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Agriculture in India: A SWOT analysis

KEYWORDS: Strengths, Weaknesses, Opportunities, Threats

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ABSTRACT *Agriculture in India today is constrained by various factors. We have created history by producing 250 million MT of food grains in 2012-13, but this has been accompanied by land degradation, declining size of land holdings and many other related problems. The present paper analyses the strengths, weaknesses, opportunities and threats to Indian agriculture. While the strength lies in having the largest cultivable land with record food grains production, our weakness lies in having low yields, less value addition and food processing and large amount of post harvest losses. The paper also dwells upon where the opportunities exist and how the opportunities can be further strengthened to augment the yield and income of the farming community the agriculture sector*

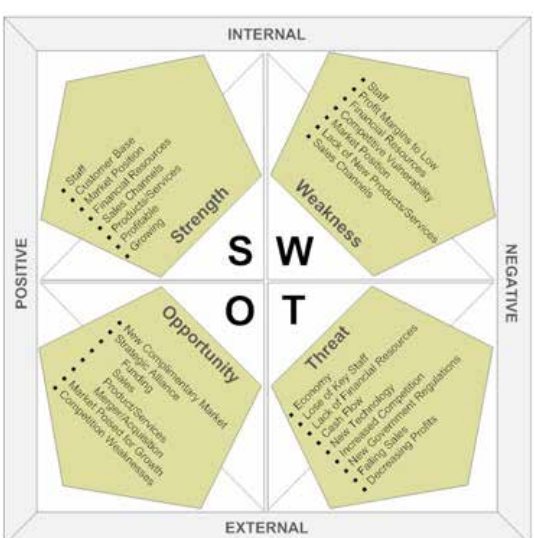
After nearly four decades of globally acclaimed phenomenal increase in food grains production, termed as Green revolution, Indian agriculture is once again at cross roads. Despite a plethora of schemes at the national and state level, the agricultural growth rate is struggling to achieve the four percent growth rate set up by National Development Council to achieve a double digit growth rate of 10%. Agriculture is becoming non remunerative and if farmers are not getting enough money to be encouraged to stay in agriculture, it would be ridiculous to come up with a binding legislation on food security. **SWOT analysis** is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in any venture.

Strengths: These are the characteristics of an enterprise that give it an advantage over the others

Weaknesses: These are the characteristics that place it at a disadvantage relative to others.

Opportunities: These are the external characteristics that can be exploited to get maximum advantage for the enterprise.

Threats: These are also the external elements in the environment that could cause trouble for the enterprise



(A) STRENGTHS OF INDIAN AGRICULTURE

Agriculture sector still contributing 14% of Gross Domestic Product and it still employs over 52% of labour force of the country and over 70% of Indian rural work force (Singh, M. 2011). We have achieved a fourfold increase in food grains production as compared to threefold increase in population (from 50 million tons in 1950 to 230 million tons in 2010). The country has the second largest area under cultivation and highest area under irrigation (55.8 million hectare). China has 54.5 million hectare under irrigation and United States has 22.4 million hectares under irrigation and the world's largest user of fertilizers (11% of world's dosage). The country is now first in production of Pulses (Masood et al, 2009), second in production of cereals like Wheat, second in production of vegetables next only to China, first in livestock population with 18% of world's cattle population with and 13% of world's total milk production is contributed by India. We are third in terms of farm mechanization. It was the strength of our agriculture that we were hardly hit by the global recession a couple of years back that bankrupted many economies of the world

(B) WEAKNESSES

(a) Low Yields: our weakness lies in having more or less stagnant yields that are lower than most of other countries as illustrated in Table 1

Table 1: Yield of Major crops in India

S. No	Crop	Yield (q/ha)
1	Rice	22
2	Wheat	28
3	Oilseeds	11
4	Pulses	6.5

The yield is far less than the yield of most of developed countries. Indian wheat yield stagnated at 28 q/ha while those of most wheat producing countries was 64 q/ha. Similarly rate of growth of rice production in India is far lower than most of Asian countries. Our per capita availability of Pulses is back to seventies level. The per capita availability of pulse was 32.6 grams/day in 2004-05 which was just half of per capita availability of 60.7 grams per day in 1960-61 (Kumar, *et.al*). Although, the production is the highest yet the productivity of 6.5 q/ha is lower than best of the countries which produce 18 q/ha. In livestock too, no doubt production is highest but the productivity of 987 Kg/year is the least as compared to world average of 2200 Kg/year (Shrivastava, 2011)

(b) Low value addition and Food processing: Food pro-

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cessing and value addition are the sunrise sectors which have the potential to generate lot of employment opportunities in rural areas. Unfortunately we in India have only 2% of value addition and 6% of food processing. This is much lower when compared to the Thailand having 30% food processing, Brazil having 70%, 78% in Philippines and 80% in Malaysia.

Table 2: Level of processing in different items

S. No	Item	Level of processing (%)
1	Fruits and Vegetables	2
2	Milk	35
3	Marine products	8
4	Poultry	6
5	Meat	21

(Source: An Overview of Indian food Processing Industry)

(c) Post Harvest losses: Due to low processing levels in the country there is a considerable amount of wastage of agricultural and horticultural produce. As per a study conducted by the Central Institute for post harvest engineering and Technology, post harvest losses in 2009 were to the tune of rupees 44,000 crores (Tiwari, 2012).

(d) Food wastage: What can be more shocking that food grains worth crores of rupees had to be sold to the farmers as manure for just 14 paisa par Kg.? The reason, water from river Ghaggar in Haryana had entered the grains which were stored in open and spoiled the grains. This is the height of things, a country having record production of food grains have millions of peoples going to bed without two square meals a day. This is attributed to the poor management by Food Corporation of India and one of the causes why we have been put by International Food Policy Research institute (IFPRI) Washington at 66th position out of 88 In the Global Hunger Index (Kumar.2010). All this makes it urgent to look for alternatives such as Food stamps.

(e) No access to modern technology: Sixty percent of the country's population has no access to modern technology. They still rely on the traditional methods of agriculture having no linkages with any institution or industry. We talk of green revolution, evergreen revolution but what we need is a trickledown revolution so that innovations reach the farming community. The technology is of no use unless and until it reaches those for whom it is intended. For those standing in the last of queue, we have to ensure the last mile delivery of extension services.

(C) THREATS
(a) Size of Holdings

Table 2: Average size of holdings

Year	Size of Holding (acre per person)
1970	0.94
2000	0.56
2050 (Projected)	0.15

The arable land has shrunk from 0.94 acre per person in 1970 to 0.56 acre per person in 2000 and going by the rate the population is increasing it is projected to decrease to 0.15 acre per person. Such small holdings create problems in performing farm mechanization operations and make farming non remunerative

(b) Land Degradation
More than 5 billion tonnes of soil is washed every year taking with it 6 million tonnes of nutrients. A look at Table 3 reveals that threat of land degradation looms large over Indian agriculture. Presently 93.7 million hectares of land is under threat of water erosion, 9.5 m ha under wind erosion, 14.3 m ha under water logging, 5.9 m ha from soil salinity, 16 m ha from soil acidity and 7.4 m ha from other types of threats. This puts the total area under land degradation to 146.8 m ha i.e. more than the total cultivable land.

Table 3: Land Degradation due to various sources

S. No	Source	Area (m ha)
1	Water erosion	93.7
2	Wind erosion	9.5
3	Water logging	14.3
4	Salinity	5.9
5	Acidity	16.0
6	Others	7.4
7	Total	146.8

(Source: NBSS&LUP)

(c) Crop loss due to weeds, insect and diseases

S. No	Source	Crop loss
1	Weeds	37
2	Insects	29
3	Diseases	22
4	Others	12

(Source: Shivay and Rahal, 2011)

A considerable portion of our production is lost due to weeds, insects and other diseases. Weeds account for 37% of total loss, insects account for 29% of total loss, Diseases account for 225 of the loss whereas other factors such as temperature humidity account for 12% of total loss.

(d) Low seed replacement ratio
In India still those varieties are used which were developed 20-30 years ago. We have a low seed replacement ratio of 20-25%. There is a close relationship between good quality seed and the yield. Quality seeds can increase yield by 25-30%. There is a need to rejuvenate the seed sector by producing more quality seeds by National Seeds Corporation and State seed corporations.

Table 4: Percentage Hybrid seeds used in different crops

S. No	Crop	%age Hybrid seed used
1	Cotton	80
2	Maize	55
3	Bajra	80
4	Sunflower	100
5	Rice	3

While the percentage is excellent in case of crops like cotton Bajra and Sunflower it needs to be increased in case of Maize. The most worrying aspect is the case of rice where it is only 3%. Use of hybrids from 3% to 25% in case of rice can contribute additional 25 million tonnes of rice to the total production.

(d) Climate Change: Climate change is also another important threat hanging like a domicile's sword over Indian agriculture. Climate change is expected to increase dry lands by 11%. Due to Global warming the average temperature has increased. It has affected the yield of major crops. A 1^0c increase in the temperature will reduce the duration of wheat and rice in north and western India by a week. This will result in reduction of rice yield by 4 to 5 quintals per hectare (Sinha and Swaminathan, 1991). In Northern parts of country in December, the day temperature has risen from 14^0 c to 20^0c and night temperature has increased from 4^0 c to 7^0 c has reduced the wheat yields in Northern parts of the country especially in Haryana from 4106 Kg per hectare in 2000-01 to 3937 Kg per hectare in 2003-04. Climate change would also result in the emergence of new insect pests besides reducing the milk yield in cattle and affecting fruit crops such as Apples in Himachal Pradesh and Jammu and Kashmir.

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(e) Declining Interest in Agriculture: A survey by National Sample Survey Organization (2005) reveals that 41% of farmers want to leave agriculture if any other option was available. Even in agriculturally progressive state like Punjab 37% of farmers wants to quit agriculture. Definitely the percentage must have risen high now. 95% of farming community has no access to microfinance and insurance. 56% still borrow from informal sources and 70% has no deposit account in Banks. Crop insurance also covers only 4-6% of farmers. Youths are not interested in agriculture. This is because agriculture is not economically rewarding and intellectually stimulating. A December 2012 report of the Institute of Applied Manpower Research (IAMR) a part of the planning commission on an average 2,035 farmers are losing main cultivators status every single day for the last 20 years. Census 2011 also shows that we now have 95.8 million cultivators for whom farming is their main occupation and this number is down from that was 103 million in 2001 and 110 million in 1991. Between 1981 and 1991 the number of cultivators (main workers) actually went up from 92 million to 110 million. The huge decline comes after post 1991.

Manpower/year	1981	1991	2001	2011
Cultivators	92.5	110.7	103.6	95.8
Labourers	55.4	74.5	63.4	86.1
Total agricultural workers	148.0	185.2	167.1	182.0

(Source: The Hindu, May 2, 2013)

(D) OPPORTUNITIES:

(a) Rain fed Agriculture: With agriculture growth reaching near saturation in irrigated ecosystems, as evident from the stagnation in productivity of different crops, the hope of further increase in Food grains production rests with rain fed areas. About 60% of agricultural land is rain fed which can be exploited for getting high yields of coarse cereals. The crux of food security lies in these rain fed areas. Emphasis should be laid on strengthening Research and Development in dry land areas to enhance their productivity and income.

(b) Diversification: Land being already a limiting factor and no more horizontal expansion possible, the situation calls for vertical expansion by integration of food crops with allied enterprises like Apiculture, Floriculture, Sericulture, Horticulture and Vegetables etc. We have enough scope in Floriculture. The state of Himachal Pradesh earned rupees 11 crore by selling flowers in the Common Wealth Games Similarly Goatry is another highly remunerative enterprise with a high benefit cost ratio.

(c) Organic Farming: It avoids the large scale use of synthetic fertilizers, pesticides, growth regulators and solely depends upon the use of on-farm and off-farm use of crop residues animal wastes, green manures and biological pest control to maintain soil productivity. The philosophy is to feed the soil rather than crops to maintain soil health (Chhonkar and Dwivedi, 2004). It is an answer to the chemical intensive agriculture that has already led to the degradation of our natural resources. In India, about 528,171 hectare area is under organic farming with 44,926 numbers of certified organic farms. This accounts for about 0.03% of total agricultural area. Indian organic farming industry is estimated at US $ 78 million and is entirely export oriented (Gautam and Bhardwaj, 2011). Organic farming can be used in rain fed areas where there is a limited use of fertilizers. The states of Madhya Pradesh and Uttaranchal have been declared Organic states. Other states are also following the suit. India has urban consumer market of about 300 to 400 million peoples in a position to utilize the commodities produced by practicing organic farming.

(d) Sleeping Giants: At the same time there is urgent need to exploit the so called 'sleeping giants' of Indian agriculture, the eastern Uttar Pradesh, West Bengal, Orissa, Chhattisgarh and Madhya Pradesh. All these are the 'potential green revolution' areas

(e) Food Processing Sector: This is the sunrise sector. The average growth has doubled from 7% in 2004 to 14% in 2010. Food processing sector has a huge potential. Provision of efficient supply chains and processing infrastructure can do miracles in terms of employment generation and creation of productive assets in rural areas. Mega foods park (MFP's) scheme, a flagship scheme of the ministry of food processing facilitates establishment of a strong infrastructure backed by efficient supply chains. MFP's have the potential to revive the agriculture in surrounding areas by increasing returns for farmers, besides creating large employment opportunities in rural areas.

(f) Agri-Clinics and Agri-business Scheme: The Government of India launched the scheme in April 2002 with an aim to provide self employment opportunities to unemployed agriculture graduates by transforming them into entrepreneurs who would than supplement the extension efforts and will be job providers instead of job seekers. By March 2010 a total of 22,158 agricultural graduates were trained under ACABC scheme and 7986 ventures were established (Gowda *et.al*, 2010). The scheme has all the potential in contributing significantly in making agriculture intellectually stimulating and economically rewarding thus attracting and retaining more youth in agriculture.

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