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**AGRICULTURE IN MAHARASHTRA: EMERGING ISSUES AND
CHALLENGES**

BY

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Abstract

Agriculture in Maharashtra is carried out mostly under rain fed conditions. In fact 30% of the state's geographical area is subject to frequent drought conditions. Therefore, in such regions farmers choose their crops in such a way that even under adverse climatic conditions, they get something to subsist on. Their main concern is to minimize the loss rather than to maximize the economic gain. High variability is the biggest challenge to agriculture in the state, which ultimately limit the growth prospect of agriculture.

Moreover, it causes variability in growth in agricultural production, thereby agricultural income of the producers. In fact, low growth of agricultural production accompanied with high magnitude of variability therein are the major problems of agriculture. Therefore, irrigation facilities are required to develop urgently. Moreover, priority should be given to develop the watershed and soil conservation along with dry farming technology. Moreover, the existing cropping pattern should be replaced by the dynamic one based on market orientation.

Key Words: Land Use, Cropping Pattern, Growth Rates, Variability

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Agriculture in Maharashtra: Emerging Issues and Challenges

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This paper sets out to examine some issues of agriculture in the state of Maharashtra. The main focus of attention is on growth performance of agriculture and variability in the growth rates in output. Section I presents the nature of agriculture in the state and sector II discusses the growth performance of agriculture. Section III highlights the issue of variability in the growth rates in output across crops and periods. Finally a brief summery and policy implications are discussed in section IV.

Section I : Agricultural Economy of Maharashtra

In Maharashtra as elsewhere in India, agriculture is an important economic activity in which nearly 62% of the working population is engaged. Moreover, of the state's total domestic product, agriculture contributes nearly 17.00 percent. Agriculture in the state though has been making progress however its performance did not remain much satisfactory as compared to non-agricultural sectors. It is due to the fact that agriculture in the state is mainly rain fed agriculture. A major part of its territory falls on the plateau where the rainfall is low and highly unstable. Therefore the growth prospect of agriculture in the state is largely associated with the level and distribution of rainfall. Failure of rainfall especially at critical stage of plant growth results drought condition and crop

failure thereby create severe problems, particularly food and economic problems for agricultural community and livestock's.

Moreover the growth prospect of agriculture through the improvement in agricultural productivity and higher intensity of cropping is restricted due to low and unstable irrigation base. Of the total cropped area nearly 16.0 % area received irrigation facilities. In irrigated area, farming is generally carried out scientifically with commercial attitude based on the relative profitability of each crop. Farmers in such area prefer to allocate more land under such crops which fetch them higher income while in rain fed agriculture, which accounted for nearly 84 %, majority of the farmers allocate more land under drought resistance, low yielding and low cost crops to guarded against crop losses due to failure of rainfall. Thus farmers in such area choose their crops in such way that even under adverse climatic conditions, they get something to subsist on. Their main concern is to minimize the loss rather than to maximize the economic gain. Because in such agriculture return from investment is not certain. Therefore high variability in rainfall is the biggest challenge to agriculture in the state, which ultimately limits the growth prospect of agriculture through land use and cropping pattern. Land use statistics showed that of the total geographical area (307.58 lakh hectares) 178.76 lakh hectares have been brought under cultivation, which accounted for nearly 58.0 percentage. Moreover, of the total arable land available in the state 85% land is already used for agricultural production. Thus on the extensive front, agriculture in the state has extremely limited scope to bring additional land under cultivation. Keeping in view the increasing demand

for non-food and food crops, the expansion of multiple cropped area is the solid and enduring way to increase agricultural production in the state. However the position of intensive cultivation of land is also limited due to low irrigation base. Consequently agriculture has achieved low level of cropping intensity to the extent of 125, indicating that only one fourth of the net sown area is being used for multiple crops.

Product-mix strategy enhances the growth prospect of agriculture, which ultimately improves the economic crops, which ultimately indicate the product mix or the crop mix strategy of the producers. The optimum condition of agricultural producers. In the state appropriate production strategy has been restricted due to low irrigation facility and unstable Moreover the nature of cropping pattern in the state is not dynamic in nature. It is dominated by Jowar, Bajra and other low value crops. In fact, the cropping pattern is considered to be one of the important indicators to measure the level of agricultural development It indicates how the cultivated area is distributed for the production of the different rainfall condition. Statistics relating to cropping pattern for 1998-99 show that, Of the total cropped area nearly 60% area was occupied by food grains crops alone. Among the crops jowar stands as most important crop, which alone occupied about 22 % of the gross cropped area. Bajra is another low value crop, which has remained the second important crop Area under rice and wheat occupied 6.0 % and 4.0 % respectively. Among commercial crops cotton is main crops (14.0%) in the state followed by groundnut (2.5 %) and sugar cane (2.7%).

Consequently, the existing of cropping pattern has affected the production pattern of agriculture. Total food grains production in the state was 127.0 lakh tones during 1999-2000 and cereal production was 105 lakh tones and pulse production was 22 lakh tones. Cereals and pulses accounted for 83 percent and 17 percent to the total food grains production respectively. Moreover the jowar is the leading crop accounting for 36.94 percent of the food grains production in the state Rice's share was 20 % followed by Bajra (14.0%) and wheat (11.30%). Output of tur and gram occupied share of 6.83% and 4.72% to the total food grains production. Moreover the production pattern in agriculture did not change significantly over the periods. Because majority of producers are marginal and small farmers who produce Mainly for self-consumption rather than for market. Thus, in the state, agriculture is dominated by peasant farming.

Section II: Growth Performance of Agriculture

in this section an attempt is made to examine the temporal growth performance of agriculture in the state during 1960-61 to 1996-97. It was observed from table I that output of food grains was increased by 2.10% per annum 1960-61 to 1990-91 and 4.11% during 1985-86 to 1996-97. This was occurred mainly due to improvement in yield rather than the expansion of area. Moreover whatever improvement took place in the output of foodgrains was contributed by higher growth rate in the output of cereal and pulses. The output of cereal was increased by 2.48 per annum during 1960-61 to 1990-91 and 3.85% during 1985-86 to 1996-97. While the output of pulses increased by

Table 1: Growth Rates in output of Principal crops (1960-61 to 1996-97)

Wheat	3.59	4.88
Jowar	2.37	3.09
Bajra	2.10	9.74
Total Cereals	2.48	3.85
Tur	1.94	3.56
Gram	3.57	9.84
Total Pulses	2.10	4.73
Total Food grains	2.44	4.11
Sugarcane	4.25	5.96
Cotton	1.38	7.04
Groundnut	0.15	1.62

Source: Economic survey of Maharashtra

2.10% per annum during 1960-61 to 1990-91 and 4.73% during 1985-86 to 1996-97. Among the cereal crops the performance of wheat was relatively impressive. Whose output increased by 3.59% per annum followed by rice (2.40%), Jowar (2.37%) and Bajra (2.10%) during 1960-61 to 1990-91. However, the growth performance of individual cereal during 1985-86 to 1996-97 changed. Bajra showed relatively better performance during this period, whose output increased by 9.7% per annum followed by wheat (4.8%), Jowar (3.09%) and rice (2.60%).

In case of pulses it showed that the output of total pulses increased by 2.10% per annum during 1960-61 to 1990-91 and by 4.73% during 1985-86 to

1996-97. it was occurred mainly through the improvement in yield and to some extent the expansion of cropped area. Moreover among pulses, gram has shown relatively better performance as compared to tur. Its output increased by 3.57% per annum during 1960-61 to 1991-92 partly through area expansion and partly through improvement in yield. The position of tur was not satisfactory as its output increased by 1.94% mainly through area expansion during 1985-86 to 1998-97.

Among cash crops sugarcane being perennially irrigated crop showed impressive growth in output level (4.25%) during 1961-62 to 1990-91 and 5.96% during 1985-86 to 1996-97. This growth in output occurred largely through the expansion of its area rather than improvement in yield level. The growth performance of other crops namely cotton and groundnut showed that the output of cotton increased by 1.38 percent and 0.15% during 1960-61 to 1990-91 respectively. During subsequent period the performance of cotton improved, whose output increased by 7.04% during 1985-86 to 1996-97. The growth prospect of groundnut did not improve much during this period. It was caused mainly due to continuous reduction in area under this crop.

Thus, the growth performance of agriculture in the state showed that growth rates of some crops and crop groups were positive. Among the crops wheat, and rice showed better performance. By and large, yield played a key role in bringing about output increase of the most of the crops during 1960-61 to 1996-97.

Section III: Variability in the growth rates in output across crops and Periods.

The major problem of agriculture in the state is that the fluctuations in rainfall have made agriculture unstable. Consequently the variability in the growth prospect of agriculture is observed, which ultimately cause instability in agricultural production thereby agricultural income of the producers in rain fed agriculture, which accounted for nearly 84.0%. Therefore in this section an attempt is made to examine the magnitudes of variability in growth rates in output, measured by the coefficient of standard deviation, across crops and sub-periods.

It was observed from table 2 that agriculture in Maharashtra experienced ups and down swings in the level of growth rates in output of major crops across sub-periods. Agriculture experienced negative growth rates in the level of output of all most all crops except rice, wheat bajra and sugarcane during 1960-61 to 1970-71. The output of foodgrains in fact was reduced by 0.81% per annum during this period. Moreover the reduction in total output of foodgrains was a result of decline in output level of cereal crops by 0.79% per annum and output of pulses by 1.18% during this period. The declining trend in output level of either cereal or pulses crops could be attributed mainly due to the decline trend in yield of these crops. Among individual cereal bajra, wheat and rice showed positive growth in the output level. While jowar experienced negative growth rate of 3.78% in output level during same period. In case of commercial crops sugarcane experienced positive achievement in its output while the performance

of the cotton and groundnut had shown disappointing position. Moreover it has been observed that there was high magnitude, of variability in the growth rates of output across the different crops. Standard deviation in the growth rate of output across crops was observed to the extent of 3.49 during 1960-71.

Table 2: Variability in Growth Rates in output across crops and periods

Sr. No.	Crops	Period I (1961-71)	Period II (1974-83)	Period III (1984-92)	Period IV 1985-97	S.D. in Growth rates
1	Rice	0.71	3.11	0.36	2.60	1.18
2	Wheat	0.04	2.41	-2.15	4.88	2.62
3	Jowar	-3.78	5.38	0.48	3.09	3.40
4	Bajra	6.10	-1.77	7.36.	9.74	4.31
5	All cereals	-0.79	3.58	0.73	3.85	1.95
6	All Pulses	-1.18	-0.72	1.10	4.73	2.32
7	Total food grains	-0.81	3.08	0.78	4.11	1.92
8	Sugarcane	5.93	4.87	5.10	5.96	0.48
9	Cotton	-4.21	4.67	5.31	7.04	4.36
10	Groundnut	-3.90	-4.44	1.65	1.62	2.90
11	S.D. in Growth rate	3.49	3.08	2.74	2.23	

Source: Economic survey of Maharashtra

Compared to period I, the second period (1974-83) showed relatively better performance in respect of agricultural production in the state. On the whole period II could be characterized as the period of positive growth barring the

couple of negative growth cases. The performances of agriculture in the state during period II become quite noteworthy on the background of the downtrend performance of the previous period. Foodgrains production increased by 3.08% during 1974-83, which was contributed mainly by the improvement in yield of foodgrains. Moreover increased in the foodgrains production was occurred mainly through the increase in output of cereals. Among the cereal crops, the production of Jowar increased by 5.38% followed by rice and wheat. However the Bajra did not show upward movement in its production level, in fact it was reduced by 1.77% per annum due to reduction in area under bajra. This might be occurred due to transfer of area under bajra to superior crops. As compared to cereal crops the growth performance of pulses did not show much satisfactory result during this period. Among commercial crops, sugarcane and cotton maintained positive growth in output. While the production of groundnut was reduced by 4.44% per annum partly due to reduction in yields and partly due to declined area under groundnut. Moreover during this period variability expressed in term of standard deviation was 3.08% indicating inter-crop variability in the growth rates in output.

Moreover It was expected that conspicuously upward trend of agricultural growth initiated in the second period would be maintained during 1984-92. However it did not happen. Output growth was positive with most of the crops. While output growth rate of wheat remained negative. The negative growth rate in output of wheat was caused by yield reduction. From a set back of in the previous decade, bajra recorded substantial progress during this period

registering 7.36% per annum growth rate. The output of pulses increased by 1.10%. As regard the cash crops all three crops, maintained positive trend in output. Moreover the magnitude of variability expressed in term of standard derivation was reduced to 2.74 indicating the reduction in the variability in the growth rates in output across crops.

Moreover period IV (1985-97) indicated that agriculture showed relatively better performance in respect of agricultural growth in the state. Output of foodgrains increased at the rate of 4.11% per annum percent followed by pulses and cereals. Among the cereal crops bajra made significant progress in its output level whose output increased by 9.74% per annum followed by wheat (4.88%) jowar (3.09%) and rice (2.60%). Moreover all cash crops also achieved positive trend in output. Coefficient standard deviation reduced to 2.23% indicating the reduction in variability in output growth rates across crops. Moreover the coefficient of standard deviation in the growth rates in output across different sub periods showed that bajra maintained high level of variability in growth rates in output to the extent of 4.31 followed by jowar (3.40) wheat (2.62) and rice (1.18). Among cash crops cotton suffered from the higher level variability in the growth rates in output followed by groundnut and sugarcane. In fact sugarcane showed consistent output growth during each sub-period while other crops indicated ups and down swings in the growth rates in output across the different sub period.

Thus, it showed that agriculture in the state has been making progress. However, there has been a remarkable periodical fluctuation in the growth rates

of output of different crops. Period I was the phase of down trend barring sugarcane and rice in the agricultural production in the state. While period II was boom like leading to noteworthy headway in output growth rates. The expansion of irrigation, favourable climatic conditions and use of high yielding varieties etc facilitated to enhance agricultural production. Thus it showed that during second period, state had gradually started getting tunes to the new technology. However this encouraging trend was slowed down during period III. Again agriculture was recovered and maintained upward trend in agricultural production during 1985-97.

Section IV: Summary and Policy Guidelines

Agriculture in Maharashtra is carried out mostly under dry condition, about 84.0 % of the gross cropped area of the state is dependent on rainfall condition which is low and uncertain in nature. In fact 30.0% of the state's geographical area is subject to frequent scarcity condition. Moreover year-to-year fluctuations in rainfall affect growth prospect of agriculture and give rise to instability in output and yield thereby affect adversely the process of capital formation in agriculture. Consequently low growth of agricultural production accompanied with high magnitude of variability therein is the major problems of agriculture in the state.

In fact the development of stable agriculture is crucial in view to maintain economic stability in the state. This can be achieved through the expansion of irrigation facilities and the proper distribution of water. Moreover in drought prone area, priority should be given to develop the watershed and soil conservation. Dry farming technology based on the quality of soil should be

encouraged. Under economic reform, it is urgent need to stimulate the growth of agro processing industries which ultimate create assure market for agriculture products thereby create incentive to increase output. In fact strong and effective food processing sector play a significant role in diversification of agricultural activities, improving value addition to agriculture produce, ensure employment generation & surplus for export of agri-food products. This however required initiates for improvement of food processing infrastructural facilities including up-gradation of technology, refrigeration, storage, enforcement of quality standard and activating the domestic market with main focus on export. These facilities help to stimulate the growth of cash crops particularly fruits and vegetables thereby boost the export of agricultural products.. At present nearly 1.37 million hectares of land have been brought under cultivation of horticultural crops. It is required to expand area under such crops particularly in rain fed area. Because global market is quite favourable for such crops. It is an opportunity to tap the large export potential. Therefore existing cropping pattern in agriculture is required to change. It should be replaced by the dynamic one based on market orientation.

Moreover, the fishery sector play significant role in the coastal economy of the state. There is great potential for marine fish export. At present frozen shrimp, squid, Cattle fish, lobsters and other seafood are being exported to foreign countries particularly USA and Japan. Keeping in view the increasing demand for marine fish, fishery sector is required to develop with update technology.

Moreover, contract farming be encouraged because majority of farmers are marginal and small farmers and they produce mainly for self-consumption rather than market. The development of contract farming will definitely help to change traditional altitude of agricultural producers. It creates ultimately assured market for the products, which in turn creates an incentive in the mind of agricultural producer to produce more output by using modern technology.

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