

HEALTH AND AGRICULTURAL SUSTAINABILITY IN DEVELOPING REGION

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Abstract: Health of the developing region's population is generally not good due to variety of reasons. The state of disease/illness or any other sign or problems of health is the most dynamic aspect of study. This study focuses on general health condition of the agricultural population and its relationship with the agricultural sustainability.

This paper is an outcome of the observation and information of the past studies carried out in a segment of lower Ganga Plain located in eastern India. This area may serve as a representative of the developing region.

Disease/illness or any other sign of health problems increasingly deteriorate health condition of each age group population. Health problems of agricultural workers cause a great loss of man-days and deficit in labour supply in agriculture and in turn adversely affect household and agricultural sustainability.

Key words: Health; agricultural sustainability; developing region, India

Introduction

Health is one of the contemporary social issues in the field of geography of health and agriculture. It leads to overall socio-economic progress and helps enhance the quality of life of the people of an area. Abusaleh, S. (1999, p. 132) rightly pointed out that health is an indicator of well-being that has direct implications not only for the quality of life but also indirect implications for the production of economic goods and services. Battista (1996, pp. 197-199) noted that for each individual health represents his/her working capacity and, thus, the means to a better life for himself or herself or for the family. In this sense health condition is a result of the combination of functions or problems of different physiological systems or parts of human body. The function of a system of human body may be normal, better than normal and worse than normal and problems of a part of the body may be in terms of symptom, sign, disease, or any other indication of health. Such functional characteristics or problems of physiological systems or parts of

human body are the indicators of physical health. Each indicator has two functions – positive and negative. When the function of a system of the body is normal or better than normal, it is called positive dimension and when the function is not normal or worse than normal with sign of other problems, it is called negative dimension of health condition. In other words, one can say that if the body systems function correctly, it is called positive, and if the body or parts of it function incorrectly, it is called negative dimension of health condition. Correct or orderly function is a sign of good health, whereas incorrect or disorderly function is a sign of health problem and shows poor health. Good health is essential to economic growth as it helps increase the productivity of labour. Good health, therefore, is an essence of positive dimension and ill health is an essence of negative dimension of health condition (The human Development Network, 1998, p. 2). According to Eyles John (1987, p. 8) health, in positive sense, is a functional ability or capacity to work. Trewartha, G.T. (1969, p. 106) stated that

health has both the negative and positive aspects depending upon the presence and absence of disease respectively.

Therefore, health condition is a combination or a set of both the positive and negative functional characteristics and problems of physiological system or parts of a person's body. Health condition is not static. It changes in space and time due to alteration in human body or due to the influence of social, cultural, economic, political and environmental factors. Here, for assessing health condition the state of blood pressure, dizziness, breathing trouble, sleep condition, tiredness and physical difficulties during standard working period, appetite and digestive condition, problems in ear, nose, throat, eyes, teeth and gum are taken into consideration. In all these, one finds normal, good, not good and other positive or negative signs of both the mental and health, which in turn indicate the state of total health of an individual. Rosenblatt, R.A. and Moscovice, I.S. (1982, p. 59) took into account different types of diseases of chronic and acute groups as the indicators of health condition. Park, J.E. and Park, K. (1991, pp. 12-14) also considered sweet breath, a good appetite, sound sleep, normal blood pressure and several other signs as indicators of good health.

Health condition of an individual depends on his/her age, social group, educational achievement, economic condition, and cultural system, personal habits and life style as well as on the types and nature of environment in which he/she spends life.

Health condition of the developing region's population is generally not good because of poor education, poor nutrition and calorie intake, nutritionally inadequate diet, under-nourishment,

malnutrition, lower per capita income, poor accessibility of health and educational facilities, lower per capita and national expenditure on health and education, poor housing quality, unsafe drinking water, poor sanitation, variety of diseases, increasing environmental pollution, high fertility and mortality as well as low life expectancy. All these characteristics are closely related to each other and make the general health of the people poor.

Area of Observation:

This study is a result of the past observations and information of the author's research works carried out in Birbhum District, West Bengal. This is a part of Lower Ganga Plain in eastern India. This may serve as a representative area of the developing region.

Concept of Sustainability:

Very simply, sustainability is the ability of something to sustain or support the wants / interests of a region's population at particular point of time. It is also meant for maintaining the status quo in the carrying capacity or supporting ability of anything over time for the improvement of human welfare. In broader sense, sustainability is an ability or capacity of a region's resources to meet the needs or necessity of its present population. It stands for ensuring continuity in efficacy under changing condition overtime too. The world Commission on Environment and Development (1987 p. 20) in "Our Common Future" defined sustainability 'as a strategy that meets the needs of the presents without compromising the ability of future generations to meet their own needs or to achieve their own requirements. Nasir El Bassan (1999, pp. 39 – 40 & 56) expresses his opinion that the key concept of

sustainability is to promote the conservation and sustainable use of natural resources, which, allows long-term economic growth, and enhancement of productive capacity along with being equitable and environmentally acceptable. Sustainability in his opinion reflects a major issue in our understanding of the necessity and of who is responsible for whom and for what in making sure that the world functions in productive and effective way into the future. In other words, sustainability reflects our understanding of necessity and responsibility on the question for whom, for what and how production can be guided into the future in a way that is efficient, environmentally sound and sparing on resources.

In author's opinion, sustainability of any thing depends on both the rate of consumption and production of resources. Not only this but also sustainability depends on the requirement, generation and supply of resources to meet the needs of the people. Sustainability, of any region or sector in the world of human society depends on its population size, its growth and necessity as well as on the generation, stock and availability of resources. Sustainability may continue over time and maintain status quo or may change (decrease or increase) depending upon the dynamics of population growth, size of population, stock and availability of resources in space and time. World Development Report (2003, p.14) also underlines that both the needs and sustainability are not constant. Both change over time. Needs of the people of an area generally increase along with an increase in population. Similarly, sustainability of resources (agricultural or non-agricultural, natural or human) changes over time owing to utilization of available resources (i.e. the stock of resources). This

happens only due to existing demands of the present population (threshold) and of future population or future generation and their potential demands of resources to meet their future necessities. Therefore, sustainability may be – present sustainability and future sustainability. Present sustainability stands for meeting the needs of the present and future sustainability for future needs.

If the ability of available resources (stock of resources) of an area is quite sufficient to sustain or support the present needs or interests of the existing total population, it is known as balance between the ability of resources and population's necessities. This condition shows the optimum ability of resource or optimum sustainability of resources of that area. If the sustaining ability of an area's resource is less than the needs or requirements of the present, it is called under-sustainability and suggests for an enhancement in production. When the sustaining capacity of the area's resources is more than the required needs or demands of the present, it is called over-sustainability with surplus resource. However, all these are not static. They change over time due to change in both the needs or necessity and the sustaining capacity of resources of the area. Change in sustainability may be positive or negative. Positive change implies progress in the sustaining capacity of resources of agricultural and non-agricultural category. This is caused due to generation of additional resources by production management system. Negative change implies fall or decline in the sustaining capacity caused by social stress or conflict, economic restraints, political instability and environmental damage including deterioration in health and education etc. This change makes imbalance between the interests of the present and sustaining ability of resources.

This may affect the necessity of future generation too. All these factors jeopardize the sustainability, which in turn adversely affect the intergenerational well-being. Thus, for the well-being of future generation sustainability must increase with the pace of increase in population. In this way, one can say that a country's sustainability depends on positive change or progress in stock of resources or wealth. For maintaining intergenerational well-being of a region there must be a rise in its wealth over time. Therefore, intergenerational well-being will rise only when wealth increases over time.

Health and Agricultural sustainability:

Health and agricultural sustainability are explicitly related to each other. One is means and another end or vice-versa. Health as explained earlier is a result of combination of both the positive and negative functional characteristics or correct (orderly) and incorrect (disorderly) functions of physiological system or parts of human body. Agricultural sustainability relates the concept of production and the carrying capacity of it with reference to the interests of existing population. In broader sense, agricultural sustainability of an area is the ability or capacity of agricultural production that can fully sustain / support or satisfy the present needs or necessity of its population. Agricultural sustainability is also meant for optimum or balanced relationship between agricultural production and population of an area at any point of time. Agricultural sustainability is a result of the combination of proper utilization and quantity and quality of land, labour and capital. These three are the basic factors of production and its sustainability. Agricultural production, which fully satisfies the needs of present, can not be maintained if there is

fall in oxygen and rise in CO_2 in the biosphere's system or even in the soil. Degradation of land and decline in fertility of soil due to several reasons disturb the sustainability of agriculture. Similarly, scarcity of quantity and quality of labour and capital as well as inefficient and inadequate utilization of them can not sustain or maintain the sustainability of agricultural system.

Out of the triad of resources - land, labour and capital – labour is very crucial agent of agricultural sustainability. It is the most important factor of production. It increases or diminishes or maintains the status quo of agricultural sustainability. Agricultural sustainability greatly depends on the quantity, quality, productivity and way of utilization of labour. All these characteristics of labour are a result of its health condition. Health condition provides or determines the workers with their energy, strength, vigour, vitality, stamina or their labour productivity in terms of labour or human resource. The levels of development or productivity of agriculture depends to a large extent on the rate of labour utilization because it helps increase goods, services and influence the production and over all development in agriculture depends largely upon the timely and efficient utilization of healthy workers. Agriculture can not be sustainable in lack of proper utilization of able bodied agricultural workers. It is agricultural workers who by dint of their hard labour break the hard rocks, plough the land, make the soil fertile and grow the crops, increase production and maintain the sustainability of agriculture. There is considerable possibility of change in health of the agricultural workers due to exposure of weather condition, adverse working atmosphere, working habits, injuries/accidents, personal harmful habits and diseases of different

types. Even a small deterioration in worker's health sometimes accumulates and translates into losses of agricultural production. The loss may be of any type and at any scale. Therefore, any damage in both the physical and mental health of the agricultural workers can disturb the sustainability of agricultural system.

Agricultural system is generally modified by both the physical and human intervention and interference caused by physical (Environmental), biological (disease or ailments), demographic (birth, death and migration), social (social vice, dispute, conflict etc.), economic (scarcity of resources or infrastructure) and political decision etc. Huggett, Richard (1980, pp.48-51) also stated that human and physical interventions modify inputs, outputs, and rate of transfer or productivity. Sinha, B.R.K. (2003, p. 17) studied that disease being a negative factor adversely affects the quantitative and qualitative elements of human resources by afflicting body and mind. This snatches from an individual his/her working or functional capability by weakening or deteriorating the normal functioning of mind and body and in turn jeopardizes agricultural sustainability.

Gregory, J. (1970, pp. 453 - 468) examined absence of workers from works due to chronic bronchitis caused by cold weather condition. It indicates that such disease is liable to prevent workers from working particularly in cold agricultural regions. In tropical or hot region, intense heat does the same. Krishna, G.R. and Aquinas, P.G. (2004, p.46) noted that if the number of persons in an organization is less than the member of persons required, then there will be disruption in the work. Production will be hampered and the pace of production will be slow and

employee burdened with more work. Such incidence may interfere agricultural sustainability too. African Development Report (1998, p.61) wrote that health and nutrition improve labour productivity and permit people to work more days and increase their effectiveness at work. A healthy and nutritionally well-fed work force is physically and mentally more productive than one that is sick and under-fed. Therefore, health of the workers should be perfect. According to Pandey, B. N. (2002, p. 95) health is one of the important factors of sustainable development in agriculture. He stressed that health and work are intimately related to each other. Kuppuswami, B. 1975, pp. 78-83) interpreted health as an instrumental value and said that a healthy man is able to work efficiently. Ill health causes great unhappiness to the family and also constitutes a social loss. It prevents the increase in labour inputs and efficiency. Similarly, Sudha, S.N. & Singh, A. (1983, p. 48) also gave emphasis on health of labour and said that productivity of farm labour greatly depends on both the physical and mental health. Difference in health of labour force causes productivity differentials. Sound health gives great stamina to stand the odds of the occupation and to work longer.

The above overview clearly shows the importance of health of workers and its role in production sustainability. Thus, health problem prohibits / prevents agricultural workers from working and their optimum utilization in cultivation by shortening labour days and degree of utilization of labour. This in turn affects both the labour earnings and agricultural production and finally decreases agricultural sustainability. Opposite to this good health maintains or increases the sustainability of agricultural system.

Agricultural worker's Health and their Household Sustainability:

Health plays a great role in both the rural and urban household sustainability. Survival of a household primarily depends on household resources earned by its own members. Earning of a member is very much guided by his / her health. In fact, health earns wealth the source of prosperity of a family. In spatial organization vertical arrangement of sustainability can be at nation level (with macro characteristics) region level (with meso characteristics), and local level (with micro characteristics). Depending upon this hierarchical system sustainability can be known as national, regional and local sustainability. Household is the most micro-level geographical unit and belongs to the local category. It is most fundamental unit and plays a very crucial role in sustainable development of a region or a nation. In rural area household sustainability is very much related to agriculture. Agriculture (particularly in developing countries) is the source of livelihood of people. It plays a vital role in generating purchasing power among the rural population. In developing countries like India, the livelihood of the majority of population depends on agriculture. Agriculture is the largest sector of economy and involves about two-thirds of work force. About 75% of India's poor are in rural areas and a large proportion of them depends on agriculture for employment and as a major source of livelihood. 58% of the labour force was employed in the agricultural sector in India in 2001, and most of them are in low productivity activities. Their prospects are not bright, (India: Sustaining Reform, Reducing Poverty, 2003, p. 73).

In maintaining rural household sustainability the role of health condition of the rural people in

general and the rural work force in agricultural economic functions in particular is of great importance. Health condition is a basic factor, which brings peace and prosperity. It is really a fact that health is wealth of the people. If this wealth goes well, the overall condition of the households of rural people continues to be good. This condition helps increase the rural household sustainability. Positive dimension of health enables the rural people to work well, earn well and save well and in turn helps them in sustaining basic necessities, self respect, dignity, honour in their life as well as in sustaining cultural, economic and political freedom, hand in hand freedom from social servitude. In contrast, negative dimension of health snatches away all these and put them in trouble and hardship. This situation arises when a person of a family becomes sick or suffers from any sign of disease or health problem. In this case his/her earning and the purchasing power either stop or considerably decline. This gives adverse impact on his/her household sustainability. It has been found in another study (carried out by the author) on, 'Agricultural Accidents in Rural Areas' (1994, pp. 23-24) that a substantial loss of man-days and income occur when an earning member of a family falls sick or suffers from health problem. Smith, K. (1975, p. 77) also pointed out that ill health directly causes loss of production.

If there is shortage of supply of labour, agricultural production is affected. This particularly happens in case of self-farm workers of small and medium agricultural land. Big farmers who employed hired labour also have to suffer. If the health of the contract or hired labour deteriorates due to any health problem then the work as well as production of such farmers is hampered. In case of

landless labourers health condition becomes a serious matter, as they are the only source of their income upon which the livelihood of the whole family depends. Their earnings are the only means to sustain their day-to-day life. In rural areas abject poverty of such workers force them to continue to work despite their acute and intermittent diseases or illness to maintain their household sustainability. This further deteriorates their physical and mental health and presses them in hardship. In this way particularly socio-economically poor households of agricultural workers have to suffer more because life of most of the agricultural workers in rural areas depends on the earnings generated from agriculture.

Thus, for rural transformation or rural sustainability there is need to eliminate poverty and strengthen rural urban linkages, intensify agricultural production and sustainably manage land, labour, capital, water to feed a growing population.

Health and Agricultural Sustainability in Birbhum District:

Health of the rural people has direct links to the agricultural system of an area. Both are positively related to each other. One is dependent on another. Agriculture is the source of food and nutrition which, helps enhances the vigour and stamina of the people. Health being a major component of human capital or human power enables an individual to work for longer hours in producing a use value of any description for satisfying the needs of the people in agriculture. O' Neill, Mackellar and Lutz (2001, pp. 162-163) pointed out that as an essential element of human capital, good health is crucial to development and interacts closely at the household level. Streeten Paul (1983, p.3) while visualizing the importance of human capital also stated that a

vigorous, healthy and well-fed labour force is a more productive labour force. Sinha, B.R.K. (1995, p. 47) considered health of a worker a very powerful factor which greatly influences the utilization and quality of him. A physically sound and healthy man works hard, more efficiently and produces better yield than a person who is physically weak and unhealthy. Health increases the working capacity of the workers. Sinha, B.R.K. (1999, pp. 447-450 and 2002, p. 8) found that healthy agricultural workers are more productive as levels of health and earnings are positively related. It has been found that agricultural workers having good health earn better monthly income as against those having poor health. Not only this but also a very high positive correlation (0.82) was found between the utilization of agricultural workers and agricultural land resources (Sinha, B.R.K. 1986, pp.-86-87). This strength may slides down due to deterioration in physical health of workers. Sinha, B.R.K. (2003, p. 25) has also found, in his study on disease pattern and human resources, a clear variation in disease pattern between agricultural and non-agricultural workers in a segment of Birbhum district. Agricultural workers suffer from a variety of health problems. Rural people of the district suffer from high iron content available in drinking water, malnutrition, under nutrition and particularly from different types of water-borne diseases. Such situation keeps the health (particularly physical health) of the rural people and of rural workers in average category as well as below average. It has also been found that those engaged in agriculture as cultivators and agricultural labourers and livestock farmers have generally average and even poor health than that of those engaged in non-agricultural occupations, Sinha, B.R.K. (2002, p. 8). Similarly,

Giovanni, B. (1996, pp. 196-199) rightly pointed out that different types of occupations are associated with different types of diseases, which adversely and variously affect the health of the working persons. Such situation often keeps the agricultural workers away from their participation and in turn snatches away their livelihood and adversely affects agricultural sustainability.

A study on agricultural accidents in this district clearly shows that fever, coryza, stomach problems (digestive system), E.N.T. problems, skin disease, fatigue and other occupational diseases are the important and major causes of poor health of the agricultural workers. These in turn prevent/stop the agricultural workers from participating in their agricultural activities. Such physical health condition causes a major loss in their man-days (labour input) as well as in their income. Most of the agricultural workers suffer from agricultural diseases (such as skin problem, fever, cold and cough/allergy, cold and fever, bronchitis/asthma, indigestion/acidity, influenza, diarrhea, body pain, weakness, gastric, pain- fever, stomach problem, tuberculosis (T.B.), throat problem, sunstroke, eye problem, paralysis etc.) and have to lose their man-days in the range of 5-30 days and their earnings up to Rs. 400 – 500. Some agricultural workers lose even more than 60 working days and earning up to Rs. 700 – 800 during different cropping seasons. Thus, loss of income and labour days (man-days) of agricultural workers are very much related to each other (Sinha, B.R.K. 1994, pp. 23-24). If we calculate this loss from household level to village and then from village (local) to regional level, we will find a huge loss of man-days, which, ultimately adversely affect the agricultural sustainability at a wider scale.

Birbhum district is one of the important segments of agriculturally dominated regions of eastern India. It is a part of the lower Ganga Plain and dominated by subsistence farming. The main crops of the district are paddy, oil seeds, vegetables, wheat. It has both rural and urban population. This nature of the area keeps the health of the rural people different than that of the urban population. A study on urban-rural health differential (based on the Birbhum district's sample survey data) carried out by Sinha, B.R.K. (1999, pp. 28-291) observed that health level of the rural people in agricultural area is below to that of the urban area's people. This district is dominated by the rural people of different social groups such as higher cast, other backward caste, scheduled cast, scheduled tribe, other (Muslims). Majority of the working people are engaged in agriculture as cultivators and agricultural labourers. Higher and other backward castes are generally cultivators (land holders) and scheduled castes and scheduled tribes are generally landless and constitute the major portion of agricultural workers and work in the land of cultivators. They are socio-economically poor and a larger portion of them remains below the poverty line. Most of them suffer from malnutrition and under nutrition. This situation causes different types of food deficiency diseases, the anaemia among them is important. The overall performance of their health is not good in comparison to that of the socio-economically better people. Health condition of the agricultural workers, (primary workers) as against non-agricultural workers (secondary and tertiary workers) is generally poor, Sinha, B.R.K. (2003, p.60). This sometimes, adversely affects the agricultural sustainability. There is shortage of potable water too, which causes certain health

problems. Normally most of the rural people suffer from food deficiency and water borne diseases. Use of pesticides, insecticides and chemical fertilizers in haphazard way also become responsible for poor health. These in turn make the physical health condition of the rural people in general and of the agricultural workers in particular poor, which disturbs the productivity of workers and sustainability of agriculture in the district.

The above reasons or facts of this District may be similar to that of other developing regions of similar nature.

Health Data and Agricultural System:

A system is a set of different elements of physical and human groups, the characteristics and functions of which are interrelated and give a common result in a defined environment, Huggett Richard (1998, p.1). Agricultural system is a set of the nature, characteristics and functions of land, labour and capital, upon which the sustainability of agriculture depends. Out of land, labour and capital 'labour' becomes an active factor of production. In maintaining production or agricultural sustainability health of agricultural work force is central. Health as mentioned before is a result of the positive or negative information of several health signs or variables relating to physiological functions of a human body. A comprehensive and up-to-date health information or data is important input for policy formulation and planning in agriculture. Health data reflects a crucial aspect of valuable labour resource. Health data constitute an integral and essential component of the overall development strategy in agriculture. It provides us an idea or clear understanding of the existing profile of the positive and negative dimensions of health, which

plays a crucial role in agricultural system as well as in maintaining agricultural sustainability. In this sense health data become very valuable wealth for researchers, scholars, academicians, administrators, government officials etc. and are used in formulating developmental plans and policies in both the agricultural and non-agricultural systems.

In developing regions most of the rural people are either directly or indirectly engaged in agricultural activities. Physical health, where an intensive use of manual labour is practiced in agriculture, becomes very vital as it very positively interacts with agricultural sustainability in agricultural system. In fact, both physical health condition and agricultural sustainability are intimately linked with each other and that is why, one says, good health condition of agricultural workers generally depends on good agricultural sustainability or production and good production or good agricultural sustainability depends on good health condition of the agricultural workers. From this point of view it can be said that agricultural system can be reformed by the uninterrupted and efficient use of healthy workers. Therefore, to reform agricultural system of an area the health condition (particularly physical health) of the rural people in general and of working age group population in particular should be taken care of with a view to maintain and improve their overall health to increase the rate of utilization of human labour. For regular labour supply and agricultural sustainability general health condition of the agricultural workers are of immense importance. This effort will maintain and increase the agricultural sustainability to meet the needs or necessities of the present and the future generation.

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