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RECENT TRENDS IN AGRICULTURAL GROWTH RATES IN KARNATAKA

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GROWTH RATES: 1956-76

Between 1955-56 and 1975-76, the value of total agricultural production in Karnataka at constant prices increased at a compound rate of 3.2 per cent.¹ This performance, under the various odds of low irrigation level associated with very uncertain rainfall conditions, was regarded as a commendable achievement. A decomposition analysis aimed at tracing the relative contribution of area, price, yield and cropping pattern revealed that the major factors contributing to this remarkable growth performance were yield and cropping pattern which accounted for 72.8 per cent and 17.9 per cent respectively. The contributions of area (3 per cent) and price (3.01 per cent) were too small to take note of² (Table I). Yield increase was brought about by dramatic improvements in the use of HYV seeds associated with higher doses of fertilizers and expansion in the irrigated area.

TABLE I—RELATIVE CONTRIBUTION OF DIFFERENT COMPONENTS TO THE GROWTH OF CROP OUTPUT
IN KARNATAKA STATE BETWEEN 1956-59 AND 1973-76

Sr. No.	Components	Relative contribution (per cent)
1.	Area (A)	3.00 (0.10)
2.	Prices (P)	3.01 (0.10)
3.	Yield (Y)	72.81 (2.44)
4.	Cropping pattern (C)	17.86 (0.60)
5.	Interactions	
	(a) YP	1.50 (0.05)
	(b) CP	-3.24 (-0.11)
	(c) CY	6.00 (0.20)
	(d) CYP	-0.94 (-0.05)
6.	Total	100.00
7.	Growth rate (per cent/annum)	3.35

Source: Prahladachar and Sundararaju: *op.cit.*

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1. M. Prahladachar and S. M. Sundararaju: *Agricultural Development in Karnataka—Phase II, Districtwise Analysis, ADRT Unit, Institute for Social and Economic Change, Bangalore, 1981, Vol. 1, p. 466 (mimeo.).*

2. *ibid*, p. 466.

RECENT TRENDS IN PRODUCTION: IS THERE DECELERATION ?

The recent trends in the growth rates of important selected crops reveal concern, especially with reference to rice, jowar and cotton. The growth rate of rice production was as high as 5.90 per cent per annum during the pre-green revolution period of 1950-51 to 1964-65. This high growth rate was attributed to the introduction of new improved seeds associated with improved cultivation practices, particularly the replacement of drill sowing by transplantation. Added to it, there was a phenomenal expansion in the total as well as irrigated rice area and also introduction of chemical fertilizers in restricted pockets of rice tract where water management under canal irrigation was under control.

During the period 1964-65 to 1975-76, the growth rate was 3.40 per cent per annum, lower than that during the pre-green revolution period. The main disadvantage of the period was that there was a sudden halt to the expansion of rice area particularly irrigated rice area, as there was competition for such area by the lucrative crop enterprises like sugarcane. The introduction of HYV rice strains in the later half of the sixties was not encouraging, as those varieties (particularly TN 1 and Taichung 65) were not suitable to the soil and climatic conditions of the rice growing tracts in the State. More often, the local improved varieties gave better performance than the new HYVs and little surprise that the latter were rejected by the rice growers in the State after an initial trial of failure. However, the IR strains introduced in the early seventies gave remarkable results which were ultimately accepted by a large number of rice growers resulting in a high growth rate of 3.40 per cent.

During the recent period (1976-77 to 1981-82) there is a marked deceleration in rice production. The growth is not only negative but high (-2.45 per cent). This is attributed to both a sharp fall in the area (-2.73 per cent) and a setback in the yield growth rate (0.29 per cent).

In the case of jowar, the growth rate of production was high in the first period (1950-51 to 1964-65) due to both area and yield effect. The area under jowar increased by 1.90 per cent and its yield by 1.80 per cent, which were really phenomenal, especially in the case of a rainfed crop like jowar. During this period, some improved strains were successfully introduced without much change in the traditional cultivation practices and the yield levels marginally improved.

It was during the late sixties that the hybrid varieties of jowar were successfully introduced in the non-traditional tracts, particularly in Bellary and Chitradurga districts. In the traditional tracts, however, the hybrid jowar strains were unsuccessful, particularly because of the stem-borers. Another reason was that the hybrid jowar strains were not suitable to the *rabi* jowar tract of the North Karnataka region.³ The result of the introduction of the hybrid jowar varieties was interesting. The jowar yield during the period

3. M. Prahladachar and S. Giriappa, "Performance of Jowar", in J. P. Singh *et al.*: New Seeds: Adoption and Yield, Sterling Publishers, New Delhi, 1978.

1964-65 to 1975-76 recorded a very high growth rate of 4.60 per cent. At the same time, the area under jowar declined by —2.64 per cent per annum and brought down the production increase to 1.90 per cent.

Jowar in Karnataka really had its setback during the period 1976-77 to 1981-82. The area under jowar continued to decline almost at the previous rate or slightly less (—2.55 per cent per annum) and the rise in the yield rate was brought down to less than the level of the pre-green revolution period (1.62 per cent). The rate of increase in production was negative at —0.94 per cent. It is rather surprising that when the new hybrid varieties of jowar suitable to the black soils of the northern districts were reported to have been successfully introduced, and when the area under irrigated jowar was increasing, the yield levels should come down. The fear that the yields of the new varieties are not stable could be true and the stem-borer menace causing drastic decline in yields could have remained unnoticed.

Cotton production increased by 1.30 per cent per annum during the period 1950-51 to 1964-65 which was the result of marginal increases in area and yield. During the early seventies hybrid varieties of cotton, both H-4 and Varalakshmi were introduced in the irrigated tract of Raichur and Bellary which caused the yield rate to take a big leap to 8.60 per cent per annum during the period 1964-65 to 1975-76. Though the area increased marginally, the production rate recorded a big jump of 9.40 per cent per annum. The recent period (1976-77 to 1981-82) however saw a drastic deceleration in both cotton yield (—5.25 per cent) and production (—2.56 per cent) though there was a positive growth in area (2.84 per cent). The fear that unstable yield and price factors could bring about such a situation was proved to be real.⁴

MAJOR BREAK-THROUGH IN RAGI AND PULSES

The deceleration in the production of rice and jowar is outweighed by a major break-through in the production of *ragi*, an important millet in the southern *maidan* of the State, and also pulses, particularly the horsegram.

Ragi yield increased at a moderate rate of 3.30 per cent per annum during the period 1950-51 to 1964-65 and the area also increased at the rate of 3 per cent resulting in a large rate of increase in the production at 6.40 per cent per annum. During the period 1964-65 to 1975-76, new HYV strains of *ragi* were introduced under rainfed conditions which caused a big boost to the yield rate increase at 7.30 per cent. However, as the area declined marginally at —1.03 per cent, the production increase was only 6.40 per cent. Further, during the recent period (1976-77 to 1981-82), unlike jowar which faced yield instability problem, *ragi* registered the highest record in production increase at 8.33 per cent per annum caused by consistent increase in yield (6.18 per cent) and moderate increase in area (2.01 per cent). The successful

4. A. R. Rajapurohit and M. Venkata Reddy, "Hybrid Cotton: Adoption and Stability", in Singh *et al.*: New Seeds: Adoption and Yield, *op. cit.*

introduction of new varieties of *ragi* under rainfed conditions, with very little problem of yield instability, played the trick.⁵

The performance of pulses during the period 1950-51 to 1964-65 was not encouraging. The production increased at the rate of 0.70 per cent caused by 0.60 per cent increase in area and 0.20 per cent increase in yield. However, there was a moderate increase in yield at 2.90 per cent and that in area at 1.60 per cent which resulted in a record production increase at the rate of 4.70 per cent. Credit for this performance cannot be ascribed to any special programme of the government. Probably the increase in the relative prices of pulses might have given an incentive to the farmers to take particular care of pulses.⁶ The recent trends in the production of pulses are quite encouraging. During the period 1976-77 to 1981-82, production of pulses increased by 13.90 per cent, caused by 8.00 per cent increase in yield and 5.47 per cent increase in area. The miracle of this unprecedented performance of pulses in Karnataka needs further investigation.

IS THERE DECELERATION IN AGRICULTURAL PRODUCTION ?

The disappointing performances of rice, jowar and cotton during the recent years need not lead one to the conclusion that there is a deceleration in agricultural production in general or foodgrains production in particular. Good performances of *ragi*, maize and pulses have not only filled up the production deficiencies caused by rice and jowar, but have further caused positive and moderate growth rates of total foodgrains. The production of total foodgrains increased at a high rate of 6.30 per cent per annum during the period 1976-77 to 1981-82 as against the moderate growth of 4.30 per cent during the previous two periods. This was caused by an overall rise in the yield rate of total foodgrain production at 5.09 per cent as against 2.70 per cent and 4.70 per cent during the two previous periods respectively.

The increase in the net sown area, gross cropped area, net irrigated area and gross irrigated area are not lagging behind (Table II). The rate of increase in fertilizer consumption has kept its pace. Under these favourable circumstances, it is rather difficult to answer the question why there was deceleration in the rate of growth of rice, jowar and cotton production. The explanations given in respect of jowar and cotton are quite convincing. Hybrid jowar varieties have very wide fluctuations in yield and they are subject to pest. These wide fluctuations themselves might have caused the deceleration in the rate of growth of production. Likewise, hybrid cotton varieties are not only having wide fluctuation in yield but also having high instability in prices. Economic rationality dictates farmers to withdraw resources from such risky enterprises, and that could have been the main cause of the deceleration in respect of jowar and cotton.

5. S. Giriappa: Role of Ragi in Dry Area Development, ADRT Unit, Institute for Social and Economic Change, Bangalore, 1980 (mimeo.).

6. Kusum Chopra and Gurushri Swamy: Pulses: An Analysis of Supply and Demand in India 1951-71, Sterling Publishers, New Delhi, 1975.

TABLE II—COMPOUND GROWTH RATES OF NET SOWN AREA, GROSS CROPPED AREA, NET IRRIGATED AREA, GROSS IRRIGATED AREA, SOURCES OF NET IRRIGATED AREA AND FERTILIZER CONSUMPTION IN KARNATAKA

Compound growth rates							1950-51 to 1964-65	1964-65 to 1975-76	1976-77 to 1981-82
Net sown area	..	..	..	..	..	..	0.59	0.12	1.47
Gross cropped area	..	..	..	..	..	..	0.66	0.44	1.56
Net irrigated area	..	..	..	..	..	..	3.85	2.56	2.54
Gross irrigated area	..	..	..	..	..	..	4.29	3.73	2.81
Sources of net irrigated area									
Canal	..	..	..	..	..	..	6.39	2.72	1.45
Tanks	..	..	..	..	..	..	1.97	1.30	2.12
Wells	..	..	..	..	..	..	1.75	6.62	3.44
Others	..	..	..	..	..	..	8.56	—1.76	5.88
Fertilizer consumption	..	..	..	..	..	..	—	19.04	14.25

In the case of rice, the explanation given above would not be sufficient. Autumn rice, which accounts for a very large proportion of the rice area in the State, was brought under the high-yielding varieties during the first part of the seventies which lifted up the yield growth rate of rice in the State during the period 1964-65 to 1975-76. Autumn rice requires congenial climatic conditions for the optimum use of inputs. Under drought situation or under heavy rainfall conditions when water floods the rice fields, fertilizers remain under-utilized or unutilized resulting in fall in yields. This peculiar environmental situation deciding the fate of autumn rice crop production could be one of the causes during recent years. The growth rate of rice has fallen mainly because of the drastic area decline in 1981-82 resulting from severe drought conditions in the months of June-August during the year. The figures given in Table III are self-explanatory and prove that given the

TABLE III—AREA UNDER, PRODUCTION AND YIELD OF RICE

Year							Rice		
							Area (’000 hectares)	Production (’000 tonnes)	Yield (kg./ha.)
1976-77	..	..	..	..	..	..	963.0	1,480.4	1,537
1977-78	..	..	..	..	..	..	1,095.7	2,280.7	2,082
1978-79	..	..	..	..	..	..	1,098.2	2,174.6	1,980
1979-80	..	..	..	..	..	..	1,173.6	2,369.6	2,019
1980-81	..	..	..	..	..	..	1,084.7	2,210.0	2,037
1981-82	..	..	..	..	..	..	787.7	1,246.9	1,583

congenial climatic conditions, there is nothing to worry about the performance of rice in Karnataka.

Before concluding, one important point needs worth mentioning. Since 1964-65, there has been a sharp decline in the percentage of area under foodgrains and a simultaneous increase in the area under some newly emerging crops like coconut, mulberry, fruits and vegetables. For instance, in 1965-66, the proportion of area under foodgrain crops was as high as 75.01 per cent of the total area which declined to 68.12 per cent in 1970-71, to 65.30 per cent in 1975-76 and to 55.25 per cent in 1981-82. It should be noted that the process of commercialisation has already started in Karnataka agriculture and there is no surprise that some foodgrain crops like rice and jowar were the victims of this process.