Chapter 7

Summary and Conclusion

The new age extension science, in an exponential manner, has to undergo an ontime transformation, sometimes may be a metamorphosis either, in its approach towards ecology and energy dynamics. Socio-economic systems depend on a continuous throughput of materials and energy for their reproduction and maintenance. This dependency can be seen as a functional equivalent of biological metabolism, the organism's dependency on material and energy flows and we therefore employ the concept of "social metabolism". Contrary to the biological notion, however, the socio-ecological paradigm links material and energy flows to social organization, recognizing that the quantity of economic resource use, the material composition and the sources and sinks of the output flows are a function of socio-economic production and consumption systems. These systems are highly variable across time and space. We describe social systems according to their metabolic profiles in relation to their economic and technological structures, as well as their demographic governance and information patterns.

RESEARCH SETTING

The villages i.e. Ghoshalia under Balagarh block, in district of Hooghly and Maheswarpur under Chakdaha block, in the district of Nadia, West Bengal, was selected purposively and a total number of 100 respondents were selected by simple random sampling method. The independent variables selected for the study were Age(X_1), Education(X_2), Gender ratio(X_3), Family size(X_4), Family education status(X_5), Innovation index(X_6),

Occupation(X_7), Family MIS(X_8), Cropping intensity(X_9), Farm size(X_{10}), Expenditure allotment(X_{11}), Credit load(X_{12}), Annual income(X_{13}), Irrigation index(X_{14}), Crop diversity index(X_{15}), Crop energy productivity (X_{16}) and Adoption index(X_{17}) Size of water body(X_{18}) and Cattle holding economics(X_{19})while five dependent variables selected for the study were Cattle Energy Balance (Y_1), Energy equivalence of cowdung (Y_2), Crop energy metabolism (Y_3), Energy consumption in farm family(Y_4), Perceived impact on energy consumption (Y_5) and Farmer's energy metabolism (Y_6).

RESEARCH METHODOLOGY

After collection of data, data were processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. Process implies editing, coding, classification and tabulation of collected data. The main statistical tools and techniques used in the present study are as follows:

1. Mean
2. Standard Deviation
3. Coefficient of Variation.
4. Correlation Coefficient
5. Multiple Regression
6. Path Analysis
7. Factor Analysis (PCA)
8. Canonical Correlation.
9. Canonical Discriminant Analysis.

All these have been done to establish and estimate the pattern, direction and intensity of interaction to ultimately estimate the energy consumption patter in a farming system.

A pilot study was also being conducted before construction of data collecting device. The variable which has been found to have correlation with Crop energy metabolism (Y_3) was Age(X_1). The path analysis also showed the impact of exogenous variables on the endogenous variables simultaneously, showing significant impact on the derived variable i.e. Crop energy metabolism (Y_3).

CONCLUSION

Any ecosystem in this universe needs energy as the driving force to maintain the system functioning and system behavior and it's no exception to farming ecosystem. The efficient energy consumption, generation and transfer have become a subject not only related to technology and input but also related to management and planning, which again is socio-ecological in nature. The new age extension is looking for energy in economic farming system for a long term productive function of the system to assure food and ecological security in present time and for posterity. The present research has revealed that the soft variables, socio-economic and managerial in nature have played a decisive role in efficient energy management for the micro and micro-micro farming system. The credit behavior level of cattle holding, occupation, age, cropping intensity and irrigation index have been identified, either in step-down regression or in canonical covariate analysis, to have discernible contribution to manage and sustain an energy efficient farm. Thus, it has led to generate following concluding remarks –

1. Energy management for any farm is complex and mutually interactive to form a complete web of interaction.
2. Proper planning, execution and management for productive farms shall also lead to the better performance of an energy efficient farm.
3. Irrigation or cropping intensity, age or occupation…..all being socio-managerial in nature, have got the substantive contribution to transform an energy prodigal farm into an energy efficient farm.
4. Proper extension strategy and policy at the grassroots level is an essential precondition to steer this huge function of energy management to a proper direction otherwise there will be a telling effect on the energy management of farms.

ISBN: **978-93-85822-54-4**

To combat the brunt of climate change associated with energy crisis in farm energy extension is offering a new paradigm shift, that is, ***input management extension to energy management extension.***