AGRICULTURAL DEVELOPMENT IN KARNATAKA (A CASE STUDY)

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Abstract
Karnataka has been a marginally deficit state in regard to food grains production. Though the situation improved from 1970s thanks to Green Revolution, there was no stability in the yield. The area under HYVs has stagnated around 32 lakh hectares. In 1990s, the food grains production started showing an upward trend going above 78 to 80 lakh tonnes. As a matter of fact, the Government of Karnataka has claimed that it has produced more than 90 lakh tonnes of food grains during 1996-97. This is the maximum food grains that the Karnataka agriculture can produce, taking into account the limited area under irrigation devoted for growing food grains, shift in the cropping pattern from food grains to commercial crops and inadequate use of chemical fertilizes. Surprisingly, the dry land agriculture contributes substantially to the food grains production of Karnataka. Therefore, the performance of Karnataka dryland agriculture determines the level of food grains production in the State. If the Karnataka agriculture produced around 95 lakh tonnes, then with 7 to 10 lakh tonnes of food grains allocated under PDS, it should be able to meet the food grains demand of the people. What is interesting to note is that while all india food grains, production was stable during the 1990s, Karnataka's food grains production faced instability. Until this is overcome, it will be futile to think of self sufficiency in food grains. In an open economy, it is also a wasteful strategy of development.

Keywords: *Productivity, miscellaneous, reorganization, dominant*

Introduction

Karnataka's agriculture is a big gamble in the monsoon. Development of agriculture has had a checkered career in the state. Until the third five-year plan, the agricultural development of Karnataka was consistently positive and the growth rate was shifted to a higher level by the introduction of High Yielding Varieties (HYV) technology. During the 1970s, the performance of Karnataka's agriculture was reasonably good barring one or two years of drought. The area under HYVs increased phenomenally and the yield also increased. During 1980s, there was sudden stagnation mainly because of successive
droughts, which adversely affected the dryland agriculture. What is disturbing is that in the case of agricultural sector in the country as a whole there is an element of resilience to recover from drought years immediately whenever there is a good monsoon in the following year. But this has not been true in the case of Karnataka's agriculture. It takes almost two years to recover from the set-back suffered during a drought year. For instance, the seventh five-year plan of Karnataka started with the background of drought conditions and the economy of Karnataka passed through almost a continuous period of droughts from 1985-86 to 1987-88. The situation did not improve significantly till 1988-89. It is only 1988-89 and 1989-90 which were normal years with a reasonably good monsoon. Again, during the eighth five year plan two years were affected by droughts
leaving the last three yearn as normal monsoon years.
The growth of agricultural output in the State was better till the end of 1970s as compared to the country as a whole. However, during 1980s the growth rate slackened. Even during the most part of 1990s, there was some element of stagnation in productivity of agriculture. Lack of technological innovations appears to be largely responsible for not sustaining a high

growth rate achieved during the early years. Further, better performance of dryland agriculture did contribute to better performance of Karnataka's agriculture in 1960s and early 1970s and then in 1990s. During the other years frequent droughts slackened the growth of agricultural ouput, particularly in dry land agriculture. The State's agricultural economy is yet to acquire the resilience to cope with the adverse natural conditions largely because of low level of irrigation. This underscores the need for substantial improvement in the productivity in dryland farming, more efficient use of the available land and water resources and further extension of irrigation to new areas.

Land Utilization Pattern

Out of the total geographical area of 186.47 lakh ha. the net area sown (agricultural land sown once in a year) in the State has increased from 51.1 percent in 1956-57 to 53.4 percent in 1980-81 and further to 55.5 percent in 1991-92. The land under miscellaneous tree crops and groves has declined marginally whereas, the area under permanent pastures and grazing land has declined sharply between 1956-57 and early 1990s. The area under current fallow (area not sown during the year) and the barren and uncultivated lands has also declined. The land put to non-agricultural use (such as residential and commercial use) has increased which gives an alarming signal to policy makers to protect cultivable land from being diverted to non-agricultural purpose.

The negative signals in the pattern of land utilization in Karnataka are to increase the land put to non-agriculture use, high proportion of barren and uncultivable wastes and also cultivable wastes and fallow land. All the three categories put together constitute 10 percent of the total geographical area. In view of increased irrigation facilities created in the last three decades, the share of gross sown area (area sown more than once in a year) has gradually increased from less than two percent to more than eight percent, thus significantly contributing to the gross cropped area in the State.

Area under Forest

According to the National Forest Policy, 33 percent of the geographical area of the country and of the States should have forest cover. But Karnataka is hardly having 16 percent of the geographical area under forest. There is virtual stagnation in the area under forest starting form the period of reorganization of the State. The only redeeming feature is that the area has not come down. Uttar Kannada district, which is the coastal and hilly district, is having 81 percent of its geographical area under forest cover, Kodagu district is having 33 percent followed by Shimoga with 31 percent, Chickamagalur with 28 percent, Dakshina Kannada and Mysore with 27 percent. Kodagu and Dakshina Kannada
districts have lost some forest cover. Bangalore (Rural), Bidar and Chitradurga districts have gained marginally in the forest cover. What is significant is that enormous amount of money spent on Afforestation, Social Forestry and Forest Plantation has not increased the area under net forest cover. It has only prevented the decline during the Five Year Plan regime. The Forest Department has expanded. The number of personnel has increased. The amount of plan and Non-Plan outlay of the forest development has increased. However, the area under forest has remained constant. This is a distrubing trend. If we analyze the composition of even the existing forest area, we find fudging of the data and information by adding urban forestry and farm forestry to show atleast constancy of the area under forest. Thus, the State forest development policy has failed to increase the area under forest in the state.

Trends in Area, Production and Productivity on Principal Crops:

Trends in area, production and productivity of different groups of principal crops during the past four decades have been examined here1. While a long-term growth gives the overall development, it is also found necessary to examine the growth patterns during the selected years. The growth patterns of area, production and yield under different groups of principal crops indicate that maize occupies the highest position with high growth
in area, production and yield during the total period. This growth is mainly contributed during the green revolution period. Even though the area under many cereal crops declined, the production and productivity rates are significant (Table 1) The growth pattern of area under oilseeds has substantially increased during the post-green revolution, even though they were basically new entrants. A significant shift has taken place during this period both in area and production from among the commercial and plantation crops followed by fruit bearing crops. Overall, while the strides made during the 70s with the introduction of improved varieties and hybrids with moderate infrastructure support had resulted in sharp increases in productivity of cereal crops, it is noticed that the peak has already reached in the evolution of new technology in high yielding varieties.

TABLE 1: TRENDS IN AREA, PRODUCTION AND PRODUCTIVITY OF CROPS IN KARNATAKA

	Years				
	1960-61	1970-71	1980-81	1990-91	1995-96
A. Area (000 ha)					
Total Cereals.	6273	5971	5573	5411	5497
Total Pulses.	1306	1445	1531	1621	1641
Total Food Grains.	7579	7416	7104	7036	7138
Total Oil Seeds.	1247	1398	1251	2531	2853
Sugarcane.	72	104	154	272	290
Cotton.	984	1142	1012	596	601
Tobacco.	39	38	52	46	58
B. Production (000 tonnes)					
Total Cereals.	3578	5235	5714	5705	7661
Total Pulses.	352	511	488	539	681
Total Food Grains.	3920	5746	6602	6244	8342
Total Oil Seeds.	510	875	650	1339	1644
Sugarcane.	5184	8106	12127	20750	22834
Cotton.	382	570	597	640	900
Tobacco.	23	18	34	33	47
C. Productivity (000 Kgs/ha.)					
Total Cereals.	570	877	1025	1054	1394
Total Pulses.	270	354	319	333	415
Total Food Grains.	517	775	873	887	1169
Total Oil Seeds.	409	626	520	529	576
Sugarcane.	72	78	79	76	79
Cotton.	66	85	100	183	255
Tobacco.	590	474	654	717	810

Source: Compiled from Government of Karnataka (1997). Growth rates of Area, Production and Yield of Principal crops in Karnataka (Various Volumes).

Cropping Pattern:
A group of 23 main crops grown in the State account for about 83.7 percent of the gross cropped area in the year 1956-57 and their share has increased to 90.5 percent by 1991-92. At the All India level these crops account for about 85 percent of the gross cropped area.
The area under total cereals in the State declined from 62.7 lakh ha. (56.5percent) in 1960-61 to 55.0 lakh ha. (45 percent) in 1995-96. The decline has come mainly from Jowar and Bajra crops. Area under Jowar declined from 25.5 percent to 17.8 percent and Bajra area declined from 5.1 percent to about 3 percent. The area under rice increased by two percentage points from 8.7 percent to 10.7 percent between 1960-61 to 1970-71 and it continued to be around the same level after 1970-71. Wheat is not a significant crop in the State and only about 1.8 percent of area is under the crop. The area under Ragi increased from 8.6 percent to 10.1 percent during 1960-61 to 1980-81 and decreased to the 1960-61 level in 1991-92. Maize is a new entrant to the State's cropping system. Area under maize increased from 0.1 percent to 2.5 percent over 36 years. Though there is a decline in the proportion of area under inferior cereals, they continue to be the dominant cereal crops in the State. At the All India level, the area under rice is about 23 percent and the area under wheat increased from 8.5 percent to 13.2 percent. At AH India level superior cereals like rice and wheat, are the dominant crops under cereal group. The area under total cereals at all India level decreased from 59.2 percent to 54.5 percent. This comparison shows that the decline in the area under cereals in the State is much faster than that of all India level. In the cereal group, inferior cereals dominate in the State whereas superior cereals are the dominant crops at all India level. Area under pulses has fluctuated around 13 percent in the State whereas it has declined from 15.6 percent to 12.9 percent to All India level. The area under total oil seeds in the State increased from 12 percent to 24.4 percent and the entire increase has come after 1980-81. The area under groundnut is around 10 percent.
Sunflower is a new crop to the State. The area under Sunflower increased from 1 percent in 1980-81 to 10.2 percent in 1991-92. At All India level the area under total oil seeds increased from 8.4 percent to 14.1 percent. The area under groundnut is around 4.6 percent and sunflower is around 1 percent. The State thus has an important place in oilseeds particularly in groundnut and sunflower. Cotton, an important commercial crop of the State presents a dismal picture. The area under the crop has come down from 10.2 percent to 4.9 percent and much of the decline has come after 1980-81. At all India level, the area under the crop declined by about one percentage point from 5.4 percent. The area under coconut increased from 0.9 percent to 2 percent in the state, whereas at all India
level its share is less than one percent. While sugarcane, tobacco, arecanut and coffee crops shared less than one percent of the areas cultivated each during 1950s, the shares of sugarcane and coffee crossed one percent mark by 1980s. To sum up, the cropping pattern in the state differs from all India. There has been a shift from cereal crops to non-cereal crops in a big way after 1980-81.

Irrigation

In spite of huge public investments on irrigation (Table 2), the State could achieve a moderate growth in area brought under irrigation cultivation. It is interesting to note that area under minor irrigation has been as much as, or more than the area brought under major irrigation. Agriculture needs irrigation for the stability of the yield. Karnataka has
achieved 31 lakh hectares of irrigated area by 1991.
The patterns of crop grown in irrigated areas indicate that rice, which depends on irrigated area, has lost ground for sugarcane. The food grains crops have lost ground in the irrigated

area. Oilseeds, Cotton, Sugarcane and Groundnut are becoming prominent irrigated crops. Thus, higher prices of non-food crops are diverting irrigated area from traditional cereal crops. Production of principal crops indicates that the production of rice has more than doubled for the last 38 years so also in the case of Ragi, maize and all
cereals. The total food grains production has more than doubled in the State for the last 38 years. Production of Groundnut, Oilseed and Cotton has more than tripled and die increase in the production of sugarcane is incredibly impressive. The State requires about 112 lakh tonnes of food grains. It has started producing 83 lakh tonnes of food grains which is a credible achievement. It is unfortunate that the share of food grain production in Karnataka in the country's food grain production has gradually declined from level of 5.3 percent in 1970 to 4.5 percent in 1995.

TABLE 2 EXPENDITURE ON IRRIGATION (MAJ + MED + MINOR) IN KARNATAKA

(Rs. lakhs)

Year	Total Expenditure Irrigation	State's total expenditure	Percentage of State Expenditure
1970-71	4964	36899	13.45
1971-72	567	37077	15.01
1972-73	5544	53896	10.29
1973-74	5598	51557	10.86
1974-75	6678	47286	14.12
1975-76	7610	55005	13.84
1976-77	9947	64331	15.46
1977-78	11945	75437	15.83
1978-79	15246	85346	17.86
1979-80	1745	98226	17.74
1980-81	18122	118159	15.34
1981-82	19059	128378	14.85
1982-83	21150	162455	13.02
1983-84	23183	184845	12.54
1984-85	26959	246022	10.96
1985-86	30469	313763	9.71
1986-87	33888	286525	11.83
1987-88	31660	358864	8.82
1988-89	36995	383989	9.88
1989-90	42252	457984	9.23
1990-91	47068	508901	9.25
1991-92	61198	685030	8.93
1992-93	78824	745860	10.57
1993-94	103071	793692	12.99
1994-95	129260	949047	13.62
1995-96	128648	1082162	11.89

Source: Compiled from Government of Karnataka (1980 to 1997). Economic Survey, (Various Volumes).

Trends in Selected Agricultural Inputs

Though the area under HYV increased by five times during the 70s it remained almost constant in the later two decades. Use of chemical fertilizers increased by ten times and so is the case with the irrigation pump sets energized. Karnataka also has a good marketing infrastructure with as many as 397 regulated markets consisting of 116 main markets and 281 sub markets.

TABLE 3: OPERATIONAL HOLDINGS BY MAJOR SIZE CLASS IN KARNATAKA.

Sl. No.	Items	1970-71	1976-77	1980-81	1985-86	1990-91
1.	No. of Operational Holdings (Nos.)					
	Total Holdings	3551	3811	4309	4919	5776
	Marginal (0-1 ha.)	1081	1274	1489	1792	2262
	Small (1-2 ha.)	840	888	1057	1293	1586
	Semi Medium (2-4 ha.)	789	818	918	1035	1163
	Medium (4-10 ha.)	623	631	662	646	636
	Large (10 ha. and above).	219	199	184	153	129
2.	Area Operated (ooo ha.):					
	Total holdings.	11368	11357	11746	11879	12321
	Marginal (0-1 ha.)	549	637	733	866	1972
	Small (1-2 ha.)	1221	1319	1543	1888	2308
	Semi Medium (2-4 ha.)	2205	2288	2572	2878	3200
	Medium (4-10 ha.)	3792	3858	4018	3881	3771
	Large (10 ha. and above).	3601	3254	2880	2364	1971
3.	Size of holdings (ha.)					
	Total holdings.	3.2	2.98	2.73	2.41	2.13
	Marginal (0-1 ha.)	0.51	0.5	0.49	0.48	0.47
	Small (1-2 ha.)	1.45	1.49	1.46	1.46	1.46
	Semi Medium (2-4 ha.)	2.79	2.8	2.8	2.78	2.75
	Medium (4-10 ha.)	6.09	6.11	6.07	6.01	5.93
	Large (10 ha. and above).	16.44	16.35	15.65	15.45	15.28

Source: CMIE, Profiles of State, Mumbai, March 1997.

Land Reforms and Agriculture Development:

Karnataka's agriculture has been facing several structural problems. The first and the foremost structural problem has been the increasing sub-division and fragmentation of land holdings, which has increased the proportion of uneconomic holding substantially. Second, there has been near stagnation of the area under HYV technology and per hectare productivity of several crops. The land tenure in Karnataka has been mostly ryotwari system under which the actual cultivators own the land and pay the land revenue to the government. In the wake of National Policy of introducing land reforms as a strategy of agriculture development, Karnataka implemented land reform legislation in 1970s. This legislation included legal abolition of tenancy and putting a ceiling on size of the holding owned by a peasant's family. Both these policies were by and large implemented reasonably well but the long term economic impact of this legislation has been disastrous. (Table 3).

It is observed that the average size of the operational holdings which was 3.2 hectares in 1970-71 i.e., before the land reform legislation was implemented, declined to 2.4 hectares in 1985-86 and further to 2.1 hectares in 1990-91; the number of large operational holdings

decreased by 30% during this period and the number of marginal holdings increased by 66 percent; the average size of the marginal holding itself declined to 0.48 hectares in 1985-86 and further to 0.47 hectares in 1990-91; and the average number of parcels per holding increased whereas the average area of a parcel per holding declined3.

While the increase in the number and proportion of marginal and small holdings may be attributed to the operation of "laws of inheritance", decline in the number and proportion of medium and small holdings is partly attributable to the implementation of land ceiling legislation. Expectedly, the number and proportion of medium and large holdings owned by traditional land owning castes have declined. This would imply that the land ceiling legislation did force the reduction of size of large holdings in Karnataka. It is true that the implementation of land reforms in Karnataka enabled some farmer tenants to become owners, but in actual practice, it is said that they have failed to achieve the avowed objective of creating an egalitarian agrarian society. On the contrary, the loopholes in the law were the aids in disguise to the landlords to maintain the *status quo* in the agrarian social structure.

Now our perception about improving the living conditions of the ordinary masses has changed drastically. It is no longer desirable to give small pieces of assets to poor people and expect them to become entrepreneurs. This has been proved by the experiences of IRDP under which some assets were distributed for the poor people. It is also realized that it is better to allow people to earn some income from assets rather than force them to leave it idle for fear of losing it.

The economic viability of land is crucial for the size of the farm to some extent. The small and marginal farmers cannot lease-in the adjoining lands as it is illegal and they cannot afford costly modem inputs and agricultural machinery. Therefore, we have to find a solution for increasing the size of the farm so as to make it economically viable

for the producer and financially remunerative for the investor. Overall, while the strides made during the 1970s with the introduction of improved varieties and hybrids with moderate infrastructure support has resulted in sharp increases in productivity of cereal crops, it is noticed that the peak has already reached in the evolution of new technology in high yielding varieties.

Another adverse impact of land reforms in Karnataka is the declining productivity of agriculture. While there is no conclusive evidence to prove absence of inverse relation between farm size and per hectare productivity, there is circumstantial evidence to show that increasing number of small and marginal holdings has had adverse impact on productivity in Karnataka's agriculture. Thus, the main objective of the proposed changes in the existing land ceiling law is to create economically viable land holdings in Karnataka. It is possible to make assets of the farmers economically viable if we allow leasing of land. Such leasing in and leasing out of small pieces of land will increase the economic viability of the operational farms. It will encourage private investment in irrigation and enable the farmers to raise institutional credit. This proposal requires appropriate amendments to section 4,5, 10,15 and 19 of the existing Karnataka Land Reforms Act 1974. Sections 21,24,25 and 27 will have to be deleted.

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