



**ORIGINAL RESEARCH PAPER**

**Economics**

**THE STATUS OF CROP DIVERSIFICATION OVER A PERIOD OF TIME IN INDIA**

**KEY WORDS:** Agricultural Economy, Crops Cultivated, Agricultural Contribution, Performance, Food Grain Crops, Poor performance, Commercial Crops Agricultural development, Change in Policy, Diversification and Development

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**ABSTRACT**

The development of an agricultural economy depends on what type of crops they are cultivating and these crops to what extent they are contributing to the growth of agriculture sector in turn the farmers. To understand this in depth an attempt is made to study the change in cropping pattern over a period of time. Towards this we have collected the data from 1952-53 to 2019-20 at the all India level and also for the state of Karnataka for about seven decades. The data has been converted into trienniums to smoothen the data and Compound Growth Rates (CGR) are worked out to study the performance of the various crops. The analysis of the data reveals that the Agricultural growth in general not growing positively. The growth of the food grain crops has been performing bad, however the commercial crops like sugarcane, cotton, tobacco, few of the oilseed crops and the performance of some horticultural crops has been really good. Therefore, it is advisable to diversify the cropping pattern from the traditional food crops to the commercial crops, which are more remunerative. Hence it is advised to the government to change the macro level policy of the agriculture sector so that agriculture sector also proves to be more remunerative.

**INTRODUCTION:**

Agriculture sector plays an important role in the growth and development of a developing economy like India. It is well known fact that economies of developing countries are based on agriculture sector. Most of the people in the developing economies are depending on agriculture and allied activities for their livelihood. The employment generation and livelihood depend mainly on agriculture and supporting industries and businesses. Generally, focus of agricultural policy in developing nations is on employment generation in tribal and rural areas, poverty eradication and equal distribution of income with high economic growth. Moreover, it is expected to contribute these socially backward groups more in overall development of a nation. However, there are limitations in the expansion of area under cultivation and therefore, it is essential to increase productivity of agriculture sector through appropriate investment in basic infrastructure, research and extension.

After the independence, according to Gandhiji's Vision of Gram-Swaraj, villages and specially farmer was the main focus of any Development Plan of India. As years passed, agriculture as an independent sector lost its importance for policy makers not only in India and also many other countries of the world. This, over time, caused severe distress among the farmers leading to recent dramatic rise in the number of suicides among farming community and hence every day there is news in the National News papers relating to the same.

India is the land of agriculture and agriculture is the main occupation directly or indirectly for more than 65 per cent of the population of our country. The economic prosperity of our country to a major extent depends on prosperity of agriculture. Mahatma Gandhi said that "India lives in villages". While signing a visitors book he said that "I preferred to be known as a Farmer" (cited by Swaminathan, 2007). It is a known fact that most of the Indian population live in villages and the majority of villagers are engaged in agriculture. Agriculture along with other allied activities like animal husbandry, forestry and fisheries is a dynamic and an important component of our economy that provides livelihood for about 59 per cent of our population.

**2. Growth of Agricultural Sector in India from the Past to Present:**

Agriculturally developed states in India such as Andhra Pradesh, Maharashtra, Karnataka, Kerala, and Punjab, the agricultural sector is said to have been in a deep crisis for the past four decades or so, characterised by stagnant growth rates, low returns, and continuously rising cultivation costs, eventually leading to farmer suicides. By implication, it

means that if left to its own devices, the agricultural production industry will not be able to provide sufficient revenue to small and marginal farmers. As a result, the agricultural sector has lost its former economic lustre, and the crisis that has recently erupted in this sector has had a negative impact on farmers' social and economic fortunes. Agriculture has a vital part in the growth of the economy in a number of ways, which is undeniable in the country.

The development and growth of the agriculture sector leads to the growth of the economy by creating major inter-sectoral links with the non-agricultural sector of the economy through product factor, and market contributions, in addition to providing a source of livelihood for the millions of people in the rural India. It is now commonly accepted that establishing these ties over time has a significant impact on increasing and maintaining the economy's overall growth rate and propelling it into a higher trajectory.

The Government of India, in its annual budget 2016-17, announced to double the farmer's income by 2022. The shift of focus from agricultural output and food security to farm income is a welcome step given the low level of absolute as well as growth in farm income (Chand et al., 2015). Now the question is how to double farmer's income? The answer to the question fundamentally lies on improved performance of agriculture in the country. Many studies have found a direct impact of improved agricultural performance (in terms of high growth rate of agriculture sector) on rural incomes. We can expect such a relationship in India given that agriculture contributes significantly to rural income for all farm households in general (with a contribution of 41.40 per cent to total income) and for the bottom 20 per cent of farm households (nearly 50 per cent) in particular (Birthal et al., 2014). There are also evidences in literature which show that increased farm income results from high growth rate in agriculture and it eventually leads to higher poverty reduction (Sharma and Kumar, 2011).

If high growth in agriculture increases farm income, then the next question is how to increase its growth rate? The sources of agricultural growth may stem from within and/or outside the agricultural sector (Chand et al., 2015). Factors such as increase in productivity, lower cost of production with efficient use of resources, increase in cropping intensity, diversification towards high-value crops, and diversification towards other allied enterprises like livestock, fishery, sericulture, etc. contribute towards higher agricultural growth from within. Shift towards non-farm enterprises and increase in real prices received by the farmers (better known as favourable terms of trade for agriculture) helps in increasing agricultural growth rate from outside.

**3. Crop Diversification:**

Crop diversification refers to the **addition of new crops or cropping systems to agricultural production** on a particular farm taking into account the different returns from value- added crops with complementary marketing opportunities. **Cropping System** refers to the crops, crop sequences and management techniques used on a particular agricultural field over a period of time. Therefore, the present study has been taken up to study the extent of the change in the cropping pattern over a period of time starting from the year 1951-52 to till today just to inform that whether crop diversification has taken place in the country or not as it will convey the message relating to the economic development.

Variables such as total area, total irrigated area, total cropped area, area cultivated under various food crops, Area under pulses, area under horticultural crops, area under garden crops, other farming activities in the study area, Details regarding the dairy farming etc., are collected before and after liberalization regime for the analysis. Towards this we have collected the data from 1952-53 to 2019-20 almost seven decades data and worked out the compound GRs to understand the status of agriculture in the country in general and in Karnataka State in particular. And moreover, this analysis helps us to understand the element of agricultural diversification viz., crop diversification over a period of time in terms of the change in the cropping pattern from food crops to commercial crops and from the same food crops to horticultural activities, viz., floriculture, fruits, plantation crops, etc.

**4. Agricultural Performance Over a Period of Time in India and Karnataka State (1952-53 to 2019-20):**

The performance in terms of cultivated area, irrigated area, production and productivity are presented in the Table-1 for the country as a whole for about seven decades starting from 1952-53 to 2019-20. The table contains the calculated trienniums (moving averages) and the CAGRs are worked out. The analysis reveals that the food grain crops are grown at the rate of 0.04, 2.08, 1.73 and 1.69 per cent respectively for all the four variables mentioned. And also the Total Pulses cultivated area, production and yield are grown at the rate of 0.65, 1.19, 2.60 and 2.18 per cent respectively. However, the same variables viz., cultivated area, production and yield of small millets have shown the negative growth rate. Interestingly at the all India level the famous major food grain crop viz., wheat, for this crop the cultivated area, irrigated area, production and yield are grown positively at the rate of 0.89, 3.74, 2.13 and 1.23 per cent respectively, during the period from 1952-53 to 2019-20. Interestingly the table reveals that wheat and the crop maize the performance is really good as they have the commercial implications. Because the wheat is processed into so many other food items and also maize is also having commercial character as it is used feed for poultry, animal feed and other food processing activities like *Kur Kure*, corn and such other eatables. Therefore the performance is really good as the growth rates have shown positive trend and growing at the rate of 1.94 per cent for the area, 4.50 per cent for the production and 2.47 for the yield.

**Table-1: Performance of the Major Food Grain Crops All India and Karnataka During 1952-53 to 2019-20, CAGR.**

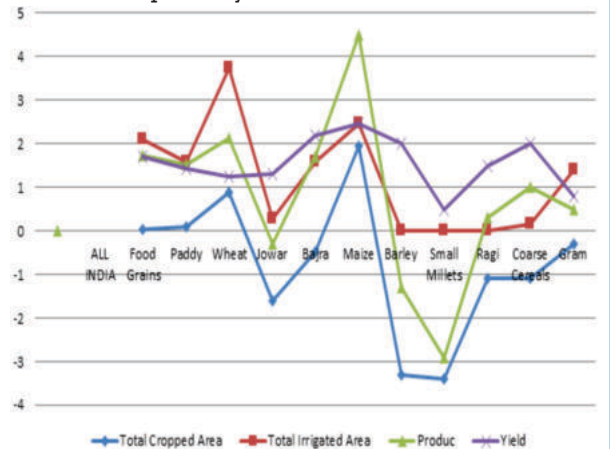
Particular	Total Cropped Area	Total Irrigated Area	Production	Yield
<b>ALL INDIA</b>				
Food Grains	0.04	2.08	1.73	1.69
Paddy	0.09	1.57	1.51	1.42
Wheat	0.89	3.74	2.13	1.23
Jowar	-1.60	0.27	-0.30	1.30
Bajra	-0.50	1.58	1.70	2.20
Maize	1.94	2.45	4.50	2.47

Barley	-3.30	NA	-1.30	2.00
Small Millets	-3.40	NA	-2.90	0.50
Ragi	-1.10	NA	0.30	1.50
Coarse Cereals	-1.10	0.16	1.00	2.00
Gram	-0.30	1.41	0.50	0.80
Tur	0.90	6.76	0.90	0.00
Total Pulses	0.65	1.19	2.60	2.18
<b>KARNATAKA STATE **</b>				
Total food grains	0.24	1.80	1.86	1.72
Paddy	-0.23	1.56	1.66	1.96
Wheat	-0.65	2.72	1.39	2.13
Jowar	-3.01	-0.99	-1.82	1.33
Bajra	-2.18	-0.33	0.08	2.28
Maize	6.72	4.35	6.88	0.25
Small Millets	-8.27	NA	-7.72	0.61
Ragi	1.96	NA	-1.14	0.83
Coarse Cereals	-0.47	1.60	1.83	2.30
Tur	2.19	6.98	3.43	1.14
Total Pulses	2.34	4.76	4.45	2.17

Note: \*\* Karnataka performance is only from 1980-81 to 2019-20.

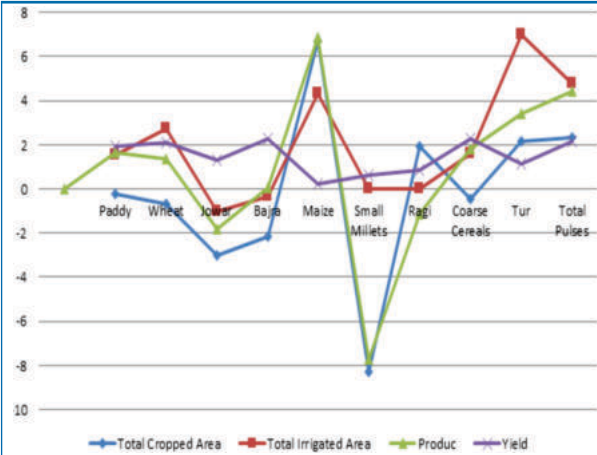
**Source:** Calculation is based on the data collected from Directorate of Economics and Statistics, Ministry of Agriculture, Government of India.

The same Table-1 indicates that the performance of Karnataka State during the period 1980-81 to 2019-20. The table clearly reveals that the trienniums are worked out before working out the CAGR for the food grain crops in Karnataka. The food grain crops cultivated area, irrigated area, production and productivity are growing at the rate of 0.24, 1.80, 1.86 and 1.72 per cent respectively. And also the major food grain crops like, Total Pulses is also showing positive growth rate as they are growing at the rate of 2.34, 4.76, 2.45 and 2.17 per cent respectively. For more clarity to understand the trends clearly we have given the Graph-1, which is self explanatory.



**Graph-1: Trends in Food Grain Crops at All India Level During 1952-53 to 2019-20.**

However, some variables viz., cultivated area, production and yield for small millets are declined at the rate of -3.4, -2.90 and yield rate is positive, which is 0.50 per cent respectively for the period of 1952-53 to 2019-20 at the all India level. Interestingly even at the state level the major food grain crops viz., Maize, cultivated area, irrigated area and production are growing very much high at the rate of 6.72, 4.35 and 6.88 per cent respectively during the period from 1980-81 to 2019-20. To understand this in a better manner we have given the Graph-2, which explains that the yield levels of all the crops more or less growing smoothly where as the area and production there is lot of fluctuations. The reasons may be uncertainty in terms of rainfall in the state.



**Graph-2:** Trends in Food Grain Crops in Karnataka During 1980-81 to 2019-20.

The Table-2 reveals that the performance of oilseed crops in India during 1952-53 to 2019-20. The table clearly indicates that the cultivated area, production and yield performance is positive as they are growing at the rate of 1.24, 1.94 and 1.70 per cent respectively. And also the total oilseed crops performance in terms of area under irrigation is growing at the rate of 6.44 per cent during 1952-53 to 2019-20 (As per the secondary data available). Interestingly the major oilseed crop like soyabean area and production are very much high growing at the rate of 13.40 and 14.70 per cent as per the data available during the period from 1952-53 to 2019-20. However, during the same period, the soyabean yield is grown at the rate of 1.20 per cent only and the area under irrigation has been declining at the rate of 3.97 per cent.

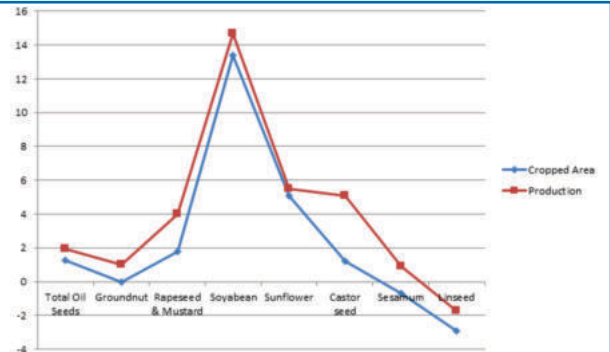
**Table-2: Performance of Oilseed Crops During the Period 1952-53 to 2019-20.**

Particular	Cropped Area	Irrigated Area	Production	Yield
<b>ALL INDIA</b>				
Total Oil Seeds	1.24	6.44	1.94	1.70
Groundnut	0.00	4.46	1.00	1.00
Rapeseed & Mustard	1.80	6.16	4.00	2.10
Soyabean	13.40	-3.97	14.70	1.20
Sunflower	5.10	-1.33	5.50	0.30
Castor seed	1.20	NA	5.10	3.80
Sesamum	-0.70	NA	0.90	1.50
Linseed	-2.90	NA	-1.70	1.10
<b>KARNATAKA STATE</b>				
Total Oil Seeds	-2.90	1.10	-2.30	0.80
Groundnut	-1.07	NA	-1.49	-0.43

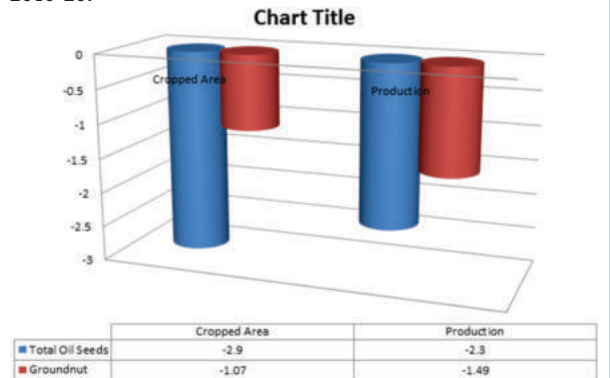
Notes: Irrigated area and the area under Oil seeds taken from 1954-55, area under sunflower and soyabean are from 1994-95 at the all India level and Karnataka's performance is taken from 1980-81 to 2019-20.

**Source:** Various Issues of the Area, Production and yield, Ministry of Agriculture, GOI.

The same Table-2 indicates that the performance of oilseed crops in Karnataka state during the period 1980-81 to 2019-20. The table clearly reveals that the cultivated area and production are growing negatively at the rate of 2.90 and 2.30 per cent respectively during the period 1980-81 to 2019-20. Even the irrigated area and yield have shown normal growth but not extraordinary as they are only growing at the rate of 1.10 and 0.80 per cent during the same period respectively. The same results are shown in the farm of line diagram for more clarity (Graph-3 and 4).



**Graph-3:** Trends in Oilseed Crops in India During 1952-53 to 2019-20.



**Graph-4:** Trends in Oilseed Crops in Karnataka During 1980-81 to 2019-20.

The Table-3 reveals that the performance of major commercial crops in India during the period from 1952-53 to 2019-20. The table clearly reveals that the cultivated area, irrigated area, production and productivity under the crop sugarcane in India has been growing at the rate of 1.17, 2.34, 1.56 and 0.38 per cent respectively. The irrigated area under the cotton crop, production and yield are growing positively at the rate of 1.89, 5.31 and 3.37 per cent respectively, during the period 1952-53 to 2019-20. However, the cotton crop cultivated area has been growing at the rate of 1.89 per cent only during the same period. Interestingly the major commercial crop like tobacco the area under the crop, irrigated area, production and yield are growing at the rate of 1.40, 2.28, 1.13 and 3.10 per cent during the same period. However, the tobacco crop cultivated area is growing at the rate of 1.40 per cent during the same period whereas irrigated area, production and yield are growing positively at the rate of 2.28, 1.13 and 3.10 per cent respectively for the same tobacco crop. This may be because of the increase in irrigation facilities, applying proper inputs like organic manure, chemical fertilizers and application of pesticides to various crops including the crop tobacco. In Karnataka state the performance of the crop sugarcane, tobacco seems to be really good where the total cropped area, irrigated area, Production and productivity (yield) showing positive trends. But the crop cotton it is showing some disturbing trend in terms of the cropped area as it is showing the negative trend.

**Table-3: Performance of Major Commercial Crops During the Period 1952-53 to 2019-20, CAGR.**

Particular	Cropped Area	Irrigated Area	Production	Yield
<b>INDIA</b>				
Sugarcane	1.17	2.34	1.56	0.38
Cotton	1.89	2.82	5.31	3.37
Jute	1.03	NA	0.66	1.68
Mesta	1.03	NA	0.66	1.68
Tobacco	1.40	2.28	1.13	3.10
Potato	3.10	NA	4.54	1.39



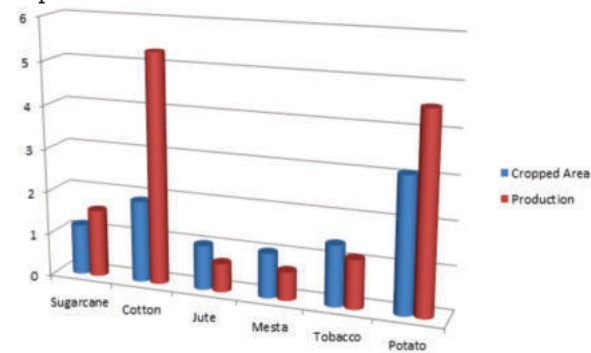
KARNATAKA				
Sugarcane	1.55	4.22	1.63	-11.54
Cotton	-0.17	-1.52	2.44	2.71
Tobacco	2.62	9.04	2.51	-0.05

**Source:** Calculation is based on the data collected from Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

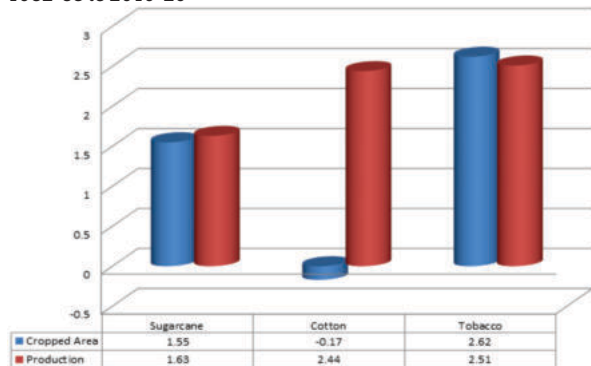
**Note:** Karnataka performance is only from 1980-81 to 2015-16 as per the data available.

The same Table-3 indicates that the performance of major commercial crops in Karnataka during 1980-81 to 2019-20. The table clearly reveals that the cultivated area, irrigated area and production under the sugarcane crop in Karnataka has been growing at the rate of 1.55, 4.22 and 1.63 per cent respectively, during the period 1980-81 to 2019-20. In the state the cotton crop productivity is growing at the rate of 2.71 per cent, which is most welcome. Interestingly the major commercial crop like, cotton the cultivated area and irrigated area have been declining at the rate of 0.17 and 1.52 per cent during the period 1980-81 to 2019-20 respectively. However, the cotton crop production and productivity have been growing positively at the rate of 2.44 and 2.71 per cent respectively during the same period. And also another major commercial crop tobacco cultivated area, irrigated area and production are growing at the rate of 2.62, 9.04 and 2.51 per cent respectively, during 1980-81 to 2019-20. However, the tobacco crop productivity is very much low as it is growing at the negative rate of 0.05 per cent during the same period.

Towards more clarity the performance and trends of the cropped area, irrigated area, production and yield for the major commercial crops like sugarcane, cotton, jute, Mesta, tobacco and potato at the all India level have been given in the Graph-5. At the all India level, the graph clearly indicates that the performance of the crops sugarcane, cotton and tobacco have been better. Graph-6 has been given to understand the same in Karnataka state. The graph clearly reveals that the performance of sugarcane is really good followed by that the crop tobacco.



**Graph-5:** Trends in Major Commercial Crops in India During 1982-53 to 2019-20



**Graph-6:** Trends in Major Commercial Crops in Karnataka During 1980-81 to 2019-20.

**CONCLUSION:**

The detailed analysis based on the secondary data relating to the area cultivated for the crops, irrigated area, Production and the Yield of the food-grain crops, pulses, oilseeds and other commercial crops reveal that over a period of time that to after 1990-91 i.e., after the liberalization of the economy there is more edge towards increase in the area for the commercial crops and the food grain crops getting less and less importance. The growth rate for all these crops and variables for a period of about 67 years (time series data) at the all India level and Karnataka state (1982-83 to 2019-20) reveal that there is more and more importance for the commercial crops as their area has been increasing at higher rate compared to the food-grain corps and hence the study hypothesis entitled "Agricultural Diversification has led to increase in the cultivation of commercial crops in the study area" has been accepted.

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