By the year 1956, Punjab agriculture, to some extent, had completed the first phase of development, in which the political leadership adopted many legislative measures for the improvement in agricultural production. The requisite administrative machinery to give effect to these measures was brought into action. The task assigned to the bureaucracy started gaining proper momentum in the right direction. Broad policies were taking shape, but the political instability in the state kept the political leadership busy in playing the musical chair race. As a consequence, the agricultural development could not show significant improvement. Though sincere efforts of the government identified various components required for more agricultural production, yet they could not create an environment which could yield positive results.

As the First Five Year Plan of the State was devoted to agriculture, the industry was pushed to the background and only small units came up. Large industry was nowhere seen in the whole of the state. Only way to give employment, directly or indirectly to the major section of the people, was agricultural development. It was imperative for the politico-administrative structure to devise ways and means for the attainment of the objectives set during the First Five Year Plan.
During the period under study (1956-66), the politico-administrative combine took a series of steps tentamounted to be the starting point for creating an environment conducive to green revolution. Encouraged by the successful execution of the First Five Year Plan, the planners in Punjab had acquired sufficient confidence to think about a miraculous attempt in the field of agricultural development. The Second Five Year Plan in Punjab, again was dedicated to the agricultural development. This was an acid test for the Punjab politico-administrative set up in form of deviating from the planning objectives of the Union Government. It was realised at the very outset that the real hope lay in intensive cultivation, greater irrigation, increased use of fertilizers and multiple cropping. The Government took all possible steps, which created a base - a reliable infrastructure, on which modern agriculture could flourish. Land reforms, irrigation augmentation, subsidized power, high yielding varieties of seeds, fertilizer, cooperative credit, improved agricultural implements, Agricultural University, link roads, marketing structure etc. were some of the infrastructural measures adopted by the Punjab Government and their proper execution by the administration, which gave an unprecedented spurt to the agricultural production.

The Government of India declared the Second Five Year Plan in 1956 with the shift in priorities i.e., from agriculture to industry. In the First Plan it gave priority to agricultural

sector by allocating 31 percent of the total outlay of the Plan and the agricultural production of India as a whole increased by 20 percent and the total production of foodgrains rose to 68 million tons against the target of 65 million tons. The economy was to some extent stabilised and the prospects for higher rate of growth during the Second Plan became brighter.

The Government of India became optimistic about the agricultural sector thinking that it is on the rails and the Second Five Year Plan was in favour of industry. The outlay in the Second Plan was reduced to 20 percent for agriculture as against 31 percent earmarked for agriculture in the First Plan. In the Second Five Year Plan of Punjab, the emphasis continued to be on agricultural development because of the dependence of its major portion of population upon the agriculture. Secondly, the projects and schemes which were devised during the First Plan, were still incomplete such as irrigation projects, power projects, fertilizer unit, canal system, minor irrigation schemes etc. Thirdly, agriculture was the base to raise the standard of living of the people and only with agricultural development the market for industrial products could be raised which is said to be the essential pre-condition for the industrial development. Fourthly, being a border state, the investors in the industrial sector were

3. ibid., p. 58.
5. Refer Appendix Table No. IV.
hesitant to install large scale industrial units. Last but not the least, was the change in political leadership from urban elite to rural domination.

Partap Singh Kairon - then Chief Minister of Punjab did create an atmosphere congenial for the stability and development in the state. He "prophetically announced the beginning of an era where farmers held political power in Punjab and agricultural development held top priority for his government". 6

After the merger of PEPSU with Punjab in 1956, Kairon reconstituted his council of ministers and new strategies were chalked out for the fulfilment of his dream to see Punjab growing, progressing in agricultural development and leading the other states of the Union. His policies and programmes were supported by all the sections of the community which is very clear from the results of the second general elections in 1957, when the Congress Party secured 120 seats out of the total strength of 154 in the State Legislative Assembly. 7

The newly elected members of the State Legislative Assembly wanted to strengthen and consolidate their faith and confidence, the people had reposed in them expecting more development in the rural areas. Moreover, there were 76 percent 8 MLAs (Member Legislative Assembly) belonging to the rural areas. Though they

6. Holly Sims, op. cit., p. 36.
7. Parmod Kumar et al., op. cit., p. 45.
were from different political shades, yet on the question of rural and agricultural development, they were one. More so, occupation-wise 39 percent MLAs belonged to the agricultural sector.

The Council of Ministers had 58.3 percent ministers belonging to the rural Punjab and out of which 33.3 percent were agriculturists. In such composition where right from the Chief Minister to the members, where most of their interests were common, the bent of the governmental policies was, obviously, in favour of the field in which they were interested keeping in view the welfare and development of Punjab. With such a massive support, the determination of the leader and the Government gets strengthened, that is what happened in Punjab from 1956-66. According to an analysis the team to run the government selected by Kairon had good experience in the field of politics. There were 20.8 percent ministers who had an experience of ministry once, 31.3 percent had twice, 22.9 percent thrice and 25 percent had the experience of more than thrice. Education-wise too, there were 66.6 percent who were above graduation, 27.1 percent were between matric and graduation, only 6.3 percent had primary education. The members of the council of ministers were from all sections of the society.

11. ibid., p. 104.
Under such political leadership, Punjab took decision of giving priority to agriculture in the Second Plan also. The Centre did not interfere in the programme of the State, rather supported the policies of agricultural development, because the potentials of the State were known to them. Kairon enjoyed full confidence of then Prime Minister Pandit Jawahar Lal Nehru and he made full use of situation in expediting the development process in the State. The Government played an extremely important role in the transformation process. In Second Plan, the major share of public investment was allocated to the development of irrigation and power. This provided a very powerful infrastructure for the modernisation of agriculture. Further, the early completion of consolidation of holdings, strengthening the cooperative credit structure, building a network of transport, marketing and storage provisions, agricultural research and extension, and so on gave boost to the agricultural production. These facilities provided great incentive to private investment in agriculture. Private investment (facilitated by subsidized institutional loans) was directed towards improved irrigation structure as well as farm machinery, so that farming along modern lines could be pursued by farmers in general. Punjab farmer adopted the new 'seed-irrigation-fertilizer' technology in late sixties with a willingness and ease that has very far historical parallels.

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So, from 1956 onwards Punjab did not look back and the agricultural development process continued year after year. Various steps taken towards the modernization and development of agriculture will be discussed one by one. But before discussing various measures the mention of the Third Five Year Plan (1961-66) provisions is very important.

Third Five Year Plan (1961-66):

The experience gained in the first two plans of India convinced the policy-makers that the rate of growth of agricultural production is the principal limiting factor in the economic development of the country. Consequently, emphasis was shifted from industrial development to agricultural development to enhance agricultural production during the Third Plan. The additional objectives were:

a) To achieve self-sufficiency in foodgrains.
b) To boost agricultural production to meet the needs of industry and exports.
c) To popularise better farming practices to enhance crop productivity.
d) To diversify occupational structure through subsidiary occupations to reduce the burden on agriculture.

Out of the total investment of Rs. 8576.5 crores, 20.4 percent was spent on agriculture. For intensive agriculture, new

programmes like Intensive Agricultural District Programme (IADP) and Intensive Agricultural Area Programme (IAAP) were introduced during the Plan.

The Punjab Third Plan consisted essentially of a practical programme in various socio-economic fields started from the level where the Second Plan had left. The main objectives of the Plan were:

a) Sizeable increase in agricultural production, primarily through the provision of more irrigation facilities and measures for anti-waterlogging and flood control.

b) Steady diversification of the State economy with a well defined orientation towards industrial expansion.

c) Creation of additional employment opportunities to absorb at least the new entrants into the labour force.

d) Adequate expansion of social services in conformity with the national targets with particular emphasis on the extension of technical education facilities.

e) Substantial improvement in the socio-economic conditions of the backward classes and of backward areas, with special emphasis on the development of the hill areas of the State.

The State Third Plan envisaged the total outlay of Rs. 231.39 crores, that was 40 percent more than the outlay of

Rs. 162.68 crores for the Second Plan. The agricultural sector including irrigation and power was allocated 65.25 percent of the total outlay which was 68.42 percent in Second Five Year Plan. During the Second and the Third Plans the control on the Government was of the same political party, but with a different political leader at the top - Sardar Partap Singh Kairon,* who had determined to improve the lot of rural Punjab and was committed to development.

Kairon's clearcut policies and his earnest efforts to implement them ultimately led to the creation of politico-administrative environment congenial for development. Various measures taken by the legislature in the form of State Acts gave a boost to the determination he had made. 'Land Reforms' was the basic line of action in this regard and the 'Consolidation of Holdings' was the first step towards that direction.

A series of energetic Revenue Ministers, notable among them once again, Kairon and then Giani Kartar Singh, pushed the programme relentlessly. As Chief Minister from 1956-1964, Kairon made this work one of his major concerns. "An impatient Chicago educated man, he could not wait long years to see it completed".17

16. For detailed account of Plan outlay refer Appendix Table No.V.
* Partap Singh Kairon - a ruralite, took over as the Chief Minister of Punjab in January, 1956, after a long spell of political instability in the State.
The scheme provided for consolidation of a total area of 219.50 lakh acres. Soon an army of revenue officials spread out over the villages and ambitious targets were set for each year. The Chief Minister took it upon himself to convince his fellow Jats and also to prevent the injustices, that the revenue staff was likely to inflict, partly due to the scale and spread of the operation, and partly due to their inherent notions. His methods were simple and effective. He toured extensively going from village to village, to feel the pulse of the farmers' response, and to hear their grievances against the officials. His sudden unannounced descents on field offices created an alertness and awareness of the long arm of the Government. He punished rarely, trusting more to his capacity to prevent oppression, by close and constant supervision. When he did, he did so ruthlessly and effectively, often bypassing petty Government rules, that were only meant to delay the just visitations of the wrath of Government and God on the malfactor. By the time (1965) the Borlaug seeds arrived, Punjab Government had already consolidated two thirds of the land.

By the end of the First Five Year Plan in March 1956, an area of 61.80 lakh acres had been consolidated and the

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20. Ibid., pp. 181-182.

* Kairon was fully aware of the attitude of the revenue staff, in dealing with the innocent farmers. His constant check saved the farmers from the exploitation in the hands of officials.
remaining area of 157.70 lakh acres was originally planned to be consolidated during the Second Plan. The target had however to be revised to 130.20 lakh acres due to various difficulties encountered in the actual implementation of the scheme. Against this revised target an area of 85.48 lakh acres was consolidated during the Second Plan period, raising the progressive total to 147.28 lakh acres.

One of the major bottlenecks leading to shortfall in physical achievement was the paucity of trained and experienced revenue staff. For this, arrangements were made at Patwar Training School at Chhachhrauli.23

The Third Plan target was to complete the remaining area of 72.22 lakh acres and a provision of Rs. 165 lakhs was made for this purpose, but the work could not be completed before 1967.

The role played by the Punjab Government in the process of consolidation of holdings can be judged from the efforts made and even financial contribution made towards it. The table given below indicates that alongwith the expenses borne by the farmer the State Government also allocated funds for the consolidation work.25

22. ibid.
23. ibid., p. 15. (Chhachhrauli is in Ambala District).
24. ibid.
Table III(1)
Expenditure on Consolidation of Holdings in Punjab
(Rs. in lakhs)

<table>
<thead>
<tr>
<th>Period</th>
<th>Plan</th>
<th>Gross Cost</th>
<th>Fee charged from Land Owners</th>
<th>Net Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951-56</td>
<td>First</td>
<td>337.34</td>
<td>238.32</td>
<td>99.02</td>
</tr>
<tr>
<td>1956-61</td>
<td>Second</td>
<td>539.67</td>
<td>273.81</td>
<td>265.86</td>
</tr>
<tr>
<td>1961-66</td>
<td>Third*</td>
<td>491.05</td>
<td>317.73</td>
<td>173.32</td>
</tr>
</tbody>
</table>

* Proposed.

From the above table it is very clear that during the first Plan, the Punjab Government contributed 29.35 percent, 49.26 in the Second and 35.29 percent during the Third Plan of the total expenses incurred in consolidating the fragmented fields.

It is heartening to note that Punjab was the first State to complete the work of consolidation in India. It was the far sightedness on the part of the Government to make the consolidation compulsory to accelerate the process started voluntarily. The Act passed in this regard was a crucial factor among others like - the personal inclination of then Chief Minister and thus of Government to achieve the target of consolidation. It may not be very wrong to say that the consolidation work completed in just one and a half decade would have taken much longer in the absence of the zeal shown by the politico-administrative set up.
The Consolidation of Holdings scheme provided unique opportunities in rural economic development and opened new vistas of prosperity. Punjab led India in consolidation work, it did more good than anticipated as it had not only transformed dwarf uneconomic holdings into compact blocks but also brought under cultivation, the uncultivated Banjar land. The consolidation changed the village scene in the Punjab economy by raising mobility in rural areas through the construction of link roads on the land spared in the process of consolidation, making irrigation more feasible and less costly, reducing the land wasted in embankments, reducing the incidence of litigation and quarrels arising due to trespassing of the cattle, increasing the community services in the villages and offering an opportunity of residing in farm houses.

The reclamation of land was a very important aspect of 'policy package' evolved by the politico-administrative set-up of Punjab. The need for this was felt because the vast areas were becoming uncultivable due to water-logging and salinity.

The Punjab Government was conscious of these problems and put through a costly programme of building huge drains to push down the fast raising water level. Once again the State Government came to the rescue of the peasant, by not only


providing funds, but also by pushing the engineers to ensure the quick and efficient completion of the works. Through various schemes, the Government was able to reclaim about one lakh acres.\(^{28}\) With the increase in cultivated area, the food production increased by 40,000 tons in 1958-59. But due to unprecedented rains, estimated damage to the crops was of about Rs. 29 crores and for its compensation, the State Government gave relief to the farmers in the form of subsidy worth Rs. 38,35,000 on seeds and taccavi loans for another sum of Rs. 1,68,71,000.\(^{30}\)

To achieve the target of reclamation of 94 lakh acres of land, Punjab Government requested the centre for assistance of Rs. 2 crores, which could not be conceded to as the Union Government had earmarked only Rs. 4 crores for the entire Plan, which was later slashed down to Rs. 2.96 crores.\(^{31}\) As a result, the reclamation work in Punjab suffered a set-back and only 10,397 acres of land could be reclaimed by 1959-60.\(^{32}\)

Water-logging could be checked by preventing excessive water going into the underground reservoir and for that construction of embankments on rivers, nullahs, Chos and Khads

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could help. As a result of embankments, Western Bein, Eastern Bein, Chos in Hoshiarpur district could contain the excessive water. Pumping out the water from depressions and low-lying areas with the help of pumping squads eased the problem.

H.L. Uppal 33 highlighted the sincerity of the Government in formulating a scheme of Rs. 23 crores in 1960 for stopping the water to go underground; diversion of 'chos', 'nullahs' into river; construction of water drains; pumping out water; recommissioning of abandoned percolation wells and installing shallow tubewells.

Upto 1961-62, the Department reclaimed an area of 117963 acres and 90 percent of which was brought under cultivation by 31 March, 1962. This brought an additional production of 53000 tons of food grains.34

Soil erosion in the Sutlej Catchment area was checked with the help of Government of India. A master plan35 was chalked out at an estimated cost of Rs. 61 crores for lining of canals and distributaries; installation of shallow tubewells; seepage drains; construction of deep discharge tubewells, reclamation of 'Thur' and 'Kallar' etc. This master plan for anti water-logging covered an area of 25 lakh acres, where the water was just five feet deep below the surface.

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* 'Cho' is a dry rivulet, which remains normally dry except during the rains. 'Bein' is a big pond which is generally full of flowing water and at places very deep.
For districts of Hoshiarpur, Ambala, Patiala, Karnal, Gurgaon and Mohendragarh, Rs. 8.25 lakhs were spent to reclaim 9000 acres, in 1962-63. Thus, by the end of 1963, total land reclaimed was 122512 acres.37

To implement various schemes vigorously for soil conservation; improvement in land fertility; to check waterlogging; 'Sem' and 'Thur' etc., the political leadership in Punjab passed the Punjab Thur and Sem Lands (Reclamation) Act38 and The Punjab Land Improvement Schemes Act, in 1963. Under these Acts, the Department of Agriculture, was authorized to bring improvement in land, reclaim thethur and sem affected areas through the District Land Improvement Committees, at the expenses of the owner, if the owner could not do so personally. Further, maintenance, repair and use of works was the responsibility of the land owner. In case of violation, a fine upto Rs.500 could be imposed on the owner and the necessary steps could be taken for repair, maintenance etc. at the expense of owner.

37. Ibid., p. 12.
As a first step towards this direction, drains and embankments were constructed to reclaim the area unfit for cultivation. In 1964, Thur-affected area was 288388 acres and Sem-affected was 41791 acres. In 1964-65, 60,000 acres of land could be reclaimed.

To carry out these operations, the Government purchased 1000 tractors. By March 1965, the Government had reclaimed an area of 1.71 lakh acres which was waste cultivable land. To encourage the people to bring more Banjar land under cultivation, the State Government announced loans and subsidies for sinking wells in those areas.

In order to bring more land under cultivation, the Central Government was approached for finances. An additional amount of Rs. 25 lakhs was sanctioned by the Centre and the State raised about Rs. 22.33 lakhs, which brought 47.33 lakhs for the year 1965-66, to reclaim 60,000 acres of land. Against the target of reclamation of 46,000 acres for the Third Plan, the area of 123000 acres was actually covered. Thus exceeding the targets. The target to reclaim 60,000 acres during 1965-66 was exceeded by 2000 acres.

45. ibid.
46. ibid., p. 40.
In 1965, the Punjab Government established a corporation with the purpose in view to expedite the work of reclamation and development of waste lands. The Land Development and Seeds Corporation came into existence in 1965, with an authorized capital of Rs. 5 crores. The functions of the Corporation were clearly defined as the programmes for land improvement, soil conservation, reclamation etc. The distribution and quality marked certified seeds was also in the hands of the Corporation.

'Grow More Food Campaign' and 'Community Development Programme':

The Government of India constituted a committee in 1952, to assess the progress of 'Grow More Food' campaign under the Chairmanship of Sir V.T. Krishnamachari. The Committee began as a Grow More Food Enquiry Committee but ended as a 'Rural Development Committee'. The Committee recommended that the

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48. Sir V.T. Krishnamachari was a member of the Planning Commission of India.


The 'Grow More Food' Campaign did not fix any target for increase in production of foodgrains but laid down broad lines along which efforts for increased production might be made. These were: (i) switch over from cash crops, mainly short stapled cotton to food crops; (ii) intensive cultivation of cultivated lands through irrigation, better seeds and manures, and better farming practices; and (iii) extensive cultivation by bringing under plough current fallows, cultivable waste lands etc. Bhatia BM; *India's Food Problem and Policy Since Independence*, p. 57.
'Grow More Food Campaign' should be enlarged so as to cover a wider plan for development of village life in all its aspects. The Committee suggested, among other things, the introduction of extension services utilization of non-official organizations such as Panchayats and multipurpose Cooperative Societies, promotion of minor irrigation schemes and supply of better varieties of seeds and fertilizers to the farmer. The emphasis was on all-sided rural development and the campaign to grow more food was thrown into the background.50

Punjab Government's major development policies during fifties were tenancy reforms, ceilings on land, consolidation of land holdings, establishment of new regulated markets for the assembly and disposal of farm produce, strengthening of cooperative structure for financing the farm business and administrative reforms to coordinate various departments for rural development work. Thus, relative to the position in other States, Punjab was a little more fortunate in having a better institutional structure.51

With the reforms in land tenure systems, the peasant proprietorship became very common and in 1961, about 52 percent of the farmers in the State were owner cultivators, over 34 percent owner-cum-tenant and 14 percent peasant tenants.52

50. B.M. Bhatia, loc. cit.
51. Hunter (Ed.), op. cit., p. 150.
Similarly the area under self-cultivation increased, which led to the rapid adoption of new technology in the State. As per the recommendations of Krishnamachari Committee, the Punjab Government reorganised its administrative structure to execute the Community Development Programme. The Development Commissioner was made overall incharge of the developmental activities in the State. (A detailed account of reorganised administrative structure which continued during 1956-66, already been discussed in the previous chapter).

Despite these administrative changes, the Community Development Programme did not bring about the desired results and proved inadequate for the task. This was because these programmes envisaged all round development of the people including their environment, their production plans, their attitudes and beliefs, without giving priority to the process of revolutionising agricultural production based on economic and technological considerations for increasing their incomes. This was like putting the cart before the horse. The environment and attitudes could not be changed without a simultaneous improvement in the economic conditions of the individuals through

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the development and ultimate adoption of modern production technology. As a result, farms income experienced only a marginal increase, which made little impact on the farming population. 54

The agricultural set-up was lacking coordination among its various constituents. The problem of inter-departmental coordination arose where (i) there was a multiplicity of State Departments and autonomous bodies engaged in the similar work, (ii) the heads of various Departments and other bodies engaged in agricultural development were independent in status, and no one was considered senior to the other to command respect and authority, and (iii) the officers who were required to coordinate the activities of the officials of other departments lacked the necessary powers. Often, more than one department was responsible for the implementation of a single development programme, e.g., irrigation projects were the responsibility of Agriculture, Development, Irrigation and Cooperation, but the lack of coordination among the Departments could not give the desired goals. 55

The purpose to integrate various departmental activities at the State, District and Block level was to provide all kinds of services through a single agency, but this was possible at Commissioner and Deputy Commissioner level only

55. ibid., pp. 152-3.
because they were from Indian Administrative Service (IAS) who had the power and influence to bring about inter-departmental coordination for rural development work. However, they were prone to disregard the advice of technical people. Block Development Officers did not have powers and authority to take disciplinary action against the defaulting officials of other departments whose day-to-day activities were under his supervision. He himself was under the Deputy Commissioner and there was tension between the BDOs and the officials of the Agriculture Department and other technical officials. A long chain of intermediary officials between the sanctioning authority and the executing officials at the grass-roots made it difficult to ensure timely action, desk work multiplied at the expense of action in the field.  

Realising that the strategy for agricultural development under Community Development Programme was not resulting in an adequate increase in output, the Government of India appointed an Indo-American Team to inquire into the causes of persistent food shortages and steps to meet it.

**Intensive Agricultural District Programme (IADP):**

Despite the efforts of the Punjab Government to coordinate the activities of its different departments, the

56. ibid., p. 153.

desired results could not be achieved. The agricultural production did register improvement, but not as expected. Frustrated from not so encouraging reports of the States, the Union Government sought the help of the American Ford Foundation in 1959, to meet the persistent food shortage in India. After visiting India, a team of the experts chalked out a programme of coordinated and concerted efforts to step up agricultural production. As a result, the Intensive Agricultural District Programme (IADP) was started in seven districts of the country. Ludhiana in Punjab, was one such district selected for this experiment. Under this 'package programme' the efforts were made in intensive cultivation through mechanisation, irrigation, seed and fertilizer. To implement this programme, it required central authority with a clear line of command and execution. At each level, officials were given well defined manageable and unescapable responsibility within full authority to discharge that responsibility.

The Punjab Government formed a Committee, selecting members from different departments connected with agriculture to provide all facilities, including inputs and education giving the details of the programmes and its benefits to the cultivators of the selected district - Ludhiana. This Committee comprised, the

Financial Commissioner—Development and Panchayats, as the Chairman and seven members. The entire Project was under the Pilot Project Officer—a senior officer of the Department of Agriculture. This officer was exclusively responsible for agricultural development in the district and the officers of the other departments were operationally answerable to him for this work. He was assisted by a Deputy Registrar Cooperative Societies in assessing requirements and arranging for timely and adequate supplies of credit, improved seeds, fertilizers and pesticides to the farming community. The overall control on the Project was with the Deputy Commissioner of Ludhiana.

A team of six subject matter specialists in Agronomy, Soil Science, Horticulture, Plant Protection, Farm Management and Animal Husbandry, who were able to advise the junior staff as well as farmers, was attached to the programme. Also important was the appointment of Rural Sociologist and a supporting team to conduct operational weaknesses in extension work. A statistical officer with the necessary staff was also attached to collect agricultural statistics for future development.

61. The other members were the Secretary of Agriculture, Secretary of Cooperatives, Director of Agriculture, Registrar of Cooperative Societies, Director of Panchayats as official member and General Secretary, Nominee of Punjab Pradesh Congress Committee as non-official member. Joint Director, Agriculture (Extension) was its Secretary.


63. ibid.

* Refer Appendix III.
programme planning. The block and village level structure was not very different from the Community Development Programme except that the number of Extension Officers and VLWs was increased in each block.

With this administrative set up, the Punjab Government earmarked a sum of Rs. 54 lakhs to fulfil the financial needs required for the success of the Programme. Replying to the question Gurbanta Singh, Minister for Community Development, stated that for the programme for adequate production, the requisites such as seeds, fertilizers, implements, pesticides, credit facilities, marketing arrangements, transport, godowns, education to the staff and the farmers would be provided. The Government had sufficient funds to meet these requirements for IADP, which was started in 1961 for a period of five years.

In 1961-62 budget, a provision of Rs. 25.92 lakhs was made for the programmes. Another Rs. 30 lakhs were sanctioned for the purchase of fertilizers, in the form of taccavi loans to the farmers. In 1962-63, a sum of Rs. 45 lakhs was advanced as medium term loans for minor irrigation.


66. As reported in The Tribune (Ambala) 23 January, 1962, p. 3.
Par tap Singh Kairon - the Chief Minister of the State took personal interest in the success of the programme and visited the areas frequently to see that everything was going smooth. He wanted that the officials attached to the programme be encouraged to get maximum out of them, because the success of Ludhiana District could act as a "pace-setter" for the other districts of the State.

As a result of this programme, Ludhiana district registered an increase of 99.3 percent in the first phase of IADP ending with the Rabi Crop of 1965-66. The production of wheat increased from 45.4 lakh maunds in 1960-61 to 90.5 lakh mds. in 1965-66. R.N. Chopra has given his views on IADP as "It was a historic decision, which yielded solid results and its importance could be judged by the fact that it provided the much needed 'adoption breakthrough'."

Though it was the programme of the Centre, yet without the dedication of the State politico-administrative set up, it could not have succeeded. The administrative structure in Punjab provided all assistance to the cultivators at right time and at right place. The supervision, control and personal interest of

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* R.N. Chopra an I.A.S. Officer attached to agricultural development in Punjab during the reference period disclosed in a personal interview with the researcher in Delhi.
then Chief Minister of the State, brought the programmers and the farmers closer. The enthusiasm to increase agricultural production encouraged them to work in unison, and to make best use of the infrastructure available to them. In such an environment progress was obvious. The sincerity of the Punjab political leadership combined with the dedication of its administrative machinery opened the flood gates of revolution in agriculture.

In 1963, 'Package Programmes' in Cotton and Oilseeds were started in Ferozepur, Bhatinda and Hissar Districts of the State. According to these programmes the cultivators were persuaded to use improved seeds, fertilisers and improved methods of cultivation. The Financial Commissioner Agricultural Production and Rural Development was made the overall incharge of the various departments concerned with agricultural production.

Later, in the second stage of the programme the Government of India extended it to 114 districts of the country, which was known as Intensive Agriculture Area Programme (IAAP) and in the third stage it covered the entire country.

Research and Development:

For the development, expansion and modernization of agriculture, research plays very important role. The farmer is not aware of the research carried on in the world unless he is informed by some agency and that agency is either the Department of the Government or some educational research-oriented University. "Farmers must depend upon the government both for supplying improved technologies and for communicating to them the skills needed to apply them. They must do so not only because they are poor and ignorant, but for another reason. Agriculture is a biological industry; there is no ready-made transferable technology that would suit all farmers in all environments; it must be carefully tailored and continuously adjusted to suit the varying conditions in each case - soil chemicals, moisture supply, temperature, pests and insects. It follows that the technology has to be locally tested and verified and frequently readopted to local conditions." 72

The need of such research institute/University, was felt in predominantly agriculturally advanced State of Punjab. The idea to have rural University was supported by the Cumings Committee Report of 1960 and the earlier proposal of Dr. Sutton in 1957. 73 The Chief Minister of the State, readily accepted the proposal and started thinking on the lines of its establishment.


73. Randhawa M.S. Green Revolution, op. cit., p. 61.
The main idea behind the establishment of the agricultural University was to bring about an integration of teaching, research and extension education programmes in agriculture at one institution to accelerate the development of the rural economy in the State.

The Punjab Agricultural University (PAU) was established in 1962 under an Act of the State legislature, which had overwhelming support of the members of the party in power and of opposition. The State was short of funds and a provision of Rs. 80 lakhs was made to start with. Later in 1963, another sum of Rs. 1.75 crores was allotted for the expansion of the University. Under the able leadership of PN Thapar, the first Vice-Chancellor, the University contributed magnificently to the Green Revolution, and "achieved name and standing throughout India and beyond..." The University was controlled by a Board of Management, which had control over the finances and assets of the institution and it provided overall guidance on its running. The University was insulated from any political or administrative interference otherwise such interferences could have diluted its magnificent start.

There were five constituent colleges of the University, all located on the main campus at Ludhiana. These were the

Colleges of Agriculture, Basic Sciences and Humanities, Agricultural Engineering, Home Science and Veterinary Medicine. There was a University Directorate of Research and a Directorate of Extension Education.

There were two main research stations at Ludhiana and Hisssar and 24 research sub-stations scattered all over the State. Considering the suitability of different crops to the various agro-climatic conditions, research on cotton, fodders, oil seeds, millets and pulses was under the Hisssar Station, while research on wheat, maize, sugarcane, rice etc. was conducted at Ludhiana.\(^77\)

The Punjab Agricultural University played a crucial role in identifying wheat varieties out of the strains imported from Mexico, which were best suited to local environment, followed by the speedy expansion of their cultivation with matching and needed agronomic improvements.

The Plant-Breeding Department of the PAU under Dr. Athwal selected two promising strains, V18 and S227, out of about 150 strains of dwarf wheats received from Mexico and multiplied them. This led to the development of Kalyan-Sona 227 and Sonalika (S-308). Later the seeds of these varieties were multiplied for cultivation. The yield of Kalyan-Sona 227 was as high as 6914 Kilograms per hectare.\(^78\)


\(^78\). The Tribune May 5, 1965, p. 3. Also Randhawa, Green Revolution, op. cit., p. 69.
Dr. Athwal of the University was awarded S.S. Bhatnagar Award for 1964 on his commendable work on Bajra. The new hybrid bajra could yield 60 to 100 percent more under favourable conditions.

The research carried on by the Directorate of Research was focussed on problems to feed the extension agency, while the extension education wing posed the field problems to the research workers and carried out the reorientation programmes for the staff of Government Departments. Besides, a team of University Extension Specialists at State and District levels coordinated with their counterparts in the Department of Agriculture to promote improved technology in farming. The University Extension wing aroused great interest among the farming communities as evinced by pressing demands received from all over the state for enhancing facilities for the dissemination of knowledge on improved agricultural practices. In response to this, training camps at the district levels became a regular feature of the Extension Wing. By doing so, this wing forged a strong and useful link between the traditional and the scientific agriculture.80

The major involvement of the Department of Agriculture came in the form of their participation in workshops held twice

79. Randhawa, Green Revolution, op. cit., p. 73. Also The Tribune (Ambala) 17 October, 1965, p. 3.

a year at the University Campus.\textsuperscript{81} The officers of the Department used to assemble to finalise the seasonal package of recommendations with the experts of the University. These recommendations subsequently published by the University formed the basis of the extension work in the country-side.

The University Farm Advisory Service was extended to the district level through extension specialists who provided technical expertise in Agronomy, Horticulture, Plant Protection, Farm Management and Soil Sciences. The University Extension Staff was made operationally answerable to the District Agricultural Officer. The District Extension staff of the University organised farm demonstrations for the benefit of the Government Extension staff and the local farmers in better techniques of farming. They also served as liaison officers between the District and the Block level Government staff and the State level University Extension staff.\textsuperscript{82}

Besides Research and Extension, the University used to arrange 'Kisan Melas' twice a year and courses to the advantage of the farmers. "All the new varieties of plants are put on display along with full details about their merits and methods of cultivation. ... Formal question and answer sessions are organised where farmers can discuss specific problems with the

\textsuperscript{81} Holly Sims, \textit{op. cit.}, pp. 152-53. Also P.C. Aggarwal, \textit{op. cit.}, pp. 117-20.

\textsuperscript{82} Kahlon et al. In Hunter (Ed.) \textit{Serving the Small Farmer}, p. 159.
scientists ... At the same time improved machines and animals are exhibited".83 This way scientists gained respectibility in the eyes of the farmers.

With the increase in production, the farmers were in need of machines to plough, sow and harvest the crops quickly. The University undertook a programme for the development and improvement of seed-cum-fertilizer drills, harvesting and thrashing machines and storage appliances.84 They developed potato digger-cum-shaker, groundnut digger, and wheat reaper etc.

To check pests and diseases, the University scientists devised two methods: to evolve new crop varieties resistant to pests and diseases and to suggest chemical and other measures to control the pests and to eradicate diseases of the plants. The spray schedules for various crops could contain the menace of pests and diseases. The farmers were benefitted from the advice of the scientists and they could save a lot, which used to be lost or damaged by pests and the plant diseases.

The Punjab Agricultural University played a very important role in providing the booster doses in the agricultural development on its all the three aspects—biological, chemical and

84. Randhawa M.S. Green Revolution, op. cit., p. 78.
technological. On its role Khem Singh Gill said, "The provision of research and extension facilities through P.A.U. can be called the backbone of green revolution in Punjab".

Irrigation

The modernized technologically oriented cropping pattern, HYV seeds, fertilizers and pesticides need more water for the exploitation of their potentials. Various schemes - major, medium and minor were devised by the Punjab Government to augment the water supply to the farmers for agricultural purposes. These schemes were framed in accordance with the topography of the area.

In 1947-48, the canal irrigated area was 40 lakh acres which rose to 60 lakh acres in 1955-56 and by the end of 1965-66, it was 78 lakh acres. Within a period of about 18 years, the irrigation facilities by canals almost doubled and from 1956 to 1966, the increase was 30 percent.

* Dr. Khem Singh Gill was Director, Extension Education, Punjab Agricultural University, at the time of interview. At present, he is the Vice-Chancellor of the same University.


The Bhakra Canal System was completed in 1954, whereas the other three - the Upper Bari Doab Canal, The Sirhind Canal and the Western Jamuna Canal, Punjab inherited after the Independence.88

The Bhakra Canal System 1954 included the construction of Bhakra Canal and the Bist-Doab Canal.89 The length of main canal and its branches was about 3400 kilometers. The storage of water in the Bhakra Reservoir was started for the first time in July, 1958 and since then the government could regulate the supplies of water both for irrigation and for generation of electricity.

During the Second Plan period,90 there was a provision of ₹ 247.93 lakhs for the Bhakra Canals with the target to irrigate 730500 hectares of land. An outlay of ₹ 1316.43 lakhs was earmarked in the Second Plan for major and medium irrigation projects.

A large amount91 was spent on Gurgaon Canal Project, Madhopur-Beas Link, Sirhind Feeder Project, remodelling of Jamuna Canal and spill over projects. The original target of the Second Plan was to bring under irrigation an additional area of 204000 hectares through major and medium projects, but an area of 156617 hectares was actually brought under irrigation.92 In the
Third Plan, a provision of Rs. 650 lakhs was made for major and medium irrigation.93

A new headworks at Harike four miles below the confluence of Beas and Sutlej was constructed in order to divert the water supplies into the Ferozepur Feeder for utilization on the Eastern and Bhakra Canals.94 Total area irrigated from the canals derived from the Harike headworks was 500,000 hectares in the districts of Ferozepur and Bhatinda.

The Bhakra Project:

The Bhakra Project - a multipurpose project, was started for providing water for irrigation and cheap hydro-electric power through utilizing the monsoon supplies of water in the Sutlej. A joint venture of Punjab and Rajasthan, Bhakra Project was completed in 1963,96 built at the cost of Rs. 175 crores. This project brought under irrigation 2.63 million hectares of land in Punjab and Rajasthan and produced 846000 KW of electric power, which could boost the irrigation in the State through energisation of the tubewells.

The storage and release of water in the reservoir of the Dam was increased from 472000 acre feet in 1958-59 to 2900000 acre feet in 1965-66, which increased the area under irrigation from 700000 hectares in 1958-59 to 1133550 hectares in 1965-66.98

The statistics given above indicate that there was an increase of 63 percent in irrigation in 1965-66 over 1958-59. The impact of the Bhakra was tremendous in the Berani Villages of Haryana area of the State, especially of Hissar district.99

The Bhakra Nangal Project became a symbol of prosperity and hope for the people of the State. By 1960-61, 54 percent of the net sown area was irrigated, largely due to the new canals. Canal irrigation was the result of a major investment consciously made. Over 1951-67 period, the Punjab spent Rs. 108 per hectare on irrigation against an all India average of Rs. 41.100

The establishment of Bhakra Dam with such huge cost and vast dimensions, in fact one of the highest dam in Asia, was clearcut indication of farsightedness and determination of politico-administrative set up of Punjab in fifties. The timely decision and action on the part of Punjab political leadership taken during early fifties created a milestone in the history of development of Punjab economy, through improving irrigation and power facilities drastically and in turn, raising agricultural productivity.

Banarsi Dass Gupta said, "The foundations of Green Revolution were laid in Punjab with laying the foundation stone of Bhakra Dam".

Minor Irrigation:

In order to irrigate more area of the State, the Punjab Government thought of exploiting underground water. Where canal irrigation was not feasible, alternate sources were taken into consideration and after giving a serious thought, the

101. "The 740 feet high Bhakra Dam dedicated by the Prime Minister on October 22 to the service of the nation is a living symbol of the resurgence and resurrection of the spirit of India... In height three times the Qutub Minar and in volume big enough to engulf a sixty storey skyscraper of one lakh rooms ... Built at a total cost of Rs. 175 crores, it is one of the proudest achievements of independent India in the use of technology and engineering for the agro-economic progress of India". (AICC Economic Review November 1, 1963. Occasional Comments).

Banarsi Dass Gupta was very active in Punjab Politics during fifties and sixties and after reorganisation of the State, in Haryana politics. He became Deputy Chief Minister and later Chief Minister of Haryana, disclosed during personal interview with the researcher in Chandigarh.
politico-administrative set up in the state resolved to augment irrigation potentials. To cover divergent areas of the state tubewells, wells, percolation wells, kuhls etc. were encouraged according to their suitability. The programme was initiated with the installation of 'public tubewells' to supply water to the farmers, especially the small farmers. But the cultivators did not show much enthusiasm in the Government run tubewells. The Government stopped the installation of 'public tubewells' and paid attention to the private tubewells.

The Punjab Government announced subsidies, loans and grants to involve more and more farmers in their tubewell programme. This inculcated a feeling among the farmers to own their own source of irrigation and they started installing tubewells, pumping sets etc. with the help of loans made available to them from time to time.

102. By the year 1958, there were 1422 Government tubewells, but further installation was stopped (Punjab Vidhan Sabha Debates, 20 March, 1958, Vol. I No. 33, pp. (23) 33-34.

103. In 1956, Rs. 25 lakhs and in 1959-60 Rs. 40.86 lakhs were given as 'taccavi loans' for 601 electric and diesel driven pumping sets, 102 tubewells and 1042 percolation wells. Further, in 1961-62, Rs. 22.31 lakhs for 372 tubewells, Rs. 15.80 for pumping sets and Rs. 23.5 lakhs for percolation wells were distributed. In 1962-63, Rs. 23.60 lakhs for 377 tubewells, Rs. 15.78 lakhs for 717 pumping sets were made available to the farms. (Government of Punjab. Department of Agriculture: Annual Reports for 1956 to 1966).
Various teams* sponsored by the Centre and the State, visited the rural areas of Punjab to assess the progress made in minor irrigation in the State. The Punjab Government activated their Department of Agriculture to direct their Drilling and Boring Wing to provide all assistance to the farmers in installing pumping sets and tubewells. The subsidy scheme also covered the diesel engines and pumping sets.

To provide irrigation in hilly areas of the State, the old non-operative kuhls were repaired and new kuhls were installed with government assistance. Liberal policy of loans and subsidy attracted the farmers of hilly areas and they made full use of government assistance in installing kuhls in the State.

The politico-administrative set up in the State, not only provided cash loans or assistance in the process of installation of tubewells etc. but made available to the farmers the required components for minor irrigation. In areas where electric connections were not given to the tubewells, the diesel driven engines were required to run the tubewells. For that, a new

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*A team headed by T.R. Mehta visited Punjab in 1964 and after surveying the rural areas it recommended for more grants and subsidy to the private tubewells. Another team led by M.S. Randhawa toured the State in 1965 and suggested that "every farmer owner of minimum of 10 acres of land be encouraged to instal tubewells and the government must provide all assistance to him". Arjan Singh Committee visited the rural areas of the State in 1964 and acquainted the Government of the interest shown by the farmers in having their own source of irrigation.

104. In 1965, 25 percent subsidy on diesel engines was announced, later in 1966, it was revised to 50 percent (upto 5 H.P. engine) and 37.5 percent (upto 10 H.P. engine).
scheme was launched by the Government in 1966. Under this lucrative scheme, the farmer could save the profit charged by the private supplier of diesel engines. The Government procured about 10,000 diesel engines (exclusively for pumping sets and tubewells) for sale to the farmers on 'no profit no loss' basis.

The incentives given by the Government paid rich dividends and as a result, the number of tubewells increased from 4799 in 1956-57 to 7445 by the end of the Second Five Year Plan in 1961 and 30864 in 1966-67 the end of the Third Plan.

The bold steps taken by the political leadership and with equal enthusiasm implemented by the administrative machinery increased the irrigation facilities in the State. Though, the Government had to spend huge amounts but at the cost of agricultural production, there was no compromise.

If one is to identify the most important factor responsible for the Green Revolution in Punjab, irrigation emerges as the prime factor among other important factors, like high yielding

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105. Under the Scheme, 25 percent subsidy was allowed to the farmers if the loanee completed the installation of tubewell within one year after getting the loan (Annual Report of the Department of Agriculture 1965-66, p. 37.). Another Scheme of Rs. 1.25 crores was popularised by announcing that one fourth of the expenses would be borne by the Government of the State. (The Tribune, April 3, 1965, p. 3).


* Refer Appendix Table. No. VI.
varieties, seeds, mechanisation, response of the farmers etc.
The inadequate irrigation was considered to be the major handicap in the prosperity of the State of Punjab in early fifties. It was the result of the earnest efforts of the State Government that the area under irrigation increased from 45 percent in 1955-56 to 54.37 percent in 1961-62 and 81.5 percent in 1966-67. In enhancing the irrigation facilities, power in the form of electricity played an important role.

Power:

Before the dawn of planning era, Punjab had a small hydel power house at Jogindernagar. The supply of electricity was mainly for the urban areas of the State. In addition, there were private companies also for some limited supply within municipal limits. As the First Five Year Plan started, Punjab Government showed its concern for agricultural production and the agricultural production could not be increased without the increase in irrigation and for irrigation, power in the form of electricity became the necessity. To generate electricity and to supply it for agricultural purposes, the politico-administrative set up in Punjab decided to have Bhakra Project, which could generate power


through its Left Bank and Right Bank. To cope with the growing
demand, the Government started another power scheme viz. Uhl
River Scheme during the Second Five Year Plan. In other words,
power for agricultural purposes, could only be supplied by the
Government, depending solely upon the Bhakra Project and Uhl
River Scheme.

In 1959, for the efficient generation and distribution of
electricity supply, the Punjab Government established an autonomous
board The Punjab State Electricity Board to cope with the
requirements of intensive cultivation.

During the Third Five Year Plan period various other
schemes/projects were started to streamline the supply to
tubewells, pumping sets, threshers etc.

To make the electricity supply cheaper, the duty on
electricity supplied to the Government tubewells was exempted
and from private operators subsidized rate was charged. The

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* Gian Singh Rarewala (Irrigation and Power Minister) inaugurated at Patiala - The Tribune, February 1, 1959.

** Power House on Upper Bari Doab Canal and Western Jamuna Canal; Extension of Uhl River Scheme; Diesel and Micro H ydel Generation Scheme; Thermal Plant at Delhi and Thermal Power Unit at Faridabad.


110. 9.38 N.P. per KWH for first 1500 KWH per month and 7.81 N.P. per KWH for the excess of 1500 KWH per month.
tubewells rose from 2224 in 1961-62 to 7236 in 1965-66. The projects/schemes started during Third Five Year Plan had their bearing on future.

The rising concern of politico-administrative set-up in Punjab towards agricultural development can be gauged on the basis of facts that the share of electricity supply to agricultural sector, in total generation has increased from 4.50 percent in 1956 to 14.90 percent in 1960-61 and 19.30 percent in 1965-66.

Seeds:
Realising the importance of seeds in the process of increasing agricultural productivity, the Punjab Government paid proper attention on the aspect of quality seeds, their multiplication and popularisation. The process to develop improved seeds of wheat, gram, barley, rice, sugarcane and cotton had already been started by the Department of Agriculture, as early as in 1956. Before the establishment of Agricultural University, the research on improved varieties was carried on by

118. By the year 1956, there were 619 agencies for distribution of improved varieties seeds. As a result of distribution, out of total area sown, under wheat 86.79 percent, cotton 95.94 percent, sugarcane 94.00 percent was brought under improved seeds cultivation. Source: Annual Report 1955-56, Department of Agriculture, Punjab, p. 34.
the experts of the Department and they could carry out a couple of new varieties of wheat according to the different agro-climatic conditions of the State.119

Later in 1962,120 the responsibility of development of improved quality seeds was assigned to the scientists of the Punjab Agricultural University. They developed a new variety of wheat (C-306) which proved to be a highest yielding tall variety. However, the real breakthrough came with the arrival of Mexican121 dwarf varieties of wheat. The strains of the imported wheat were tried to check their quality and production. Two dwarf varieties (V18 and S227) emerged as the best and their yield was as high as 4690122 kilograms per hectare against 3291 kilograms per hectare of C-306 - the best variety of that period. Dr. Khem Singh Gill has spelled out the importance of high yielding variety seeds in green revolution as, "The process of agricultural transformation was started with the arrival of HYV seeds in form of Norin 10 in 1961 and the Mexican in 1963". *


121. Mexican dwarf seeds came to India in 1963. About 150 strains of dwarf wheat were received and the University picked up two V18 and S227 for multiplication. The names of these two varieties were popularised with the name PV18 and Kalyan Sona 227.

122. The Tribune October 8, 1966, p. 3.

* In an interview with the researcher at Ludhiana.
The Punjab Government took the charge of mass multiplication of improved seeds and for that, 214 seed farms at the cost of Rs. 109.60 lakhs were established during the Second Five Year Plan period.

In 1963, the Government implemented a scheme for multiplication of improved seeds. This had gone a long way in ensuring the proper multiplication of seeds. The Government had acquired a 10,000 acres plot at Hissar for mass multiplication of Mexican seeds. Seed farms under the control of registered seed growers were also given assistance in the process of multiplication and in purchasing their produce on premium, keeping in view the quality of the seeds.

To popularise the improved seeds, the politico-administrative set up devised liberal policy to finance the purchase of seeds by the farmers. The farmers responded to the incentives given by the Government and within a matter of few years, the fertile land of Punjab came under the cultivation of high yielding varieties.

123. Under the scheme, all seed farms under the control of tenants were required to give 35 maunds per acre yield, if they were under canal irrigation and the share of the Government was fixed at 10 maunds per acre. "Those tenants who failed to make supply of this quantity of seeds, would be liable to eviction. In such cases these farms would be given to local tillers, showing better results" - Partap Singh Kairon, The Tribune 26 October, 1963.


A sum of Rs. 5 per quintal paid to registered growers for procurement of improved paddy seeds. Darbara Singh (Home & Development Minister) S.Q. 6214, 18 Sept., 1964, Punjab Vidhan Sabha Debates Vol. II No. 5, pp. (5)20-(5)21.
Chemical fertilizers play a crucial role in the biological aspect of agricultural development. Before 1956, the farming community was not in the habit of using chemical fertilizers and the only fertilizer they knew was compost/green manure. Lack of popularity of chemical fertilizers was a stumbling block on the way of intensive cultivation. Realising the necessity of awareness among the cultivators, the Punjab Government directed its Department of Agriculture to take appropriate steps in popularising such fertilizers. The Department established many demonstration plots to attract and educate the farmers in fertilizer use. The field staff was activated and extensively trained to convince the farmers of benefits of chemical fertilizers. The trained officials used to organise village level meetings to clear the doubts of the farmers concerning agricultural development through the use of chemical fertilizers. Ammonium Sulphate, Ammonium Sulphate Nitrate, Calcium Ammonium Nitrate, Superphosphate and Urea (Nitrogenous, Phosphatic and Potassic).

125. Eighty compost Inspectors, 36 Agricultural Inspectors and 40 village level workers were given training in the use of fertilizers to be communicated to the farmers. Source: Government of Punjab. Annual Report. Department of Agriculture, 1958-59, p. 46.

From time to time, taccavi loans were made available to the farmers for the purchase of fertilizers. The efforts of the Government to finance the chemical fertilizers was to popularise them and for that 25 percent Government subsidy was announced during the Second Five Year Plan period.

Keeping in view the timely supplies of fertilizers the distribution was exclusively under the control of the Punjab Government. Later, the sole responsibility of distribution was given to the Punjab State Supply and Marketing Federation Ltd. (MARKFED) - an Apex Cooperative body. The purpose of transferring the distribution to a cooperative body was to supply the fertilizers to the farming community in their villages through cooperative societies.

The network of cooperative societies to supply chemical fertilizers, gave an opportunity to the farmer to get these fertilizers at his door step that too, on credit. The consumption of chemical fertilizers increased from 17812 nutrient tons in 1955-56 to 236225 nutrient tons in 1965-66.129

127. In 1956, a sum of Rs. 72 lakhs was earmarked for short and medium term loans; 1958-59, 25 percent subsidy on restricted supply of fertilizers; 1964-65, Rs. 624 lakhs for loans out of which Rs. 175 lakhs as subsidy. In 1966, fertilizers worth Rs. 60 lakhs were distributed on credit.

Sources: For 1956, Gurbanta Singh (Minister for Agriculture) Reported in The Tribune 25 May, 1956.


128. MARKFED - Details under the heading Marketing Infrastructure.

129. Statistics compiled from the Office of Registrar, Cooperative Societies (Punjab) Chandigarh and Directorate of Agriculture (Punjab), Chandigarh.
Per hectare use of chemical fertilizers increased from 1.06 kilograms in 1960-61 to 156 kilograms per hectare in 1988-89. After the reorganisation of the State in 1966, Punjab was left with an area of 2.37 percent of the total cultivated area of the Indian Union, but with 9.79 percent of her total consumption of chemical fertilizers. This clearly speaks the volumes of the successful implementation of the Government policy on fertilizers in right direction. With this, Punjab completed 'water-seed-fertilizer' package to enhance the agricultural production. Prem Singh 'Prem' said, "Rural biased policies relating to irrigation, power, seeds and fertilizers, of our government became instrumental in bringing the green revolution".


* Prem Singh 'Prem' was a Minister in Kairon Ministry from 1956 to 1964, Ram Kishan Ministry from 1964 to 1966 and Giani Gurmukh Singh 'Musafir' Ministry from 1966 to 1967.

** Personal interview with the researcher in Chandigarh.
further accelerated by providing 1199 Bucket Sprayers, 1314 Foot Sprayers and 1127 Rotary Dusters to the Panchayats on subsidised basis. In 1958, the Government announced a subsidy of 50 percent on plant protection equipments.\textsuperscript{134}

To eliminate the dangers of use of pesticides, a programme for imparting proper training to the field workers was chalked out with an outlay of Rs. 2.18 lakhs.\textsuperscript{135}

The spraying unit of the Department of Agriculture supplied the farmers, regular schedule of spray of insecticides/pesticides at various stages of growth of crops. This information was supplied to them by using all possible media - radio, leaflets and even newspapers. During the year 1958-59, large scale spraying operations were carried out against cotton-pests.\textsuperscript{136}

One of the major threats to crops was locust invasion.\textsuperscript{137} Such threats were expected in 1960 and 1961. A sum\textsuperscript{138} of Rs. 1,90,500 was spent on BHC\textsuperscript{*} to evade the threat of locust swarms in Fazilka Tehsil. The State Entomologist was made


\textsuperscript{135}. \textit{Review of Second Five Year Plan}, op. cit., p. 66.


\textsuperscript{137}. \textit{The Tribune} 22 July, 1961, p. 10.


* An insecticide
incharge of locust control with the designation-Locust Control Officer. This threat was expected to spread throughout the State and for that the Deputy Commissioners were alerted against the expected threat from locust swarm in the State. An aeroplane was procured from the Central Government for spraying on crops.

Further, during the year 1963 the farmers were provided with locust control equipments worth Rs. 350000 free of cost to meet any such eventuality in future. It was stated in the Assembly that a subsidy of Rs. 8,04,000 was given from 1958 to 1963 on pest control equipments.

The Central Government gave 66 percent subsidy on aerial sprays and exempted duty on 43 brands of pesticides commonly used by the farmers. The State Government was asked to procure more pesticides to save the crops. The Punjab Government established a full-fledged 'Plant Protection Organisation' to control the spread of pests in the State. The officials of this organisation were given extensive training in plant protection. The cotton growing areas of

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139. Ibid.
143. Reported in The Tribune 2 June, 1963, p. 3.
In mechanising the agriculture, the Punjab Government's policy was extensively influenced by Kairon's observations about mechanised high yielding American agriculture made in California.\textsuperscript{147} The political and personal influence of Kairon could accelerate the pace of mechanisation of Punjab agriculture.

Under the Technical Cooperation Mission (TCM) Programme, more iron and steel was supplied to Punjab to fabricate implements for distribution to the farmers. As a result the Department sold the improved implements worth Rs. 3339620 in 1956-57.\textsuperscript{148} Easy terms loan of Rs. 5820014,\textsuperscript{149} was distributed among the farmers for the purchase of tractors.

During Second Five Year Plan the research wing of the Department further improved the Power Wheat Thresher and Winnower, which they had invented earlier and some new implements were added, to name a few, Self Rake Reaper, Double Mould-Board, Light Furrow - Turning Plough and Disc Harrow. To ascertain the quality and specifications, the appointment of an Engineer ( Implements) was made. The design and specifications given by the Engineer ( Implements) were complied with by the fabrication staff and details were passed on to the district and village level officials.\textsuperscript{150}

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\textsuperscript{147} Gill, Agriculture Cooperatives, \textit{op. cit.}, p. 179.
\end{flushright}
Later, this post was transferred to Punjab Agricultural University, which strengthened the Agricultural Engineering Wing of the University and twelve new implements were designed viz. Disc Harrow, Power Wheat Thresher, Winnower, Punjab Senior Plough, Punjab Junior Plough, Punjab Soil Stirring Plough, All Grain Seed Drill, All Seed Grain-cum-Fertilizer Drill, Randa Wheel Hand Hoe, Kangra Plough (for hilly areas), Maize sheller and Clod Crusher. All these new implements attracted the farmers during the Kisan Melas organised by the University every year.

Pandit Amar Nath suggested that "...demonstration of new improved implements is very important. This work has been assigned to the District Agricultural Staff and VLW". In real sense until and unless the farmers are not given demonstration of new implements, they would not own them. For that purpose the field staff must be properly trained.

An Agricultural Workshop at Ludhiana was opened by the Department of Agriculture, at the cost of Rs. 78510, to carry out repairs, smithy work etc. concerning agriculture. This workshop was opened to provide field service to the farmers and practical training facility to the students of Agricultural Engineering.

151. ibid., p. (39) 345.

* Pandit Amar Nath was a member of Punjab Advisory Committee on Agricultural Implements.
Now, the farmers could get their implements repaired under the expert hands. The specialists used to give instructions also concerning the proper use of implements. Implements worth Rs. 38 lakhs were distributed to the farmers during 1959-60. Another big workshop at Nilokheri run by the Department became a centre for tractor repairs. The workshop was equipped with trained personnel to provide facilities for repairs and allied jobs. For the controlled price spare parts of the tractors and repairs, the farmers preferred to visit Nilokheri. With these two workshops, one at Ludhiana and the other at Nilokheri, the popularity of new improved implements and tractors gained momentum and by then the farmers had prepared themselves to change accordingly. Further, the Government announced 25 percent subsidy on implements. This attracted the small farmers also. They too, started using new improved implements. The Government was ready to bear loss even in their mission to popularise new implements for mechanisation of farming. For this the door step repair facility was considered to be of utmost importance. In this direction the Government did the splendid job, as S.R. Maini* puts, "Our decision of establishing five projects for agricultural implements each at Batala, Nawanshahar, Ludhiana and other centres was a right one."

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154. A workshop was opened at Nilokheri in 1961. The farmers of Haryana area were very happy over it. Now, the needs of the farmers belonging to Haryana area could be attended to in their own area. So, the balance was made by having two centres for repairs of agricultural implements one at Ludhiana and the other at Nilokheri.


*S. R. Maini was a senior officer of Indian Administrative Service in Punjab who was closely associated with the agricultural development in the State, during the period under study. Disclosed while talking to the researcher in Chandigarh.
NLOOKHERI, Sonepat and Faridabad proved very effective in taking care of the increasing demand for improved agricultural implements with the rising mechanisation of the State agriculture. Five Agricultural Inspectors were assigned the job to popularise the implements by exhibiting them throughout the State. The price of the implements were further reduced and subsidized concessional rates were tagged.

In 1962, an Assistant Engineer and eleven Agricultural Inspectors were appointed to arrange demonstrations in the villages. They were trained in operation of new implements and their approach was to provide information at farmer's doorstep.

With the increase in production of improved implements at NLOOKHERI workshop, the prices of implements were further slashed and a subsidy of 50 percent was announced by the Government.

To encourage private investors in manufacturing agricultural implements, the Government announced subsidy, cash awards and merit certificates to the fabricators and manufacturers of seed drills and threshers. They were provided with facilities for further improvement, research and designing the farming tools.

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158. The Tribune 6 June, 1966, p. 3.
This led to the emergence of more local manufacturers of these implements to which the response of the farmers was encouraging because they could supply the implements at cheaper rates in comparison with the Government manufactured implements. In addition, the facility for spares and repairs was also available in the local markets.

During the year 1965-66, the Government of India issued a letter of intent to M/S Escorts Ltd. for manufacturing 7000 tractors of 34.5 H.P. per annum at Faridabad.

** Cooperative Credit:**

To meet the finances for inputs in agriculture, farmers need the help of either some relative or friend or money lender. Money lender gradually compels the farmer to sell his land to repay his debts which he is unable to pay otherwise, because of high rate of interest. Then came the cooperatives to rescue the farmer from the clutches of the money lenders. The cooperatives movement in Punjab started when factors like small holdings, cattle mortality, non-availability of irrigation compelled the farmer to live in poverty. The Cooperative Societies Act was passed in 1904, to save the farmer from the poverty. Upto 1946, the Punjab passed through many ups and downs in the field of


cooperatives even then the efforts of the Registrars like Darling and Calvart laid the foundations of a sound cooperative movement in the State.

The partition of Punjab in 1947, gave a big jolt to the cooperative movement in the State. The Punjab Provincial Cooperative Bank and Provincial Cooperative Union, both situated in Lahore were lost to Pakistan. As a result "for all practical purposes the movement had to be started de novo and built up almost from scratch". The people of the truncated state were saved by the cooperatives and they started organising it in various fields.

The Government and the cooperatives played a significant role in fulfilling the needs of the farmers by advancing short term, medium term and long term loans. The Governmental effort in sanctioning taccavi loans was a step in right direction but the amount in the form of taccavi loans could not satisfy the requirements of the farmers. The cooperative credit agencies emerged on the scene and the agricultural cooperative credit societies, Central Cooperative Banks and the Punjab State Cooperative Bank gave loans to the farmers. The recommendations of the Rural Credit Survey Committee were complied with and the


* Rural Credit Survey Committee was constituted in 1955, to assess the scope of credit in rural areas in Punjab.
Punjab Government became major shareholder in societies and invested large amounts by way of share capital. Since Government funds were involved, for their safety, considerable supervision and control was maintained by the Registrar, Cooperative Societies.

To streamline the credit structure in Punjab, the Punjab State Cooperative Societies Act was passed in November 1954. With the involvement of Government in Cooperative movement, credit facilities improved. In 1955, Punjab had 24 Central Cooperative Banks and 36 banking unions. With the implementation of three-tier structure (at village, district and State level), banking unions were eliminated and some of the central banks were also merged in order to have one such bank per district. The Registrar, Cooperative Societies, Punjab called it "the seed period of the cooperatives". Earlier in 1955, Rural Credit Survey Committee had concluded "Cooperative has failed in India, cooperation must succeed". As far the progress of the movement in Punjab was concerned, it was reasonable to say that "while cooperatives have succeeded to a large extent in Punjab, Cooperation has largely failed". This was true because of

the involvement of the State Government in cooperatives. More and more powers were given to the Registrars and their subordinates and the farmers merely saw the cooperative movement as a Government agency for providing government loans.

The State Government contributed Rs. 15 lakhs to the share capital of the Apex Bank. By strengthening the structure of the cooperatives, the credit operations of the movement increased considerably. The amount of loans advanced annually increased from about one crore at the commencement of the First Five Year Plan to nearly Rs. 4.25 crores in 1956. These loans were short and medium terms only, no long term loan facility was available with the cooperatives. The long term credit was given by the Government in the form of taccavi loans, which were insufficient to meet the rising needs of the public and it was imperative that the cooperative institutions should provide long-term credit in addition to the short term and medium term credit which had been attended to by them. In accordance with the Central Government policy, a scheme was formulated in the Second Five Year Plan for the setting up of a state Land Mortgage Bank with a network of District Mortgage Banks.

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69. Ibid.

* After partition, the Central Cooperative Bank of Ambala was notified in January, 1948, to serve as the 'Apex Bank' for the State under section 2(c) The RBI Act. (AAR 1962-63, PS Coop. Bank, pp. 55-56.).
The Punjab Cooperative Land Mortgage Banks Act, 1957, provided the State Government opportunity to become a shareholder and to extend the maximum possible financial and administrative support to the new venture. The Act provided for the setting up of the State Cooperative Land Mortgage Bank, which was registered at Jullundur with the State of Punjab as its area of operation, on 26 February, 1958. The Bank was designed to provide long term loans to the owners of land or other immovable property to enable them to discharge their debts, to carry out agricultural improvement, to acquire land for the formation of economic holdings and to promote thrift and self-help among them. The loans were advanced for the periods ranging five to twelve years and the maximum limit of the loan was fixed at Rs.25 thousands. Initially, the bank started functioning through cooperative banks but in 1961-62, it was agreed to fall in line with the general pattern suggested by the Reserve Bank of India and to establish separate Primary Land Mortgage Banks at the level of the District or below. Hence, fourteen such banks were established almost in all the districts. "To begin with, a member could draw a loan upto twenty times of his share capital subject to a maximum of Rs. 10,000 for a period of up to 15 years. The loans were given against simple mortgage". The Bank distributed

172. The Tribune October 10, 1958, p. 6.
173. Daljit Singh's (Manager) write up, 'Punjab State Land Mortgage Bank', The Tribune November 1, 1958, p. III.
Rs. 13.84 lakhs in 1958-59, which increased to Rs. 157.44 lakhs in 1966-67.175

The Punjab State Cooperative Bank, distributed short term and the medium term loans for tubewells, wells, pumps, tractors, cattles etc. The details are given below:

Table III(2)

<table>
<thead>
<tr>
<th>Year</th>
<th>State Coop. Bank</th>
<th>Central Coop. Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955-56</td>
<td>268.17 lakhs</td>
<td>414.61 lakhs</td>
</tr>
<tr>
<td>1957-58</td>
<td>394.62 lakhs</td>
<td>844.16 lakhs</td>
</tr>
<tr>
<td>1959-60</td>
<td>617.00 lakhs</td>
<td>1365.52 lakhs</td>
</tr>
<tr>
<td>1960-61</td>
<td>795.00 lakhs</td>
<td>1231.57 lakhs</td>
</tr>
<tr>
<td>1961-62</td>
<td>817.60 lakhs</td>
<td>1515.61 lakhs</td>
</tr>
<tr>
<td>1962-63</td>
<td>915.50 lakhs</td>
<td>1628.50 lakhs</td>
</tr>
<tr>
<td>1966-67</td>
<td>1608.54 lakhs</td>
<td>2731.88 lakhs</td>
</tr>
</tbody>
</table>

2. Annual Administrative Reports, Cooperatives C.P.S. Punjab of various years.

The Cooperative Credit Societies and Service Cooperative Societies in Punjab helped the farmers by granting short term credit in cash and in kind like supply of fertilizers, seeds, insecticides, implements etc. The primary Agricultural credit societies increased from 14344 in 1957-58 to 19981 in 1964-65.176

The loan outstanding with the farmers in 1958 was Rs. 99,209 thousands, which increased to Rs. 301,572 thousands in 1966-67. The details are given in the table.

**Table III(3)**

Cooperative Loans Outstanding During the Year for Agriculture (1958-1966) (Rs. in thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary Credit Cooperative Societies (Agriculture)</th>
<th>State Cooperative Banks (Agriculture)</th>
<th>Central Cooperative Banks (Agriculture)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1958</td>
<td>99,209</td>
<td>39,115</td>
<td>80,391</td>
</tr>
<tr>
<td>1959</td>
<td>116,284</td>
<td>59,989</td>
<td>91,000</td>
</tr>
<tr>
<td>1960</td>
<td>142,836</td>
<td>62,302</td>
<td>109,021</td>
</tr>
<tr>
<td>1961</td>
<td>161,619</td>
<td>69,842</td>
<td>114,533</td>
</tr>
<tr>
<td>1962</td>
<td>192,352</td>
<td>86,172</td>
<td>139,713</td>
</tr>
<tr>
<td>1963</td>
<td>215,766</td>
<td>98,256</td>
<td>160,811</td>
</tr>
<tr>
<td>1964</td>
<td>255,968</td>
<td>121,643</td>
<td>193,538</td>
</tr>
<tr>
<td>1965</td>
<td>292,042</td>
<td>152,901</td>
<td>229,217</td>
</tr>
<tr>
<td>1966</td>
<td>234,605</td>
<td>169,344</td>
<td>190,182</td>
</tr>
<tr>
<td>1967</td>
<td>301,572</td>
<td>160,854</td>
<td>273,188</td>
</tr>
</tbody>
</table>

Sources


That means the credit societies - primary, State Cooperative Banks and the Central Cooperative Banks were always ready to help the needy farmers and advanced loans for the purchase of agricultural inputs. "It was the cooperative network which could meet the greater credit needs of farmers raised by the adoption of new technology".* The Service Cooperatives were there to give credit not in cash but in kind. On the recommendations of the Rural Credit Survey Committee small-sized village level societies were abolished and large sized societies were established to avail the services of the trained staff and for the efficient functioning of the cooperatives. "When the pattern of large-sized societies was adopted in Punjab, they were established in villages after careful selection. By 1962, 420 large sized societies had been established in Punjab with a membership of 159000 and a working capital of Rs. 4.31 crores".178 By the year 1963-64, 100 percent of the villages were covered by the cooperative societies in Punjab.179 But with all this numerical bounty, the performance was inadequate in respect of coverage of village population.

The All India Rural Credit Survey Report by Reserve Bank of India in 1955,180 clearly indicates that only 3.1 percent credit requirements were met by the cooperatives, and in 1966-67, it

178. M.S. Randhawa, Green Revolution, op. cit., p. 84.
179. ibid., pp.87-8.

* In a personal interview with Dr. Manohar Singh Gill, who was Financial Commissioner (Development) Punjab disclosed.
rose to 34.6 percent.\textsuperscript{181} This implies that the 65.4 percent requirements were met by other agencies. The study conducted by Punjab Agricultural University indicated that "11.47 percent of the simple farmers were not interested in taking loans from cooperatives presumably due to lack of awareness of the significance of credit in the adoption of new farm technology, 53.28 percent of the farmers who were interested to avail of credit facilities failed in their efforts. Only 35.25 percent of the interested farmers were able to obtain the loans after overcoming various difficulties in getting credit".\textsuperscript{182} The Economic and Statistical Organisation study revealed that the big farmers were the main beneficiaries of the cooperative credit. It was brought to light "... that the average amount of loan obtained per borrowing committee member of the managing committees of agricultural credit societies (who are all big land holders) worked out to Rs. 737.70 and it was over three times (Rs. 244.40) that secured by the borrowing member during 1967-68".\textsuperscript{183}

The dark side of the cooperative credit in Punjab does not mean that the cooperative credit could not contribute significantly in the agricultural development in the State. No doubt,


\textsuperscript{182} ibid.

this step was loosely guarded and hence, suffered from some glaring defects, but it could drastically influence the debt position of Punjab farmers. Cooperative credit was one of the important factors which induced the farmers to adopt modern agricultural technology. As Jaswinder Singh Brar* felt "Cheap and timely credit through cooperatives led to Green Revolution in Punjab". **

Agrarian Market Structure in Punjab:

Marketing is one of the major stages of production process. A defective marketing system can nullify all the efforts made by different sections of society in direction of augmenting the productivity. Marketing includes the smooth supply of inputs (of specified quality and at normal prices) and the disposal of produce at remunerative price.

At the start of Second Five Year Plan, the State of Punjab was suffering from a defective agrarian marketing structure. In this system, the middlemen were playing havoc with the ignorant agriculturists. The politico-administrative set up in Punjab could appreciate the necessity of removing marketing obstacles on the way of agricultural prosperity of the State. For this, Markfed was rejuvenated.

* Mr. Jaswinder Singh Brar was a Minister in Prakash Singh Badal Ministry from 20 June 1977 to 17 February, 1980. (A big landlord turned politician after the Green Revolution).

** Personal interview with the researcher at Sandhwan (Faridkot) - his native village.
MARKFED: (The Punjab State Supply and Marketing Federation Ltd.)

The Punjab State Supply and Marketing Federation Ltd. came into existence on 2 September, 1954, as the Apex Cooperative body and Tata Fison Ltd. gave exclusive rights of distribution of insecticides and pesticides to it. To popularise pesticides among the farmers MARKFED played a significant role. But Markfed's real role in agricultural development started in 1960 when the Department of Agriculture transferred the fertilizer distribution in the State to it. Even the chemical fertilizers were not well received and accepted by the farmers before giving supply rights to Markfed. The purpose of transferring distribution to the cooperative body was that the supply was made available to the farmers in their villages through cooperative societies. Very marginal commission was the share of Markfed in the net sale of fertilizers distributed among the societies. The value and the quantities of fertilizers supplied by Markfed are given below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity (lakh tons)</th>
<th>Value (Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-61</td>
<td>0.39</td>
<td>1.17</td>
</tr>
<tr>
<td>1961-62</td>
<td>0.69</td>
<td>2.11</td>
</tr>
<tr>
<td>1962-63</td>
<td>1.11</td>
<td>3.41</td>
</tr>
<tr>
<td>1963-64</td>
<td>1.42</td>
<td>5.68</td>
</tr>
<tr>
<td>1964-65</td>
<td>2.28</td>
<td>9.77</td>
</tr>
<tr>
<td>1965-66</td>
<td>2.36</td>
<td>9.03</td>
</tr>
<tr>
<td>1966-67</td>
<td>2.58</td>
<td>13.95</td>
</tr>
<tr>
<td>1967-68</td>
<td>5.16</td>
<td>18.50</td>
</tr>
</tbody>
</table>

Source: Handhawa M.S. : Green Revolution, p. 92.

The supply of fertilizers increased gradually and by the year 1967-68, it received momentum. There was a network of 6000 sale depots in Punjab managed by the Apex Body.185

The efforts of MARKFED in popularising the use of pesticides resulted in a rise in the demand of plant protection equipments by the farmers. MARKFED was entrusted with the job of total plant protection in 1965. Thereafter its role in this direction can be assessed with by the fact that in the years 1965-66 and 1966-67, the total business by MARKFED in plant protection equipments was Rs. 7.37 lakhs and in insecticides and pesticides Rs. 15.26 lakhs.186

The improved seeds, fertilizers and the insecticides/pesticides added strength to the irrigated fertile land of Punjab and the production of crops started showing encouraging results. With the arrival of more supplies of wheat in the market, the price in the open market was less and that was a loss to the farmer. To compensate the loss and for morale boosting of the farmers the Punjab Government asked Markfed to purchase wheat to ensure remunerative prices to the farmers. A quantity of 50,000 tons of wheat was procured by Markfed for the first time in 1964-65.

186. Randhawa, Green Revolution, op. cit., p. 95.
Table III(5)
Wheat Purchased by Markfed

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity (quintals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964-65</td>
<td>50,000</td>
</tr>
<tr>
<td>1965-66</td>
<td>1,20,000</td>
</tr>
<tr>
<td>1966-67</td>
<td>9,66,000</td>
</tr>
<tr>
<td>1967-68</td>
<td>65,00,000</td>
</tr>
<tr>
<td>1968-69</td>
<td>82,00,000</td>
</tr>
</tbody>
</table>

Source: Data compiled from the Markfed Office, Chandigarh.

It is evident from the above table that Markfed continuously increased its purchases of wheat for providing requisite agrarian market structure to the producers of wheat. Assured remunerative prices of wheat could check any hampering impact on the enthusiasm of farmers in raising their wheat produce.

Cooperative Farming:

In the process of agricultural development, the political leadership took steps to encourage cooperative farming because the tiny farms and with meagre resources could not give boost to productivity. By way of joining hands and pooling small farms, the cultivators could use mechanised methods by using tractors, threshers, improved implements; more irrigation facilities by installing tubewells; and HYV seeds and pesticides etc. whereas small farms were breft of these facilities.
In this process, the politico-administrative set up in the State provided facilities and cooperative farming societies got cash incentives also.

The Planning Commission of India announced concessions to the cooperative farming. The Punjab Government following the directions of the Commission, formed an eighteen member Board for cooperative farming. The main job assigned to the Board was to suggest plan and promotion of cooperative farming.

The Government grants and subsidies were given to the cooperative farming societies from time to time, which led to the increase in number of such societies. In 1958, there were

* The Planning Commission announced concessions like technical advice, subsidy for managerial expenses, and preferential credit from cooperatives or Governmental agencies in the supply of seeds, fertilizers, materials and in grant of lease of land reclaimed by the Government ('Cooperative Farming - Fads and Fallacies', The Tribune, October 20, 1957).

** The Board functioned under the chairmanship of Minister for Community Development and Cooperatives. (The Tribune, August 6, 1961, p. 6).

*** The Punjab Government gave assistance to the Cooperative Farming Societies:

<table>
<thead>
<tr>
<th>Plan</th>
<th>Amount</th>
<th>Years</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Plan</td>
<td>Nil</td>
<td>1956-57</td>
<td>Rs. 2 lakhs</td>
</tr>
<tr>
<td>II Plan</td>
<td>Rs. 6.79 lakhs</td>
<td>1957-58</td>
<td>Rs. 2.30 lakhs</td>
</tr>
<tr>
<td>III Plan</td>
<td>Rs. 60.59 lakhs</td>
<td>1958-59</td>
<td>Rs. 98560</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1960-61</td>
<td>Rs. 50000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1961-62</td>
<td>Rs. 392500</td>
</tr>
</tbody>
</table>

Cooperative Farming Societies in Punjab, the number rose to 1330 in 1965, covering an area of 1.5 lakh acres.\(^\text{188}\)

The experiment in cooperative farming was a step towards progress and prosperity of the State, but in this venture main role was played by the politico-administrative set up, because without its incentives and assistance, the small farms could not be covered under irrigation, HYV seeds, fertilizers, pesticides and above all the mechanisation of agriculture would have remained a dream.

Roads and Transport:

"Transport is a necessary ingredient of nearly every aspect of economic and social development. It plays a key role in getting land into production, in marketing agricultural commodities and in making forest and mineral wealth accessible".\(^\text{190}\)

These ideas communicate the importance of roads and transport in developmental activity. The Government of Punjab, understanding the need of roads constructed metalled and unmetalled roads to connect villages with towns and cities. The Public Works

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187. As reported in The Tribune February 17, 1960, p. 7.
Department (B&R) remained active in constructing roads in the entire state. From 1956 to 1966, besides maintaining the existing ones, new main as well as link roads were constructed. Year-wise progress can be assessed from the table given below:

Table III(6)

Roads Constructed in Punjab

(in kilometres)

<table>
<thead>
<tr>
<th>Year</th>
<th>Length of Roads Constructed Per year</th>
<th>During Plan period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955-56</td>
<td>913.6</td>
<td></td>
</tr>
<tr>
<td>1956-57</td>
<td>646.4</td>
<td></td>
</tr>
<tr>
<td>1957-58</td>
<td>504.0</td>
<td></td>
</tr>
<tr>
<td>1958-59</td>
<td>553.6</td>
<td></td>
</tr>
<tr>
<td>1959-60</td>
<td>662.4</td>
<td></td>
</tr>
<tr>
<td>1960-61</td>
<td>627.2</td>
<td>2993.6</td>
</tr>
<tr>
<td>1961-62</td>
<td>550.0</td>
<td></td>
</tr>
<tr>
<td>1962-63</td>
<td>376.0</td>
<td></td>
</tr>
<tr>
<td>1963-64</td>
<td>288.0</td>
<td></td>
</tr>
<tr>
<td>1964-65</td>
<td>339.2</td>
<td></td>
</tr>
<tr>
<td>1965-66</td>
<td>568.0</td>
<td>2281.6</td>
</tr>
</tbody>
</table>

Source: Compiled from the Unpublished Records, Office of Chief Engineer, P.W.D. (B&R) Punjab, Chandigarh.

From the table, one gets an idea of the involvement of the Government in expanding the roads in the State. The network
of roads increased the mobility of the farmers and they could transport the inputs for agriculture from towns/cities to their farms and the produce from farms to the towns/cities.

The beginning of the period 1956-66 coincided with the restoration of political stability in the State with the emergence of Partap Singh Kairon as the most powerful political leader. This provided an opportunity to the political leadership to resort to rigorous planning for the agricultural development in the State. Darbara Singh has pointed out, "Bureaucrats were made to follow the line of instructions issued by the Government and political will prevailed upon the civil servants in realising the goals."

Administrative set up of the State was geared up and it became one of the participants in the process of development in the State. Des Raj also emphasised the role of politico-administrative set up in green revolution as "But for the well coordinated and determined efforts of leaders from different

* Darbara Singh remained active in Punjab Politics right from the independence and became a minister in Ramkisshen Ministry from July 1964 to July 1966 and Giani Gurmukh Singh Musafir Ministry from November 1966 to March 1967. He was elected as the Chief Minister of Punjab in 1980.

** Personal interview with the researcher in Delhi.

*** Des Raj entered politics long before taking over as Minister in Parkash Singh Badal Ministry (1977-1980).
political parties and the bureaucracy of that period, the green revolution would not have become a reality".*

Punjab politico-administrative combine established its farsightedness and capability by devoting Second Five Year Plan of State to development of agricultural sector. The period 1956-66 of two Five Year Plans saw a number of plans on papers and ideas taking shape in real life. Hardly, any aspect of development was left without proper attention. Politico-administrative set up vigorously took the action, planned all the three aspects of agricultural development - biological, chemical and technological supplemented by improved infrastructural facilities by implementing various policies for achieving targets set on consolidation of holdings, reclamation of land, irrigation, power, seeds, pesticides, improved agricultural implements, cooperative credit, roads, marketing structure etc.

A comprehensive and well defined 'policy package' developed and earnestly implemented by the politico-administrative set up led Punjab to take the pride place of most modernised agricultural State of India. It led the State to perform the miracle popularly known as 'green revolution' by the end of the period under study.

Commented during personal interview with the researcher in Chandigarh.*