

Agronomic Catastrophe in India and its impact on Growers

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Abstract

India is an agrarian country with around 60% of its population depends directly or indirectly upon agriculture. Agriculture has always been the backbone of the Indian economy and despite concerted industrialization in the several decades; agriculture still occupies a place of pride. About 67% of the work force effort in agriculture and more than 75% live on in the villages. Those who live outside villages belong to agriculture in more than one way like through trade in agriculture products and agro based industries etc. But for past few years, Agriculture in India is undergoing a structural change prominent to a crisis situation. Farmer suicides account for 11.2% of all the suicides in India. It is the intentional ending of one's life by a person dependent on farming as their primary source of livelihood. The related factors responsible for the crisis include crop failure indebtedness (climate change), malicious circle of poverty, illiteracy, liberal import of agricultural products, reduction in agricultural subsidies, lack of easy credit to agriculture, decline in government investment in the agricultural sector, conversion of agricultural land for alternative uses, lack of a sustainable agricultural policy (government policies) and old traditions etc. The top most states where farmer's suicides are rising continuously are Andhra Pradesh, Karnataka, Kerala, Maharashtra and Telangana. There is a great need to make a radical change in the outlook of the farmers towards agriculture to check this agrarian crisis. It is contended that the consequence of agricultural crisis in India is very vast and likely to knockout all the other sectors and the national economy in several ways. In specific, it has adverse effects on prices of food-grains, food supply, cost of living, health and nutrition, poverty and employment. In this context, the actual problems being faced are to be understood and analyzed. Innovative remedies have to be thought of which are to be implemented with sincerity by the Government and the implementing agencies, along with putting in place ways to reeducate the affected farmers.

Key Words: Agricultural Productivity, Farmers Suicide, Agrarian Crisis

Introduction:

Agriculture plays a vital role in India's economy. 54.6% of the population is engaged in agriculture and allied activities (Census 2011) and it contributes 17.4% to the country's Gross Value Added for the year 2016-17 (at current prices). Total geographical area of the country is 328.7Mha, of which reported net sown area is 140.1Mha and the gross cropped area is 198.4 Mha with a cropping intensity of 142% (Land Use Statistics 2014-15). The net area had sown works out to be 43% of the total geographical area. Agriculture has always been the backbone of the Indian economy and despite concerted industrialization in the seven decades; agriculture still occupies a place of pride. About 67% of the work-force effort in agriculture and more than 75% live on in the villages (Amuthan, 2014). Those who live outside villages belong to agriculture in more than one way like through trade in agriculture products and agro based industries etc., but for past few years agriculture employment and work force has descended because agriculture sector faced dreadful circumstance. In mid 1990s and 2000 agriculture has not performed well causing failure of rainfall and climate changes. On 30th November, 2018, over 50×10^3 subsistence farmers and landless peasants, agricultural laborers and trade unionists marched to the Indian Parliament (First Post, 2018) to focus on the agrarian crisis in the country, a crisis epitomized by the suicides of over 300×10^3 debt-ridden farmers in the past 25 years. The related factors responsible for the crisis include i.e. no remunerative support prices, land and forest rights, drought relief, pension schemes, usurious lending practices ((Majumdar, 2018; The Indian Express, 2018), crop failure indebtedness (climate change), malicious circle of poverty, illiteracy, liberal import of agricultural products, reduction in agricultural subsidies, lack of easy credit to agriculture, decline in government investment in the agricultural sector, conversion of agricultural land for alternative uses, lack of a sustainable agricultural policy (government policies) and old traditions (Amuthan, 2014). The top most states where farmer's suicides are rising continuously are Andhra Pradesh, Karnataka, Kerala, Maharashtra and Telangana (Ram and Singh, 2017). During the same period, the nutritional status of India's population, particularly children and women, has been horrible. In 2017, the Global Hunger Index ranked India 100 out of a total of 119 countries (IFPRI, 2017). India is home to the greatest number of malnourished children in the world (Livemint, 2017). In specific, it has adverse effects on prices of food-grains, food supply, cost of living, health and nutrition, poverty and employment (Holla

and Ittyerah, 2018). In this context, the actual problems being faced are to be understood and analyzed. Innovative remedies have to be thought of which are to be implemented with sincerity by the Government and the implementing agencies, along with putting in place ways to reeducate the affected farmers. Thus, Indian agriculture has been passing through a period of unembellished crisis since long and the overall situation in this sector is that of stagnation, lack of dynamism and under-performance (Shroff, 2019).

Objective of the Study:

- To study the growth and performance of agriculture in India
- To identify the pattern of worker in agriculture segment in India
- To analyze the farmer's suicide in India
- To analyze the agrarian crisis reasons and its impact in India

Materials and Methods:

The present study is based on secondary sources of data. The data was collected from Census of India from various census reports, RBI, Report of the Committee on Doubling Farmers' Income, Pocketbook of Agricultural Statistics, NAS, NCRB, Ministry of Commerce and Affairs, Rajya Sabha and Lok Sabha Unstarred Question for farmer suicide etc. The study has been done using simple statistics for analysis.

Overview of Indian Agriculture:

Crop Production Scenario from 2014-2017:

As per the Fourth Advance Estimates for 2016-17, production of rice is estimated at a new record of 110 MTs (Million Tonnes). Rice production is 3.50 MTs higher than the previous record production of 106.65 MTs achieved during 2013-14 and has increased significantly by 5.74 MTs than the production of 104.41 MTs during 2015-16. Like this, wheat production is higher by 6.10 MTs as compared to the wheat production of 92.29 MTs in 2015-16. As a result of significant increases in the area coverage and productivity of all major pulses, total production of pulses during 2016-17 is estimated at a record level of 22.95 MTs. The production during 2016-17 is higher by 6.61 MTs than the previous year's production of 16.35 MTs. Total food grain production during 2016-17 in the country is estimated at 275.68 MTs which is higher by 10.64 MTs than the previous record production of food grain of 265.04 MTs (2013-14) and also

higher by 24.12 MTs than the food grain production in 2015-16 (Jain *et al.*, 2019). Data related to other crops like Oilseeds, Sugarcane, Cotton, Jute and Mesta is also given in table 1.

Table 1: Area, Production and Yield of Major Crops

Crops	Area (Lakh Hectare)			Production (Million Tonns)			Yield (Kg/ha)		
	2014-15	2015-16	2016-17*	2014-15	2015-16	2016-17*	2014-15	2015-16	2016-17*
Rice	441.1	434.99	431.94	105.48	104.41	110.15	2391	2400	2550
Wheat	314.65	304.18	305.97	86.53	92.29	98.38	2750	3034	3216
Coarse cereals	251.7	243.89	247.71	42.86	38.52	44.19	1703	1579	1784
Pulses	235.54	249.12	294.65	17.15	16.35	22.95	728	656	779
Food grains	1243	1232.18	1280.26	252.02	251.57	275.68	2028	2042	2153
Oil seeds	255.96	260.87	262.06	27.51	25.25	32.1	1075	968	1225
Sugarcane	50.66	49.27	43.89	362.33	348.45	306.72	71512	70720	69886
Cotton@	128.19	122.92	108.45	34.8	30.01	33.09	462	415	519
Jute and Mesta#	8.1	7.82	7.66	11.13	10.52	10.6	2473	2421	2490

(* 4th Advance Estimates @ Production in Million bales of 170 kg each # Production in Million bales of 180 kg each) Source: Annual Report (2017-18)

As shown in Table 2, the picture regarding production and yields is also far from encouraging. At the same time, the per capita availability of cereals, pulses, oil and other fats and sugar has increased (Table 3). While the per capita availability of cereals hovered at a level just above the level recommended for Indians as set by the National Institute of Nutrition (NIN) and the Indian Council for Medical Research (ICMR) for the past decade (2005 to 2016), the per capita availability of pulses has been at a level which is literally half of the recommended level during the entire period. As for edible oil the per capita availability has exceeded the recommended level only in recent years (NIN, 2011).

Table 2: Availability of Food Grains per capita per annum (Kg/year) in India

Year	Rice	Wheat	Other cereals	cereals	Gram	Pulses	Food grains
1951	58	24	40	122	8.2	22.1	144.1
1961	73.4	28.9	43.6	145.9	11	25.2	171.1
1971	70.3	37.8	44.3	152.4	7.3	18.7	171.1
1981	72.2	47.3	32.8	152.3	4.9	13.7	166
1991	80.9	60	29.2	171	4.9	15.2	186.2
2001	69.5	49.6	20.5	141	2.9	10.9	151.9
2011	66.3	59.7	23.9	149.9	5.3	15.7	170.9
2012	69.4	57.8	21.9	149.1	4.9	15.2	169.3
2013	72.1	66.8	19.2	158.1	5.6	15.8	179.5
2014	72.3	66.8	22.6	161.6	6	16.9	178.6
2015	67.9	61.3	28.4	153.8	5.1	16	169.8
2016	67.2	72.9	26.1	162	4.8	15.9	177.9
2017 (P)	69.3	70.1	30	164.9	6.3	19.9	184.7

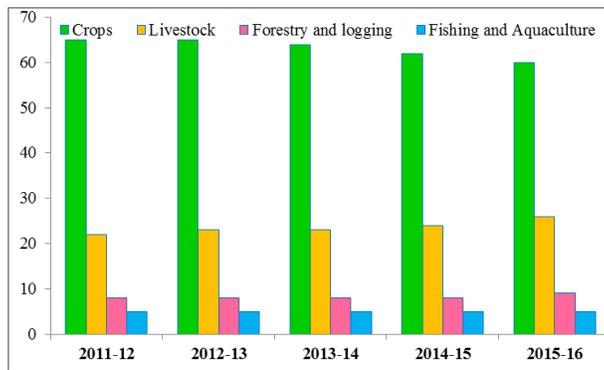
Source: Pocket Book of Agricultural Statistics, 2017

Changes aspects of GDP and GVP:

Agriculture remains an extremely critical element of the Indian economy even though it contributes only a little over 14% to the GDP (2012-2013 estimates of Central Statistics Office), its direct and indirect impact being undeniably significant and multifaceted. With 70% of rural households surviving on agriculture (FAO), it accounts for a very large share of consumption vital for the health and wellbeing of the other sectors of the economy. Besides, it accounts for nearly 13% of total exports of the country (Agricultural Statistics of India 2017). In spite of its criticality for the livelihoods of millions of Indians, agriculture is in a deepening state of crisis. When seen against the decline in the contribution of the agricultural sector to the Gross Domestic Product (GDP) from 51% in 1951 to just 14% in 2011-12 (Central Statistics Office), this signifies that the agriculture sector is absorbing too many people in order to produce less value. It is oversaturated with workers and farmers who are depending on ever

smaller returns from it. Further, there is massive migration rural to urban areas. The last census of 2011 indicated that 2300 people on an average are abandoning agriculture and migrating every day to the cities (Census of India, 2011).

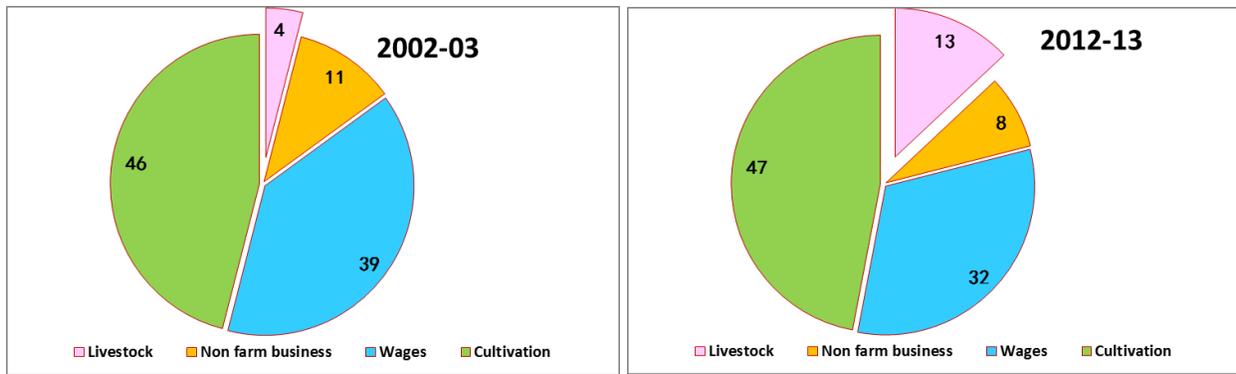
The agricultural growth in India has been fluctuating since more than 50% of agriculture in India is rainfall dependent. However; the sector has been witnessing a gradual structural change in recent years. The share of livestock in GVA in agriculture has been rising gradually; the share of the crop sector in GVA has been on the decline from 65 % in 2011-12 to 60 % in 2015-16 (Fig 1). The decrease in share of crop sector in the total gross value added of the agriculture and allied sector has impacted the sources of incomes of the farm households. As can be seen from Figure 2 in 2002-03 the share of livestock in total farm incomes was just 4 % which increased to 13% by 2012-13 (Fig 2).



(Source: National Accounts Statistics 2017 and Economic Survey 2017-18)

Fig. 1: Share of Agriculture and allied sectors in Gross Value Added (%)

Gross Domestic Product (GDP) is a economic measure of the market value of all the final goods and services produced in a period of time, often annually. While Gross Value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy. GVA is linked as a measurement to GDP, as both are measures of output. GVA is sector specific, and GDP is calculated by summation of GVA of all sectors of economy with taxes added and subsidies are deducted. $GVA = GDP + subsidies - (direct, sales) taxes$



(Source: NSSO, 2002-03, 2012-13 and Economic Survey 2017-18)

Fig. 2: Sources of Farmer's Income

Such distress in the agricultural economy because of which in addition to subsidies and price support even income support to farmers is required. The sector wise status of the economy can be observed from Table 3 (Shroff, 2019).

Table 3: Status of Agriculture in India (Sector-wise percentage share in Employment and Gross Domestic Product)

Sector	1981		1991		2001		2016-17	
	Employment	GDP	Employment	GDP	Employment	GDP	Employment	GDP
Primary	68.87	41.8	66.75	34.92	59.9	27.3	42.74	15.11
Secondary	13.48	21.58	12.77	24.48	11.9	24.28	23.79	31.12
Tertiary (Services)	17.65	36.62	20.5	40.6	28.2	48.42	33.48	53.77

The employment in the agricultural sector which was 68.87% in 1981 declined to 42.74% in 2016-17 (Table 3). This raises two issues. Firstly, agriculture is still the major source of employment after more than 7 decades of independence, but its contribution to GDP is declining very rapidly and is only 15.11% (2016-17) which speaks of low labour productivity in this sector. Secondly the workforce that has

moved out of agriculture is mostly to the service sector, perhaps casual self-employment.

Farms Profiles in India:

Farming is only occupation which started without any pre training or course work and learns from experience from generation to generation. a person who is not mentally prepare for farming starts his work (Ram and Singh, 2017).

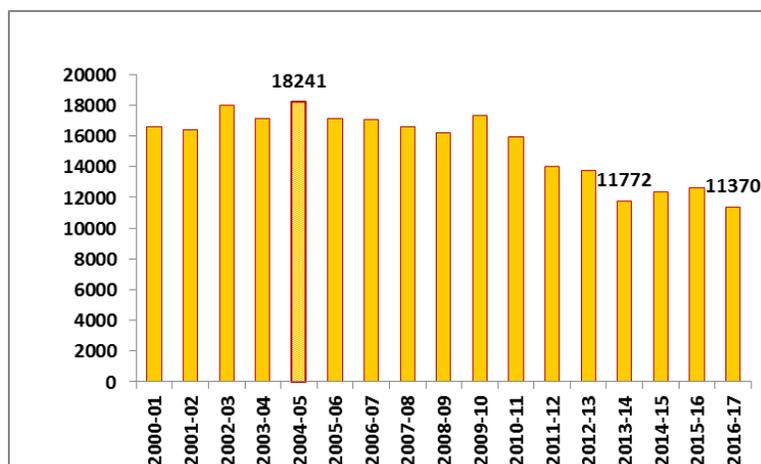
- **Marginal:** Land below one hectares (62%)
- **Small:** Land between one and two hectares (19%)
- **Semi medium:** Land between 2 and 4 hectares (12%)
- **Medium Farmers:** Land between 4 and 10 hectares (6%)
- **Large Farmers:** Land more than 10 hectares (1%)

Table 3 shows the farmer's suicide in India from few states wise for past ten years. As per the data, in the year 2000-01 the 3725 number of farmer has commit suicide in India followed by 2952, 2931 and 2240 in the year 2001-02, 2002-03 and 2004-05 respectively. The fact that was becoming the reasons for suicide had agrarian crisis its impact of indebtedness. Among the India, Andhra Pradesh, Karnataka, and Maharashtra the majority of farmer had commit suicide for agrarian reasons. Geographically this states has more suffer by irrigation facility here most of the farmer depends on bore well water sources for agriculture. Fig 3 shows the total farmers suicides since 2007 -2017. It is observed that mostly the agrarian crisis and incident of suicide by poor monsoon and bad irrigation facility, as a government can improve irrigation facility but can't take steps getting rainfall. Hence, the people has transformed to non-agriculture sector.

Table 4: State wise Farmer Suicide in India 2000-2011

Year	Andhra Pradesh	Gujarat	Karnataka	Kerala	Maharashtra	Odisha	Punjab	Tamil Nadu	Total
2001-01	191	13	2630	841	50	Nil	Nil	Nil	3725
2001-02	267	6	2505	50	122	2	Nil	Nil	2952
2002-03	313	3	2340	101	173	1	Nil	Nil	2931
2003-04	393	108	708	119	632	Nil	13	Nil	1973
2004-05	1126	125	271	112	595	Nil	11	Nil	2240
2005-06	657	4	163	68	1028	5	32	Nil	1957
2006-07	530	4	176	11	590	Nil	19	Nil	1330
2007-08	507	1	182	Nil	735	Nil	24	1	1450
2008-09	469	0	156	Nil	585	Nil	12	1	1223
2009-10	03	Nil	145	Nil	548	Nil	15	Nil	711
2010-11	222	Nil	116	Nil	485	Nil	4	Nil	827

(Sources: Rajya Sabha Unstarred Question and Lok Sabha Unstarred Question during the date from 12.05.2006 to 07.09.2012)



(Source: National Crime Records Bureau)

Fig.3: Total farmer's Suicide in India since 2000-2017

Rural Population: Cultivators and Agricultural workers:

The growth rate of rural population has been increased from 298.6 million (82.7%) in 1950-51 to increased 833.0 million (68.84%) in 2010-11. But, the entire study period the growth of rural population has increased and same time the percentage of rural population has been declined. In

India, the work force was 140.0 million in 1950-51. Cultivators 69.9 million (49.9%), agricultural workers 27.3 (19.5%) and non-agriculture workers 42.8 million (30.6%) followed in 1990-91, 402.2 million in 2000-01, cultivators 103.0 million (27.76%); agricultural workers 63.4 million (15.76%) and other workers 235.2 million (58.48%) and 481.8 million in 2010-11, cultivators 95.8 (19.88%), agricultural workers 86.1 (17.87%) and non-agriculture workers 299.8 million (62.2%). The foregoing above analysis reveals the cultivators declined from 38.75% to 19.88%, and agricultural workers also declined from 26.1% to 17.87% in 1990-91 and 2010-11 (Table 5). This two category of the workers declined almost of the percentage of the workers. Whereas, the non-agriculture worker have been increased from 35.1% to 65.2% over the period. This further reveals the (after the new economic reforms) non-farm employment and dependents has been increased for the period. As a result, the rural population likes farmers, agricultural labour to migrate urban areas for their suitable and sustainable source income for survival (Amuthan, 2014).

Table 5: Population and Agricultural Workers in India

Year	Rural Population	Cultivars	Agricultural Labourers	Non Agricultural Workers	Total (100%)
1951	298.6 (82.7)	69.9 (49.9)	27.3 (19.5)	42.8 (30.6)	140
1961	360.3 (82.0)	99.6 (52.8)	31.5 (16.7)	57.6 (30.5)	188.7
1971	439.1 (80.1)	78.2 (43.4)	47.5 (26.3)	54.7 (30.3)	180.4
1981	525.6 (76.7)	92.5 (37.8)	55.5 (22.7)	96.6 (39.5)	244.6
1991	628.0 (74.2)	110.7 (38.75)	74.6 (26.1)	100.2 (35.1)	285.5
2001	742.6 (72.2)	103 (27.76)	63.4 (15.7)	235.2 (58.48)	401.6
2011	833.7 (68.84)	95.8 (19.88)	86.1 (17.8)	299.8 (62.2)	481.7

(Source: Registrar General's Office for the data of 1951 to 2011)

Note: Figures in brackets give percentage to total

Reasons behind Farmers' Suicides in India:

There are many reasons discussed by the scholars, which lead to farmer's suicide such as:

- **Cost of Chemical Fertilizers and Seeds:** The cost of fertilizers, crop protection chemicals and the seeds for cultivation has risen and hence farming has become expensive for the already indebted farmers.
- **Cost of Agricultural Equipment:** Agricultural equipment and machinery like tractors, submersible pumps thrashes etc. adds to the already surging costs. Besides, these secondary inputs have become less affordable for the small and marginal farmers.
- **Cutback in Agricultural Subsidies:** In the post-reform period the government reduced different types of subsidies to agriculture, and this has increased the production cost of cultivation.
- **Decline in Government Investment in the Agricultural Sector:** After the economic reforms started, the government's expenditure and investment in the agricultural sector have been drastically reduced. This is based on the policy of minimum intervention by the government enunciated by the policy of globalization. The rate of capital formation in agriculture came down, and the agricultural growth rate was also reduced.
- **Liberal Import of Agricultural Products:** The crash of prices of agricultural products, especially of cash crops, in India was removal of all restrictions to import these products. The removal of quantitative restrictions and lowering of import duties were according to the restrictions of the World Trade Organizations (WTO), the crash in the prices of agricultural products is directly related to the liberalization policy of the government.

- **The Increase in Input Costs:** A major cause of the farmers' suicides in India has been the increasing burden on the farmers due to ever inflated prices of agricultural inputs. The addition of these factors is seen in the overall increase in the cost of cultivation.
- **Lack of Direct Integration with the Market:** Although steps taken by government like the National Agricultural Market and contract farming are helpful in integrating the farmers' produce directly with the market and hence cutting the role of intermediaries, the reality is still lagging behind far from reality.
- **Lack of Awareness:** The digital divide, as well as the literacy gap, has made the marginal and small farmers particularly vulnerable due to their inability to utilize the positives of government policies.
- **Water Crisis:** The concentration of these suicides in the water-deficit regions of states like Maharashtra, Karnataka is a manifestation of the fact that how the water crisis and there by the failure of rain to meet production demands have intensified the menace. This is particularly true in the backdrop of continued failed monsoons.
- **Labour Costs:** Likewise, hiring labourers and animals is getting costlier too. While this may reflect an improvement in the socio-economic status of the labourers, and hike in minimum basic income, this has not gone too well with boosting the agriculture sector.
- **Climate Change:** It has acted as the last nail in the coffin by resulting in furthering of the uncertainties associated with the already uncertain monsoon system and hence agricultural production. While incidents like flash floods have led to crop losses, deferred monsoons have seen production shortfall year-in and year-out.

Hence, several causes of the current agricultural crisis are witnessed in the country. The most important reason is the small and rapidly decreasing size of land holdings, steadily declining

over the past 40 years. Smallholders now cultivate 42% of operated land and constitute 83% of total farm land, with the maximum increase being in small and marginal farmers. Nearly 67% of the farmers operate on land less than 1ha and 18% of farmers own between 1-2ha of land, while only 0.7% of farmers own more than 10.5% of agricultural land (Report of Committee on Doubling of Farmers' Income, 2017). While several studies have shown that smaller farms are more productive than larger ones reported by Sen (1964), Bardhan (1973) and Chand *et al.*, (2011). In addition, the government has been acquiring farmland for developing urban infrastructure, mining and setting up of industries without paying adequate remuneration, or considering the impact on the livelihood of farmers (Bajoria, 2018). Multi cropping with drought-resistant seeds may also reduce the impact of climate change (Economic Survey of India, 2018), can result in 12% decline in farmers' income. Low physical access to markets due to poor road transportation and other logistical deficiencies also lower farm incomes (Banik, 2017). The increasing indebtedness of Indian farmers is perhaps the leading determinant of agrarian stress.

Conclusion:

The growth of agriculture in the every plan is being higher than earlier growth rate mostly. The twelfth plan target growth rate for agriculture is 4% with food grains growth rate is about 2% and non-food grains sector growing at about 5 to 6%. The production of food grains, oilseeds, pulses and other commercial crops is increasing continually in India. But capital formation level is decreasing in the agricultural sector due to the unfavorable policy of the government regarding investment promotion. Agricultural price policy has played an important role in Indian agriculture but is facing some challenges. The slowdown in agriculture growth could be attributed to the supply side factors such as public investment, irrigation water management,

rural credit, technology, land management, agricultural research and development including extension services, rural infrastructure like roads, electricity, marketing, post-harvest management and so on. All farmers, agricultural labourers, societies, Government and people's organizations should work collectively to revive agriculture. It is high time that the government and the people realized that India can become a real "superpower" only when the vast majority of people, especially farmers in rural areas, become prosperous and are really empowered. Thus, a holistic approach is needed to tackle the crisis in the farm sector. The increased production instead of leading to crash in prices and rescue operations in the form of government interventions must be used for agro processing which will provide vital synergies and linkages between agriculture and industry, create employment and thus be a growth driver.

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