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AN ANALYSIS OF GROWTH PERFORMANCE OF FOOD GRAINS IN TAMIL NADU, INDIA

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ABSTRACT

Foodgrains are the very important agricultural commodities which fulfill the dietary and nutritional requirements of human beings. Throughout the pages of history, it can be observed that a very large proportion of humanity has lost life due to hunger and starvation. Without enough food, India's hope for improving human welfare, achieving social justice and securing democracy will become almost impossible of attainment. The growth rate of agricultural production is generally judged by the performance of food grains and non-food grains production.Increased agricultural production, whether food crops or non-food crops, results in enhanced net income of the farmers given remunerative prices and input costs. When the net income of the farmers increases, markets begin to expand. Available data indicate that out of the total cropped area of 59,42,134 hectares, the area under food grains is 34,95,997 hectares covering more than 58.83 percent of the total cropped area in Tamil Nadu during 2018-19. Due to the importance of food grains in the life of the masses, the performance of foodgrains in Tamil Nadu over a long period of time has been attempted with the following objectives i) to estimate the average annual growth rate of area, production and productivity of cereals, pulses and food grains in Tamil Nadu ii) to analyze the performance of food grains in Tamil Nadu, and iii) to estimate and examine the performance of food grainsduring the three sub periods.

The present study is based on secondary data collected from various Reports of the Government of Tamil Nadu. These reports include Economic Appraisal of Tamil Nadu released by the Evaluation and Applied Research Department of Government of Tamil Nadu, Statistical Handbook of Tamil Nadu and Season and Crop Reports both released by the Department of Economics and Statistics, Government of Tamil Nadu. The study covers a period of 30 years from 1989-90 to 2018-19 and the period is classified into three sub periods. They are: Period I from 1989-1990 to 1998-1999. Period II from 1999-2000 to 2008-2009. Period III from 2009-2010 to 2018-2019.

Key Words: Food grains, Cereals, Pulses, Growth, Productivity, Production

Introduction

Among the three necessities of life – food, cloth and shelter - food comes first. Food is required to sustain life and it helps to provide strength to work. Food grains are the very important items which fulfill the dietary and nutritional requirements of human beings. Throughout the pages of history, it can be observed that a very large proportion of humanity

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has lost life due to hunger and starvation. This pathetic situation is the result of non availability of food. Production and supply of food grainsare the responsibility of the primary sector, that is, the agricultural sector. The growth of Indian agriculture over the last few decades has helped the country to achieve food security at the National level. The next big challenge faced by the country in general and Indian agriculture in particular is to sustain this growth and achieve nutritional security as well. Without enough food, India's hopes for improving human welfare, achieving social justice and securing democracy will become almost impossible of attainment. In the agricultural production scenario of Tamil Nadu, food grains form a major and significant part.

Agriculture in Tamil Nadu

Agriculture is the backbone of Tamil Nadu economy. It employs still about 49 percent of the total population. Besides meeting the demand for food emanating from the growth of population, agriculture sector of Tamil Nadu provides livelihood support to a vast majority of the population. In addition to this, there are strong linkages between agricultural growth and overall economic growth. Rapid growth of agriculture is still a prerequisite to achieve faster overall economic growth in Tamil Nadu. In Tamil Nadu, the contribution of agriculture and allied activities to NSDP at constant prices has been undergoing a decline over the years. In 1960-61, the contribution was 52 percent, in 1970-71, 39 percent and in the year 1981-82 the contribution stood at 29 percent (MIDS). The contribution of the primary sector to the NSDP is Rs. 330, 57,65 lakhs during 2013-2014 which is 7.74 percent of the NSDP at 2004-2005 prices (Economic Appraisal,Tamil Nadu,2013-2014). Though the contribution of the primary sector to the Gross State Domestic Product has declined over the years, yet it is the single largest sector and the dependence of the population has not diminished.

Importance of Food Grains

Agricultural production consists of food crops and non food crops. Under the food crops, there are cereals, pulses, condiments and spices, sugar crops, fruits and vegetables. Fibers, oil seeds and other crops, mostly plantation crops are included under non food crops. Among the food crops, cereals and pulses together constitute the staple crops and are called food grains. Food grains continue to be the main pillars of food security in the country and any slack in their production translates into a price shock and has an adverse impact on common people. Increased agricultural production, whether food crops or non-food crops, results in enhanced net income of the farmers given remunerative prices and input costs. When the net income of the farmers increases markets begin to expand. Available data indicate that out of the total cropped area of 51,3,9832 hectares, the area under food grains is 26,47,586 hectares covering more than 50 percent of the total cropped area in Tamil Nadu.

Objectives of the Present Study

The broad objectives of the present study are to understand the performance of food grains economy of Tamil Nadu over a long period of time, say, 30 years. However, the specific objectives are:

1) To estimate the average annual growth rate of area, production and productivity of cereals, pulses, and food grains in Tamil Nadu for the period from 1989 to 2019

2) To analyze the growth performance of food grains in Tamil Nadu, and

3) To estimate and examine the growth performance of food grains in the three sub periods

The Methodology

The present study is based on secondary data collected from various Reports of the Government of Tamil Nadu. These Reports include Economic Appraisal of Tamil Nadu released by the Evaluation and Applied Research Department of Government of Tamil Nadu, Statistical Handbook of Tamil Nadu and Season and Crop Reports released by the Department of Economics and Statistics, Government of Tamil Nadu. The study covers a period of 30 years from 1989- 1990 to 2018-2019 and the period is divided into three sub-periods, Period I from 1989 to 1999, Period II from 1999 to 2009 and Period III from 2009 to 2019. Three parameters are taken into consideration for the analysis. These parameters are i) area, production and productivity of food grains ii) area, production, and productivity of cereals and iii) area, production, and productivity of pulses. First, an attempt is made to analyze the average annual growth rate of area, production, and productivity of cereals and then the rate of change that has occurred in the area, production, and productivity of pulses in the state of Tamil Nadu is explained. Aggregating the cereals and pulses to represent food grains, the trend in the area, production and productivity of food grains has also been evaluated for the period from 1989-90 to 2018-19. Finally, the entire study period is divided into three sub-periods eachconsisting 10 years and the variation occurred to these variables in the sub-periods has also been explained.

Cereals

Cereal grains were the first agricultural attempts by early man. Cereals have been part of human diet since prehistoric times. The word cereal derives from Ceres, the name of the Roman goddess of harvest and agriculture.Cereals can be defined as a grain or edible seed of the grass family, Gramineae. Cereal grains are grown in greater quantities and provide more food energy worldwide than any other type of crops; they are therefore staple food crops. In their natural form they are rich in vitamins, minerals, carbohydrates, fats, oils and protein. Around the world, rice, wheat and maize, sorghum and millet are important staples and are critical to daily survival of billions of people. More than 50 per cent of world's daily caloric intake is derived directly from cereal grains consumption. The Food and Agricultural Organization has expressed that cereals are the most important sources of food and cerealbased foods are a major source of energy, protein, B vitamins and minerals for the world population. The very important property of cereals is that they do not deteriorate readily if kept dry. Most of the developing countries consume cereals such as rice, wheat, and millet as their major diets. But, in most developed countries, cereal consumption is moderate and varied but still substantial. Globally, more than 2000 million tones of cereals are produced from about 700 million hectares with the average productivity of about 3000

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kg/hectare. Rice, wheat, and maize make 87 percent of all grain production worldwide while other varieties such barley, sorghum, millet, oats, triticale, rye, buckwheat etc. represent the rest of 13 percent.

Area, Production and Productivity of Cereals

The area, production and productivity of cereals in Tamil Nadu from 1989-90 to 2018-19 are presented in the following table 1.

Table-1: Area, Production and Productivity of Cereals in Tamil Nadu

(Area in '000' Hectares, Production in '000' tones, Yield in kgs/hectare)

Year	CEREALS					
	Area	Growth %	Production	Growth %	Yield	Growth %
1989-90	3202769		7582990		2368	
1990-91	3038122	-5.14	7135710	-5.90	2349	-0.80
1991-92	3211646	5.71	7913960	10.91	2464	4.90
1992-93	3206042	-0.17	8015400	1.28	2500	1.46
1993-94	3336924	4.08	7981060	-0.43	2392	-4.32
1994-95	3158393	-5.35	8740570	9.52	2767	15.68
1995-96	2761760	-12.56	6172220	-29.38	2235	-19.23
1996-97	2976685	7.78	6697260	8.51	2250	0.67
1997-98	3050649	2.48	7859530	17.35	2576	14.49
1998-99	3039061	-0.38	9108180	15.89	2997	16.34
1999-2000	2940222	-3.25	8551610	-6.11	2908	-2.97
2000-01	2812857	-4.33	8304140	-2.89	2952	1.51
2001-02	2766169	-1.66	7418142	-10.67	2682	-9.15
2002-03	2228992	-19.42	4259878	-42.57	1911	-28.75
2003-04	2300397	3.20	4110967	-3.50	1787	-6.49
2004-05	2696555	17.22	5929613	44.24	2199	23.06
2005-06	2791400	3.52	5939142	0.16	2128	-3.23
2006-07	2629611	-5.80	7972250	34.23	3032	42.48
2007-08	2487987	-5.39	6396715	-19.76	2571	-15.20
2008-09	2655525	6.73	6934365	8.41	2611	1.56
2009-10	2498305	-5.92	7300179	5.28	2922	11.91
2010-11	2537040	1.55	7348930	0.67	2897	-0.86
2011-12	2541748	0.19	9782497	33.11	3849	32.86
2012-13	2134936	-16.01	5392862	-44.87	2526	-34.37
2013-14	2658817	24.54	10388674	92.64	3907	54.67
2014-15	2721836	2.37	12028249	15.78	4419	13.10
2015-16	2867330	5.35	10800046	-10.21	3767	-14.75
2016-17	2160865	-24.64	4899249	-54.64	2267	-39.82
2017-18	2713903	25.59	10156849	107.31	3743	65.11
2018-19 Provisional	2645435	-2.52	9839458	-3.12	3719	-0.64

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AAGR (1989-2019)	-0.08		5.90		4.11
AAGR (1989-1999)	-0.394		3.08		3.24
AAGR (1999-2009)	-0.917		0.76		0.28
AAGR (2009-2019)	1.050		14.12		8.72

Source: Season and Crop Report 2018-19, Department of Economics and Statistics, Government of Tamil Nadu, Table IXC, pp. 300-310.

In Tamil Nadu, 32,02,769 hectares were under the cultivation of cereals in 1989-90. In the subsequent year, it declined to 30,38,122 hectares which shows a moderate deceleration of 5.14 percent in 1990-91. From 1998-99 to 2002-03, a continuous slowdown of a moderate magnitude in the area under the cultivation of cereals has been observed. During the 30 years, the growth rate of area under cultivation of cereals is found to be high in2017-18 with 25.59 percent and the area under the cultivation cereals was negative with 24.64percent in 2016-17**.**Thus, the area under the cultivation of cereals exhibits fluctuations over the years. These fluctuations, both in acceleration as well as in deceleration, are moderate in some years and more pronounced in other years. During the initial years of the study period, the area under the cultivation of cereals has been higher compared to the terminal years of the study period. Over the entire study period, that is, from 1989-90 to 2018-19 the average annual growth rate of area under the cultivation of cereals has been worked out to be -0.08 percent.

In the case of production of cereals in Tamil Nadu, Table 1 reveals that the production of cereals was 75,82,990 tones in the year 1989-90 which has declined to 71,35,710tones in the subsequent year representing a decline of 5.90 percent over the previous year**.** However, production of cereals showed a remarkable turnaround in the year 1998-99 with a production of 91,08,180 tones. In the study period, a maximum production of cereals was recorded in 2014-15 with 120,28,249 tones. Over the entire study period, the production of cereals has registered an average annual growth rate of 5.90 percent per annum.

As far as productivity of cereals is concerned in Tamil Nadu for the period from 1989-90 to 2018-19, 2368 kilograms of cereals were produced in a hectare in the year 1989-90. A very moderate decline in the productivity of cereals in the subsequent year is observed. A highest productivity level of 4419 kilograms in a hectare was achieved in the year 2014-15. Anincrease of 65.11percent in the productivity of cereals has been obtained in2017-18 and in 2016-17, productivity has exhibited a sharp decline by 39.82 percent. It can be inferred from the quantum jump in the level of productivity achieved in respect of cereals in Tamil Nadu that there is a possibilityof increasing the yield of cereals**.** During the study period, productivity of cereals also exhibited moderate to severe fluctuations over the years and recorded an average annual growth rate of 4.11 percent in Tamil Nadu.

Pulses

Pulses are the dried edible seeds of cultivated legumes. They belong to a large family and various species are capable of surviving in different climates and soils. Pulses are cultivated in all parts of the world, they occupy an important place in human diet,and serve as

a low-cost protein to meet the needs of the large section of the people. They have, therefore, been justifiably described as 'the poor man's meat'. According to the Commission for Agricultural Costs and Prices (CACP) pulses have double the protein content of wheat and three times that of rice and are valuable for the cropping system in maintaining and improving the productivity of soil due to the nitrogen fixation ability. In India, 25.23 million hectares were under the cultivation of pulses and produced 19.27 million tones in 2013-14. Pulses, for being environment friendly will have a vital role to play under the unfavorable circumstances. In the production process, pulses improve soil fertility, requires less water than cereals and their rotation with cereals help in controlling diseases and pests.

India is the largest producer, consumer and importer of pulses in the world. India accounts for about 33 percent of world area and about 22 percent of world production. The total production of pulses in India was 19.27 million tones in 2013-14 from an area of 25.23 million hectares. The state of Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Andhra Pradesh were the leading pulse producing states in the same order with more than 70 percent of the production being contributed by these states taken together. The increase in population, decrease in per-capita land availability and stagnation in pulses production has created a gap in demand and supply of pulses. The government has made various efforts to bridge this gap like launching of Technology Mission in 1986 in order to reduce import and achieve self-sufficiency in production of particular pulse crop covered under the Mission.

Area, Production and Productivity of Pulses

The area, production and productivity of pulses in Tamil Nadu from 1998-1999 to 2018-2019 are presented in table 2.

Table-2: Area, Production and Productivity of Pulses in Tamil Nadu

(Area in '000' hectares. Production in '000' tones. Yield in kgs/hectare)

Year	PULSES					
	Area	Growth %	Production	Growth %	Yield	Growth %
1989-90	820860		333760		425	
1990-91	847010	3.19	359930	7.84	425	4.42
1991-92	775870	-8.40	351140	-2.44	453	6.59
1992-93	738964	-4.76	342630	-2.42	464	2.43
1993-94	689858	-6.65	276360	-19.34	401	-13.58
1994-95	691283	0.21	340050	23.05	492	22.69
1995-96	577267	-16.49	233070	-31.46	404	-17.89
1996-97	581551	0.74	232810	-0.11	400	-0.99
1997-98	591481	1.71	244170	4.88	413	3.25
1998-99	637065	7.71	304280	24.62	478	15.74
1999-00	692539	8.71	290790	-4.43	420	-12.13
2000-01	687931	-0.67	312643	7.52	454	8.10
2001-02	685403	-0.37	270719	-13.41	395	-13.00
2002-03	562983	-17.86	200479	-25.95	356	-9.87
2003-04	536849	-4.64	201056	0.29	375	5.34

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2004-05	590250	9.95	216431	7.65	367	-2.13
2005-06	525237	-11.01	177003	-18.22	337	-8.17
2006-07	536529	2.15	290503	64.12	540	60.53
2007-08	609552	13.61	184924	-36.34	303	-43.99
2008-09	535859	-12.09	167370	-9.49	312	2.97
2009-10	535819	-0.01	204369	22.11	381	22.12
2010-11	636735	18.83	245190	19.97	385	1.05
2011-12	666921	4.74	354460	44.57	554	37.92
2012-13	512650	-23.13	212574	-40.03	415	-21.85
2013-14	815756	59.13	613799	188.75	752	81.20
2014-15	883862	8.35	766964	24.95	868	15.43
2015-16	887650	0.43	584969	-23.73	659	-24.08
2016-17	785086	-11.55	337707	-42.27	430	-34.75
2017-18	824696	5.05	556450	64.77	675	56.98
2018-19 Provisional	850562	3.14	551036	-0.97	648	-4.00
AAGR (1989-2019)		1.03		8.08		4.84
AAGR (1989-1999)		-2.53		0.51		2.52
AAGR (1999-2009)		-1.22		-2.83		-1.24
AAGR (2009-2019)		6.50		25.81		13.00

Source: Season and Crop Report 2018-19, Department of Economics and Statistics, Government of Tamil Nadu, Table IXC, PP 300-310.

In Tamil Nadu, 8,20,860 hectares were under the cultivation of pulses in 1989-90. The area registered an increase of 3.19 percent in the subsequent year. Thereafter, the area under the cultivation of pulses exhibited a gradual decline in absolute terms. This trend is observed till 2012-13. In the next three years, a substantial improvement in the area under pulses is observed. In the terminal years of the study period, the cultivation of pulses shows a marked improvement compared to the middle years. It can be inferred that thearea under pulses in Tamil Nadu fluctuates over the years. Over the entire study period, the area under the cultivation of pulses has grown at an average annual rate of 1.03 percent.

In Tamil Nadu, production of pulses remains 3,33,760 tones during the initial period of the study**.** In the year 2014-15 Tamil Nadu produced 6,13,799 tones of pulses registering 188.75 percent over the previous year. In the subsequent year also, production of pulses shows a growth rate of 24.95 percent. Compared to the beginning years of the study period, theproduction of pulses exhibits a substantial improvement except in the year 2016-17. Production of pulses shows an average annual growth rate of 8.08 percent during the entire study period.

In the case of productivity of pulses, Tamil Nadu achieved a productivity level of 407 kilograms in a hectare in the year 1989-90. In the subsequent three years, a moderate increase in the productivity of pulses is observed. In the entire study period, the yield of pulses remained lowest with 303 kilograms in a hectare in the year 2007-08. In 2014-15, the yield

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of pulses remained 868 kilograms in a hectare which is the highest level in the study period of 30 years in the state of Tamil Nadu. Compared to the initial years of the study period, the productivity of pulses shows an improvement in the terminal years. Similar to the trend observed in respect of area under the cultivation and production of pulses, productivity of pulses also exhibits moderate to severe fluctuation over the years. During the entire study period, productivity of pulses has grown at an average rate of 4.84 percent per annum.

Food grains

Area, Production and Productivity of Food grains

The area, production and productivity of Food grains in Tamil Nadu from 1989-1990 to 2018-2019 are presented in table 3.

Table-3 : Area, Production and Productivity of Food grains in Tamil Nadu

(Area in hectares, Production in tones. Yield in kgs/hectare)

Year	FOOD GRAINS					
	Area	Growth %	Production	Growth %	Yield	Growth %
1989-90	4023629	-	7916750		1968	
1990-91	3885132	-3.44	7495640	-5.32	1929	-1.98
1991-92	3987516	2.64	8265100	10.27	2073	7.47
1992-93	3945006	-1.07	8358030	1.12	2119	2.22
1993-94	4026782	2.07	8257420	-1.20	2051	-3.21
1994-95	3849676	-4.40	9080620	9.97	2359	15.02
1995-96	3339027	-13.26	6405290	-29.46	1918	-18.69
1996-97	3558236	6.57	6930070	8.19	1948	1.56
1997-98	3642130	2.36	8103700	16.94	2225	14.22
1998-99	3676126	0.93	9412460	16.15	2560	15.06
1999-00	3632761	-1.18	8842400	-6.06	2434	-4.92
2000-01	3500788	-3.63	8616783	-2.55	2461	1.11
2001-02	3451572	-1.41	7688861	-10.77	2228	-9.47
2002-03	2791975	-19.11	4460357	-41.99	1598	-28.28
2003-04	2837246	1.62	4312023	-3.33	1520	-4.88
2004-05	3286805	15.84	6146044	42.53	1870	23.03
2005-06	3316637	0.91	6116145	-0.49	1844	-1.39
2006-07	3166140	-4.54	8262753	35.10	2610	41.54
2007-08	3097539	-2.17	6581639	-20.35	2125	-18.58
2008-09	3191384	3.03	7101735	7.90	2225	4.71
2009-10	3034124	-4.93	7504548	5.67	2473	11.15
2010-11	3173775	4.60	7594120	1.19	2393	-3.23
2011-12	3208669	1.10	10151780	33.68	3164	32.22
2012-13	2647586	-17.49	5605436	-44.78	2117	-33.09
2013-14	3474573	31.24	11002473	96.28	3167	49.60
2014-15	3605698	3.77	12795213	16.29	3549	12.06

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2015-16	3754980	4.14	11385015	-11.02	3032	-14.57
2016-17	2945951	-21.55	5236956	-54.00	1778	-41.36
2017-18	3538599	20.12	10713299	104.57	3028	70.30
2018-19 Provisional	3495997	-1.20	10390494	-3.01	2972	-1.85
AAGR (1989-2019)		0.05		5.91		3.99
AAGR (1989-1999)		-0.85		2.96		3.52
AAGR (1999-2009)		-1.06		0.01		0.27
AAGR (2009-2019)		1.98		14.49		8.12

Source: Season and Crop Report 2018-19, Department of Economics and Statistics, Government of Tamil Nadu, Table IXC, PP 300-310.

In Tamil Nadu, the area under the cultivation of food grains remained 40,23,629 hectares in the year 1989-90. A moderate decline of 3.44 percent in the area under the cultivation of food grains was observed in the subsequent year. During the year 1993-94, the area under the cultivation of cereals remained highest with 40,26,782 acres in the study period of 30 years. The acreage under food grains remained lowest in the year 2012-13 in Tamil Nadu. Compared to the beginning years of the study, the area under the cultivation of cereals shows a substantial reduction in the state of Tamil Nadu. The area under the cultivation of food grains registered an average annual growth rate of 0.05 percent which implies a stagnation of area under the cultivation of food grains.

As far as the production of food grains is concerned, Tamil Nadu produced 79,16,750 lakh tones in the year 1989-90. After a decline of 5.32 percent in the subsequent year, production of food grains increased to over 9.4 million tones in 1998-99. In the study period of 30 years, production food grains remained lowest in the years 2002-03 and 2003-04. Decline in production of food grains is worked out to be 41.99 percent. However, a turnaround in the production of food grains is observed from 2011-12 to 2018-19 except during the years 2012-13 and 2016-17. This shows that there has been a marked improvement in the production of food grains in the terminal years of the study period in Tamil Nadu. Over the 30 years period, the average annual growth rate of food grains in Tamil Nadu has been worked to be 5.91 percent.

In the case of productivity of food grains, Tamil Nadu produced 1968 kilograms in a hectare in 1989-90 which marginally declined to 1929 kilograms in a hectare, a reduction of 7.47 percent in the subsequent year. In the next two years, a moderate improvement in the productivity of food grains is observed in Tamil Nadu. In the study period of 30 years, the level of productivity of food grains remained lowest with 1520 kilograms in a hectare in the year 2003-04. Similarly, a highest food grains productivity of 3549 kilograms was achieved in 2014-15. In the year 2017-18, the increase in the productivity of food grains is 70.30 percent over the previous year. The overall scenario of food grains productivity in the state of Tamil Nadu does not show a uniform pattern and on the contrary food grains productivity exhibits a mixed trend during the study period of 30 years. However, the average annual growth rate of food grains in Tamil Nadu remains 3.99 percent in the study period of 30 years.

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Growth Scenario of Food Grains in Tamil Nadu in the Sub-periods

Growth scenario of area, production and productivity of cereals, pulses and food grains in the sub-periods is presented in table 4.

Table-4: Growth Rates of Area, Production and Productivity of Food grains in the Sub-Periods

Period	CEREALS			PULSES			FOOD GRAINS		
	A	P	Y	A	P	Y	A	P	Y
Period I	-0.39	3.08	3.24	-2.53	0.51	2.52	-0.85	2.96	3.52
Period II	-0.92	0.76	0.28	-1.22	-2.83	-1.24	-1.06	0.01	0.27
Period III	1.05	14.12	8.72	6.50	25.81	13.00	1.98	14.49	8.12
Total Period	-0.08	5.90	4.11	1.03	8.08	4.84	0.05	5.91	3.99

Source: Reproduced from Tables 1,2 and 3. **Note:**A=Area, P=Production, Y=Yield

From the table, it found that the area under the cultivation of cereals, pulses and food grains reports negative growth in Period I. The negative growth reported in respect of pulses is more pronounced compared to the growth rates of area under the cultivation of cereals and food grains in Period I. The growth rates of production of cereals, pulses and food grains turnout to be positive and the growth rate of production of cereals is higher compared to the growth rates of production of pulses and food grains in Period I. A very similar trend in the growth rates of productivity of cereals, pulses and food grains is observed in Period I.

In Period II also, the growth rates of area of cereals, pulses and food grains report a negative growth and production growth rates are found to be very low in the case of cereals and food grains. Production growth rate of pulses shows a deceleration in Period II. As far as the productivity is concerned in Period II, the growth rates of cereals and food grains turnout to be identical while it is negative for pulses.

In Period III, all the three variables namely area, production and productivity of cereals, pulses and food grains exhibit a positive trend in Tamil Nadu. The decadal production growth rate of pulses is more pronounced compared to the decadal growth rate of production of cereals and food grains in Period III in the state of Tamil Nadu. The growth rates of productivity of all the three magnitudes are substantial in the Period III. Thus, it is observed that the there has been a substantial improvement in the area, production and productivity of cereals, pulses and food grains in Tamil Nadu Period III compared to the other two periods.

Concluding Remarks

Availability and accessibility of food grains are the two sides of food security. The availability of food grains to the public in required quantity has to be ensured so that the people can be free from hunger and malnutrition. This warrants a stable production of cereals and pulses. In the available area, increased production can be achieved through improvement in productivity. As far as Tamil Nadu is concerned, the productivity of food grains is much higher than that of India. However, the yield is lower than what has been achieved by the other countries in Asia. The growth rates of area under the cultivation of cereals, pulses and

food grains highlight near stagnation during the 30 years. The average annual growth rates of production and productivity of cereals, pulses and food grains are positive but not substantial. However, the average annual growth rates of production and productivity in Period III emerged substantial over the other two decades.

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