



Research Article

Diversification of agriculture for employment generation

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Introduction

The economy and socio-political life of India depends largely on agriculture. Since the mid-sixties, when the first 'Green Revolution' saved us from mass starvation, Indian agriculture has come of age, and is on the brink of a second revolution. It is time for new orientation. Besides increasing productivity and production, there is an urgent need for satisfying the socioeconomic aspirations of the rural poor who depend for their livelihood on agriculture. This could be achieved through mass employment generation.

This research paper endeavours to highlight the fundamental aspects, challenges and prospects of areas of diversification in agriculture for employment generation.

Challenges to Indian Agriculture

The challenges ahead are tougher on the face of (i) unabated population growth, (ii) Undernourishment or malnutrition, (iii) continuing degradation of arable land, (iv) shrinking per capita land and

decreasing availability of 'new' cultivable land, (v) pollution and eco-disaster and (vi) grim national and global economic situation. The circumstances become more complex owing to unprecedented and fast global changes, including tremendous advancements in science and technology. These complexities are confounded in India because of the growing regional imbalances, demands of parity and unemployment.

The first 'Green Revolution' made us self-sufficient in the food front, more so with wheat and paddy. The pattern of growth, however, has shown considerable variations and imbalances in terms of regions per capita production & consumption of carbohydrate-protein-oil-vitamin combinations, and socio-economic levels. Several parts of India tropics and semiarid topic have not benefitted adequately from appropriate technologies already available in our laboratories; the "trickle down theory" on transfer of technology has not yielded the desired results.

Salient social justice measures highlighted by the National Commission on Agriculture (1976) included, among others the creation of large scale opportunities for productive employment through diversification of agriculture. The comprehensive report of the Commission elaborated projections for 2000 AD. However, the crop diversification as suggested by the Expert Committee has failed to materialise. It is against this back drop of earlier models for diversification of agriculture and their failures or inadequate implementation that strategies have to be developed.

Diversification in agriculture

Diversification of agriculture is aimed at increasing the variety of farm products and operations with a view bringing about a shift from the prevailing specialised patterns of production and operations. Such shifts may be necessitated by several factors, such as : (i) a production glut, (ii) failure of the on-going venture, (iii) economic and intellectual stagnation, (v) appearance of new demands, and/or (vi) alteration in the social, intellectual and economic levels all around. In the context of Indian agriculture, it is a complex mix of these factors.

Diversification of an on-going venture in agriculture is feasible in a situation where there is a demand determined by actual or perceived needs and the purchasing capacity of the concerned community. In addition, sufficient skill and material have to be available. Moreover, the new ventures resulting from diversification shall have to be productive enough to be viable in a competitive market economy. It is in this context that the selection of areas for

diversification of agriculture has to be made with utmost care.

Diversification of agriculture and employment generation

It is fact that a vast majority of Indians depend for livelihood on agriculture. The achievements of Indian agriculture continue to be annulled by population growth. Among several consequences is the alarming unemployment situation in rural India. The National Commission on Agriculture, and various other bodies, have been suggesting that an important of agricultural development should be to create more jobs, and that this could be possible only through diversification of agriculture. Unless farming becomes intellectually satisfying in addition to being economically rewarding, it will continue to be difficult to attract or retain the restive youth in rural profession and satisfy them. This could be achieved by both vertical and horizontal diversification of agriculture as complementary to each other, Vertical diversification may be viewed as the direct extension, expansion or offshoot of the present operations or systems, while horizontal diversification may entail alteration or substitution of the present production patterns, and engagement in entirely new operations, Thus, there is a need for a planned modernisation and diversification of agriculture involving changes in the existing cropping and occupational patterns, and a sustained entrepreneurial motivation for a variety of new operations.

Employment in agriculture sector

With the increased agricultural production and activity since the mid-sixties, job opportunities have increased substantially. However, the situation is

far from satisfactory. There have been varying suggestions about the number of days per year ranging from 265 days to 300 days for which a gainfully employed person has to earn his wages. The National Commission on Agriculture suggested a compromise 280 days per year of waged work.

Since most on-farm operations are seasonal in nature, the optimum 280 days per year work per person has not been achieved, and the agricultural labour force is laid off for varying

lengths of time every year. This lay-off period depends largely on the agricultural commodity, cropping intensity and related industry or trade.

As an illustration, in Bihar, an approximation of employment generation capacity of different agricultural commodities (Table 1) does not give a satisfying picture. The data presented in the table do not provide a holistic view; nevertheless the emerging trend is fairly clear.

Table 1. Approximate estimate of on-farm employment generation capacity of different cropped commodities@

Cropped Commodity	Unit (Year ¹)	Employment generation* (man-days)
Winter Maize	ha ⁻¹	122
Wheat	ha ⁻¹	105
Potato	ha ⁻¹	184
Green Vegetable	ha ⁻¹	240
Sugar-Cane	ha ⁻¹	165
Paddy	ha ⁻¹	144
Banana	ha ⁻¹	450
Milch Animal	Animal ⁻¹	95

* Does not account for off-farm operations such as supportive management, Complementary or supplementary enterprises etc.

@Relates to Bihar situations; Data generated by Department of Agricultural Economics, Rajendra Agricultural University.

Table 2. Employment-seeking groups, their skills and agriculture sectors in which more employment needs to be generated (Regional disparities not considered)

Employment-seeking group (women and men)	Skill				Agriculture Sector (Private and Public)			
	US	SS	SP	SSP	Direct		Indirect	
					OF	FR	AB	NR
1. Unemployed	++++	+++	++	+	++++	+++	+++	+
2. Seasonally Unemployed	++	++	-	-	++	+++	+	-
3. Aged-unemployed or incapable of hand manual work	+	+++	+	-	+	+	+++	-
4. Underemployed	+	+	+	+	++	++	++	-

US = Un-skilled; SS = Semi-skilled; SP = Specialised; SSP = Super-specialised; OF = On-farm; FR = Farm-related; AB = Agri-business (both on-farm and off-farm); NR = Non-resident vis-à-vis farm location; ++++ = Maximum number of jobs required; +++ = Moderate number of jobs required; ++ = Low number of jobs required; + = few jobs required.

Seasonal lay-off is one among various other phenomena contributing to unemployment. There are different categories of unemployment that need to be considered. Since absolute figures of location specific rural unemployment for the whole of India are not available, an approximate and subjective estimate is presented in Table 2. It only centres round the fact that various categories of unemployment exist and that for developing implementable strategies the various categories have to be given due consideration. There is a need for the availability of location specific data in absolute terms. The socially relevant aspect of child labour also need to be adequately considered. In view of the misfortune of large scale illiteracy, the illiterate and unskilled labour force deserves greater attention.

Areas for diversification of agriculture

The National Commission on Agriculture (1976) has identified areas for diversification of agriculture most elaborately; there remains hardly anything to be added to the basic philosophy & principles adopted by the commission. Since then several agencies and eminent persons have made valuable suggestions. What has been intriguing is the non-implementation of the actual recommendations. Jha (1991). Obviously there are factors beyond the scope of agriculture in its restricted sense of the term that play major than could be anticipated. Based on the

recommendations of the National Commission on Agriculture, various other agencies, expert committees and presentations in this convention, some of the more important areas for diversification of agriculture for employment generation could be identified as follows:

(i) Diversification of cropping patterns
Diversification of the existing cropping pattern in a given location has to take into account the profitability of the proposed pattern, and that of the competing crops vis-à-vis the existing dominant crops. For example, in the case of Punjab, diversification of the existing wheat-paddy pattern is possible only if other patterns are at least as profitable. This is feasible either through ensuring relatively higher prices of the competing crops or through their increased yield or through a combination or both. In Punjab, in contrast to other crops, sugarcane was found to be more profitable even when compared to annual wheat-paddy rotation. According to one estimate, area under sugarcane can be increased to nearly three lakh hectares, provided 50 more sugar mills are set up in the state providing jobs for about 37,500 persons.

Altered cropping patterns are likely to create job opportunities both in on-farm sector and ancillary industries and businesses. Crop diversification has to be location specific as determined by the

demand-supply balance and distributive justice.

(ii) Diversification of cropping intensity

Increased cropping intensity by introducing multiple cropping systems will, besides increasing production, also generate employment opportunity and reduce lay-off periods. Greater number of crops per year will also ensure establishment of activities supplementary to on-farm operations. Introduction of field crops new to an area is also welcome.

(iii) Other than field-crops

Apart from diversification within the field-crops, introduction of fruit crops, mushroom cultivation, sericulture, floriculture, energy-agriculture, medicinal plants, forestry, agroforestry, social forestry etc. will create jobs in on-farm and off-farm sectors.

The importance of tree plantations needs no emphasis. On the 16th, October, 1991, the forty-sixth World Food Day was observed with the focal theme of 'Trees for Life'. Not only that tree plantation will create almost year round jobs for millions, but will also save the eco-disaster in many ways. Jobs for unskilled, semiskilled, skilled and specialised personnel shall be available.

(iv) Livestock and animal farming

Livestock and animal farming is already being practiced, and has assumed the structure of cottage-to large scale industries. Apart from animal products for internal consumption, substantial export potentiality makes animal farming more attractive. Millions of man-year employments, direct and indirect, are likely to be created.

Poultry farming has been a success-story. Vast opportunities are available for goatery, piggery, rabbit farming etc.

Fisheries have not yet exploited the full potential that India is endowed with. In most parts fisheries have remained by and large traditional. New introductions of fish-breeds and the latest-farming techniques have not reached the villages. The potential of several indigenous species has not been assessed. For example, in the Koshi river belt of middle-men in an unorganised market, and then transported to the north-eastern Indian states to be sold at higher profits. Such location-specific potentials should be identified and organised.

Apiculture, snake-farming, etc. too, have shown great advantages in the farmers income generation and in minimizing lay-off gaps.

(v) Land reclamation and soil amelioration

The advancing frontiers of agriculture and need for higher production have made it imperative to increase the area of cultivable land, besides preventing degradation of land already under cultivation. Organised projects for land reclamation and soil amelioration deserve consideration.

(vi) Farm mechanisation

Modernisation of Indian farming imposes the need for mechanisation of both plant and animal farms. Panda (2012). It has been argued that farm mechanisation per se reduces labour requirements of the traditional type. The fact is that farm mechanisation increases production and makes multiple cropping possible thereby effectually increasing the traditional-type labour requirements. In addition, employment opportunities

are galore in related small and big industries and businesses.

(vii) New technologies

The fast expanding vistas of science and technology have opened up new channels for developments in agriculture. Generation of non-conventional energy, remote sensing, computer technology, biotechnology etc. has raised hopes. There is a global race to convert these skills-and input intensive technologies into profitable commercial ventures, which will create additional employment opportunities for highly skilled and super-specialised

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personnel. Mass employment generation for unskilled rural labour force to any substantial magnitude is not likely. Selection of areas of high-tech enterprises aiming at mass employment generation is restricted by the Intellectual Property Rights and other patent right acts at transnational levels. Nevertheless, certain areas could still be identified for employment generation. For instance, in biotechnology, micropropagation through tissue culture techniques can be used in cases of sugarcane, potato.

Panda S C (2012) Diversified Farming. A Handbook of Agriculture pp.900. Agrobios Jodhpur, India.