# AGRICULTURAL GROWTH IN INDIA AND SOUTH-EAST ASIA : COMPARATIVE PERFORMANCE*

BY

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1. It is indeed an honour to be invited by the Indian Society of Agricultural Statistics to deliver Dr. V. G. Panse Memorial Lecture for this year. I regard this invitation as much more than an honour done to me. It has provided me an opportunity to pay a tribute to one who was a distinguished colleague of mine in the Union Ministry of Food and Agriculture. I have had numerous opportunities of working closely with Dr. Panse and I could state unhesitatingly that as a purist in statistics, he had very few peers. His design of sample surveys and the rigour of his statistical analysis have left a deep imprint on statistical development in the country. I may mention in particular one of the surveys with which I was associated namely the farm management surveys of the fifties (the precursor of the presents cost of production surveys), initiated by the Directorate of Economics and Statistics, Ministry of Food and Agriculture, to the design of which Dr. Panse made a notable contribution.

2. The esteem with which Dr. Panse is held is also evident by the presence in our midst of such an eminent agricultural scientist and administrator as Dr. M.S. Swaminathan, Member (Agriculture), Planning Commission, who graciously agreed to preside over the function.

3. I have chosen as the subject of the Lecture a Comparative Analysis of Agricultural Growth in India and in South East Asia. It is necessary to indicate at the outset the coverage of South East Asia that I have in mind. I have excluded the centrally planned economies and the developed economies of South East Asia. For

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purposes of my exposition, South East Asia therefore, comprises of Indonesia, Malaysia, Philippines, South Korea and Thailand. All these countries and India have been pursuing economic growth within the framework of a mixed economy though their growth strategies and achievements have differed.

4. Most of these South East Asian countries have been classified as Middle Income countries having percapita income exceeding US $300. One of them, South Korea, is included among 'the newly industrialising countries' (NICS), those with a growing industrial base geared to exports, whose economies, the other less developed countries, are often urged to follow and which several, notably India, Malaysia, the Philippines and Thailand are already trying to copy.

5. The share of agriculture in GDP has fallen to 27-31 per cent in the economy of South East Asian countries (between 1960 and 1977). Nevertheless, agriculture is still dominant in their economies. Although between 1965 and 1975 there has been a perceptible fall in the agriculture share of the labour force in these countries, unlike in India, where there has practically been no reduction, (*vide* Appendix Table I), half or more of the labour force is still engaged in agriculture; opportunities for productive employment and for higher income have therefore to be sought within the agricultural sector.

6. The dominance of agriculture is also visible in the contribution of agricultural exports to total foreign exchange earnings in South East Asian countries barring South Korea. In India and South Korea, agricultural exports constitute less than 10 per cent of gross agricultural output (1970-1974). In Malaysia, the Philippines and Thailand, on the other hand, the proportion exceeds 30 per cent. In India and South Korea, the export sub-sector of agriculture is too small to play a major role in agricultural growth, this being determined largely by the food sub-sector.

7. Except in South Korea, the problem of population relative to available land is not particularly acute in South East Asia. Population growth which is higher in South Eastern countries (excluding Indonesia and South Korea) than in India, is no doubt pressing on the development process but the pressure is eased by land settlement schemes in Malaysia and by transmigration to the outer islands in Indonesia.

8. In spite of these somewhat divergent characteristics of the structure of the agricultural economy of India and of the South East

Asian countries, the strategy of agricultural growth of latter is of some relevance to the former.

*Agricultural Growth*

9. In the sixties as well as in the seventies, both the growth rate of agricultural production and of food production in South East Asian countries barring Indonesia, exceeded that of India, as will be seen from the following table :

TABLE I

**Growth rate of gross agricultural production and food production (percentage per annum) [1]**

| | *Agricultural Production* | | *Food Production* | |
|---|---|---|---|---|
| | *1961/65–1970* | *1971–80* | *1961/65–1970* | *1971–80* |
| India | 2.9 | 2.5 | 3.1 | 2.6 |
| Indonesia | 3.7 | 2.4 | 3.8 | 2.4 |
| Malaysia | 5.9 | 3.7 | 5.7 | 4.3 |
| Philippines | 3.0 | 5.3 | 3.1 | 5.2 |
| South Korea | 4.3 | 7.0 | 4.2 | 7.3 |
| Thailand | 4.0 | 5.6 | 3.9 | 5.9 |

[1] Growth rates calculated from FAO Index numbers of production.

Except Indonesia, the other South East Asian countries have in the seventies either achieved or exceeded the second United Nations Development Decade target of 4 per cent per annum in agricultural production, whereas in India the growth rate has been only 2.5 per cent per annum. In respect of food production, while in India it just kept ahead of population growth, it outstripped population growth by a wide margin in South East Asian countries (*vide* Appendix Table II).

10. Rice dominates the economy of South East Asia. In India, two tendencies have been visible in the rice economy. In the first place, the proportion of wheat in total food grain output has been increasing, from 14 per cent in 1964, it has increased to about 25 per cent in 1977-78. As a proportion of rice production, wheat

output which constituted about 32 per cent in 1960-61 has increased to 66 per cent by 1978-79. A much larger proportion of wheat area (71 per cent) has been under HYV whereas that of rice has been only about 41 per cent. In fact, rice production has responded less dramatically than wheat to technological change. This is so, also in all South East Asian countries. The other tendency visible in India has been that the growth in productivity has been taking place in a few non-traditional rice growing areas with assured irrigation such as Punjab, Haryana and Western Uttar Pradesh. Although the contribution of Punjab and Haryana to total rice production is only about 6 per cent (1975-76 to 1977-78), it is substantial in respect of marketed surplus, since rice is grown as a cash crop in these states and almost the entire production is marketed. One of the important factors for the lack of spread of new rice technology to traditional areas has been that rice is largely grown in the kharif season when water management becomes difficult because of the monsoon season.

11. The Asian Agricultural Survey (1976)[1], has estimated the proportion of rice area under four major environmental categories, irrigated, rainfed, upland and deep water.

TABLE II

**Estimates of the proportion of rice area under four major environmental categories. (Proportion of area in per cent)**

| *Country* | *Irrigated* | *Rainfed* | *Upland* | *Deep-water* |
|---|---|---|---|---|
| India | 40 | 50 | 5 | 5 |
| Indonesia | 47 | 31 | 17 | 5 |
| Malaysia (West) | 77 | 20 | 3 | 0 |
| Philippines | 41 | 48 | 11 | 0 |
| Thailand | 11 | 80 | 2 | 7 |

(*Source :* Asian Agricultural Survey 1966, Page 76—Data refer to 1970-74)

It will be seen that except in Malaysia, non-irrigated rice area constitues more than 50 percent. A major detriment to adoption of HYV is inadequate water control ; the risk associated with application of fertilisers and other inputs is greater under uncontrolled

[1] Asian Agricultural Survey 1976; Rural Asia Challenge and opportunity by Asian Development Bank.

water conditions. It is not surprising, therefore, that the HYV's have hardly made any headway in Thailand where limited irrigation facilities and ineffective water control in the wet season make HYVs' ill-suited environmentally.

12. Rice yields in South East Asian countries except in South Korea are still below 3 tons per hectare. In South Korea, a number of factors have contributed to the remarkable improvement in productivity which has attained a level of 5 to 6 tons per hactare, one of the highest in the world. The rise in productivity which started since the 1920's owed in the first place to the Japanese policy of expanding irrigation and drainage, dissemination of improved seeds and spreading of the use of fertilisers to supplement the Japanese deficit in domestic supply of food grains. The improvement in expansion of irrigation facilities continued till the 1930's and South Korea has now attained an irrigation ratio of 75 per cent. Since the thirties, the input items which have shown a remarkable rise are fertilisers and high yielding varieties of seeds. The South Korean experience indicates that the fundamental requirement for increase in rice productivity are (*a*) control of water and (*b*) technological innovation centering around the introduction of higher yielding varieties with high fertiliser response[1]. Under the constraint of land resources, a land saving technology was resorted to.

13. That basic investments in land in the form of flood control and irrigation are a crucial condition for substantially increasing production is also illustrated by Malaysia where 78 per cent of the total paddy lands have been served by irrigation facilities. Of the irrigated areas, 61 per cent have facilities for double cropping, a main and a second crop.

14. The principal effect of the greatly expanded use of power driven pumps in India referred to as 'pumpset revolution' has been an enormous increase in the use of ground water. Irrigation made possible by this process has been highly complementary to the new varieties and increased fertiliser use. It has also been complementary to public investment in infra-structure such as rural electrification.

15. Despite the emphasis on irrigation, higher overall productivity hinges on a break through in technology for rainfed rice. Hitherto rainfed areas have not received the same attention in research and development programme as irrigated areas. Varietal

[1] *Economic Development in Asian Perspective* by Shigeru Ishikava.

research on evolving high yielding varieties for rainfed rice is far behind than that for irrigated rice. In fact, it is only recently that international and national institutions have initiated serious efforts on varietal research for rainfed and deep water rice. Normally, it takes 8-10 years for varietal research to make any significant impact on output. Considering that nearly one half of the rice area is non-irrigated and the potential for increasing production on such vast area is substantial, very high priority needs to be given to varietal research for these areas. The FAO Study: Agriculture: Toward 2,000 sets as the production objective for the the developing countries of Asia, the raising of the growth rate in rice production to 3.3 per cent per annum for the decade 1980 to 1990 from the trend (1961/65 to 1974/76) growth rate of 2.3 percent per annum. Much higher targets have been set in some of the development plans of the countries, such as India[1]; however, the achievement of the targets depends mainly on raising the productivity of rainfed rice.

16. Among other food grains, maize has been important for Indonesia, the Philippines and Thailand. Whereas in Thailand, maize is largely an export crop, In Indonesia and the Philippins, the bulk of crop is consumed domestically as food. The most spectacular growth in maize products has been in Thailand where the development of an export market and opening up of new areas to maize production stimulated by construction of new and improved high way gave a big spurt to maize production. Between 1966-1976 production more than doubled from slightly over 1.0 million tons in 1966 to 2.7 million tons in 1976.

17. In India, Sorghum (Jowar), Millet and pulses have been far more important than maize production. The shift to more productive and remunerative foodgrain crops have resulted in a decline in area planted to Sorghum and to a decline in production in respect of pulses, Sorghum has been grown mostly in areas of uncertain rainfall. The area under HYV constitutes only 19 per cent of the total area under Sorghum. Pulses have lost ground to the more remunerative grains. Owing to the increase in profitability of wheat, rabi pulses have given way to wheat. Similary, Kharif pulses have lost ground to irrigated crops where the new technology have proved more profitable. Both Sorghum and pulses are predominently grown by low income farmers and these crops are also particularly risk prone. Improved technology would relate to crop, variety, fertility, management, land development and water conservation.

[1] The target laid down in the Sixth Five Year Plan of India 1980-85 is 4.2% per annum.

But technology alone is not the answer; the socio-economic conditions of the farmer would have to be improved by diversified farming taking a total view of the entire farming system.

18. Where South East Asian countries have made a breakthrough and where India has fallen behind is in respect of the expansion of production of oil seed crops. While Malaysia and Indonesia have a substantial share in world trade in palm oil and Philippines in coconut oil, India has become a substantial importer of vegetable oils. Estates predominate in oil palm because of the technical problem of extracting the oil from the fruits ; the ripe fruit bunches must be processed within twenty four hours of harvesting and therefore a processing factory must be close by. Moreover, palm oil processing factories are costly ; processing units for small scale cultivation have not been introduced ; small holders have been organised in estate—like schemes to plant the crop. As in respect of Sorghum and pulses, the area under oil seeds particularly groundnut has shown a tendency to decline in India with the competition of high yielding grains particularly millets such as Bajra. Two factors have helped the rapid increase in export earnings from oil seed crops in South East Asian countries. In the first place, they benefitted greatly from the sharp price rise due to the steep increase in oil prices since 1973. Secondly, much greater research efforts have gone into increasing productivity so as to improve the competitive position of export crops, this is particularly true of Malaysia.

19. The high overall agricultural growth rates of South East Asian countries such as Malaysia, Philippines, and Thailand can be ascribed to three factors ;

(*a*) the prominent role of the estate sector (in Malaysia, the estate sector still accounts for one-third of the value added in agriculture);

(*b*) accelerated growth of small holder agriculture through diffusion of existing technology for raising yields and

(*c*) the export-oriented nature of their agricultural economies which has necessitiated raising the productivity of export crops to improve the competitive position in world markets. However, productivity gains could be wiped out by adverse movements of international agricultural prices. In South Korea, besides the dominent role played by technology such as wide spread and high level of fertiliser use, responsive crop varieties and irrigation, the improvement of the farmer's terms of trade followed as a deliberate public policy has been a major determining factor in the highgrowth rate attained in the seventies.

*Growth and Equity :*

20. Has growth of agricultural output been accompanied by improvements in the distribution of the benefits of growth ? The answer varies greatly from country to country depending on structural changes and government policies pursued. While South Korea has been successful in combining rapid growth with advance in equity, in the other countries, the distribution of benefits has not been satisfactory.

21. We may view the problem of equity from two stand points

(*a*) reduction of regional inequalities and

(*b*) reduction of the magnitude of hunger and poverty.

22. As regards the first, in India average incomes have been rising much more rapidly in the wheat growing than in the rice growing regions. Between 1973-74 and 1979-80, food grains production grew by about 4.7 per cent p.a. in Haryana and 7.4 per cent p.a. in Punjab, whereas in the predominently rice growing state, Tamil Nadu, it grew by 2.3 per cent and in Andhra Pradesh even less so. In the South East Asian countries, regional disparities arise not from cropping patterns but from differences in technology and agro-ecological conditions. In general, the irrigated areas have witnessed faster rates of growth of incomes than unirrigated and dry farming regions.

23. The extent of prevalence of hunger is represented by percaput dietary energy supplies in relation to requirements. While South Korea, Malaysia and Thailand (1869-71 and 1972-74) have percaput dietary energy supplies exceeding requirements, India, Indonesia and Philippines have below requirements as the following table indicates.

In Indonesia, although percaput dietary energy supplies are below requirements, there has been a progressive improvement over the years ; in India, on the other hand, there has been a deterioration in percaput energy supplies as a percentage of requirements, since they have declined from 94 in 1969-71 to 93 in 1975-77. The improvement in Indonesia may be ascribed to the slower growth rate of population in relation to the rate of growth of food output.

TABLE III

**Percaput dietary energy supplies in relation to nutritional requirements-[1]**

| | *Average % of Req.* | | | *Requirements Kilo calories percaput per day* |
|---|---|---|---|---|
| | *1969-71* | *1972-74* | *1975-77* | |
| India | 92 | 90 | 88 | 2,210 |
| Indonesia | 91 | 95 | 98 | 2,160 |
| South Korea | 112 | 113 | 114 | 2,350 |
| Malaysia | 112 | 113 | 110 | 2,240 |
| Philippines | 93 | 94 | 95 | 2,260 |
| Thailand | 103 | 102 | 99 | 2,220 |

[1] *Source* : FAO Food Balance Sheets.

24. There can only be a rough estimate of the incidence of rural poverty as it is difficult to define poverty in different countries on a uniform basis. Using national household expenditure surveys, the World Bank has estimated the percapita poverty line which varies from a low of US $ 95 for rural areas in Indonesia in 1975 to US $ 215 in Malaysia depending on the different consumption baskets and the price levels of their components. The estimates indicate that the bulk of the poor are in the rural sector and that while in Malaysia and in the Philippines, the population below the poverty line is 40 per cent, in Indonesia it is 55 per cent, while it is only 10 percent in South Korea.

**Poverty Estimates, 1975***

| | *Poverty line (Rural) (in Percapita income in US dollars).* | *Per cent of population below poverty line.* | *Per cent of the poor in rural areas.* |
|---|---|---|---|
| Indonesia | 95 | 55 | 83 |
| South Korea | 140 | 10 | 50 |
| Malaysia | 215 | 40 | 88 |
| Philippines | 155 | 40 | 79 |

**Source* : Finance and Development : June 1978 Vol. 15, Nov. 2, Page 31.

25. In India, the poverty line has been defined "as the mid-point of the monthly percapita expenditure class having a daliy calorie intake of 2,400 per person in rural areas"[1]. In 1979-80 prices, this mid point corresponds to Rs. 76.00 per month in rural areas. According to the several assessments of the National Sample Survey of household consumer expenditure, it has been estimated that while the percentage of population below poverty line has been 54 in rural areas in 1972-73, it had declined to 50.8 in 1978-79[2].

26. The rural poor in Malaysia have been identified to be the single crop paddy farmers, small holder rubber and oil palm producers, small coconut growers and the small fishermen. There has been a notable improvement in poverty in recent years among rubber and oil palm small holders due to favourable prices in the world markets. The term of trade of the rural sector are therefore a major factor in the determination of rural poverty in Malaysia. The other important factor is the pace of land development.

27. The problem of poverty in Indonesia is aggravated by the small size of holdings. Eighty per cent of the farmers have less than 1.0 ha. and the number of the landless and near landless have been estimated to be about onethird of the labour force. The main plank of the programme for reduction of poverty, therefore, is accelerated land settlement by migration to outer islands to bring unutilised land into small holder food and tree crops.

28. The manland ratio has deteriorated in the Philippines with population growing at about 3 per cent p.a. Percaput land harvested has decreased from 0.29 ha. in 1960 to 0.25 in 1970 and is expected to decline further to 0.20 ha. by 1985. Since uneven income distribution in the Philippines has been historically due to unequal land holdings, the land reform of 1972 aimed at the amelioration of the lot of the tenant farmers in rice and corn land. The reforms consisted of the transfer to the tenants of land holdings in excess of 7 ha. and the enforcement of leasehold for holdings less than 7 ha. To prevent any adverse effect on total output, an agricultural credit programme for providing seasonal production inputs to small farmers without collateral was also implemented which had a significant impact on food production. It may be noticed that the land reform did not apply to the area under export crops notably sugarcane and coconut.

29. The relatively better performance of South Korea in the distribution of the benefits of growth has been the outcome of the pattern of growth which it promoted. In the first place, a more

[1] Sixth Five Year Plan 1980-85 : A Summary Page 24.
[2] *Ibid.*

egalitarian distribution of income than in the other countries was brought by the adoption of labour intensive techniques of production. Secondly, land reform by putting a ceiling of 3 ha on paddy holding and eliminating tenancy, established a structure of very small owner operated farms. Eightyeight percent of the holdings are now below 2 ha. The result has been that farmers gained more or less equitably from the growth in farm incomes. Thirdly, improvement of the farmer's terms of trade by high support prices which the economy could afford due to the faster rate of growth of the non-agricultural sector, has provided for higher rural incomes. The wide spread of literacy (adult literacy rate being 91 %) has made the farmers receptive to new techniques and this contributed to the extensive modernisation of agriculture. Another factor has been the New Community Movement or the Saemaul Movement initiated in 1970 which through promotion of self-help and sense of community, has created an impressive physical infra-structure in the rural areas and improved the living environment of rural villages. These relative improvements have helped to narrow the disparity between urban and rural incomes; percapita rural income is now about 90 per cent of urban income.

30. Thus with the exception of South Korea, the relatively high growth rate both overall and sectoral in the South East Asian countries has not resulted in a satisfactory distribution of the benefits of growth. Malaysia and Indonesia are favourably placed with regard to the allocation of land for the landless and small farmers which is a powerful tool for redressing poverty and improving income distribution. However, ensuring a growth rate of small holder agriculture of 4-5 per cent p.a. to improve rural incomes has by no means been easy. This calls for improve access for small farmers to irrigation; inputs and extension services. The problem of small farmers in rainfed agriculture has been difficult to takle because a breakthrough in technology has yet to take place. Land redistribution measures though necessary and important are not sufficient by themselves. The South Korean experience has indicated that it has to be reinforced by measure for increasing land productivity through technological factors particularly irrigation and fertilisers. Further, it has come to be recognised that the solution to the problem of rural poverty does not lie in the agricultural sector alone. Even with relatively high agricultural growth, agriculture can be expected to absorb only a small part of the prospective growth in labour force. Thus substantial expansion of the non-agricultural sector based on a labour intensive strategy would form a key element in the alleviation of rural poverty.

## *APPENDIX*

### TABLE I

**Agricultural Share in Labour Force (In per cent)**

| | *1965* | *1975* |
|---|---|---|
| India | 73 | 72 |
| Indonesia | 72 | 67 |
| Malaysia | 60 | 52 |
| Philippines | 59 | 54 |
| South Korea | 62 | 54 |
| Thailand | 81 | 72 |

(*Source* : Asian Agricultural Survey 1976)

### TABLE II

**Growth rate of population and food production (per cent per annum)**

| | *Growth rate of population 1970-77* | *Growth rate of food production 1971-80* |
|---|---|---|
| India | 2.5[1] | 2.6 |
| Indonesia | 1.8 | 2.4 |
| Malaysia | 2.7 | 4.3 |
| Philippines | 2.7 | 5.2 |
| South Korea | 2.0 | 7.3 |
| Thailand | 2.9 | 5.9 |

[1] Refers to growth rate between 1971 and 1981.