainable livelihood in India a move complex and vicious endeavor.

The household food security approach that evolved in the late 1980s emphasized both the availability of food and stable access to it; food availability at the national and regional levels and stable and sustainable access at the local level were both considered essential to household food security.

Nutritional security demonstrated that growth faltering is not necessarily directly related to failure in household food security. It shifted the emphasis away from simple assumptions concerned with households' access to food, the resource base and food systems by demonstrating the influence of health and disease, caring capacity, environmental sanitation and the quality and composition of dietary intake on nutritional outcomes.

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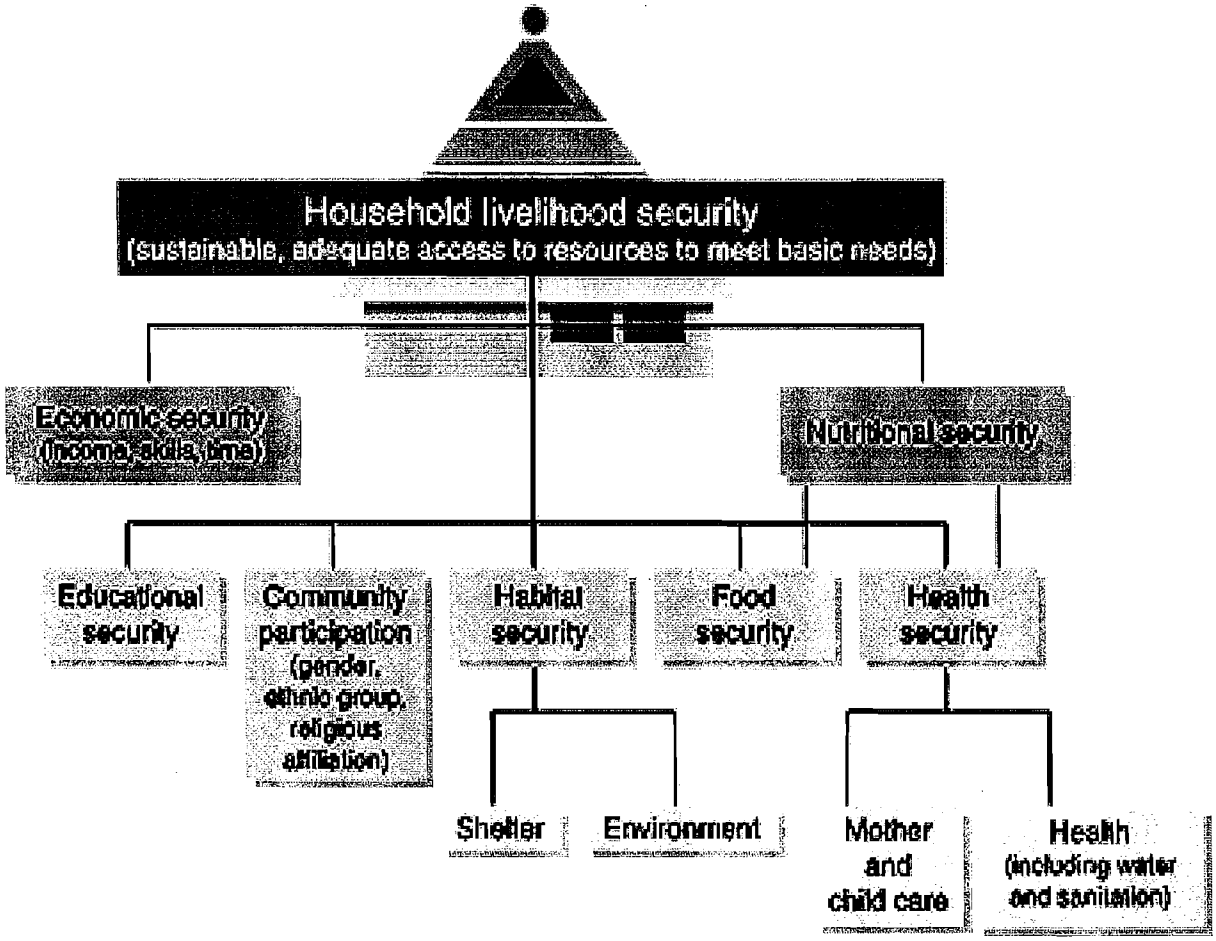
Thus, food and nutritional security are subsets of livelihood security; food needs are not necessarily more important than other basic needs or aspects of subsistence and survival within households. Food-insecure households juggle among a range of requirements, including immediate consumption and future capacity to produce. Food security has an adverse effect on sustainable livelihood because Food securities somewhere sign of knowledge or literacy. And sustainable livelihood approach is applicable to reduction of poverty. So, it is interrelated. However, both are important for community or nation.



In order to improve the livelihood of rural society, it is important to put more focus on farmer empowerment: the major challenge would be revisiting how to manage the society to make the best use of both human and social resources (Nayna, 2008). A survey was conducted in the Rasuwa District of northern Nepal to identify existing indigenous rangeland management systems, examine the challenges facing the development of sustainable practices and suggest possible strategies for promoting their development (Dong *et al.*, 2007). Study of various farming systems including cereal farming, fruit cultivation and the practice of out-of-season vegetables in the different altitudinal zones of the state of Eritrea suggests strategies for sustainable livelihood of the populace. The study reveals that potential of cultivating out-of-season vegetables, fruits and cash generating products is considerably higher than traditionally cultivating subsistence cereal crops. (Sati, 2008). With this backdrop the present study was undertaken with the following objectives:

I. To assess the level of sustainability of livelihood of the respondent farmers.
II. To assess the interrelationship between food intake and the set of predictor variables of sustainable livelihood.

MATERIALS AND METHODS

The work was conducted with the following variables- age-X_1, education-X_2, family size-X_3,

family statement with adult person-X_4, functional education strata (FES)-X_5, cropping intensity-X_6, irrigation status-X_7, animal/bird number-X_8,holding size-X_9, income(Rs) per cottah-X_{10}, spacing(%)-X_{11}, fertilizer(%)-X_{12}, irrigation(%)-X_{13}, pesticide(%)-X_{14}, yield(%)-X_{15}, food intake value.($g^{-1}day^{-1}head^{-1}$) -Y Food intake value $g^{-1}day^{-1}head^{-1}$-Y, Purposive as well as simple random techniques was employed for selection of respondents. There are 134 families in the village Ghoragachha which constitute the total population of the study. Out of 134 families only 53 families have been interviewed.

RESULTS AND DISCUSSION

Table-1 is presenting the descriptive distribution of both independent and dependent variables. In case of age (X_1), mean age of respondents of the study was 44.056 years with a standard deviation of 8.155 years for total distribution. The coefficient of variation of this age distribution of respondents was 18.510, which explained the higher level of consistency of the total distribution. The mean value of education (X_2) of respondents was 8.245 that were in primary and

Table 1: General distribution of variables in terms of Mean, S.D. and C.V

Variables	Mean	SD	CV (%)
X_1 Age	44.057	8.155	18.511
X_2 Education	8.245	3.721	45.128
X_3 Family Size	9.283	2.884	31.065
X_4 Family Statement with adult person	49.567	11.010	11.213
X_5 Functional Education Strata(FES)	2.151	1.257	58.457
X_6 Cropping Intensity (%)	295.396	17.795	6.024
X_7 Irrigation status	76.887	32.746	42.590
X_8 Animal/Bird number	5.925	3.528	59.549
X_9 Holding Size	11.113	3.905	35.138
X_{10} Income(₹) per cottah	608.491	78.749	12.942
X_{11} Spacing (%)	81.585	8.867	10.868
X_{12} Fertilizer (%)	96.887	8.925	9.211
X_{13} Irrigation (%)	81.472	7.1523	8.779
X_{14} Pesticide (%)	91.566	8.219	8.977
X_{15} Yield (%)	73.094	7.915	10.829
Y Food intake g^{-1} $day^{-1}head^{-1}$	103.453	19.709	19.052

secondary school level. The S.D. of distribution was 3.720 with a coefficient of variation 45.128% which in turn reflected the medium level of consistency. In case of holding size (X_9) and irrigated land (X_7) cottah, mean value of these two variables of respondents of the study wads 11.113 and 76.886 with a standard deviation 3.904 and 32.746 for total distribution. The coefficient of variation of this holding size and irrigated land (cottah) distribution of respondents was 35.137 and 42.590 which explained the medium level of consistency of the total distribution.

Table 2: Coefficient of correlation between Food intake value (Y) and 15 independent variables

	Variables	Correlation coefficient
X_1	Age	-0.064
X_2	Education	0.063
X_3	Family Size	-0.076
X_4	Family Statement with adult person	-0.217
X_5	Functional Education Strata(FES)	0.024
X_6	Cropping Intensity (%)	0.333*
X_7	Irrigation status	0.415**
X_8	Animal/Bird number	-0.122
X_9	Holding Size	0.636**
X_{10}	Income(Rs) per cottah	0.276*
X_{11}	Spacing (%)	0.328*
X_{12}	Fertilizer (%)	-0.154
X_{13}	Irrigation (%)	-0.044
X_{14}	Pesticide (%)	-0.008
X_{15}	Yield (%)	0.234

*,** *Significant at 0.05 and 0.01 level of significance, respectively*

The mean value of cropping intensity (X_6) and income (`) per cottah (X_{10}) was 295.396 and 608.490 with standard deviation 17,794 and 78.749 respectively. The coefficient variation was 6.024 and 12.941 respectively, which depicted the level of consistency. In case of spacing(%)(X_{11}), fertilizer(%)(X_{12}), irrigation(X_{13}), applied pesticide(X_{14}) and yield (%)(X_{15}) mean value of these variables of respondents of the study was 81.854, 96.886, 91.556, 81.47, 91.566 and 73.094 with a standard deviation 8.866, 8.924, 7.152, 8.129 and 7.915 for total distribution. The coefficient of variation of these variables distribution of respondents was 10.868, 9.211, 8.778, 8.976 and 10.82 which

explained the high level of consistency of the total distribution.

The mean value of functional education strata (X_5) and animal.bird^{-1} number (X_8) of respondents was 2.150and 5.924 that were in low level. The S.D. of distribution was 1.257 and 3.528 with a coefficient of variation 58.456 and 59.549 which in turn reflected the low level of consistency.

In case of Food intake g^{-1}day^{-1}head^{-1} (Y) mean value of these two variables of respondents of the study was 103.452 with a standard deviation 19.709 for total distribution. The co efficient variation of Food intake value/ distribution of respondents was 19.051 which explained the medium level of consistency of the total distribution.

From the table-2 it has been found that the following variables Cropping Intensity (%)(X_6), Irrigated land (cottah) (X_7), Income(X_{10}), Spacing(X_{11}) have recorded significant and positive correlation food intake value(Y) of the respondent. The access to availability of food depends on yield performance, cropping intensity followed, holding size possess by the farmers. These all agro economic variables have cumulatively amounted to higher access to food by the respondents.

Table 3: Regression analysis for selecting most significant variables having prominent regression impact on consequent variables

Variables			ß	T	R^2
Food intake value (Y)	X_9	Holding Size	0.63	6.34	R^2=0.51
	X_{11}	Spacing (%)	0.32	3.21	

Note: Factor value for R^2=0.51 with 37 df

Table 4: Path analysis for deriving direct, indirect and residual effect of exogenous variables on consequent variables (Food intake value (Y)

Variables	Correlation coefficient (r)	Direct effect (d)	Indirect effect (r-d)	Substantial indirect effect		
				i	ii	iii
X_1	-0.064	0.070	-0.135	-0.355(X_9)	0.221(X_3)	0.072(X_{11})
X_2	0.063	0.061	0.002	0.253(X_9)	-0.135(X_3)	-0.093(X_{15})
X_3	-0.076	0.307	-0.383	-0.276(X_7)	-0.180(X_9)	0.051(X_1)
X_4	-0.217	-0.152	-0.065	0.144(X_{15})	-0.108(X_{11})	-0.076(X_{10})
X_5	0.024	-0.108	0.132	0.263(X_9)	-0.174(X_{15})	0.100(X_{10})
X_6	0.333	0.245	0.088	-0.428(X_{15})	0.346(X_9)	0.240(X_{10})
X_7	0.415	-0.474	0.889	0.670(X_9)	0.179(X_3)	0.077(X_6)
X_8	-0.122	-0.168	0.046	-0.009(X_7)	0.090(X_3)	0.055(X_9)
X_9	0.636	1.039	-0.403	-0.306(X_7)	-0.100(X_{15})	0.082(X_6)
X_{10}	0.276	0.360	-0.084	-0.513(X_{15})	0.163(X_6)	0.126(X_9)
X_{11}	0.238	0.288	0.040	-0.246(X_{15})	0.144(X_{10})	0.072(X_6)
X_{12}	-0.154	0.042	-0.196	-0.179(X_9)	0.088(X_7)	-0.080(X_{11})
X_{13}	-0.044	-0.043	-0.001	0.173(X_9)	-0.082(X_{11})	-0.033(X_3)
X_{14}	-0.008	0.097	-0.105	-0.135(X_7)	0.113(X_3)	0.059(X_8)
X_{15}	0.234	-0.563	0.797	0.326(X_{10})	0.186(X_6)	0.185(X_9)

Note: Residual effect 0.058

Table-3 presents multiple regression analysis showing the magnitude of regressional impact on the consequent factor i.e. Food intake value(Y). It has been found that two variables Holding size(X_9) and Spacing(X_{11}) have recorded a significant on regression impact on food intake value higher holding size means higher economic security and better purchase capability.

Spacing helps a critical intercalated operation through engagement of optimum labour utilization and these two casual variables have explained 51% variable of consequent variable.

Table-4 presents the path analysis to decompose the total effect into direct, indirect and residual effect of the exogenous variables on the variable food intake value (Y). It has been found that the variable holding size (X_9) has recorded the highest direct effect on food intake value (Y). In the domain of food security, income generation and livelihood security, holding size is still a strong provider. The other way we can say that land is still uncontrolled factor in rural economy.

It is concluded from the study that the access to availability of food depends on yield performance, cropping intensity, holding size owned by the farmer. All these agro-economic variables have cumulatively amounted to higher access to food by the respondents. It has also found that two variables holding size (X_9) and spacing (X_{11}) have recorded a significant regression impact on food intake value higher holding size means higher economic security and better purchase capability. Spacing helps a critical intercultural operation through engagement of optimum labour utilization and these two casual variables have explained 51% variable of the consequent variable.

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