

Impact of Liberalization on the Performance of Indian Agriculture

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Abstract: Agricultural sector is to provide adequate output to assure global food security and enhance their economic development. It is, therefore increased population can only be absorbed in agricultural sector but it is the saddest part of the story that Indian agriculture is backward as the productivity per labour and per hectare is very low. In order to boost the Indian agriculture, serious attempts made during the late 1970's and early 1980's. The culmination of the policies for reforming the trade sector and making it more export oriented came with the policy of economic liberalization initiated in 1991. The process of reforms especially trade reforms had deep impact on the exports of agriculture commodities., since 1995 following implementation of WTO agreement on agriculture beginning of the new era for agricultural sector of India on the policy side. Trade policy reforms have aimed at creating an environment for agricultural export promotion, accelerating India's agricultural export share in the world exports and makes export as an engine for economic growth. The present study an attempt to examine the effects of trade liberalization on production, area under cultivation, yield per hectare from 1970-71 to 2009-10. This study based on the time series data from Ministry of Agriculture Govt. of India, Reserve Bank of India hand book of Statistics, economic survey is a source of data. Production, area under cultivation, yield per hectare are variables of study, Simple quantitative analysis is used to examine the impact assessment with annual growth rate..

Keywords: WTO, Liberalization, Food security, Productivity, Production.

I. INTRODUCTION

The Rationale for trade liberalization is based on the assumption that a free multilateral trade regime leads to significant increase in the world trade and benefits all the trading partners. In particular, the developing nations were likely to benefit specially due to increased agricultural exports to developed nations, because of their natural comparative advantage in agriculture subsequent to the envisaged withdrawal of domestic and exports subsidies by the developed nations. India implemented the process of comprehensive economic reforms in June 1991. The macro economic reforms particularly the devaluation of rupee in 1991 and gradual dismantling of imports, exports and exchange controls constituted an important component of these reforms. Many liberalized policies government of India implemented in 1991, free entry of foreign competitors into India's domestic market, free access to import, free access to foreign investment. Liberalization of agricultural trade is expected to stabilize price of agricultural products, expected to improve productive efficiency, reduce stress on external balance and evaluate the growth process of the developing nations.

Liberalization of Indian agricultural trade

Agriculture in India is considered as the back bone of Indian economy and provides employment to about two thirds of work force of the country. Two third of labor force livelihood mainly depends on the agriculture in India, has always been India's most important economic sector. The increase in post - independence agricultural production has been brought about by bringing additional area under cultivation, extension of irrigation facilities, use of better seeds, better techniques, water management, and plant protection. Agricultural growth during 1980 witnessed a growth rate of 3% per annum, which has outstripped population growth and enabled the country to substitute imports of food grains and attain food security at the national level. Robotson (1949) trade is not only advice for achieving productive efficiency but also an engine of growth. Foreign trade plays a vital role in accelerating the process of economic development both in developed and developing nations. International trade was suffering greatly during the Second World War after that large acceleration in its growth immediately. In post-world war period in any developing nations the agriculture sector and agriculture trade plays an important part of overall economic growth. Like merchandise trade the growth of agriculture trade is also closely associated with an increasing diversification of products and markets. The growth of trade was truly phenomenal after 1970. Under the impact of globalization, one of the important features of merchandise and agriculture trade in the post-world war period is that rate of growth of trade has exceeded rate of growth of production. World trade in agriculture has also grown at a rapid rate after 1970. But trade in agriculture has not grown at the same rate as merchandise rate.

Up to 1991 India has protected its domestic agriculture market by high level tariff and quantitative restriction for most agricultural products. The liberalization initiatives taken place since 1991, including the abolition of some export controls and minimum export prices and removal of some products from the list of restricted imports. Since 1991 measures have been taken to promote integration of domestic economy with

global economy by reforms. Change in exchange rate and liberalization of external trade along with liberation of trade, private sector has been allowed and encouraged to participate in import and export of major agricultural products. Agreement on Agriculture (AoA) put India in a position to avail itself of the opportunity available under WTO provisions to export of goods and services in which we have comparative advantage. Over the years change in export and import policy have been effected towards liberalization. Nation specific and commodity specific measures have been taken to promote exports and efforts have been made to reorient institutional infrastructure towards creating export friendly environment. Governments of India announce its new trade policy in support of liberalization of policy in 1991. The main components of the policy package with respect to agriculture, subsidies on agriculture inputs such as seeds, fertilizer, water, and electricity should be discounted in a faced manner. Allocate resource optimally nationally and internationally, Government should not interfere with the function of market drive price mechanism.

II. REVIEW OF LITERATURE

G.S.Bhalla (1997) has attempted a study on “globalization and agriculture policy in India” The study attempts to examine the implication of globalization on Indian agriculture. His main objective is to examine the implication of globalization on Indian agriculture, by giving importance to domestic demand and supply of food grains and other important commodities in India. A dynamic agriculture can also lead to rapid accumulation in non-agriculture sector. He also found that the elasticity of demand for food grains is less than one. His argument is economic liberalization in India resulted in depreciation in the Indian currency and shifted the terms of trade in favour of tradable agriculture and created a new favourable climate for a number of agriculture commodities to increase exports.

Hanumanta Rao(1994) In his paper “liberalization and agriculture” focus is on how liberalization brings the agricultural development. He has studied some major issues and approach relating to agriculture. According to him there are three major issues, which have direct as well as indirect bearing on agriculture Liberalization of agriculture trade, Input subsidies and Institutional frame works. He pointed out that agriculture growth is not to be constrained by the domestic demand but should contribute rising the overall economic growth ,then agriculture output needs to be stepped up for exports by diversifying into areas such as dairy and other animal products, horticulture, floriculture etc. According to him there are three basic pre requisite for the proper development and diffusion of new technology. Development of irrigation, roads and marketing network would facilitate the wide spread adoption of new technology by raising the yields. Improvement in the literacy levels of farmers are new methods for achieving agricultural growth. Ramesh Chand (1999) A study by him attempted to quantify the impact of globalization of agriculture on producer surplus, consumer surplus and net social welfare in the case of four crops, namely, paddy (rice), maize, chickpea and rapeseed-mustard. The study concluded that in the case of studied crops, free trade is likely to have sharp positive impact on net return from production of exportable like maize and rice, whereas, it is likely to have small negative impact on net return from the importable like rapeseed-mustard. In rice where level of input subsidy is high, free trade would not be sufficient to counter the adverse impact on income due to withdrawal of subsidies.

Vyas(1999) He studied on agriculture trade policy and export strategy, He attempted to study the performance of Indian agriculture in the context of development in agricultural trade especially agriculture exports. According to him India’s foreign trade regime till reforms initiated in 1991 was primarily dictated by two important considerations, i.e., import substituting industrialization, and concern for dwindling foreign exchange resources. The major instrument used to implement these policy goals comprised quantitative restrictions heightening tariffs, surcharge on imports, rebate on exports and sever restrictions on foreign exchange transaction. Ratna reddy & Badry Narayan (1992) examined trade exports in Indian agriculture for the period 1960-85. Their study used net exports supply function for specific commodities. They found continues decline in the share of agricultural export from 44 percent in 1962 to 28 percent in 1995. There was also decline in the share of agricultural imports from 29 percent in 1960 to 28% in 1985. The imports substitution policies dominates agricultural trade scenario in India. Therefore authors have suggested that more concentration should be given to produce and exports more of the commodities like tobacco and cotton for which India enjoy comparative advantage. Finally, they concluded that India is still following import substitution policies rather than export oriented in agriculture and even with import substitution policies, not able to achieve self-sufficiency in some of the important commodities like oil seeds.

Subramanyam(1998) has studied “Trade liberalization and Indian agriculture” in the context of economic liberalization within India and global liberalization of agriculture trade. The impact of trade liberalization depends on world economic environment. The author has attempted to study a computing general equilibrium model a set of equations describing the behaviour of producers’ consumers and others. Finally he concludes that, the course of Indian’s agriculture development has been shaped by government intervention. Ashok Gulati & Anil Sharma (1994) The author in their paper titled “ Agriculture under GATT :what it holds for India” examine the impact of India’s commitments on intellectual property rights , especially commitments to market access, domestic support and export competition in the area of agriculture . In their opinion that

agricultural has turned out to a star performed in terms of export. Agriculture exports increased during the first half of the year 1994. They concluded that exports of agricultural commodities have increased and abolition of all export controls regulation like canalization export quotas and minimum export prices to be abolished.

Objectives of study

The present study an attempt to examine the effects of trade liberalization on production, area under cultivation, yield per hectare from 1970-71 to 2009-10

Sources of Data

This study based on the time series data from Ministry of Agriculture Govt. of India, Reserve Bank of India hand book of Statistics, economic survey is a source of data. Production, area under cultivation, yield per hectare are variables of study, Simple quantitative analysis is used to examine the impact assessment with annual growth rate.

III. ANALYSIS AND DISCUSSION

Total production of Agriculture sector

If we look at the data total production was continuously increasing from 1970-71 to 2009-10 share of commercial crops production was higher than the food grains production .Total production was recorded 254.79 million tons during the year 1970-71, this was increase to 554.58 million tons during the year 2009-10(Table3). After the liberalization there was increase in the commercial crops production than food grains production because there was much demand for commercial crops in the international market. If we look at the figure production of total commercial crops curve was higher than the production of food grains curve, total production food grains curve parallel to OX axis (Figure 3). During the year 1970-71 total food grains production was recorded 108.42 million tonnes, total commercial crops production was recorded 146.37 million tones9(S Table1). Total food grains contain different crops which are: Rice, Wheat, Coarse Cereals, and Pulses. In the case of Total commercial crops: Groundnuts, Rapeseed & Mustard, Soybean, Coffee, and Tea, Cotton, Raw jute and Mesta, Sugar cane, Tobacco.

Rice occupies major share in the total production of food grains, Wheat occupies next place. During the year 1970-71 total production of rice was recorded 42.22 million tons this was increased to 89.13 million tons during the year 2009-10 (table 1) in case of wheat during the year 1970-71 total production was recorded 23.83 Million tons this was increase to 80.71 Million tons during the year 2009-10. In the case of commercial crops Sugar occupies major share in the total production of commercial crops (see figure2) which was very higher than the other crops. Total production of sugar recorded 126.37 Million tons during the year 1970-71 this was increased to 227.75 Million tons during the year 2009-10 (table 2) production of Cotton also increase to 23.94 Million tons in the year 2009-10 from 476 Million tons in the year 1970-71.

The annual growth rate of total production(commercial crops & food grains) was recorded high level 22.47 percent during the year 2007-08 compared to previous year, after that period annual growth rate of total production came down(figure 4), During the year 1979-80 annual growth rate of total production was very low which recorded negatively-15.05 percent. After the immediate period it was increased to 5.00 percent during the year 1990-91. If we look at the annual growth rate of production of food grains and commercial crops, during the year 1971-72 annual growth rate food grains was negatively recoded -2.99 percent compared to previous year (See Table 3), but in the case of commercial crops during the same period the annual growth rate was recorded negatively -7.18 percent compare to previous year 1970-71.

After the liberalization period annual growth rate of total production and improvement in the total production of commercial crops as well as food grains, but from data production of commercial crops were higher than the food grains because of there was much demand for commercial crops in the international market.

Area under Cultivation

Cropping pattern of a nation depends up on the different factors which are climate; soils and rainfall determine the crops that can be grown in any location. Cropping pattern also depends up on the irrigation and introduction of new technology. Consumption also playing role on the cropping pattern of the nation, if there is more demand then farmer cultivates more of that good. For the long time consumption pattern in India was dominated by food grains. Income of population also affects the cropping pattern. If we look at the data (See Figure8) total food crops cultivation was higher than the commercial crops cultivation, during the year 1970-71 total commercial crops cultivation was recorded 22.93 Million Hectares, food grains cultivation was 124.32 million Hectares (See table 5). During the year 2009-10 commercial crops cultivation was 121.33 million Hectares but there was not much increase in the area under cultivation of food grains from 124.32million hectares during the year 1970-71 to121.12 million hectares during the year 2009-10 but compare to commercial crops this was high, under total food grains up to 1983-84 Coarse cereals was high, after 1984-85 area under rice cultivation occupies major share in the total cultivation of food grains. During the year 1970-71 Coarse Cereals cultivation was 45.95 Million Hectares, 37.59 Million Hectares recoded for Rice (See table 4).

Cultivation of Rice increasing continuously from the year 1970-71 to 2009-10 (Figure 6). During the year 2009-10 cultivation of rice was 41.87 Million but it was 37.59 Million Hectares in 1970-71. Cultivation of

Coarse cereals continuously decreasing from 45.95 million Hectares to 28.34 Million Hectares. Under commercial crops cultivation of cotton (figure 7) was higher than other crops, cultivation of cotton increase to 10.28 Million Hectares during 2009-10 from 7.61 million hectares during 1970-71(table 5). Soybean cultivation was increasing rapidly from 0.77 Million Hectares during the year 1982-83 to 9.79 million Hectares during the year 2008-09.

There was a significant change in cropping patterns during 1990-93to2009-10, both in terms of area allocation and share in total value of output. The most important change was a significant decline in the share of area under coarse cereals and an increase in the share of area under higher value crops brought about because of changes in relative prices and productivity. During 1980-83to1990-93, shifts occurred mainly towards oil seeds, and to some extent, towards remaining crops. But duringthepost-reformperiod1990-93to2009-10, whereas the diversification of area as well as value of output towards plantation and condiments and spices, and towards remaining crops have continued, the diversification towards oil seeds has slowed down considerably.

However, there is a diversification of area as well as of value of output towards plantation and condiments and spices, and towards remaining crops (that includes other fruit and vegetables).But in the north-western region, despite an ambitious programme of diversification away from rice and food grains, the share of rice and total food grains in total cropped area has actually increased and the share of food grains in total value of output has remained constant. In short, economic reforms and trade liberalization have failed to hasten the process of diversification in agriculture. But, despite this slow down at the all-India level, most of the states in the central region registered an increase in their share of area under as well as value of output of oilseeds as well as cotton. On the face of it, diversification away from coarse cereals to high value oilseeds, cotton and remaining crops should be a desirable development. However, in dry land agriculture, this shifts also ex-poses the cultivators to much greater weather-borne risks. These risks are further exacerbated because of increased vulnerability to world commodity price volatility following trade liberalization. These risks pose a serious problem for the livelihood of cotton and oilseed farmers.

Yield per hectare

If we look at the data (See figures 9, 10) total commercial crops yield per hectares was higher than the total food grains yield. There was not much increase in the per hectare yield of food grains, but in the case of commercial crops yield per hectare was increased. Under commercial crops Tea yield per hectare was high up to1997-98(See table 8) , after words coming down then raw jute yields per hectare were increased but more over per hectare yield of rice was higher than other commercial crops during the years 1970-71 to 2009-10 . During the year 1997-98 per hectare yield of Rice was 1924 kgs that was reduced to 1711 kgs during the year 2009-10(See table 7). Under food grains per hectare yield of wheat was higher than the other crops, during the year 1970-71 yield per hectare of Wheat 1307 kgs that was increase to 2907 kgs in 2009-10.

IV. SUMMARY AND CONCLUSION

Foreign trade plays a very important role in the developing and developed nations. Agricultural plays a crucial role in the process of economic development of a nation particularly in the initial stage of development. Agricultural growth promotes the purchasing power of agricultural workers and thereby and demand for industrial goods. Before the independence 1900-01 to 1946-47 the growth rate of agricultural sector recorded only 0.46 pa percent, during the same period growth rate of agricultural production also very low. During the year 1901-04 to 1940-44 agriculture output recorded a growth rate of 0.26 per annum percent at 1925 prices.The main important reason for the growth during the pre-independence period was limited spared of scientific research particularly in the agriculture, there was some partiality shown by the Britishers in providing irrigation facilities, lack of technology also another reason.

The study had identified that after independence period Indian government passed through various policies, all these policies accelerated in the growth rate of Indian agriculture from 1950-51. Agriculture sector recorded high growth rate during 1950-51 to 1964-65 after that period there was declaration in the growth rate of agriculture during the year 1967-68 to 1979-80.

India should increase investments in rural infrastructure (including transport and information technology that connects villages) and agricultural R&D (leading to improved technologies for farmers). This is most important suggestion. To ensure high returns on these investments, India will have to invest in institutions that make implementing agencies transparent and accountable to user groups. Part of this expansion of pro-poor investments in rural India should be financed by reducing food and input subsidies, making them available only to vulnerable groups.

V. REFERENCES

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Appendix

Table1: Total Production of food grains

AGRICULTURAL PRODUCTION – FOODGRAINS					
(Million tons)					
Year	Cereals			Pulse s	Total Food grains
	Rice	Whea t	Coarse Cereals		
1970-71	42.22	23.83	30.55	11.82	108.42
1971-72	43.07	26.41	24.60	11.09	105.17
1972-73	39.24	24.74	23.14	9.91	97.03
1973-74	44.05	21.78	28.83	10.01	104.67
1974-75	39.58	24.10	26.13	10.02	99.83
1975-76	48.74	28.84	30.41	13.04	121.03
1976-77	41.92	29.01	28.88	11.36	111.17
1977-78	52.67	31.75	30.02	11.97	126.41
1978-79	53.77	35.51	30.44	12.18	131.90
1979-80	42.33	31.83	26.97	8.57	109.70
1980-81	53.63	36.31	29.02	10.63	129.59
1981-82	53.25	37.45	31.09	11.51	133.30
1982-83	47.12	42.79	27.75	11.86	129.52
1983-84	60.10	45.48	33.90	12.89	152.37
1984-85	58.34	44.07	31.17	11.96	145.54
1985-86	63.83	47.05	26.20	13.36	150.44
1986-87	60.56	44.32	26.83	11.71	143.42
1987-88	56.86	46.17	26.36	10.96	140.35
1988-89	70.49	54.11	31.47	13.85	169.92
1989-90	73.57	49.85	34.76	12.86	171.04
1990-91	74.29	55.14	32.70	14.26	176.39
1991-92	74.68	55.69	25.99	12.02	168.38
1992-93	72.86	57.21	36.59	12.82	179.48
1993-94	80.30	59.84	30.82	13.30	184.26
1994-95	81.81	65.77	29.88	14.04	191.50
1995-96	76.98	62.10	29.03	12.31	180.42
1996-97	81.73	69.35	34.11	14.24	199.43
1997-98	82.54	66.35	30.40	13.83	193.12
1998-99	86.08	71.29	31.33	14.91	203.61
1999-00	89.68	76.37	30.34	13.41	209.80
2000-01	84.98	69.68	31.08	11.07	196.81
2001-02	93.34	72.77	33.37	13.37	212.85
2002-03	71.82	65.76	26.07	11.13	174.78
2003-04	88.53	72.15	37.60	14.91	213.19
2004-05	83.13	68.64	33.46	13.13	198.36
2005-06	91.79	69.35	34.06	13.39	208.59
2006-07	93.35	75.81	33.92	14.20	217.28
2007-08	96.69	78.57	40.76	14.76	230.78
2008-09	99.18	80.68	40.03	14.57	234.47
2009-10	89.13	80.71	33.77	14.59	218.20

Source: Ministry of Agriculture, Government of India.

Figure1: Production of Total Food Grains

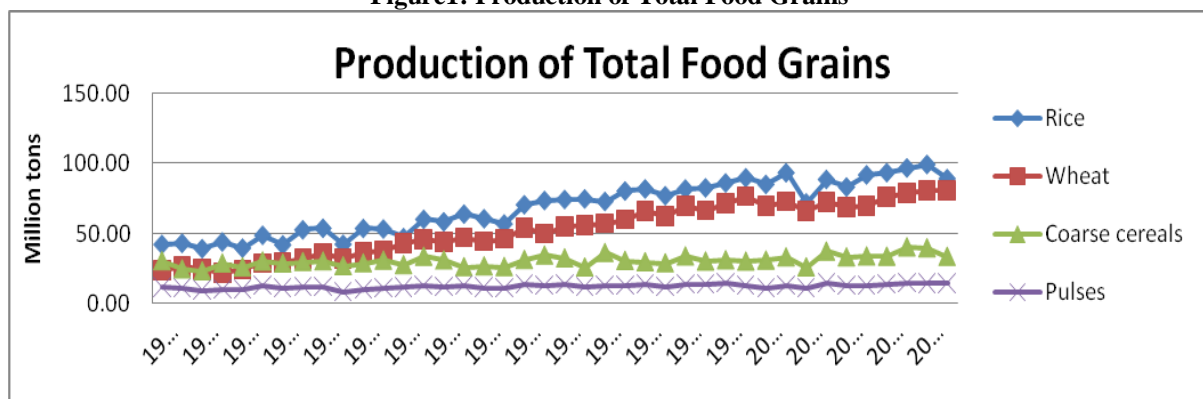


Table2: Total Production of Commercial crops

AGRICULTURAL PRODUCTION - MAJOR COMMERCIAL CROPS										
(Million tonnes)										
Year	Ground nut	Rapeseed and Mustard	Soybean	Coffee	Cotton (Lint)	Raw Jute & Mesta	Sugarcane	Tea	Tobacco	Total
1970-71	6.11	1.98	0.01	0.12	4.76	6.19	126.37	0.47	0.36	146.37
1971-72	6.18	1.43	0.01	0.07	6.95	6.84	113.57	0.48	0.42	135.95
1972-73	4.09	1.81	0.03	0.1	5.74	6.09	124.87	0.51	0.37	143.61
1973-74	5.93	1.70	0.04	0.09	6.31	7.68	140.81	0.53	0.46	163.55
1974-75	5.11	2.25	0.05	0.1	7.16	5.83	144.29	0.54	0.36	165.69
1975-76	6.76	1.94	0.09	0.09	5.95	5.91	140.60	0.54	0.35	162.23
1976-77	5.26	1.55	0.12	0.11	5.84	7.10	153.01	0.57	0.42	173.98
1977-78	6.09	1.65	0.18	0.14	7.24	7.15	176.97	0.62	0.49	200.53
1978-79	6.21	1.86	0.30	0.12	7.96	8.33	151.66	0.63	0.45	177.52
1979-80	5.77	1.43	0.28	0.16	7.65	7.96	128.83	0.61	0.44	153.13
1980-81	5.01	2.30	0.44	0.13	7.01	8.16	154.25	0.63	0.48	178.41
1981-82	7.22	2.38	0.35	0.17	7.88	8.37	186.36	0.62	0.52	213.87
1982-83	5.28	2.21	0.49	0.14	7.53	7.17	189.51	0.62	0.58	213.53
1983-84	7.09	2.61	0.61	0.11	6.39	7.72	174.08	0.65	0.49	199.75
1984-85	6.44	3.07	0.95	0.21	8.51	7.79	170.32	0.71	0.49	198.49
1985-86	5.12	2.68	1.02	0.13	8.73	12.65	170.65	0.73	0.44	202.15
1986-87	5.88	2.60	0.89	0.21	6.91	8.62	186.09	0.7	0.46	212.36
1987-88	5.85	3.45	0.90	0.13	6.38	6.78	196.74	0.75	0.37	221.35
1988-	9.66	4.38	1.55	0.24	8.74	7.86	203.04	0.78	0.49	236.74

89										
1989-90	8.10	4.13	1.81		11.42	8.29	225.57		0.55	
1990-91	7.51	5.23	2.60	0.13	9.84	9.23	241.05	0.76	0.56	260.76
1991-92	7.09	5.86	2.49	0.19	9.71	10.29	254.00	0.8	0.58	277.01
1992-93	7.09	5.86	2.49	0.2	9.71	10.29	254.00	0.84	0.58	291.06
1992-93	8.56	4.80	3.39	0.19	11.40	8.59	228.03	0.79	0.60	266.35
1993-94	7.83	5.33	4.75	0.23	10.74	8.43	229.66	0.85	0.56	268.38
1994-95	8.06	5.76	3.93	0.2	11.89	9.08	275.54	0.84	0.57	315.87
1995-96	7.58	6.00	5.10	0.25	12.86	8.81	281.10	0.84	0.54	323.08
1996-97	8.64	6.66	5.38	0.23	14.23	11.13	277.56	0.87	0.62	325.32
1997-98	7.37	4.70	6.46	0.25	10.85	11.02	279.54	0.93	0.64	321.76
1998-99	8.98	5.66	7.14	0.29	12.29	9.81	288.72	0.96	0.74	334.59
1999-00	5.25	5.79	7.08	0.32	11.53	10.55	299.32	0.93	0.52	341.29
2000-01	6.41	4.19	5.28	0.33	9.52	10.56	295.96	0.95	0.34	333.54
2001-02	7.03	5.08	5.96	0.33	10.00	11.68	297.21	0.95	0.55	338.79
2002-03	4.12	3.88	4.66	0.3	8.62	11.28	287.38	0.95	0.49	321.68
2003-04	8.13	6.29	7.82	0.3	13.73	11.17	233.86	0.98	0.55	282.83
2004-05	6.77	7.59	6.88	0.3	16.43	10.27	237.09	1.01	0.55	286.89
2005-06	7.99	8.13	8.27	0.3	18.50	10.84	281.17	1.06	0.55	336.81
2006-07	4.86	7.44	8.85	0.32	22.63	11.27	355.52	1.09	0.52	412.50
2007-08	9.18	5.83	10.97	0.29	25.88	11.21	348.19	1.1	0.49	413.14
2008-09	7.17	7.20	9.91	0.29	22.28	10.37	285.03	1.09	NB	343.34
2009-10	5.51	6.41	10.05	0.32	23.94	11.29	277.75	1.11	NB	336.38

Source: Ministry of Agriculture, Government of India.

Figure2: Production of total Commercial crops

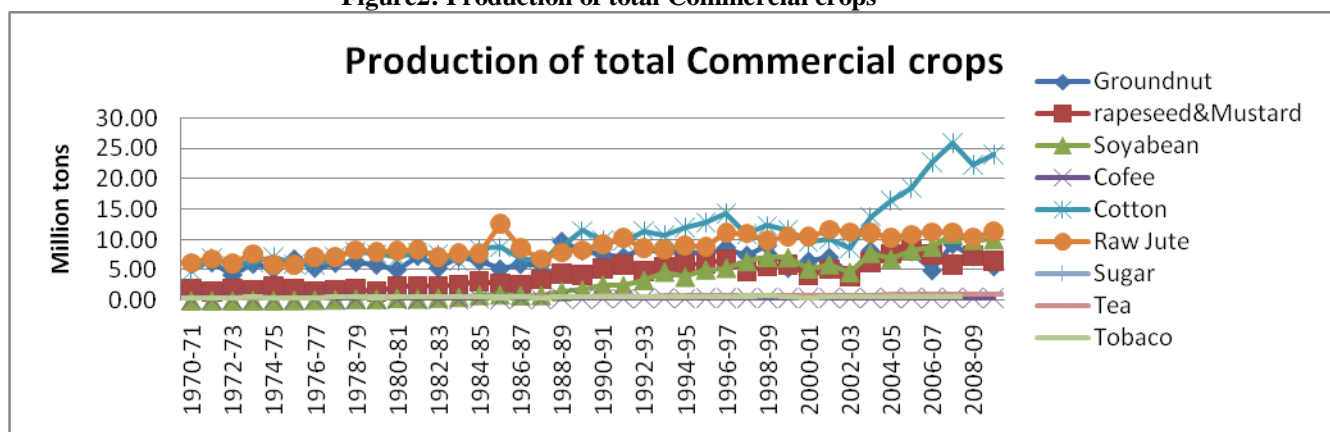


Table3: Annual Growth rates of Food grains, Commercial crops and Total production

Year	Production of total food grains	production of Total Commercial crops	Total Production	Annual growth rate of total production (%)	Annual growth rate of Food grains (%)	Annual growth rate of total Commercial crops (%)
1970-71	108.42	146.37	254.79			
1971-72	105.17	135.95	241.12	-5.36	-2.99	-7.11
1972-73	97.03	143.61	240.64	-0.199	-7.73	5.63
1973-74	104.67	163.55	268.22	11.46	7.87	13.8
1974-75	99.83	165.69	265.52	-1.01	-4.62	1.3
1975-76	121.03	162.23	283.26	6.68	21.23	-2.08
1976-77	111.17	173.98	285.15	0.66	-8.146	7.24
1977-78	126.41	200.53	326.94	14.65	13.7	15.26
1978-79	131.90	177.52	309.42	-5.35	4.34	-11.47
1979-80	109.70	153.13	262.83	-15.05	-16.83	-13.73
1980-81	129.59	178.41	308.00	17.18	18.13	16.51
1981-82	133.30	213.87	347.17	12.71	2.86	19.875
1982-83	129.52	213.53	343.05	-1.18	-2.83	-0.15
1983-84	152.37	199.75	352.12	2.64	17.64	-6.45
1984-85	145.54	198.49	344.03	-2.29	-4.48	-0.63
1985-86	150.44	202.15	352.59	2.48	3.36	1.84
1986-87	143.42	212.36	355.78	0.9	-4.66	5.05
1987-88	140.35	221.35	361.70	1.66	-2.14	4.23
1988-89	169.92	236.74	406.66	12.43	21.06	6.95
1989-90	171.04	260.76	431.80	6.18	0.65	10.14
1990-91	176.39	277.01	453.40	5.1	3.12	6.23
1991-92	168.38	291.06	459.44	1.33	-4.54	5.072
1992-93	179.48	266.35	445.83	-2.96	6.59	-8.48
1993-94	184.26	268.38	452.64	1.52	2.66	0.76
1994-95	191.50	315.87	507.37	12.09	3.92	17.69
1995-96	180.42	323.08	503.50	-0.76	-5.78	2.28
1996-97	199.43	325.32	524.75	4.22	10.53	0.69
1997-98	193.12	321.76	514.88	-1.88	-3.16	-1.1
1998-99	203.61	334.59	538.20	4.52	5.43	3.98
1999-00	209.80	341.29	551.09	2.39	3.04	2
2000-01	196.81	333.54	530.35	-3.76	-6.19	-2.27
2001-02	212.85	338.79	551.64	4.01	8.14	1.57
2002-03	174.78	321.68	496.46	-10	-17.88	-5.05
2003-04	213.19	282.83	496.02	-0.08	21.97	-12.07
2004-05	198.36	286.89	485.25	-2.17	-6.95	1.43
2005-06	208.59	336.81	545.40	12.39	5.15	17.4
2006-07	217.28	412.50	629.78	15.47	4.16	22.47
2007-08	230.78	413.14	643.92	2.24	6.21	0.15
2008-09	234.46	343.34	577.80	-10.26	1.59	-16.89
2009-10	218.20	336.38	554.58	-4.01	-6.93	-2.027

Source: Ministry of Agriculture, Government of India.

Figure3: Total Production

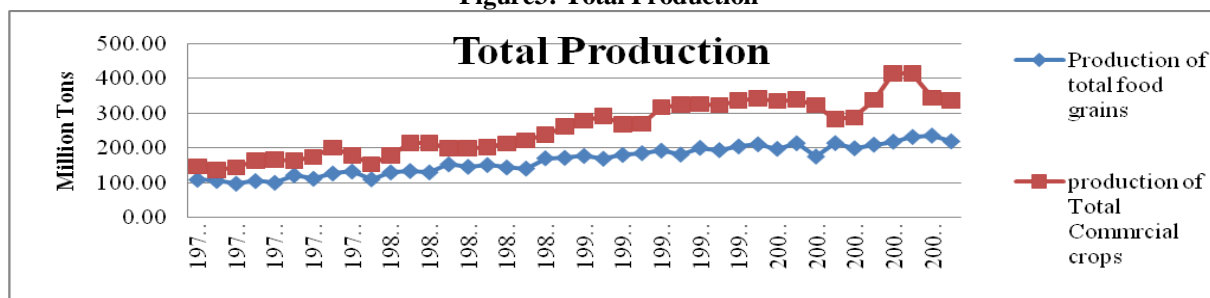


Figure4: Annual growth rate of Total Production (%)

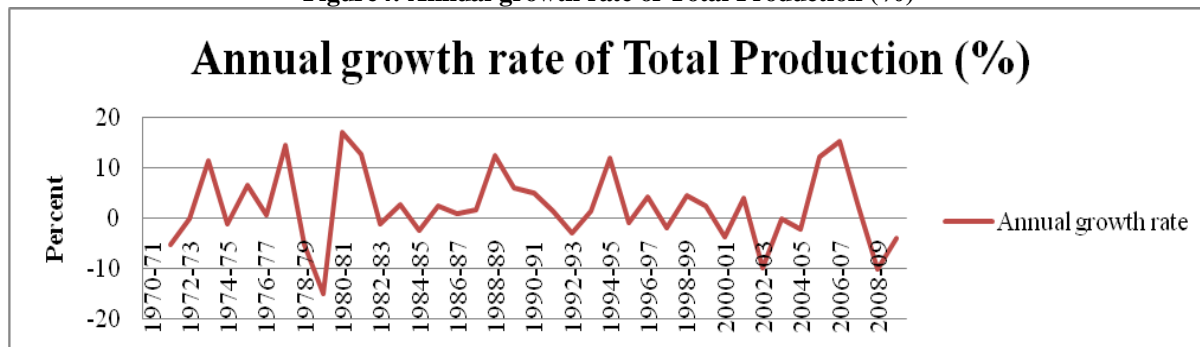


Figure5: Annual Growth rate of Food and Commercial Crops Production (%)

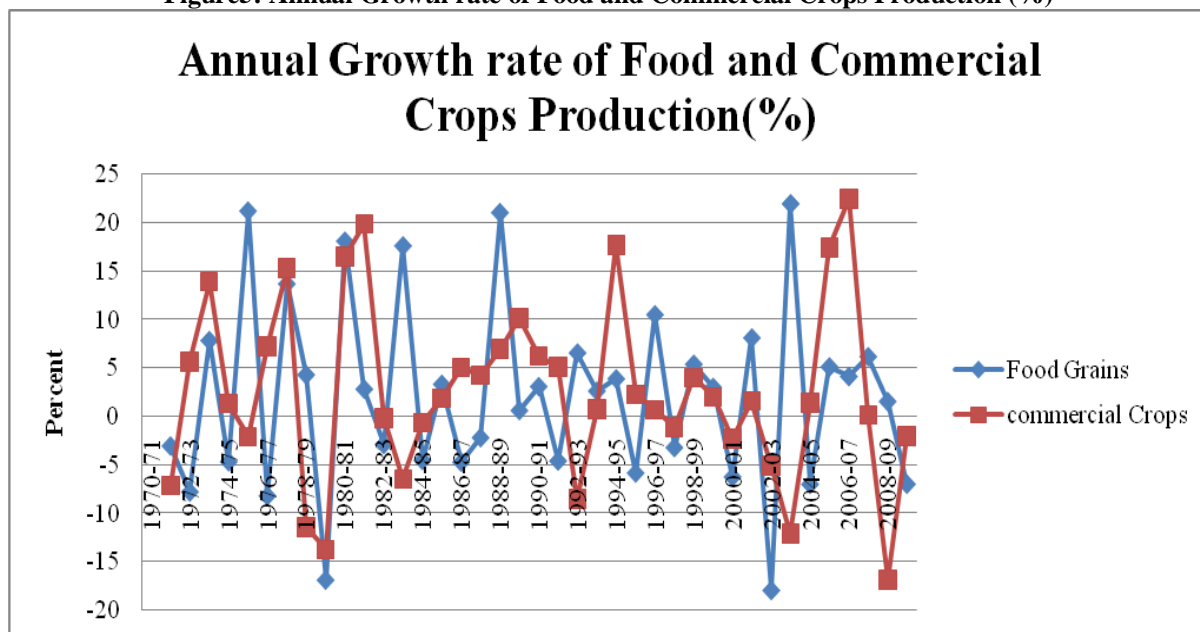


Table4: Food Grains Area Under cultivation

AREA UNDER CULTIVATION - FOODGRAINS					
(Million hectares)					
Year	Cereals			Pulses	Total Food grains
	Rice	Wheat	Coarse Cereals		
1970-71	37.59	18.24	45.95	22.54	124.32
1971-72	37.76	19.14	43.57	22.15	122.62
1972-73	36.69	19.46	42.21	20.92	119.28
1973-74	38.29	18.58	46.24	23.43	126.54
1974-75	37.89	18.01	43.15	22.03	121.08
1975-76	39.48	20.45	43.80	24.45	128.18
1976-77	38.51	20.92	41.94	22.98	124.35
1977-78	40.28	21.46	42.28	23.50	127.52
1978-79	40.48	22.64	42.23	23.66	129.01
1979-80	39.42	22.17	41.36	22.26	125.21
1980-81	40.15	22.28	41.78	22.46	126.67
1981-82	40.71	22.14	42.45	23.84	129.14
1982-83	38.26	23.57	40.43	22.83	125.09
1983-84	41.24	24.67	41.71	23.54	131.16
1984-85	41.16	23.56	39.21	22.74	126.67

1985-86	41.14	23.00	39.47	24.42	128.03
1986-87	41.17	23.13	39.74	23.16	127.20
1987-88	38.81	23.06	36.55	21.27	119.69
1988-89	41.73	24.11	38.68	23.15	127.67
1989-90	42.17	23.50	37.69	23.41	126.77
1990-91	42.69	24.17	36.32	24.66	127.84
1991-92	42.65	23.26	33.42	22.54	121.87
1992-93	41.78	24.59	34.42	22.36	123.15
1993-94	42.54	25.15	32.82	22.25	122.76
1994-95	42.81	25.70	32.17	23.03	123.71
1995-96	42.84	25.01	30.88	22.28	121.01
1996-97	43.43	25.89	31.81	22.45	123.58
1997-98	43.45	26.70	30.83	22.87	123.85
1998-99	44.80	27.52	29.34	23.50	125.16
1999-00	45.16	27.49	29.34	21.12	123.11
2000-01	44.71	25.73	30.26	20.35	121.05
2001-02	44.90	26.34	29.52	22.01	122.77
2002-03	41.18	25.20	26.99	20.50	113.87
2003-04	42.59	26.60	30.80	23.46	123.45
2004-05	41.91	26.38	29.03	22.76	120.08
2005-06	43.66	26.48	29.04	22.39	121.60
2006-07	43.81	27.99	28.71	23.19	123.70
2007-08	43.91	28.04	28.48	23.63	124.06
2008-09	45.54	27.75	27.45	22.09	122.83
2009-10	41.87	28.34	27.52	23.39	121.12

Source : Ministry of Agriculture, Government of India.

Figure6: Food Grains Area Under Cultivation

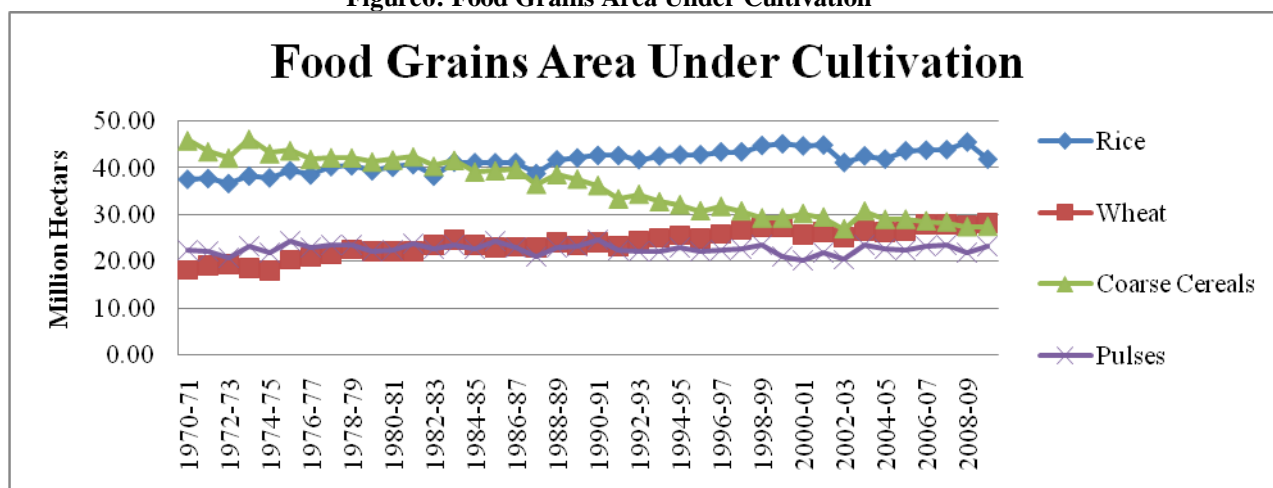


Table5: commercial crops area under Cultivation

AREA UNDER CULTIVATION - MAJOR COMMERCIAL CROPS (Million hectares)										
Year	Oilseeds			Sugar cane	Tea	Coffe e	Cotton (Lint)	Raw Jute & Mesta	Tobacco	Total Production
	Ground nut	Rapeseed & Mustard	Soya bean							
1970-71	7.33	3.32	0.03	2.62	0.35	0.14	7.61	1.08	0.45	22.93
1971-72	7.51	3.61	0.03	2.39	0.36	0.14	7.80	1.11	0.46	23.41

1972-73	6.99	3.32	0.03	2.45	0.36	0.15	7.68	0.99	0.45	22.42
1973-74	7.02	3.46	0.05	2.75	0.36	0.16	7.57	1.16	0.46	22.99
1974-75	7.06	3.68	0.07	2.89	0.36	0.16	7.56	0.98	0.38	23.14
1975-76	7.22	3.34	0.09	2.76	0.36	0.17	7.35	0.91	0.37	22.57
1976-77	7.04	3.13	0.13	2.87	0.36	0.14	6.89	1.09	0.43	22.08
1977-78	7.03	3.58	0.20	3.15	0.37	0.15	7.87	1.16	0.50	24.01
1978-79	7.43	3.54	0.31	3.09	0.37	0.16	8.12	1.27	0.41	24.70
1979-80	7.17	3.47	0.50	2.61	0.37	0.17	8.13	1.22	0.43	24.07
1980-81	6.80	4.11	0.61	2.67	0.38	0.19	7.82	1.30	0.45	24.33
1981-82	7.43	4.40	0.48	3.19	0.38	0.19	8.06	1.15	0.44	25.72
1982-83	7.22	3.83	0.77	3.36	0.39	0.21	7.87	1.02	0.50	25.17
1983-84	7.54	3.87	0.84	3.11	0.40	0.21	7.72	1.05	0.44	25.18
1984-85	7.17	3.99	1.24	2.95	0.40	0.21	7.38	1.13	0.44	24.91
1985-86	7.12	3.98	1.34	2.85	0.40	0.21	7.53	1.50	0.40	25.33
1986-87	6.98	3.72	1.53	3.08	0.41	0.22	6.95	1.07	0.39	24.35
1987-88	6.84	4.62	1.54	3.28	0.41	0.22	6.46	0.96	0.32	24.65
1988-89	8.53	4.83	1.73	3.33	0.41	0.22	7.34	0.92	0.38	27.69
1989-90	8.71	4.97	2.25	3.44	0.41	0.22	7.69	0.91	0.41	29.01
1990-91	8.31	5.78	2.56	3.69	0.42	0.22	7.44	1.02	0.41	29.85
1991-92	8.67	6.55	3.18	3.84	0.42	0.22	7.66	1.11	0.43	32.08
1992-93	8.17	6.19	3.79	3.57	0.42	0.22	7.54	0.93	0.42	31.25
1993-94	8.32	6.29	4.37	3.42	0.42	0.23	7.32	0.89	0.38	31.64
1994-95	7.85	6.01	4.32	3.87	0.43	0.23	7.87	0.93	0.38	31.89
1995-96	7.52	6.55	5.04	4.15	0.43	0.24	9.04	0.93	0.39	34.29
1996-97	7.60	6.55	5.45	4.17	0.43	0.25	9.12	1.10	0.43	35.10
1997-98	7.09	7.04	5.99	3.93	0.43	0.29	8.87	1.11	0.46	35.21
1998-99	7.40	6.51	6.49	4.05	0.47	0.30	9.34	1.03	0.51	36.10
1999-00	6.87	6.03	6.22	4.22	0.49	0.31	8.71	1.04	0.43	34.32
2000-01	6.56	4.48	6.42	4.32	0.50	0.31	8.53	1.02	0.26	32.40
2001-02	6.24	5.07	6.34	4.41	0.51	0.32	9.13	1.05	0.35	33.42

2002-03	5.94	4.54	6.11	4.52	0.52	0.33	7.67	1.04	0.33	31.00
2003-04	5.99	5.43	6.56	3.93	0.52	0.33	7.60	1.00	0.37	31.73
2004-05	6.64	7.32	7.57	3.66	0.52	0.33	8.79	0.92	0.37	36.12
2005-06	6.74	7.28	7.71	4.20	0.56	0.38	8.68	0.90	0.37	36.82
2006-07	5.62	6.79	8.33	5.15	0.57	0.38	9.14	0.94	0.37	37.29
2007-08	6.29	5.83	8.88	5.06	0.58	0.39	9.41	0.96	0.35	37.75
2008-09	6.64	6.30	9.51	4.42	0.58	0.39	9.41	0.90		38.15
2009-10	5.42	5.77	9.79	4.18	0.58	0.40	10.28	0.91		37.33

Source: Ministry of Agriculture, Government of India.

Figure7: Commercial Crops Area under Cultivation

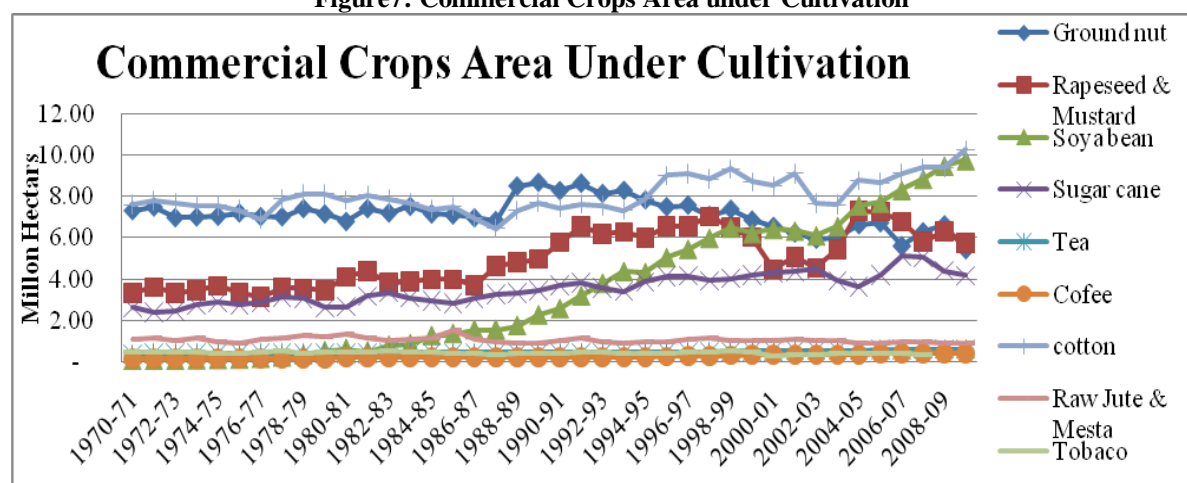


Table5: Area under cultivation for total crops (Million Hectares)

Year	Total commercial Crops	Total Food Grains	Year	Total commercial Crops	Total Food Grains
1970-71	22.93	124.32	1991-92	32.08	121.87
1971-72	23.41	122.62	1992-93	31.25	123.15
1972-73	22.42	119.28	1993-94	31.64	122.76
1973-74	22.99	126.54	1994-95	31.89	123.71
1974-75	23.14	121.08	1995-96	34.29	121.01
1975-76	22.57	128.18	1996-97	35.1	123.58
1976-77	22.08	124.35	1997-98	35.21	123.85
1977-78	24.01	127.52	1998-99	36.1	125.16
1978-79	24.7	129.01	1999-00	34.32	123.11
1979-80	24.07	125.21	2000-01	32.4	121.05
1980-81	24.33	126.67	2001-02	33.42	122.77
1981-82	25.72	129.14	2002-03	31	113.87
1982-83	25.17	125.09	2003-04	31.73	123.45
1983-84	25.18	131.16	2004-05	36.12	120.08
1984-85	24.91	126.67	2005-06	36.82	121.60
1985-86	25.33	128.03	2006-07	37.29	123.70
1986-87	24.35	127.20	2007-08	37.75	124.06
1987-88	24.65	119.69	2008-09	38.15	122.83
1988-89	27.69	127.67	2009-10	37.33	121.12

1989-90 29.01 126.77

Source: Ministry of Agriculture, Government of India

Figure8: Area Under Cultivation for Total Crops

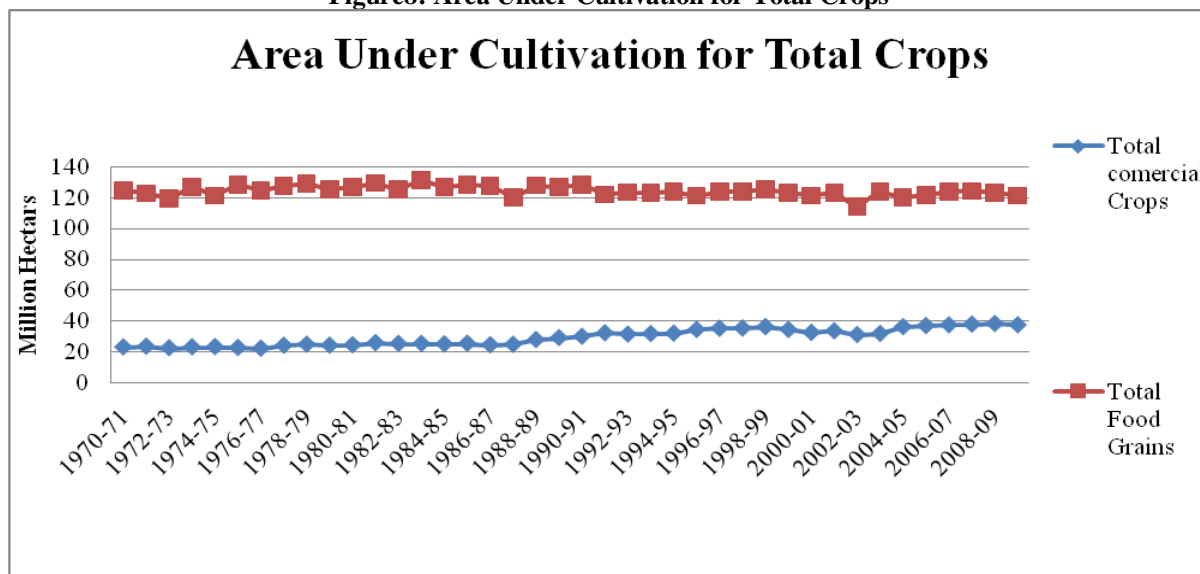


Table7: Food grains Yield per Hectare

YIELD PER HECTARE - FOODGRAINS					
(Kg./ hectare)					
Year	Cereals			Pulses	Total Food-grains
	Rice	Wheat	Coarse Cereals		
1970-71	1123	1307	665	524	872
1971-72	1141	1380	564	501	858
1972-73	1070	1271	548	474	813
1973-74	1151	1172	623	427	827
1974-75	1045	1338	606	455	824
1975-76	1235	1410	694	533	944
1976-77	1089	1387	689	494	894
1977-78	1308	1480	710	510	991
1978-79	1328	1568	721	515	1022
1979-80	1074	1436	652	385	876
1980-81	1336	1630	695	473	1023
1981-82	1308	1691	733	483	1032
1982-83	1231	1816	685	519	1035
1983-84	1457	1843	813	548	1162
1984-85	1417	1870	795	526	1149
1985-86	1552	2046	664	547	1175
1986-87	1471	1916	675	506	1128
1987-88	1465	2002	721	515	1173
1988-89	1689	2244	814	598	1331
1989-90	1745	2121	922	549	1349
1990-91	1740	2281	900	578	1380
1991-92	1751	2394	778	533	1382
1992-93	1744	2327	1063	573	1457
1993-94	1888	2380	939	598	1501
1994-95	1911	2559	929	610	1546
1995-96	1797	2483	940	552	1491
1996-97	1882	2679	1072	635	1614
1997-98	1900	2485	986	567	1552

1998-99	1921	2590	1068	634	1627
1999-00	1986	2778	1034	635	1704
2000-01	1901	2708	1027	544	1626
2001 - 02	2079	2762	1131	607	1734
2002-03	1744	2610	966	543	1535
2003-04	2077	2713	1221	635	1727
2004-05	1984	2602	1153	577	1652
2005-06	2102	2619	1172	598	1715
2006-07	2131	2708	1182	612	1756
2007-08	2202	2802	1431	625	1860
2008-09	2178	2857	1459	659	1909
2009-10	2133	2907	1204	632	1801

Source : Ministry of Agriculture, Government of India.

Figure9: Per Hectare Yield for Total Food Grains

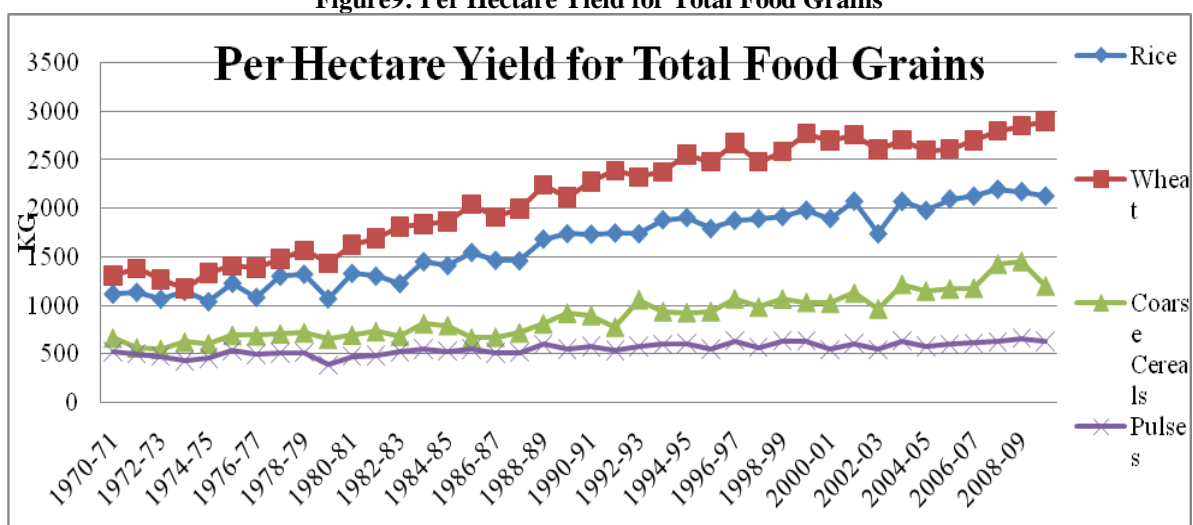


Table8: Major Commercial crops Yield per Hectare

YIELD PER HECTARE - MAJOR COMMERCIAL CROPS										
(Kg./ hectare)										
Year	Oilseeds			Sugar cane	Tea	Coffee	Cotton (Lint)	Raw Jute & Mesta	Tobacco	Total
	Groundnut	Rapeseed & Mustard	Soya-bean							
1970-71	834	594	426	48322	1182	814	106	1032	810	54120
1971-72	823	396	426	47511	1221	498	151	1107	914	53047
1972-73	585	545	819	50933	1271	620	127	1104	837	56841
1973-74	845	493	829	51163	1311	555	142	1188	1001	57527
1974-75	724	612	768	49855	1353	592	161	1068	954	56087
1975-76	935	580	975	50903	1341	490	138	1164	950	57476
1976-77	747	496	988	53383	1407	712	144	1173	969	60019
1977-78	866	460	940	56160	1519	840	157	1108	979	63029
1978-79	835	525	975	49114	1528	706	167	1186	1109	56145
1979-80	805	411	568	49358	1455	889	160	1177	1031	55854
1980-81	736	560	728	57844	1491	624	152	1130	1065	64330
1981-82	972	541	741	58359	1461	785	166	1311	1172	65508
1982-83	732	577	637	56441	1422	646	163	1265	1157	63040
1983-84	940	673	735	55978	1468	507	141	1320	1120	62882
1984-85	898	771	768	57673	1606	936	196	1242	1113	65203
1985-86	719	674	764	59889	1641	571	197	1524	1111	67090
1986-87	841	700	584	60444	1508	891	169	1454	1187	67778
1987-88	855	748	582	60006	1628	563	168	1274	1155	66979

1988-89	1132	906	892	60992	1693	972	202	1540	1307	69636
1989-90	930	831	801	65612	1652	534	252	1646	1335	73593
1990-91	904	904	1015	65395	1727	759	225	1634	1353	73916
1991-92	818	895	782	66069	1800	805	216	1662	1369	74416
1992-93	1049	776	894	63843	1664	758	257	1658	1425	72324
1993-94	941	847	1086	67120	1796	936	249	1713	1463	76151
1994-95	1027	958	911	71254	1767	788	257	1760	1486	80208
1995-96	1007	916	1012	67787	1770	921	242	1712	1356	76723
1996-97	1138	1017	987	66496	1809	816	265	1818	1444	75790
1997-98	1040	668	1079	71134	1924	799	208	1792	1394	80038
1998-99	1214	869	1100	71203	1804	877	224	1722	1451	80464
1999-00	766	960	1138	70935	1707	947	225	1836	1211	79725
2000-01	977	935	822	68577	1682	959	190	1867	1318	77327
2001-02	1127	1002	940	67370	1670	937	186	2007	1565	76804
2002-03	694	854	762	63576	1640	839	191	1960	1506	72022
2003-04	1357	1159	1193	59380	1691	831	307	2008	1486	69412
2004-05	1020	1038	908	64752	1739	826	318	2019	1498	74118
2005-06	1187	1117	1073	66928	1708	803	362	2173	1481	76832
2006-07	866	1095	1063	69022	1716	840	421	2170	1409	78602
2007-08	1459	1001	1235	68877	1706	761	467	2101	1417	79024
2008-09	1163	1143	1042	64553	1679	748	403	2074	NB	72805
2009-10	993	1142	1076	65721	1711	826	396	2233	NB	74098

Source : Ministry of Agriculture, Government of India. NB; Not Available

Figure10: Per Hectare Yield for Commercial Crops

