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Research Article

AGRICULTURAL INSTABILITY IN ODISHA DURING POST REFORM PERIOD

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ABSTRACT
Instability is an inherent characteristic of agriculture everywhere. This study analyses the instability in the agricultural performances in the state of Odisha from 1993/94 to 20010/11. The entire time period is divided into two sub-periods, i.e. early-reform period (1993/94-2001/02) and late-reform period (2002/03-2010/11). With a trend break, instability in area, yield and production of major crop groups are estimated. It is observed that the stability has increased in area under cultivation for all major crop groups except condiments and spices, however, stability of production and yield has increased across all the crop groups at the state level in the second period. Some diversified results have been observed while examining the instability of area under cultivation across the physiographic zones for major crop groups. Besides the fluctuations in area, the stability in the production and productivity (yield) has increased for all major crop groups across the physiographic zones. The credit of reducing the instability in the second period should go to the plan policy adopted by the state government. However, Odisha's agriculture has to go a long way to achieve self-sufficiency.

Keywords: *Agriculture, Instability, Economic Reform, Production, Productivity*

INTRODUCTION
Agriculture, like in most developing economies, is the core sector providing livelihood to a significant proportion of the rural population. The relevant literature suggests that a growing agriculture and allied sector is expected to contribute immensely to the overall growth and poverty alleviation of an agrarian economy. As is generally well-acknowledged, agriculture in most of the developing countries has been experiencing serious difficulties in the recent years, in large, measure on account of policies rooted in neo-liberal macro-economic frameworks. One major element of such policy regimes has been relative neglect of agriculture in particular and the rural areas in general. Being dependent on weather conditions, technology, infrastructure production and productivity of crops are liable to substantial variations across time and space. The nature and extent of variability of agricultural production, its sources and implications have however not received systematic attention till recently, at any rate in Odisha. However, increase in production of food grain and crop stability is the key challenges to Odisha's agriculture which is open to the vagaries of monsoon and highly susceptible to natural calamities, subsistence oriented and has faced fluctuating growth rate over the years.

Agricultural growth occupies the centre-stage in the overall development of Odisha's economy. Nearly 84 percent of Odisha's population lives in rural areas. Agriculture remains the mainstay of the state's economy and a major source of livelihood for a large majority of population (Mishra, 2009). Odisha's agriculture continues to provide employment to more than 60 percent of the total work force. However, over the years, agriculture's share to the Gross State Domestic Product (GSDP) has recorded a substantial decline. In the 1950s, the share of agriculture to GSDP was about 70 percent, which has come down to meager less than 20 percent in 2009-10 (Government of Odisha, 2012). The reasons attributable to such a fall may be *inter alia* reduction in arable land, deterioration of land productivity, lack of proper land use planning, and lack of capital and appropriate technology (Bhattacharya and Bhattacharya 2007). Such a structural transformation may at times be considered desirable, provided with the fall in the share of agriculture to GSDP, agriculture's share in employment falls commensurately and matching employment is created in two other broad sectors. Paradoxically, the situation speaks otherwise.

Odisha ranks very low amongst the Indian states in terms of income per capita with highest proportion of population (46.4 percent) living below poverty line (Government of Odisha, 2012). There is a strong link between poverty reduction and output growth (McKay 1997). Furthermore, the link is even stronger in case of agricultural growth (Datt and Ravallion 1998; Mishra 2009). Agriculture, being a predominant contributor to the sources of employment, can be considered a vital element in the attempt to achieve food security, reduce poverty, and foster sustainable economic development (Ravallion and Dutta 1996). According to an estimate by Mishra (2009), the per capita-per day return from cultivation in Odisha turns out to be less than four rupees and hence there is persistence of abject poverty. Improvement in agricultural growth thus remains the single most important objective in pursuit of eradicating poverty from the state.

Given this backdrop, the objective of this paper is to examine the stability in the growth pattern of Odisha's agriculture and suggest a perspective for its development. A review of area, productivity and production is indeed an essential prerequisite. It may be pertinent to note that although some such studies have been carried out in other agrarian states of the country (Bhattacharya and Bhattacharya 2007; Vakulabharanam 2004; Subrahmanyam and Satya Sekhar 2003), a comprehensive study considering different dimensions of agricultural instability in the context of Odisha is seldom found. The database information built upon these statistics is expected to be immensely helpful in formulating plans and policies for the development of the agricultural sector in a more objective way. The analysis of the background of agriculture sector at the national level makes it necessary to analyse the role and importance of agriculture in Odisha, a state heavily reliant on agriculture.

Review of Literature

In order to understand the dynamics of agriculture in Odisha, in proper perspective, it is important to investigate into the realm of the national perspective. Instability in agriculture has always remained the matter of concern in the developing countries. The risk involved in farm production increases because of the instability in agricultural production. Instability in agriculture also affects farmers' income and decision to adopt high paying technologies and making investments in farming. It also affects the price stability and the consumers. Also, it increases the vulnerability of low-income households to market. For food management and macroeconomic stability, stability in agriculture and food production is also important (Chand and Raju, 2009). Increasing agricultural production and growth is important for the country, while increase in instability in agricultural production is considered adverse. Studies have paid much attention to the green revolution in terms of its impact on agricultural growth and instability in farm output.

Over the decades, the policy focus on agriculture in India has passed through several phases, from an initial focus on increasing food production to the concerns for environment, poverty, food security and self sufficiency (Ghosh and Kumar, 2010). With the onset of green revolution, Indian agriculture is said to have experienced a paradigm shift in its growth parameter. While first phase of green revolution brought a mixed bag of impacts – growth rate of output improved with significant improvement in crop yield but inter-regional and inter-crop inequalities draw attention due to restriction of High Yielding Variety (HYV) seeds to rice and wheat only and limiting it to select well-endowed regions – the second phase (1980s) appeared to be much better a period – with acceleration of output and reduction in regional inequalities through introduction of HYV for other crops, spreading to eastern region. However, a reversal was witnessed in 1990s with clear deceleration of agricultural growth (Subrahmanyam and Satya Sekhar, 2003).

It is widely acknowledged that adoption of green revolution technology helped India for achieving a substantial increase in food production and has driven the country almost close to attaining self-sufficiency in food by early 1980s. However, the impact of improved technologies on instability in agriculture and food production has not been quite clear and has remained a matter of discussion. Most of the studies which covered the time period of 10 to 20 years since the adoption of green revolution technologies have concluded that instability in agricultural production has increased with the adoption of these technologies (Mehra, 1981; Hazell, 1982; Ray, 1983a; Rao *et al.*, 1988) As against the findings of

these studies Mahendradev (1987) found a progressive but marginal decline in the instability in food grains production at all-India level and a mixed results at the state level.

Indian economy embarked upon major economic reforms in 1990s. Although, no direct attempt was made in the reforms process to give a boost to agriculture, it was argued that the new macroeconomic policy framework, more particularly, changes in exchange and trade policy, devaluation of the currency, gradual dismantling of the industrial licensing system and reduction in industrial protection would benefit tradable agriculture by bringing an end to discrimination against it and making the agricultural terms of trade more favourable. This, in turn, was supposed to promote exports leading to rapid agricultural growth (Bhalla and Singh, 2009). The other important measures were abolition of zonal restrictions in the movement of agricultural commodities, promotion of private agencies in the distribution of inputs and agricultural extension (Vyas, 2001). Contrary to expectations, Indian agriculture has, however, performed miserably in the post-reform period (Bhalla and Singh, 2009).

While trying to find out possible reasons for the failure of agricultural sector to grow in the post-reform period, interestingly, researchers blame the reforms process itself. In the aftermath of economic reforms, agriculture witnessed certain important changes, which were considered sudden shock to the sector. To illustrate a few, as fallout of economic liberalization, food, fertilizer and credit subsidies were reduced to a great extent. Consequently, Public Distribution System (PDS) got a back seat. Besides, with the onset of import liberalization, there was inflow of cheaper food grains from abroad. As a result, agriculture was confronted with dual challenges. On the one side, costs of production started rising due to withdrawal of subsidies for inputs. On the other side, farmers failed to sell their produce at an economically viable price against the competition from abroad (Bhattacharya and Bhattacharya, 2007).

It is also ascertained that India's unenthusiastic approach towards agricultural reform was partly intentional. First, agriculture being a state subject, in forging and implementing policies, states had a larger say. Most of the states were dragging their feet in implementing reforms in non-agricultural sector, thus paying least attention to agricultural growth. Besides, it was believed that non-price measures like development of technology and infrastructure were more important for agriculture than market-oriented measures (Vyas, 2001).

Given this national scenario, it is imperative to see how Odisha's agriculture has performed over the years particularly in the post reform period. As economic reform is said to have brought about a clear shift in the focus on growth strategy, it may be useful to analyze the scenario of agriculture in the state comparing the early-reform scenario with the late-reform. The present study aims at examining instability in Odisha agriculture with respect to area, yield and production. The paper is organized into five sections including introduction. The second section provides a brief review of various studies on instability in Indian agriculture and discusses the need to update the analysis on instability in the state of Odisha. Data and methodology used in the present study are presented in section three. The fourth section presents our estimate of instability at state and physiographic zone level. This section also includes analysis of instability at disaggregate level by using district level data for the state of Odisha. Conclusions and policy implications are presented in the section five.

MATERIALS AND METHODS

Data Source

The study is based on secondary data. Attempt has been made to study the changes in the agricultural instability in area, yield and production for major crop groups in Odisha for the aggregate of crop-sector physiographic zone wise. The data have been collected from the various issues of Agriculture Statistics of Odisha published by Directorate of Agriculture and Food Production, Government of Odisha.

Analysis is extended to disaggregate level using the district level data for the state, as there exists, vast variations in agro climatic conditions across the districts. The state has been divided into four physiographic zones. The physiographic zone wise analysis has been undertaken on the basis of 30

districts (Table 1). The study estimates the instability in agriculture by dividing the entire study period into two phases (a) Period I is from 1993/94 to 2001/02; (b) Period II is from 2002/03 to 2010/11.

Table 1: Division of Districts according to the Physiographic Conditions

Odisha			
Northern Plateau	**Central Table Land**	**Eastrn Ghats**	**Coastal Plains**
Keonjhar	Bolangir	Kalahandi	Balasore
Mayurbhanj	Sonepur, Dhenkanal	Nuapara, Koraput	Bhadrak, Cuttack,
Jharsuguda	Angul, Sambalpur	Malkangiri,	Jagatsinghpur
Sundargarh	Bargarh, Deogarh	Nawarangpur	Jajpur, Kendrapara
		Rayagada, Phulbani	Ganjam, Gajapati
		Boudh	Puri, Khurda, Nayagarh

Source: Government of Odisha (2012), 'Odisha Economic Survey-2011/12'

Methodology

The issue of instability attracted the attention of researchers in the early phase of adoption of green revolution technology who concluded that adoption of new technology had increased instability in food grain and agricultural production. This study preferred to use the method proposed by Ray (1983b) and applied by Ray (1983a), Mahendradev (1987) and Rao *et al.*, (1988) to estimate instability in agricultural production. This method is given by:

"Instability index = Standard deviation of natural logarithm (Y t+1/ Y t)"…… (1)

Where, Y_t is the area / yield / production in the current year and, Y_{t+1} is for the next year. This index is unit free and very robust, and it measures deviations from the underlying trend (log linear in this case). When there are no deviations from trend, the ratio of Y_{t+1}/ Y_t is constant and thus standard deviation is zero. As the series fluctuates more, the ratio of Y_{t+1} and Y_t also fluctuates more, and standard deviation increases. This method also does not suffer from the limitations like arbitrary choice of assumed trend line initially proposed and used by Hazell (1982). The instability is estimated for aggregate of crop sector as well as for the sub sectors at state level and district level in Odisha by applying the above method.

Instability in Area, Yield and Production of Different Crop Groups at State Level

The main focus of this paper is to examine how fluctuations in crop output changed from one period to another period, and what is the effect of new agricultural policy on the instability in crop output. Accordingly, instability in area, production and yield of important crops and crop aggregates have been studied at state level as well as physiographic zone level during different periods. As there are vast variations in agro climatic conditions across districts, a disaggregate analysis reveals instability at micro level which is more relevant for policy implications.

Estimates of instability in area, production and productivity of different crop groups estimated from all Odisha data are presented in table 2. Instability in area under cereals was quite low during the early reform period at 1.43 percent. The instability in area decreased to 1.26 during the late reform period. Furthermore, the instability in yield and production marked a decline in the second period. Adoption of technology in late reform period may be the cause of this decline. Decline in instability in yield was three times higher than instability in production during the late reform period. Instability in area, yield and production of vegetables declined remarkably between the two time periods. Oilseeds in the state showed a fall in instability with respect to the area, yield and production. Instability in the yield of oilseeds was dropped by 37 percent in the second period. Progress of area under HYV, fertilizer consumption and use of improved technology spreading to much wider areas during the second period. A reduction in the production of fibres in the state has been observed by 19 percent. It is observed that there is a large decline in yield under vegetables. Interestingly, 40 percent reduction in the instability of physical production of vegetables has been recorded as the instability index declined from 3.37 to 2.02 in the second period. Similar results have been recorded for condiment and spices except in area under

cultivation. Comparatively, instability has declined in the state across all major crop groups. The factors which might have contributed to the decline in variability in yield and production seem to be; expansion of irrigation, improvement in the availability of other inputs, institutional credit and policy of minimum support prices that provided stable economic environment to induce investments in agricultural production.

Table 2: Instability in area, yield and production of major crops at state level (in percentage)

	Cereals		Pulses		Food Grains		Oil Seeds		Fibres		Vegetables		Condiments and Spices	
	PD-I	PD-II	PD-I	PD-II	PD-I	PD-II	PD-I	PD-II	PD-I	PD-II	PD-I	PD-II	PD-I	PD-II
Area	1.43	1.26	5.50	3.59	1.75	1.12	4.74	3.85	3.81	3.71	3.65	3.44	2.55	2.72
Yield	6.83	5.19	3.97	1.90	6.56	4.80	3.71	2.32	2.79	2.38	1.59	0.68	2.73	2.08
Production	10.05	8.59	9.25	7.76	9.33	7.50	7.82	7.48	4.99	4.02	3.37	2.02	4.65	4.45

Source: From various reports of State Agriculture Statistics, Directorate of Agriculture and Food Production, Odisha (Authors' own calculation)

Instability in Area of Major Crop Groups across Different Physiographic Zones

In Northern Plateau zone which comprises the districts Keonjhar, Mayurbhanj, Jharsuguda, Sundargarh, instability in area between two study periods for cereals, fibres and condiment and spices has shown an increase where as for pulses, food grains, oilseed and vegetables it has declined (table 3). The instability for cereals, fibres and condiment and spices has been increased by 23, 12 and 24 percent respectively during 1993/94 - 2001/02 to 2002/03 - 2010/11. Instability in area for pulses, food grains, oilseed and vegetables has declined by 19, 19, 28 and 15 percent between two time periods respectively. Central Table Land includes seven districts (Bolangir, Sonepur, Dhenkanal, Angul, Sambalpur, Bargarh and Deogarh) of the state. Except vegetables, instability for all other crops has declined during 1993/94 - 2001/02 to 2002/03 - 2010/11 (table 3). Instability in area for pulses, food grains and fibres has dropped significantly whereas a marginal decline is observed for cereals, oilseeds and condiment and spices during the above period.

In Eastern Ghats zone comprising the districts Kalahandi, Nuapara, Koraput, Malkangiri, Narangpur, Rayagada, Phulbani and Boudh, instability in area under cereals has declined by 29 percent in the second study period, whereas for pulses the instability in area is found more pronounced at 35 percent decline. As a result, the instability in area under food grains has gone down significantly by 44 percent. Instability in area under oilseeds and vegetables has also shown a decline in the second period. However for fibres instability index in area increased to 4.28 in 2002/03-2010/11 from 3.83 in 1993/94-2001/02 while instability in area for condiments and spices has remained almost constant between the two time periods.

In Coastal Plains cereals and pulses have shown a considerable decrease in instability with respect to the area by 21.7 and 39.7 percent respectively during the second period. As a consequence area under food grains has also shown a large decline in instability at 42 percent. Furthermore under the non food grain category oilseeds, fibres and vegetables have also shown significant decline in instability during the second period of the study. However, condiments and spices has shown a remarkable increase in instability by 10.8 percent from 2.31 to 2.56 during 1993/94 - 2001/02 to 2002/03 - 2010/11 in this zone.

The above observation on spatial variations in crop instability in the zones is very high. The possible reason is that the farmers are still primitive from the view point of resource utilization, technology adoption and diversification of cropping pattern. Being dependent on weather conditions largely, instability of area under different crops are liable to substantial variations from year to year and from zone to zone.

Table 3: Instability in Area of Major Crop Groups across the Physiographic Zones of the State (in percentage)

	Cereals		Pulses		Food Grains		Oil Seeds		Fibres		Vegetables		Condiments and Spices	
Zones	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**
Northern Plateau	0.96	1.19	4.28	3.43	1.26	1.02	4.54	3.24	3.42	3.86	3.95	3.35	1.88	2.34
Central Table Land	1.31	1.30	5.00	3.02	1.65	1.12	5.40	5.38	4.16	3.69	4.34	4.46	2.63	2.60
Eastrn Ghats	1.69	1.19	5.93	3.81	2.04	1.13	4.04	3.53	3.83	4.28	3.56	3.47	3.37	3.38
Coastal Plains	1.75	1.37	6.79	4.09	2.07	1.20	4.96	3.26	3.83	3.03	2.75	2.48	2.31	2.56

Source: From various reports of State Agriculture Statistics, Directorate of Agriculture and Food Production, Odisha (Authors' own calculation)

Instability in Yield of Major Crop Groups across Different Physiographic Zones

Instability in yield of cereals in the Northern Plateau zone has declined from 7.67 to 6.59 between the two time periods; where as the yield of pulses during the second period has shown a significant decline in instability from 2.78 to 1.61 by 42 percent (table 5). However instability in yield of food grains has shown a decline by 19 percent. Variability in yield of oilseeds, fibres and vegetables has also declined during the second period. In this physiographic zone, the only deviation is that the instability in yield of condiments and spices has increased by 7 percent. Instability in yield of cereals and pulses in the Central Table Land has declined by 34 and 45 percent respectively in the second period. As a result, the instability in yield of food grains has been estimated at 32 percent decline. Instability in yield of other crop groups' condiments and spices, vegetables, oilseeds, and fibres it has declined by a large extent.

In Eastern Ghats zone, for major crop groups, instability in yield has declined except for condiments and spices and fibres that have shown an increase by 7.7 and 3.27 percent respectively. However instability in the yield of vegetables has registered a 58 percent lower during the second period. In Coastal Plains, the first study period has shown higher instability as compared to the second period for all seven crop groups. Fibres yield has shown least instability by 24 percent, whereas vegetables yield has shown the highest instability by 50 percent. It is interesting to note that in this physiographic zone instability has declined in all the crop groups during 2002/03 - 2010/11.

While measuring the instability across the crop groups among the zones, it is observed that there is less instability in the yield of crop groups in the second period of the analysis. Improved quality input and output markets like credit facilities, seed production and distribution at local markets, policies to increased use of fertilizer, electricity and technology are responsible for bringing stability in the yield rate among the major crop groups in the zones particularly in the late reform period (2002/03 - 2010/11).

Table 5: Instability in Yield of Major Crop Groups across the Physiographic Zones of the State (in percentage)

	Cereals		Pulses		Food Grains		Oil Seeds		Fibres		Vegetables		Condiments and Spices	
Zones	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**
Northern Plateau	7.67	6.59	2.78	1.61	7.35	5.98	3.22	2.22	1.54	1.35	1.72	0.60	2.24	2.40
Central Table Land	8.03	5.26	4.16	1.45	7.77	5.26	3.73	2.15	2.15	1.67	1.72	0.78	3.42	1.35
Eastrn Ghats	6.28	5.29	4.55	1.99	5.50	4.70	3.90	2.61	3.27	3.32	1.32	0.55	2.84	3.06
Coastal Plains	5.36	3.63	4.39	2.53	5.60	3.25	3.98	2.31	4.18	3.16	1.60	0.79	2.42	1.51

Source: From various reports of State Agriculture Statistics, Directorate of Agriculture and Food Production, Odisha (Authors' own calculation)

Instability in Production of Major Crop Groups across Different Physiographic Zones

Instability in the production of all crop groups in the Northern Plateau zone has declined during 1993/94 - 2001/02 to 2002/03 - 2010/11 except condiment and spices. It is observed that instability index has increased from 3.98 to 4.16 by 4.5 percent during this period (table 4). In Central Table Land except the production of fibres, instability in production of all other crops has declined during the study period. Furthermore, except the production of oilseed and condiment and spices instability has declined for all the crop groups in Eastern Ghat and Coastal Plains zones. Except few divergences, it is observed that the instability in the production of major crops has declined in all the physiographic zones. The role of growing uniformity of cultivation practices and the relevance of the quantum of inputs and quality of management has brought a significant decline in the instability in the agricultural output in Odisha. However, a wide range of variation in the instability of agricultural output is observed across the zones, the performance of new varieties HYVs differs widely as between different environments and physiographic conditions.

Table 4: Instability in Production of Major Crop Groups across the Physiographic Zones of the State (in percentage)

	Cereals		Pulses		Food Grains		Oil Seeds		Fibres		Vegetables		Condiments and Spices	
Zones	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**	**PD-I**	**PD-II**
Northern Plateau	11.51	10.07	9.24	8.20	9.61	8.86	10.46	10.11	6.34	5.04	3.61	1.64	3.98	4.16
Central Table Land	11.06	9.90	9.63	6.71	11.05	8.40	8.29	7.28	4.29	4.42	3.27	2.62	5.65	5.35
Eastrn Ghats	9.73	8.58	9.12	7.97	9.07	7.66	6.83	6.92	5.46	3.11	3.79	1.85	4.90	4.01
Coastal Plains	7.88	5.79	9.01	8.16	7.59	5.08	5.72	5.61	3.85	3.51	2.83	1.98	4.07	4.28

Source: From various reports of State Agriculture Statistics, Directorate of Agriculture and Food Production, Odisha (Authors' own calculation)

SUMMARY AND CONCLUSION

Crop instability has always been important for liberating the difficult situation of subsistence agricultural economy of Odisha to ensure the varied nutritional requirement of the people. The empirical results reveals that crop instability in Odisha have been persisting since the economic reforms adopted. It is observed that the stability has increased in area under cultivation for all major crop groups except condiments and spices in the second period. However, stability of production and yield has increased across all the major crop groups at the state level in the second phase. Variability in agricultural production consists of variability in area and yield and their interactions. Variation in area under a crop occurs mainly in response to distribution, timeliness and variations in rainfall and other climatic factors, expected prices and availability of crop-specific inputs. All these factors also affect the variations in yield. Further, yield is also affected by outbreak of diseases, pests, and other natural or man-made hazards like floods, droughts and fire and many other factors. Different events may affect area and yield in the same, opposite or different way at the state level.

To see, if instability in agriculture at disaggregates level presents a different picture than that at the aggregate level, instability in the above selected dimensions has also been estimated for each physiographic zones of the Odisha state. Some diversified results have been observed while examining the instability of area under cultivation across the physiographic zones for major crop groups. For Northern Plateau the instability has increased for cereals, fibres and condiments and spices in the second period of analysis, however in Central TableLand the instability has increased only for vegetables.

Examining for Eastern Ghats and Coastal Plains, it is observed that except fibres and condiments and spices the stability of area has increased for all other crop groups in the late reform period.

Instability in the production, except condiments and spices in the Northern Plateau and Coastal Plains, fibres and oilseeds in Central Table Land and Eastern Ghats respectively, all other crop groups has shown declining trend. By and large it is observed that the stability in the production across most of the crop groups has increased in the late reform period (2002/03 - 2010/11) when it is compared with the early reform period (1993/94 - 2001/02). Beside the fluctuations in production, the stability in the productivity (yield) has increased for all major crop groups across the physiographic zones except few exceptions. Except condiments and spices in the Northern Plateau, condiments and spices and fibres in Eastern Ghats, the stability in the yield has increased for all major crop groups in the late reform period.

The credit of reducing the instability in the second period (2002/03 – 2010/11) goes to the plan policy adopted by the state government. During this period the state government has implemented some of the policy objectives of agriculture such as modern technology in agriculture, development of agro-based industries, and provision of extension services specifically for the Agriculture and Allied sector. Furthermore, emphasis has been given on development of sustainable and quality infrastructure, availability of cheap and timely agricultural-inputs and good extension services to secure production gains in agriculture. In recognition of the decisive role of the agriculture in the state's economy, the state government has given emphasis on agricultural extension services for facilitating improved agricultural practices, use of quality inputs, adoption of improved technologies and adequate support to the farmers. To conclude, it may thus be stated that Odisha's agriculture has to go a long way to achieve self-sufficiency. Being an agrarian economy overall economic growth and well-being of masses in Odisha is conditional upon the stability in performance of agricultural sector. To make the growth process inclusive and stable, deliberate public action through comprehensive policy frame work is the need of the hour.

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