CHAPTER V

FOODGRAINS PRODUCTION & FOOD SUPPLY

Self-sufficiency in food implies meeting the food demand from domestic production. In a country like India dependent heavily on foodgrains, the objective being of optimum food supply will mean the production of foodgrains through increasing the efficiency of agriculture. With the limitations of cultivable land, the major stress for increasing production will most likely fall on the three inputs of water, fertilizer and seed. Before, however, we proceed to look into the efforts towards intensive cultivation let us first seed at the situation and the production policy.

Constitutionally, food and agriculture are purely State subjects, being specifically described in the State List II of the Seventh Schedule of the Indian Constitution. Some matters related to them, however, figure in the Concurrent List III and at some other places. The relevant Sections in List II are:

14- "Agriculture, including agricultural education and research, protection against pests and prevention of plant diseases,"

17- "Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provision of entry 56 of List I,"

18- "Land, that is to say, rights in or over land, land tenures including the relation of landlord and tenant, and the collection of rents; transfer and alienation of agricultural land, land improvement and
agricultural loans; colonization,

19- Forests,

30- "Money-lending and money-lenders; relief of agricultural indebtedness,"

45- "Land revenue, including the assessment and collection of revenue, the maintenance of land records, survey for revenue purposes and records of rights and alienation of revenues,"

46- Taxes on Agricultural income,

47- Duties in respect of succession to agricultural land,

48- Estate duty in respect of agricultural land.

Sections 18, 20, 30, 33, 34, and 38 of the Concurrent List III respectively provide states' jurisdiction over matters connected with adulteration of food-stuffs, economic and social planning, vital statistics including registration of births and deaths, trade and commerce in, and the production, supply and distribution of, food-stuffs, including edible oil-seeds and oils, price control and electricity. These sections leave no ambiguity and the role of the States in the policy formulation in the field of agricultural production, and consequently of food-grains production, is thus primary and well-defined. They have not only control over agricultural operations, but also are responsible for land management, land tenure system and land taxation. The control of State governments on agricultural sector in their respective States extends to operations concerned with tillage and watering to the creation of conditions that are conducive to farm development, including land reforms, credit controls and research and extension.
The Framework

These provisions, however, operate within a particular constitutional framework and an equally well-defined political system. The Preamble to the Constitution outlines the basic national objective of "Justice— social, economic and political"; the Constitution also provides for certain Directive Principles of State Policy as guidelines for future behaviour, conferring on state policy as guidelines for future behaviour, conferring on State— both Central and State Governments— the responsibility of securing a social order for the promotion of welfare of the people (Article 39), of raising the level of nutrition and the standard of living (Article 47), and of organizing Agriculture in general (Article 48). The imposition of these responsibilities as also the restrictions posed by fundamental rights of a citizen, namely the right to equality before law in taking up any profession including agriculture (Article 14), the right to property, including agricultural anywhere in India (Articles 19 and 31) and the right to enforce these rights through the Constitutional Remedy (Article 32), to a certain extent restrict the operational sphere of the State Governments in the field of agriculture, for example land and tenurial reforms can only be carried out subject to Constitutional provisions.

A very effective change in the powers, seemingly unlimited, of the State Governments in Agricultural sphere, is made by Constitutional provisions regarding relations between Union and States, sharing of finances and taxes, Central control over trade, commerce and services and certain provisions of the Union List I of the Seventh Schedule. Article 245 extends the opera-
tion of Parliament's laws in the whole country and Articles 251 and 254 provide that they have overriding effect in case of conflict with State laws. Article 257 further provides for control by the Union or States in certain cases. In the sphere of finances and taxes while Articles 268 to 270 and 272 provide for separation of levying of taxes and their collection as also the mode of their sharing, Articles 273 and 275 provide for sanction and release of Grants by the Union to State Governments, and Articles 280 and 281 for the creation and role of Finance Commissions for allocation of revenues and resources between Union and the States. Subject to the individual's freedom of trade and commerce (Article 301), Article 302 provides for the Parliament's authority to impose restrictions on inter-State trade and commerce and section 42 of the List I of Seventh Schedule puts in the Union List. The Centre further has the overriding power to create and maintain All India Services (Article 312) and under the Seventh Schedule, to central and regulate maritime shipping (Section 25), Banking (S.45), inter-state riverine matters(S.56) and Census operations (Section 69). All these powers of the Central Government are backed by Article 365 which provides for measures to be taken in case of failure to comply with, or to give effect to directions given by the Union. The most important of all the powers of the Centre that controls the States' powers in making of food and agriculture's policies is the Emergency Provisions under Articles 352 to 360 which when in operation can wipe out virtually all the powers of the States as separate independent entities.
The Planning Commission

These are also buttressed by the controls exercised through the Planning Commission in the approval of State Plan schemes from time to time and in making resources available for the purpose. "In Plan formulation the Centre's role today is predominant. . . . . This is so for several reasons. Centralized decision-making is a necessary con-
comitant of national planning. The best use has to be made of the limited resources of the country by their proper allocation among schemes of development and right priorities for the optimum and balanced development of the country as a whole." 1

In effect, therefore, the Centre's powers in the field of food and agricultural planning and policy making are enormous, by virtue of other inter-connection powers and financial and administra-
tive controls, and thus a great deal of responsibility, backed with considerable influence and autho-
rity, devolves on the Central Government. Since, however, not much direct powers are provided by the Constitution under the scheme of Seventh Schedule, the role of the Central Government can broadly be stated to be that of a friend and adviser, as also a coordinators and evaluator of policies of State governments.

The Role of the Union Govt.

The food and agricultural policy-making at the Centre is thus a result of the interplay of actions and ideas of Central and State Governments and the consequence of the forces operating at national and state levels; the attitudes and approaches at the Centre, to a great extent, are affected by those of the states and the views and
Programmes of States are conditioned by the Centre's decisions and priorities. In more concrete terms, the Centre has necessarily to play the role of a planner, a financier and a coordinator, superior technical adviser, supplier of scarce inputs vital for increased production, evaluator of programmes, organiser of coordinated and higher research, higher technical education and countrywide programmes of training of key personnel and millions of farmers.

In the sphere of implementation of policies it is the States that play the major part. Although plan formulation and evaluation remain with the Centre, the actual efforts in agricultural and food matters are to be, and are, made by the States. The allocation of finances, the provision of research and extension facilities, the coordination of administrative actions of States and the arrangements for inputs supplies and services—administrative implications in all these matters, on the national level are with the Centre but the day-to-day activities and situations are the responsibility of the States. Administration of food policies is thus predominant and almost unfettered. In short, as N. Sringivasan points out, "the Union's powers are essentially powers of coordination rather than administration, laying down of standards, policy formulation, and of advice and encouragement. The division of responsibility between the Union and the States makes the coöperation between them essential for the solution of all major problems in agriculture, and food."
The Royal Commission 1928

2. Production During the Plans

The Government of India's policy towards foodgrains production took a positive form after the Royal Commission of Agriculture in 1928 declared development of agriculture a necessity for economic development. The Commission emphasized the role of the Government in encouraging agricultural research and extension, growth of the seed industry and provision of chemical fertilizers and in taking up irrigation works to feed the water requirements of the crops. The acute food shortages of the late thirties culminated in the declaration of the national objective of self-sufficiency and the launching of a Grow More Food Campaign. The G.M.F. Campaign aimed at increasing the production of foodgrains within the shortest possible time to meet the needs of the target of self-sufficiency. The independent India finding that "while the Indian Union received 82 percent of the total population of the undivided India, it got 75 per cent of the total cereal production, 65 per cent of the total wheat production and 68 per cent of the total rice production" reiterated the objective of self-sufficiency, this time by a firm year of 1952. The I Five Year Plan stated that "for the immediate five-year period, agriculture, including irrigation and power, must in our view have a top-most priority", and provided 10% of the total financial outlay in public sector for agriculture, CD & Irrigation. The foodgrains production target for the Plan period was exceeded by 14% over 1949-50 base level. Nothing, however, that the I Plan had already initiated the process of increasing produc-
tion in agriculture, and finding the performance of the sector very satisfactory (although the goal of self-sufficiency had not been attained) the II Plan laid greater emphasis on the industrial sector. It provided for a reduced outlay of 6% for agricultural production increasing, however the target of food production by 10.2 million tons, which was subsequently revised to 15.75 million tons. The adversity of the monsoons and the consequent failure of food crops, resulted in acute food shortage during the Plan period. The Foundation's Team of Agricultural Experts, after carrying out a study of the Indian situation in 1959, recommended that an immediate and drastic increase in food production is India's primary problem of the next seven years.

There was, however, lack of a correct appreciation in the Government's mind about the state of agriculture and the III Five Year Plan continued to consider agriculture as of secondary importance and followed the policy emphasis of the II Plan period. It, however, increased the outlay on agriculture to 9% of the total outlay. The III Plan period, but for 1965-66, was characterized by a virtual stagnation in food production. A mid-term appraisal of the agricultural situation resulted in the formulation of the policy of integrated development of agriculture and intensive area development programmes. The IV Five-Year Plan adopted the policy of providing to the farmer a package of practices and incentives in the shape of remunerative price of produce, research and extension services, better and timely input supplies and adequate and cheap credit. It increased the emphasis on agricultural production and aimed at
a foodgrains level of production of 129 million tons, subsequently revised to 115, in the last year of the Plan period. The actual production level remained much below even the revised target.

The performance of foodgrains production, area and yield since 1950 (Table VI-1) and the trend (Table VI-2) reveal that:

While there was a net increase in production between 1950-51/1973-74 by 52.8 million tonnes over the base production of 50.8 million tonnes (by no means a mean achievement), it declined during the latter part of the sixties and slumped to virtual stagnation in 1970-71/1973-74 to 4.1 million tonnes. Further, the increase reached between 1960-61/1969-70 was lower than the succeeding four years. The average annual growth in production during the entire period was only 2% million tonnes, although during the sixties it was 2.25 million tonnes, and during 1960-61/1964-65 only 2.48. This was again largely because of the slump to 1.02 in 1970-71/1973-74. The average annual percentage rate of increase was as high as 6.83 in 1950-51/1954-55 which came down to 3.22 in 1960-61/1964-65 and the same trend was visible in the decennials where there was a decline from 5.16 to 2.92 between the decennials ending 1959-60 and 1969-70. The average for the whole period however was as high as 3.55, despite of a further decline to 1.02 during
1970-71/1973-74, showing that notwithstanding the sharp decline in the last few years, food production average for future calculations could be safely kept somewhere between the general average and the average of the last year.

The area increased drastically by 46.2 million acres during 1950-51/1959-60, and especially during 1955-56/1959-60, and it went down as drastically in 1960-61/1964-65 to 5.8 and in 1960-61/1969-70 to 19.5 million acres. The trend in lesser utilization of more area for foodgrains continued during 1970-71/1973-74. The average annual increase in the area came down from 4.62 to 1.95 million acres if decennial averages are taken for fifties and sixties, with the overall average being 3.0 for the whole period. And the average annual percentage increase in area came down from 1.34 in 1950-51/1954-55 to 0.6 in 1960-61/1964-65 and to 0.5 in 1970-71/1973-74, although the average for the whole period was as high as 1.23 due to high increase in the fifties, indicating decreasing use of extensive method of land use for greater production.

The yield showed an overall increase from 2.1 to 3.2 quintals per acre, i.e. 1.1 which is about 50% increase, but the increase in yield was nil during 1970-71/1973-74. The bulk of increase took place during 1950-51/54-55 and 1960-61/1964-65, the decennial rate of increase being, however, almost the
### Table 3

<table>
<thead>
<tr>
<th>Period (FY)</th>
<th>V.Plan Target</th>
<th>Average</th>
<th>Calculation 1</th>
<th>Calculation 2</th>
</tr>
</thead>
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<tr>
<td>1950-51/59-60</td>
<td>-</td>
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<td>1960-61/66-65</td>
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<tr>
<td>1965-66/70-71</td>
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<td>1.6</td>
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<tr>
<td>1970-71/77-72</td>
<td>-</td>
<td>1.7</td>
<td>1.7</td>
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</tbody>
</table>

**Notes:**
1. Increase as on the basis of figures in the last year of the period of plan
2. Single average has been calculated for the base years for calculations have changed year over year.

### Table 4

<table>
<thead>
<tr>
<th>Period (FY)</th>
<th>V.Plan Target</th>
<th>Average</th>
<th>Calculation 1</th>
<th>Calculation 2</th>
</tr>
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<td>1950-50/59-60</td>
<td>3.1</td>
<td>1.9</td>
<td>1.9</td>
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<tr>
<td>1960-61/66-65</td>
<td>7.2</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>1970-71/77-78</td>
<td>7.8</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

**Notes:**
The draft VTH five year plan has calculated the compound rates of growth as:

\[
\frac{P}{A} = V.Plan\ Target \times \left(1 + \frac{R}{100}\right)^{n}
\]
same and around the overall rate of increase for the period. The increase in production during the fifties was associated with the increase in area while during the sixties it was inspite of the decline in the increase rates in area as well as yield. And the increase in production during 1970-71/1973-74 was inspite of nil increase in yield and further decline in increase rate of area, both indicating strongly the use of intensive methods of cultivation on larger areas.

The bulk of the increase in production was due to the increases in wheat and rice, their contribution being 19 million tonnes out of the total increase of 52.8. This was because of the increase in production of wheat was by over 300% from 6.5 in 1950-51 to 20.2 million tonnes in 1973-74 and the rice was by about 100% from 22.6 to 43.7 million tonnes. This increased production in wheat and rice was the result of sizeable increases in both area and yield—the area under wheat showing an increase of 96% from 24.4 million acres in 1950-51 (a little less than 25.0 million acres were under wheat in 1911-1912) to 47.7 million acres in 1973-74 and that under rice an increase of 23% from 77.0 to 95.0 million acres and the yield under both showing an increase of 65% from 2.7 quintals per acre to 4.6. Interestingly, the area under gram and barley went down, whereas the area under jowar and others showed marginal increases due to which, in spite of there being
PRODUCTION, AREA & YIELD OF FOODGRAINS
(ANNUAL AVERAGE)

PERCENTAGE, RATE OF INCREASE
(ANNUAL AVERAGE)

PRODUCTION: MILLION TONNES
AREA: MILLION ACRES
YIELD: QUINTALS PER ACRE

1950-51 55-56 60-61 65-66 70-71 73-74

1950-51 54-55 55-60 64-65 69-70 73-74

0 40 80 120 160 200 240 280 320

0 1 2 3 4 5 6 7

0 50-51 55-56 60-61 65-66 70-71 73-74

50-51 54-55 55-60 64-65 69-70 73-74
increase in the yield of maize and bajra, the contribution of coarse grains to total foodgrains production remained moderate. The net result was that the increases on account of wheat and rice were nullified by the decreases in the production rate of all foodgrains, pulling down the average foodgrain growth rate of production from 3.3% to 2.7%.

During the score of years after the advent of planning, thus, in terms of the total foodgrains production there has been a declining trend in the extensive use of area, a movement towards stagnation in yield, and a striking fall in the rate of growth of production.

The efforts of the Government in increasing production are indicated by the distribution of Plan outlays, and actual expenditures as also its anxiety to fix targets of production (Table VI-3). It shows that while the total outlay during the III Plan trebled over that of the I Plan, which was further doubled during IV Plan, the outlay on agricultural production increased by only a little above half in III Plan over I Plan though it almost trebled in IV Plan over III Plan, indicating thus the comparative neglect of agriculture during the II and III Plan periods and the realisation of the extreme urgency of its growth in the IV Plan period. The percentage allocation of total Plan outlay for agriculture, which came down from 31% in I Plan to around 20% to 23% during the rest of the Plans, also confirms the decline of the importance of this sector in the Government's thinking. Conversely, the target of production of foodgrains was doubled in IV Plan over the I Plan.
| Table 1 | M | Q | | | |
|---|---|---|---|---|
| 1. Output for Agriculture | 746 | 1860 | | 23 |
| 2. Output for Agriculture | 746 | 1860 | | 23 |
| 3. Output for Agriculture | 746 | 1860 | | 23 |
| 4. (2) as % of total real output | 746 | 1860 | | 23 |
| 5. Output for Agriculture | 746 | 1860 | | 23 |
| 6. Actual expenditure on (2) | 746 | 1860 | | 23 |
| 7. Actual expenditure on (2) | 746 | 1860 | | 23 |
| 8. Actual expenditure on (3) | 746 | 1860 | | 23 |
| 9. Anticipated foodgrain demand | 746 | 1860 | | 23 |
| 10. Assumed base level for Prod. | 746 | 1860 | | 23 |
| 11. Target of production (a) | 746 | 1860 | | 23 |
| 12. % Increase over | 746 | 1860 | | 23 |
| 13. Actual production | 746 | 1860 | | 23 |
| 14. % Increase of 13 over base level | 746 | 1860 | | 23 |
| 15. Imports to meet short fall | 746 | 1860 | | 23 |

1. Food agriculture is given in current terms. 2. Figures are those planned for 1964-65. 3. Figures are those planned for 1965-66. 4. Figures are those planned for 1966-67.

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target, exhibiting an anxiety on the food front and an intention to be self-sufficient in foodgrains. The shortfalls in actuals, inspite of the targets being exceeded by around 20% during I & II Plan period, indicated a lack of will and drive later on in the government's efforts. In fact there was regression in foodgrains production during the III and IV Plan periods as evidenced by the shortfall in production even on their assumed base levels.

Intensive Cultivation

The actual Plan expenditure and the actual foodgrains production indicate strongly that although production has increased substantially, it has been much below the mark and on account of limited land resources, intensive cultivation is the only answer to break the recently developed near-stagnation in the field of agriculture. The necessity of increasing the yield through intensive methods, backed by the experiences gained in wheat and rice, and thereby increasing the total foodgrains production is self-evident. Production through increased productivity, through more and better utilization of inputs in production, has therefore to be taken as the watchword for attempts on improvement in the performance of the agricultural sector.

3. Production through Productivity

Productivity can be roughly taken to mean the relation between the output and input in terms of yield per unit, which in the case of land will be yield per acre and in the case of labour per person. In the case of land, theoretically if productivity per acre remains constant, output would grow at the same rate as the growth of the acrea. Therefore, the
growth of output attributable to the changes in productivity is given by the difference between the growth rates of output and area. In the case of labour it is evidenced by the difference between the growth rates of members engaged in production and hours/quantums of their work. While the growth in land is easily calculable by measuring the changes in the utilization of land and the net sown area, the growth of output attributable to labour is not easily measurable in physical terms, in view of the disguised and under-employment in agriculture. The efforts to increase the productivity of all or any results in intensive cultivation.

The trend towards the increase in the intensity of cultivation, and of foodgrain production (Table VI-4), shows that:

1. The quantitative increase in net area sown in 20 years of planning was 47.0 million acres as against 28.3 million acres under area sown more than once, indicating thereby that the extensive method of cultivation was used to increase agricultural production more than the intensive method.

2. The percentage of area under foodgrains to not sown area increased from 81.9% in 1950-51 to 86.7% in 1972-73, showing a greater inclination of the farmer to produce foodgrains rather than other crops, and the quantitative increase of 54.9 million acres in the area under foodgrains during the same period indicates that a large part of the increase in area under food-
grains was either by diversion from other crops or by sowing area more than once.

The percentage of area sown more than once to net area sown increased from 11.0% in 1950-51 to 17.7% in 1972-73, showing an increasingly greater inclination of the farmer towards intensive cultivation by increasing the intensity of cropping on the same unit of land. Interestingly during the early sixties, although the net sown area increased by 8.3 million acres from 333.7 in 1960-61 to 340.0 in 1965-66 there was actual decrease in area sown more than once by 0.7 million acres, exhibiting an unexpected reluctance on the part of the farmer for intensive cultivation, which was suddenly converted into great enthusiasm in the next quinquennium when in 1970-71 the area sown more than once increased by 14.0 million acres, which was even more than the area brought under cultivation during the preceding decade.

There was a phenomenal shift towards the cultivation of foodgrains of 23.1 million acres during 1970-71, after a sympathetic reduction in area under foodgrains during the quinquennium ending 1965-66, the increase being about equal to the increase in net sown area during the preceding decade and around three times the increase in not sown area under the preceding quinquennium. This also reflected the increased use of the technological capsule in increasing the intensity of cultivation of foodgrain crops.
### Table VI.4

<table>
<thead>
<tr>
<th>Area sown more than once</th>
<th>Area sown</th>
<th>% to net increase</th>
<th>Area</th>
<th>Net</th>
<th>% to net increase</th>
<th>Net</th>
<th>% to net increase</th>
</tr>
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<tr>
<td></td>
<td>Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1950-51</td>
<td>710.7</td>
<td>297.0</td>
<td>243.3</td>
<td>81.9</td>
<td>32.7</td>
<td>11.0</td>
<td>13.4</td>
</tr>
<tr>
<td>1955-56</td>
<td>730.2</td>
<td>322.0</td>
<td>276.7</td>
<td>33.4</td>
<td>44.7</td>
<td>12.0</td>
<td>13.9</td>
</tr>
<tr>
<td>1960-61</td>
<td>747.5</td>
<td>331.7</td>
<td>288.9</td>
<td>12.2</td>
<td>48.7</td>
<td>4.0</td>
<td>14.0</td>
</tr>
<tr>
<td>1965-66</td>
<td>-9.0</td>
<td>340.0</td>
<td>287.7</td>
<td>84.6</td>
<td>48.0</td>
<td>-0.7</td>
<td>12.0</td>
</tr>
<tr>
<td>1970-71</td>
<td>-9.0</td>
<td>353.0</td>
<td>310.8</td>
<td>88.0</td>
<td>62.0</td>
<td>14.0</td>
<td>17.5</td>
</tr>
<tr>
<td>1972-73</td>
<td>-9.0</td>
<td>344.0</td>
<td>298.2</td>
<td>86.7</td>
<td>61.0</td>
<td>-1.0</td>
<td>17.7</td>
</tr>
</tbody>
</table>

**Note:**
For an analysis of volume of change of area under various uses, including forest & cultivation, an interesting analysis has been done by Jasbir Singh, *An Agricultural Atlas of India: A Geographical Analysis*, Vishal Publications, Kurukshetra, 1974, P. XV Table IV.

Compiled from:

1. Directorate of Econ. & Statistical, Ministry of Agriculture & Irrigation, New Delhi, figures obtained in December, 1975.
2. Estimates of Area & Production of Principal Crops in India, 1971-72, Min. of Agriculture, Government of India.
In the sphere of agricultural labour and efforts in increasing its productivity the picture is one of a continuous increase in numbers dependent on land for their subsistence. Labour in agriculture is the human population irrespective of age or sex engaged either directly in the tillage of land or indirectly in the activities connected with various agricultural operations. It includes both labour available in and with the family free of charge and labour hired on daily, seasonal or regular basis from outside. It covers the labour of the owner of the land as also the labour of landless wage earner. The crux of the agricultural labour lies in the fact that it is primarily and mainly dependent on land for its living.

On the 82.7% of the total rural population in India, 81.6% depend on agriculture for their livelihood, the cultivated land per capita being 0.77 acres. The labour per acre increased the pressure of land considerably and total agricultural workforce increased from 97.3 million in 1951 to 131.0 million in 1961 but the percentage of agricultural labour to total workforce remained 69.7 in 1961 and 1971. Indian agriculture is thus characterised by over-population and consequently under-and disguised employment. Ostensibly, India, like other over-populated countries, furnishes the highest occupation ratio—"it is hard to find someone unemployed yet almost everyone is loafing about"; actually "Indian agriculture produces food, but not sufficient employment to the three-fourths of India's population." N.A. Majumdar finds, in his nine villages study of small farmers, that roughly about 71% of the farmers were affected by under and
disguised unemployment. ¹¹

Since supply of labour generally outstrips the demand for it, agricultural wages remain suppressed, ¹² and since there is very high density of population and land-holdings are small, the return from wages and farm incomes per capita is small. Thus, both remain very low, reducing the bulk of rural work force to subsistence level or below it ¹² and leaving very little allowance for savings for investments in development. The net result is that the man-hour productivity of labour i.e. net return per person employed in agriculture, has not shown any improvement and is much lower than in other countries. The option of transfer of rural work force to other sectors through mobility of labour has not been effectively availed of, because of a population explosion and a not very absorbing development in other sectors of the economy. By far the most serious problem in underdeveloped countries is, as Nasir Ahmed Khan in 'Problems of Growth of an Underdeveloped Economy' remarked, that of assessment and removal of disguised unemployment. ¹³

The picture that emerges thus is one of rural poverty and subsistence agriculture. With low incomes, much of the earnings are consumed; with low outputs much of the production is eaten; with low productivity of both land and labour, there is not sufficient money for investment for development. The nature of poverty being vicious and the biggest cause of poverty being poverty itself, the nature of Indian agriculture provides an uncogenial environment for development. The strategy of planning
and development, therefore, has to be, and to some extent has been, directed towards making the environment suitable through various measures, used simultaneously, towards ensuring an adequate and timely supply of inputs, necessary for increased productivity.

Some of the important measures in this regard are land reforms, research, power and credit, but whereas in the case of land reforms they are "brought about as a result of direct intervention in the agrarian structure", the other factors may be responsible for changes in an indirect manner in response to the spontaneous operation of socio-economic processes."14

State directed land reforms are mainly concerned with size-tenure relationship of land with the cultivator and tend to modify, what A.K. Khusro calls, the 'disincentives of tenure' or the 'disabilities of size.'15 While theoretically both may be effective means of optimisation of the use of scarce land resources through their reallocation and thereby of creating environmental conditions conducive to increasing investment in land and its productivity and while both ownership and economic size of unit create mental approach favourable to productivity increase, it is more the tenurial aspect or the ownership question, rather than the size of the holding, that holds the key to this.16

The re-arrangement of the holding size and tenure-texture have however been largely based on the ideology that since the "institutional problems of agriculture are proving more intractable than those connected with investment,"17 since the
distribution of land was most uneven in India and since land concerned not only the agricultural production but the entire fabric of rural life in its social, economic and political ramifications, it was the duty of the state to ensure that the principles of distributive justice also were taken care of. Hence, the measures connected with the abolition of zamindari and ryotwari systems, ceilings on land holdings, consolidation of scattered plots, security of tenures and creating of enforceable tenancy rights, removal of rural indebtedness and distribution of land to landless. And in spite of these the principal features of the rural scene are scarce land yet concentrated in few hands; low yields but high rents; poor farmers but expensive farms; too many people living on too little land; small small holdings getting smaller as population rises without alternative occupations; little margin for risk-taking; and subsistence farming with little capacity for growth.18

The reason is obvious and that is that the basic objective in land reform legislation has not been economic but socio-political. The statutory lowering of the land ceilings, the granting of ownership rights for small holdings, the so-called half-hearted measures in the tenancy rights—all these have been instrumental not only in increasing the chances of lesser return on further investment in permanent improvements but also in creating a feeling of uncertainty in respect of further reductions of ceilings or sizes due to Government intervention or increase in the family size,
resulting in its operating as a disincentive to increased productivity. Added to this is the failure on the executing front. In the circumstances and given the existing technology, the rearrangement of size, with the ceilings in most of the States being almost near the lowest level of being economic, emphasis needs to be shifted to purely economic considerations, and hence to tenurial reforms. Henceforth, Land Reforms must aim not at distributive justice to provide a holding to every landless ruralite, but at maximization of production by commercializing agriculture so that it encourages capital formation, investment and increased productivity. It must not aim at conferring of ownership as an end but only as the means of making the owner and the society both economically better off. Since small fragmented uneconomic holdings are liability—both for the owner as well as the society, co-operative-isation may be taken up as a basic principle of future land rearrangement and legislation. This would ensure an amalgam of ownership and commercial farming and in the process will benefit all.

The importance and necessity of research in various fields of foodgrains production, from the farm studies in regard to water and fertilizers dosage to the suitability of soils and quality of seeds, can hardly be overemphasized. There is no area of activity where experimentation and research is not necessary. As early as 1928 the Royal Commission on Agriculture observed: "The basis of all agricultural progress is experiment. However,
experienced the organization which is built up for demonstration and propaganda, unless that organization is based on research, it is merely a house built on sand. In spite of the marked progress which has been made in many directions during the last quarter of a century, it is hardly an exaggeration to say that agricultural research in this country is still in its infancy. The claims of research have received a half-hearted recognition.

The Finance Enquiry Commission of 1945 and the GMF Enquiry Committee of 1952 too emphasized the potentialities of research and extension in augmenting food production. Since then the Five-Year Plans have been placing ever-increasing emphasis on this. The setting up of the Imperial Council of Agricultural Research in 1929 to promote, guide and coordinate agricultural research was the first important step; this Council now is called the Indian Council of Agricultural Research.

The aims and objects of the Council are:

(a) "to undertake, aid, promote and coordinate agricultural and animal husbandry, education, research and its application, development and marketing, to increase scientific knowledge of the subjects and to ensure its adoption in everyday practice, (b) to act as a clearing house of information not only in regard to research but also in agricultural and veterinary matters generally, and (c) to establish and maintain a research and reference library in pursuance of the objectives of the Society; and (d) to do for the attainment of its objects."
Council has taken up various programmes, directly in its own Centres or through the Agricultural Universities, on crop-breeding, fertilizer application, water utilisation, soil improvements, farm implements and plant protection. The role of Agricultural Universities in these respects has also been widening and increasing. The number of Agricultural Universities and the Council's Centres in 1975, was 21 and 25 respectively. The breeding of the new high-yielding varieties received the greatest attention, and up to 1971, the largest number of schemes sanctioned were for plant breeding and genetics (282) followed by plant protection (204) and agronomy (174). Among the crops, 126 schemes were sanctioned for rice, 27 for wheat, 20 for maize and 32 for millets, resulting in the evolution of some high-yielding, high-quality, rust-resistant wheats like Kalyan Sona and Sonalika and fine-grain, blast-resistant and salinity-tolerant, rice variety like 'Jaya' and 'IR8', hybrid maize like Ganga and Vijay and Bajra like HB I and HB 3. In the sphere of agronomy and soil management, research efforts were intensified through several coordinated projects for stepping up production per unit area in unit time, with minimum damage to the environment, resulting in improved methodology of practices in soil conservation, water application, dry farming, fertilizer dosage and agricultural engineering. Special emphasis was laid on the preparation of soil maps delineating the problem soils, potential areas and soil needs on the basis of extensive soil surveys, the
better utilisation of available water resources, by on-farm management, by tailoring cropping patterns to water availability and the utilisation of solar energy for simple post-harvest operations through "solar reflectors and flat-plate collectors".

The Objectives of ICAR research in the Seventies have been outlined as higher and more stable yields, increasing the income and employment potential of small holdings, dry-land farming, post-harvest problems and nutrition, crop-planning based on ecology-cum-economics and basic research. The objectives of the research in Agricultural universities, with special emphasis on crop improvement and water and fertilizer studies and agricultural extension, are expected to be dovetailed into this programme. In spite of all this, however, agricultural research, and especially extension, has remained incommensurate with the requirements in almost all the fields except plant breeding, and especially in the field of dryland farming.

As realization is growing about the advantage of utilization of ground water resources, there is an increasing awareness of the role of electric power in running the tube wells and pumpsets. The power-crisis in 1973 and 1974 in Punjab and Haryana only highlighted the sudden farm hunger for power and the existing gap in the process of its satiation. The increasing rate of utilization of power for Agricultural production is evident from the following figures:
<table>
<thead>
<tr>
<th>Year</th>
<th>Hydro</th>
<th>Total Power Generation</th>
<th>Thermal</th>
<th>Nuc</th>
<th>Total</th>
<th>T/wells</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>2519.77</td>
<td>2387.06</td>
<td>199.73</td>
<td>-</td>
<td>5106.56</td>
<td>162.11</td>
<td>3994.55</td>
<td>4156.66</td>
</tr>
<tr>
<td>1955</td>
<td>3742.24</td>
<td>4618.86</td>
<td>231.35</td>
<td>8592.45</td>
<td>256.00</td>
<td>6855.01</td>
<td>7111.01</td>
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</tr>
<tr>
<td>1960-78</td>
<td>8732.41</td>
<td>369.02</td>
<td>16937.01</td>
<td>830.42</td>
<td>13009.95</td>
<td>13840.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1965-66</td>
<td>15224.97</td>
<td>17372.18</td>
<td>392.97</td>
<td>32990.12</td>
<td>1404.72</td>
<td>22814.55</td>
<td>26734.94</td>
<td></td>
</tr>
<tr>
<td>1970-71</td>
<td>25248.24</td>
<td>27796.45</td>
<td>365.57</td>
<td>55827.64</td>
<td>4459.86</td>
<td>99264.30</td>
<td>43724.10</td>
<td></td>
</tr>
<tr>
<td>1974-75</td>
<td>27833.00</td>
<td>39548.00</td>
<td>571.00</td>
<td>70158.00</td>
<td>7565.41</td>
<td>44339.59</td>
<td>52898.00</td>
<td></td>
</tr>
</tbody>
</table>

*Provisional* in parentheses

Note: This does not include the transmission losses.

Source: Public Electricity Supply, All India Statistics, 1973-74
Central Electricity Authority Ministry of Energy
Department of Power, Government of India, pp.150-151

Since there is a big gestation period between the formulation of power projects and their commission, days seem still far away, when demand was likely to be fully fed. However, the Government's realization has led to a vigorous action in this regard and power has been given the highest priority in planning for development.

Credit is necessary for investments in agriculture in a country where holdings are small, return from land inadequate and the farmer poor. The credit needs of the farmer are dependent on time as well as purpose, and can be long-term or short-term; the former for permanent investments like tubewells and tractors and the latter for defraying seasonal expenses connected with seeds, fertilizers etc. The Rural Credit Surveys of the Reserve Bank have proved the existence of rural indebtedness on a large scale and have impressed...
on the desirability of extending cooperative credit. Long time back Sir M.D. Darling wrote: "Properly organised systems of land credit must ultimately drive the money-lender from his last stronghold. There are few relationships so injurious to both parties as that of money lender and borrower. In India it is almost invariably demoralising." Lot of water has run down since then and cooperative and institutional credit has to a large extent replaced the moneylender in many of the areas of the country. Still their share was only about 50% of the IV Plan short-term credit requirements of Rs. 2000 crores assessed by the Rural Credit Review Committee.

On the marketing side, agricultural marketing is the performance of business activities that direct the flow of agricultural goods from the producers to the consumers, so as to reach them at the time and place and price they are willing to accept; "the maximisation of the net consumable quantity and the equalisation of the per capita satisfaction from consumption the twin factors of distributive efficiency are the functions of marketing." With this angle, marketing involves not only central purchase and sales platforms but also storage facilities, an efficient information system and transport network to take care of the marketable surplus. It thus involves both wholesale and retail marketing both of which exhibit areas of operation, where there has been a general lack of appreciation of services required and both the producer and the consumer are sufferers at one time or other. Marketing has been left generally to private trade although facilities like marketing yards, arrangements for temporary storage,
correct weighing and grading etc. are some areas where public and government organizations are being increasingly paying attention. Price fixation for purchasing the marketed surplus, however, is now a regular policy of the Government.

In transportation, there has been a tremendous expansion both in the rail and road system. The Railway mileage which was only 4800 in 1870 went up to 34100 in 1950 and railway haulage which was 261 miles per tonne in 1937-38 to 318.8 in 1955. The road mileage went up from 243.2 in 1930 to 260.8 in 1951, its ratio to rail mileage increasing from 11 to 15\frac{2}{3}:32. The goods train kilometrage increased from 104.5 to 198.1 millions and the tonnage carried from 93.8 to 197.3 millions from 1950-51 to 1970-71. And still during the post harvest season in surplus states, there is a shortage of rail and road services for movement of foodgrains.

One of the serious constraints in policy formulation for production has been the problem of obtaining correct and relevant agricultural data for formulating policies and determining required levels of growth. For any developmental planning on a realistic basis it is absolutely necessary that the planning agency should be properly armed with basic data which is fairly accurate and is available on a timely basis. The difficulties of obtaining much in a country of the size and complexity of India, both in the geographic and the demographic senses, can be well imagined. Writing in 1929, Sir Josiah
Stamp expressed the extreme unreliability of the agricultural data collected on the basis of traditional 'Anna Wari' method: "The Government are very keen on amassing statistics - they collect them, add them, raise them to the nth power, take the cube root and prepare wonderful diagrams. But no one of these figures comes in the first instance from the Chowkidar (village watchman) who just puts down what he damn pleases." The traditional method was, therefore, attempted to be improved upon by introducing a system of crop-cutting experiments as the basis of conclusions.

Since the difficulties of calculations - of choosing the base year and of making adjustments with new figures where production existed but no figures were supplied - still remained, the Ministry of Agriculture tried to remove these by adopting the ingenious device of linking up each year's production estimate for a crop with the preceding year's estimate through a second estimate strictly comparable with the latter and, by using the chain method, constructed a time series of adjusted production estimates comparable with one another over the entire series. Taking into account this, as also purely statistical changes that are the result of better coverage statistically, the first modified Food Statistics was published in 1945. Since then the reporting methods have improved considerably and the reliability of agricultural statistics has become more dependable which led to the observation
in 1960 that "But our judgment is that the data for India and the Phillipines are the best in the region...yet even the material for India leaves much to be desired." The desirability of further improvement was stressed in 1961 by A. Rudra, who came to the conclusion that "Whatever national accounts there are in India provide the same sorry picture as the national income estimates; a few islands of sound and solid ground in a treacherous marsh of Derived and Baseless Statistics." 

Attempts at further improvement therefore continue and the present situation is that the yield estimates through crop-cutting experiments estimate of production of a crop is calculated on the basis of the area under that crop and its average yield per hectare. The area under principal crops is collected by field to field enumeration by the lowest level revenue functionary of the State Revenue Department. Yield estimates are made by crop-cutting experiments by random sampling method, in which a predetermined number of villages is selected at random for each crop and in each selected village two crop fields are selected at random and in each field a plot of defined size, ordinarily 5x5 meters, is located at random and the yields in all such plots are computed and an average figure arrived at. These surveys/experiments are designed, organised and conducted by the State Bureau of Economics and Statistics/State Department of Agriculture/State Department of Land Records, under the overall technical direction of the National Sample Survey
To combine accuracy and timeliness, a scheme for Timely Reporting of Estimates of Area & Production is in operation since 1969-70, which provides for an advance complete enumeration of one out of five villages selected at random from each patwari circle. These reports are submitted by State Governments to Government of India. By the fact of extensive use of random sampling and by their very nature, these reports are tentative and serve at best as indicators of the prospects and the probable size of the crop. Assumption of bases, drawing of inferences, arriving at conclusions and framing of policy decisions, after collection of this insufficient, varying, and not very much dependable data from the grass roots level is thus a particularly tedious task. The Estimates Committee

It is not only the production data which is unreliable but also price data, collected from selected centres, which suffers from the defect of unrepresentativeness on account of periods of fluctuation, areas of uncertainty and non-reported sales as also from the deficiency of deliberate distortions, and the procurement forecast data, collected from the State Governments, which is a casualty in veracity as a result of manipulated mutilations on account of the two-three figure-sets prepared on the same day for consumption of different clients. The work is complicated by the scope and limitations of applicability which largely determine the implementation value of policies. The statistics

Organisation of the Ministry of Planning.
being what they are, they have to be regarded with great caution.

The Findings

From the foregoing discussion one finds that there is an ineffective constitutional arrangement, wherein while the responsibility for food production and food policy rests in the states, the bulk of the resources are available with the Centre. The Centre's role in these fields could not be expected to be more than that of a coordinator and evaluator, whereas the states could always be expected to allude the shortfalls to the non-availability of adequate resources and finances. There is thus an in-built scheme of diffusion of responsibility and this may be perhaps one of the main reasons of shortfalls in planned targets inspite of centralised planning.

Another thing noticeable is the poor performance of agriculture in the recent years. While in the fifties the rate of growth of production was reasonably fast, in the years after 1968 it could at best be called sluggish. The fact that this was inspite of the enormous public outlays and extensive programmes of development emphasizes the presence of counter-technological factors of production, especially drawing attention to the vagaries of nature as a crucial determinant of production levels.

Further, food production, as a matter of state policy, has been looked at as an end
and not as an adjunct of the food demand. This is so presumably because of the virtual absence of a reasonable assessment of food demand. It is also because of lack of seriousness in public policy on the nature of food supply. Food production is not an arithmetical exercise, no decision to import foodgrains a guarantee of adequate availability of foods and foodgrains in the country. A regular policy of production, and imports if necessary, is possible only if production is planned, both keeping in view the requirements of growing demand and the constraints of increasing supply.

One of the main bottlenecks towards this end is the unreliability of production statistics. Inspite of the crop-cutting experiments for yields and the timely reporting scheme for area sown, in the absence of cross-checking and the massiveness of the data, agricultural statistics still remain far from adequate. There are also the problems of identifying the base year and the base period for making dependable supply projections to meet the likely demands. The unpredictable factor of weather is always available for bailing out in all cases of miscalculations.

In spite of this it is virtually established that with the limited land available the answer to the quest for self-sufficiency lies in intensive cultivation, through the provision of suitable environment and requisite input supplies. Increase in productivity of land is
the only way available to increase the food production substantially. And public policy towards this end has to be geared, backed both with a political will and the economic resources. Land reforms do indicate the inadequacies in the former and the infra-structural arrangements such as electricity, credit etc. in the latter. It is however established that the main thrust will have to be through the larger application of the technological inputs; And the crucial among them are the inputs of water, fertilizers and seeds.

It is clear thus that the state of foodgrains production, with the constraint of reliable statistics, while exhibiting a very high rate of growth in the fifties shows a fast declining rate during the early seventies. That the Central Government has had a limited role to play, on account of the constitutional powers being with the States, may be one of the important reasons for this phenomena. That in view of the limited land resources, the major concentration should be on increasing the productivity of the traditional factors of land and labour, with a greater role envisaged for the Central Government, seems to be the natural conclusion.

The thrust of the future policy should be increase in productivity through intensive cultivation. The intensive area development programme approach must be pushed forward and deeper; it should no longer be only a path-finder, not even a 'pace-setter', but should be made a 'go-getter' if it is not
to remain only a break-through on to a plateau, as Michael Lipton put it, since there is no other alternative available. Fertilizer, seeds and water have largely to share among themselves the responsibility for increasing food production in the near future. And in this process policies for input supplies and all measures namely land reform, research, power and credit must aim at the economics of farming rather than the socio-political ramifications so as to create conditions conducive to commercialization of farms and farm practices and thereby maximization of return from investment.
References


4. Report of the Enquiry Committee, 1952, Department of Agriculture, Govt. of India, New Delhi.

5. I Five-Year Plan, para 46, p. 44.

6. II Five-Year Plan, p. 51.

7. Report on India's Feed Crisis & Steps to Meet It, 1959, p. 3.


28. Estimates Committee of Lek Sabha, in para 2.7 of their 61st Report of the Civil Supplies Organisation of the Govt. of India observed: "Unless Govt. arranged to assess reasonably correctly the crop prospects they would not be able to take timely measures to produce the foodgrains within the country and/or import them from outside or initiate concerted measures for implementing contingency emergency agricultural production plans." The necessity of reliable statistics for a proper food and production policy cannot be over-emphasised.


30. V. K. R. V. Rau, - Presidential address to the 21st Annual Conference of the Indian Society of Agricultural Economics held in December, 1961 in Pilani and published in Indian Journal of Agricultural Economics, January-March, 1962, Vol. XVII, p. 67. The details of these are given in an article by Dr. V. G. Panse and V. S. Menon on "Index numbers of Agricultural Production in India", Indian Journal of Agricultural Economics, April-June, 1961.
