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Changing Agricultural Trends in Punjab during Provincial Autonomy 1937-47

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Abstract

This study details the various measures taken up by the Unionist Party which ruled Punjab during the Provincial Autonomy period (1937-47) to enhance the financial health of peasantry by making ten amendments in Alienation of Land Act(1901), many among them would favor agriculturalists and took some effective steps to strengthen the rural co-operative system to encourage them to go in for consolidation of their lands. The government embarked upon ambitious plans of canal construction and colonization. It also gave liberal taqavi loans at lower interest rates to farmers for sinking pucca wells. In addition, agricultural colleges were opened which brought consciousness for using improved seeds, modern iron implements and the need for going in for the rotation of crops by adding a crash crop along with the usual rabi and kharif crops. Although the WW-II dampened their efforts, yet the Unionists tried it sincerely.

Keywords

Consolidation of holding, *Benami* transfer, Co-operative Societies, Sliding Scale System, Water-logging**,** *Rabi, Kharif, Taqavi* loan

1.0. Introduction

The Punjab was a prosperous agricultural region due to its fertile soil, irrigation facilities crops and use of improved seeds which would increase the productivity of his land**.** So there was a dire need of changing the agricultural methods to improve the economic condition of the peasantry.

provided by the canals, abundance of dedicated labor and great inherited agricultural skills. Yet, the condition and the living standard of an average tiller of the soil were pathetic.

In the 19th century, the developments such as commercialization of agriculture, the secular trends towards rise in the level of prices, establishment of the right to the creditor to seize land in satisfaction of debt and widening of the scope of alienable land rights took place. Further, the increase in the volume and value of agricultural produce made land an instant marketable entity and a source of profitable investment and credit for the land owners. Along with these changes, the agriculturists were subjected to three fold exploitation. They had to bear heavy burden of *lagan*, interest and taxes. In market too, they were out rightly robbed and became more and more burdened with debts. Consequently, they started either mortgaging or selling their lands [1].

Some laws were oppressive towards the agriculturalists; rather would favor the moneylenders.The Co-operative Moment Consolidation of holdings (*Quillabandi* or *Murraba bandi)*, though in vogue well before 1937(Provincial Autonomy started) was dormant; the irrigation facilities both by the canals and by wells were meager; water taxes needed slashing down; the common peasant was using old obsolete agricultural implements and had no agricultural education like rotation of

2.0. Methodology

The research material was collected both from the official and non-official agencies using primary and secondary sources and had been discussed in our previous publication [2].

3.0 Discussion

The Unionist Party which ruled the Punjab during the Provincial Autonomy period tried to emulate the deteriorated financial health of the agriculturalists by introducing a number of schemes which would bring about a visible change in the agricultural pattern of the farmers of Punjab and, thus, their economic condition.

3.1. Legislations

With time, the financial position of rural peasantry became more acute and so did the cases of mortgages. In the beginning, the British government, actually, welcomed the transfer of land from peasants to the moneylenders on the ground that now the land would be placed at the disposal of those who would bring capital, intelligence and enterprise to bear on it. But soon it was realized that transfer of land to non-cultivating classes was socially, economically and politically dangerous since the whole land would be transferred from the actual tillers of the soil to the non-agriculturist moneylenders. Such a situation would result in the creation of a class of 'landless proletariat' [3].

In order to check the growing discontent against transfer of land to the moneylenders, the Land Alienation Act (1901) was passed. Under this Act, non-agricultural classes were neither allowed to buy land from a member of an agricultural tribe nor to take it in mortgage for more than 20 years. So the agricultural land could be sold only to the notified agricultural castes. This Act divided the population into two classes-the agricultural class and non-agricultural class. Its Section 4 allowed the non-agricultural class could take land on mortgage for 20 years with previous sanction of deputy commissioner, but even within this period, the agriculturist mortgagor had the right to claim redemption without payment, if he could show that the mortgage debt had been paid off or if only a part had been paid off then on payment of such portion as the district officer deemed equitable.

But the main difficulty in the working of the Act arose from the clause which provided against the expropriation of an agriculturist's land by a member of a different tribe or different group but not against a member of the same tribe or against a tribe of the same group. Experiences showed that the agriculturist moneylender took full advantage of his privileged position to fleece agriculturist in a manner as unscrupulous as that of a non-agriculturist moneylender. So the Act created a new class of 'agriculturist moneylenders' and aimed at avoiding the danger of"the subjugation of the old hereditary peasantry class under the moneylender and their degradation from the position of owner to that of tenant"[4].The Act seemed to have succeeded to a considerable extent. The first elected government of Punjab headed by Sikander Hayat Khan favoring peasants, noted with pride in the report (1938) the prominent notice the Alienation Act had attracted in the province, "because of the vigor with which it has been criticized by the spokesmen of the moneyed classes, which were thus prevented from taking possession, of the lands of their debtors. Despite their criticism, it is, however, safe to assert that if Punjab retains up to this time, its character as a land of peasant-proprietors, it is due in a large measure to wholesome provisions of this law" [5].

3.2Amendments in Punjab Alienation of Land Act, 1901

During the period of Provincial Autonomy, the Unionist party passed various bill to check the dishonest and fraudulent practices related with the moneylender's role in plugging some of the loopholes in the Alienation of Land Act, 1901 and protecting the interest of the agriculturists from the malpractices of shopkeepers and brokers. This Act was amended as many as ten times till 1940 leading to its further limitation and clarification in favor of the already favored classes and strata. It would, therefore, be correct to say that the forces let loose by this Act were further strengthened and perpetuated by its subsequent amendments and also by other agrarian legislation supplementary in nature to this Act [6]. Two major amendments in Punjab Alienation Land Act, 1901 would be described as follows:

3.2.1. Alienation of Land Act (II Amendment)

The moneylender was "not willing to lose his hold on the cultivator" and discovered various ways of circumventing the provisions of the Act; the most popular and effective being the '*benami'* transactions under which transfers were made in favor of an agriculturist but the real benefit was reaped by moneylender himself. Such *benami* transfer of land had resulted in transfer of properties worth several crores of rupees from agriculturists to non-agriculturist moneylenders [7]. Thus in 1938, the Punjab Alienation of Land Act was amended by the Act X of 1938[8]. Under this act, all *benami* transfers of agricultural land were declared null and void, entitling the original owners or their heirs and successors to recover their lands, in some cases, after paying compensation to the buyers and in other cases without paying it .But it could not plug all the loopholes.

3.2.2. Alienation of Land Act (III Amendment)

Consequently, the Punjab Alienation of Land Act (third amendment) was introduced as the Act V of 1938. It aimed at protecting the agriculturist debtor from the agriculturist moneylender by restricting the alienation of land from the debtor to the creditor. This Act was the first and the only acknowledgement that the agriculturist moneylenders needed to be officially placed in the same "rapacious" category as the non-agriculturist moneylender[9].This change brought in 1938 was projected as having placed the agriculturist moneylender in the same position as the non-agriculturist moneylender in the matter of permanent alienation of land.

3.3. Restitution of Mortgaged Lands Act

Land Alienation Act 1901, which favored the richer among agriculturist, was made retroactive in order to bring about redemption of lands mortgaged and still subsisting to the non-agriculturists. It was changed by enacting another Act [10] known as "The Punjab Restitution of Mortgaged Lands Act" (Act IV of 1938) which gave relief to the indebted peasantry whose lands, mortgaged a long time ago and had yielded considerable profit to the mortgagees. The Act provided for the restoration without any compensation of agricultural lands mortgaged prior to June 8, 1901 (date when Punjab Alienation of Land Act came into force), if mortgagee had already derived from the land benefits amounting to twice the amount of the original principal advanced. The mortgagee was to be given reasonable compensation in other cases. It restored 835,000 acres of land to 365,000 peasants who had been dispossessed of their lands. Even Sikander Hayat Khan and Khizr Hayat Khan, both premiers of the Punjab during the period of provincial autonomy, had to relinquish land worth Rs.5.5 lakhs and Rs.1.5 lakhs respectively [11].

But the *Benami* Act and the Restitution of Mortgaged Land Act had favored the agriculturist moneylender as he could lend money at lower rate of interest than a non-agriculturist and also lend against mortgage since there was no restriction on his acquiring the land in case of default. On the other side, the non-agriculturist moneylender hesitated to advance loans and demanded surety for loans. So the above said Acts did give relief to the indebted peasantry but also left the poor peasantry with little to choose between the two. The agriculturist moneylender proved to be more exacting than non-agriculturist moneylender as the former would encourage the borrower to borrow more than he could hope to repay, and, ultimately, compel the borrower to mortgage his land to him. The restriction on the purchase of land by the non-agriculturists had clearly provided rich agriculturists and agriculturist moneylenders of the Punjab with a condition of 'semi-monopoly' to buy land cheaply [12].

3.4. Punjab Debtors Protection Act

To protect agriculturist debtors from intimidation, Punjab Debtors Protection Act passed in 1936 was amended in 1938 to prohibit civil execution of decrees by appointing a receiver to administer property protected from attachment or sale.

3.5. Registration of Moneylenders' Act

In 1938, the government passed the Punjab Registration of Moneylenders Act (Act III of 1938). It made the registration of moneylenders (agriculturist and non-agriculturist) and holding of a valid license by them, necessary before they could file a suit in a civil court for recovery of a loan or apply for the execution of any decree relating to a loan. This license could be cancelled or suspended if the court found him making fraudulent entries into book or charging a rate of interest higher than fixed by the Punjab Relief of Indebtedness Act, 1934[13].

But it did not cut much ice as in 1939 only 9,206 moneylenders were registered and their number decreased to 8,232 in 1940[14].

3.6. Agricultural Produce Mandi Act

The growers of agricultural commodities were protected by the Punjab Agricultural Marketing Produce Market Act V of 1939, popularly known as '*Mandi* Act' [15] was moved by Chaudhri Chhotu Ram in 1938; enacted on February 2, 1939 but was amended twice(1941 and 1944) on account of wide spread protests. The Act would protect the growers of agricultural commodities, who brought their produce for sale in the markets, from various malpractices on the part of shopkeepers and brokers as overweighing and *dharmarth* in the food grain markets [16].

Under this Act, Debt Conciliation Boards were set up for small local areas which were authorized to bring about agreement between the creditor and debtor and also to register it. In the beginning,5 such Boards were set up in Karnal, Hoshairpur, Amritsar, Rawalpindi and Jhang districts whose number swelled to 29 by 1939.These Boards received 40,720 applications from debtors involving a debt of Rs.5,62,42,216 and 27,060 applications from creditors covering a debt of Rs.2,71,00,034 [17]. Total debt settled amicably was Rs.2, 04, 26,008 and it was conciliated for Rs.86, 77, 351 during the year ending March 31, 1940[18]. The Boards in the whole of Punjab (Shimla included) had received 43,621 applications of which 18,000 were of the creditors. 26,000 applications involving Rs.246 lakhs were disposed off and debts amounting to Rs.91.45 lakhs were actually admitted [19]. A large numbers of debtors took advantage of conciliation and the debt claims came down by about 60% by1940 .In 1943, claims amounting to Rs.361 lakhs scaled down to Rs.138 lakhs by mutual agreement [20]indicating its success to remark that 'Conditions in the Punjab were extremely favorable for a voluntary conciliation of debts in view of a wide range of the exemption of property provided by the indebtedness and other Acts rendering recovery of even secured debts practically impossible.'[21]

3.7. Punjab Relief of Indebtedness Act

Since there were some defects in Punjab Relief Indebtedness like- even if one of the joint creditors did not attend the hearing fixed by the board, the latter could not deliver any judgment and unless the creditors, whom the debtor owned at least 40 % of his debts, agreed to submit their cases to the Conciliation Board, it could do nothing .The ministry enacted the Punjab Relief of Indebtedness Act in 1940 (Act XII of 1940) which provided that if the creditor failed to be present in person or through his accredited agent, or failed to produce full particulars and documents, the debt payable to him was deemed as fully discharged for all purposes. It described that interest shall be deemed excessive if it exceeded 7.5% simple interest or was more than 2% over the bank rate or 12.5 % simple interest in case of unsecured loans. No debtor could be arrested or imprisoned in execution of a decree for money. In other words, the Act lowered the rate of interest from 18% to12.5% simple interest in the case of unsecured loans and from 12% to 7.5 % simple interest on secured debts and abolished the compound interest altogether .

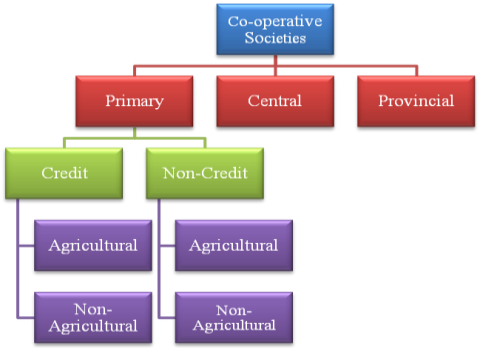
Under all the Acts of 1934, 1936 and 1940 of the 'Punjab Relief of Indebtedness Act, it was the creditor who sued his debtor for payments, the agriculturist moneylender benefitted in this because he did not advance money on promotes or bonds but gave it generally on mortgage with possession .In the Debt Conciliation Boards, the creditors faced difficulty; the % of cases agreed and decided upon were rather low. In 1940, the proportion of the agreed amount to be paid to the admitted debt was 39 % in the whole of Punjab; while in the case of creditors' applications, it was merely 29 % [22].

4.0. Co-operative Societies

Another positive measure to enhance the financial health of the peasantry was the effort at building up a rural co-operative system to substitute the moneylender by providing credit at cheaper rates since the *Taqavi* loans covered the needs of a small proportion of peasants. "The Famine Commission of 1901" recommended the introduction of co-operative societies in rural areas and passed "Co-operative Credit Societies Act in 1904" which favored the growth of co-operative societies and rural banks, based upon the Raiffeisen system [23]. Its main aim was to free the cultivators from the vicious system of credit and to encourage them to save and to provide alternative to the moneylender.

Further, in 1912, Government of India passed the new Co-operative Societies Act II to rectify some of the omissions and defects of the old Act. The co-operative edifice was structured as: (a) Primary Societies; (b) Central Banks and (c) Provincial Banks [24]. Unions of primary societies could be formed for mutual control and credit. The Central Banks concerned solely in the direct financing of primary societies, within an area sufficiently limited to allow them to exercise also the duties of supervision and control over the societies. The Provincial Banks were the apex institutions in each province which were formally constituted to co-ordinate and control the finances of Central Banks and deal only with such banks and not with primary societies. Till 1915, there were 3,261 primary societies, 38 central banks but no provincial bank. With the devolution of power under the Montague-Chelmsford Act (1919), the provinces were allowed to pass their own legislation on several subjects; the co-operative subject was transferred to the provincial governments.

First credit co-operative society in Punjab was founded in 1905. There was a rapid development of the movement thereafter. The loans were taken mainly for the ordinary purposes of cultivation, like purchase of seed, fodder or implements, repayment of old debts, litigation, ceremonial expenses and the purchase of land. Steady expansion had continued through 1927 and 1928. In 1929, the world wide depression brought the agricultural prices down to rock bottom level and incomes of the zamindars got shrinked and co-operative societies could not work smoothly. It brought stagnation to the co-operative movement as over dues accumulated tremendously, the societies' assets were almost frozen and recovery of such loans became a near impossible which led to the contradiction of credit. There were 19308 societies with total members 6.04 lakhs and a working capital of 16.03 crores [25]. Primary co-operative societies were classified into agricultural and non-agricultural as well as credit and non-credit societies; the overwhelming majority being agricultural. A figure given below would depict the classification of Co-operative societies.



The objective of primary agricultural credit societies was to provide loans to members, generally, for three purposes: productive, unproductive and for liquidation of past debts. Repayments of old debts, purchase of cattle, improvement of land and payment of land revenue generally absorbed the greater part of the loans made. In Punjab, the usual rate of interest charged by the co-operative societies was 12.5% which did not change till 1944. But the societies which had the good fortune to create a fund sufficient for the needs of the members occasionally lowered their rate varying between 3.5% and 12.5% [26]. As the interest was much lower than that charged by the professional moneylenders, it compelled him to bring down their rate of interest. In 1938-39, out of total 19,401 agricultural credit and non-credit societies, only 2,226 were non-credit [27] An increase in the number of in non-agricultural societies in 1943-44 from 4,734 to 5,898, being most noticeable, indicated savings, better living and public health. The decrease in working capital in agricultural societies which was mainly due to the decrease in working capital of the credit societies; implying good repayments and going down the fresh lending. The following Table1 [27].would give and idea of the rise in the number of societies, their members and working capital(WC) during provincial autonomy

Table1. Growth of Co-operative Societies

This reduction, however, had been more than made up by the large amounts received by central

Year	Agricultural Societies (Members)	Non-Agricultural Societies (Members)	WC (Rs.Lakhs) Agri. (Non-Agri.)
1936-37	18,846 (6,57,735)	4163 (1,64,827)	840 (162)
1937-38	19,057 (6,90,797)	4419 (1,77,286)	826 (172)
1938-39	19,401 (7,26,419)	4734 (1,92,833)	723 (171)
1943-44	20,884 (8,29,480)	5898 (2,45,122)	553 (183)

institution in the form of deposits. The loan business in agricultural credit societies had gone down steadily:112.11lakhs(1943-44) to 111.50 lakhs (1938-39).Advances by non-agricultural credit societies in 1943-44 were 58.57 lakhs against 71.46 lakhs in 1938-39. But loans for cultivation and for the purchase of cattle had increased from 36 % in 1938-39 to 45 % in 1943-44 [28].

4.1 Land Mortgage Banks

The ordinary co-operative societies could grant loans to their members for short periods only but loans for sufficiently long periods were necessary to affect a complete and speedy release from the burden of indebtedness. This remedy laid in the mortgage banks. Their number was small as compared to the number of credit societies and continued to function till 1945-46. Such banks gave loans at a low rate of interest i.e. 9 %. They raised the funds at a low rate of interest by the issue of debentures to the public and lending to individual landholders on the security of their property for a long period of years .The first Co-operative Mortgage Bank in Punjab was registered in the beginning of 1920s in Jhang and their number rose to 10 by 1939[29]. During the period of economic depression, the loans advanced to its members declined and so did the repayment installments by the borrowers and thus restrictions were imposed on the maximum loan. However, after 1936(end of economic depression) they began to function very effectively. But with the onset of W.W-II in 1939, no fresh loans were advanced by any of the mortgage banks till 1944**.**

Over all, the co-operative movement did a great job to reduce debt of its member besides accumulating capital. Every year old debts amounting to several lakhs of rupees were paid off. The actual reduction was estimated roughly at rupees twenty lakhs per year. Those zamindars who were members of societies steadily paid off their debt, redeemed their lands, added to their fields and accumulated large capital. Those who were not members sank further into debt; added to their mortgage and even lost their lands. But co-operative and government credit institutions failed to meet the peasant's credit requirements as was accepted by Punjab Land Revenue Committee in its report in 1938; perhaps the interest rates were, too high.

In addition, agricultural co-operative non-credit societies for the purpose of cattle breeding, their insurance, better farming , arbitration, silt clearance, *chos* reclamation and marketing of agricultural produce were also operational.

5.0. Consolidation of Holdings

Consolidation (*Quillabandi* or *Murraba bandi)* of holdings, an important legacy of the co-operative movement, means arranging exchanges of land between the various owners so that their holdings, instead of being scattered all over the village in small fields, were consolidated in one or two places as fragmentation would hamper the agricultural progress. The Co-operative Consolidation of Holdings scheme to mitigate the disadvantages of cultivating holdings of uneconomic size was introduced by Mr. Calvert (1920) [30] when a number of co-operative societies were set up in the province. Their membership was voluntary but involved certain obligations like settlement of disputes through arbitration. Realizing its benefits, zamidars made a voluntary contribution of Rs.15000 towards the cost of consolidation. In 1920, there were 20 societies and became 654 in1930 [31,32]. In 1939, the number of consolidation of holding societies was 1477 which increased to 1,874 by 1944. The total area consolidated during 1939 to 1944 was 5,12,026 acres. In1942-43, the co-operative societies membership was 1,60,782 which rose to 2,40,487 in 1943-44[33].In 1946, there were 2,003 societies with 2,57,913 members and 1 ½ million acres had been consolidated.[34].The year wise total area consolidated was represented in Table2[35].

Table2. Area Consolidated

Year	Acreage Consolidated
1937	1,20,295
1939	1,57,211
1941	1,70,002
1942	47,512
1943	68,826
1944	81,883
1946	1,50,0000

Prior to the passing of the Punjab Consolidation of Holdings Act in 1936, this work was carried out by the co-operative consolidation of holdings societies. Under this Act, some compulsions could be applied and by 1947 about 4, 50,000 acres had been consolidated. This was in addition to the area consolidated under the Co-operative Societies Act. There would happen other beneficial acts like the sinking of new wells (9150 by 1946)[36], preserving rainfall, bringing waste land under cultivation, stimulating the desire for better farming, increasing rent, decreasing the causes of litigation and quarrels.

6.0. Taxes

Agriculture being the main occupation in Punjab which provided means of subsistence to almost 75% of its population, the taxes on the agriculture called "Land Revenue", changed from time to time, was the main source of income of the Imperial and Provincial governments. While determining the land revenue, the British authorities gave no allowance for the high cost of cultivation. Instead of calculating the net assets of the peasant proprietor, the government calculated the tax on the basis of landlords' net assets which were substantially larger .Till 1860, the limit was fixed at one-half of the "net assets" which was to be paid in cash. Even the Punjab Land Revenue Act, 1887, gave no tangible relief because it levied land revenue at 50% of the net assets .The Unionist government, amended this Act and placed reassessment of land revenue on a statutory basis and restricted the share of the State to a maximum of 25 % of landholder's net assets and measure of enhancement to a similar proportion in excess of assessment at the expiry of the settlement fixed for 40 years [37]. But it failed give much relief to the peasantry.

With the disastrous fall in prices of agricultural produce in the thirties, land revenue incidence had become very oppressive. So A new system for the assessment of land revenue known as 'Sliding Scale System' was introduced, first in Montgomery and Lyallpur districts, to meet all fluctuations in prices in future and lighten the burden of tax on peasantry. This would "enable government to pitch its demand high enough to take into account the possibility of prices rising to the average level of the last 20 or 30 years, and, then, adjust this demand at each harvest to current prices" keeping in view the average prices of the agricultural produce for the preceding same number of years. The government would reduce tax if the prices of agricultural produce fell .The effect of the sliding scale system in Lyallpur district had been shown below for 1937[38].

Table3.SlidingScale System for Lyllpur

Settlement demand if district had not been reassessed in 1935-37	Actual demand	% Remittance
69 Rs.Lakhs	61Rs.Lakhs	11.6

The sliding scale system of land revenue characterized as 'revolutionary' step by the then Premier Sikandar Hayat Khan was criticized on the ground that the system did not take into the consideration that the cost of cultivation did not fall proportionately to the fall in the prices of agricultural produce. It implied that with the fall in prices of agricultural produce, the cost of cultivation did not fall to that limit. Brij Narain, a noted economist, had critically analyzed the system, pointed out it snags and the intentions of the government [39]:

> "The revolution in the method of assessment only means that the Government will be able to beat their remission drum every year, while the great majority of cultivators will part with the whole of their net assets or even more in payment of land revenue, as they do now. Land revenue, at present, is a tax on subsistence of the cultivator. It will retain that character under the new system"

In 1937, the Unionist party decided to extend the "Sliding Scale System" to the whole of province as and when settlements fell due in various districts of

Punjab .The Table 4 showed the total land revenue earned by government from 1937 to 1943 [40] :

Table4. Total Land Revenue: 1937-43

Year.	Approximate value of total land revenue (Rs. Crores)
1937-38	5.31
1938-39	5.05
1939-40	5.38
1940-41	5.63
1941-42	6.87
1942-43	6.76

Besides reducing and rationalization the land revenue, the government also made liberal remissions of land revenue many times on account of low prices or during the bad seasons. Fazl-i-Husain, in the Unionist government said:

"The land revenue payer is a good paymaster if he had anything out of which he could make a payment. But when his crop was really hopeless, it was only right that Government should come to his rescue and this without there being any strong agitation set afoot or trouble created for the authorities" [41].

Financial aid was also provided in the form of *taccavi*, in times of natural disaster like famines, hail storms; remission of revenue and *taccavi* remained a common feature throughout the period 1937-46. Loss due to 'hail storm' in 1937 (*rabi)* was compensated with about Rs.44 lakh. Sikandar Hayat said in 1942 (Budget speech) that in the preceding five years, his government had remitted *abiana* mainly due to the Unionist Party's efforts, as a result of which the peasant of the Punjab paid the lowest land revenue in the country[42]. During the period of provincial autonomy, the Unionist government continued making special remissions on account of low prices or bad crops in districts where the system of sliding scale of assessment of land revenue had not yet been introduced. In 1937, such remissions amounted to Rs.95,000 and for the Rabi of 1938 these totaled about Rs.4, 58,000[43]. Since during the years 1937-40, there had been hailstorms and famines in the Punjab, the government granted remissions and suspensions on the tune of Rs.3.6237 crores during this period as against 1.4737 crores granted during 1934-37.In 1940-41, the government promised remissions and suspensions totaling Rs.1.24 crores [44].

7.0. Irrigation of Lands

Three means of irrigation were commonly used:

7.1. Irrigation by canals

The most important phase in the history of the Punjab irrigation started when the government took over unclaimed lands as 'crown waste' and embarked upon an ambitious scheme of canal construction and colonization with the help of borrowed funds. The primary aim behind canal construction program was to deepen and strengthen the colonial relationship by promoting larger production and export of agricultural raw materials and wage goods from India. Secondly, canals were built to increase the financial resources of the government from direct and indirect sources-water rates, sale of colony lands and enhancement of land revenue.

Between 1885 and 1940, nine canal colonies were developed in West Punjab. Besides, the state owned perennial and inundation canals, there were several private canals irrigating an area of 495,000 acres in 1943-44. All except one of the private canals in the Shahpur district were owned by the members of the Noon and Tiwana families [45].The perennial canals in the eastern plains and a large number of inundation canals added considerably to the acreage under cultivation. As compared to the extent of land brought under the plough by the perennial canals in the western plains, canalization in the eastern plains was relatively less significant as here very largely irrigated lands were already under private ownership and involved little colonization. On the other hand, most of the canals in western plains were constructed and expanded primarily for the colonization of waste lands at the disposal of the government .They were converted into blooming fields of wheat, cotton, oilseeds and other crops; large quantities of which were exported to England and other foreign lands besides supplying food grains to the deficit areas of the country.

The canal systems like the Lower Chenab Canal, Lower Jhelum Canal, Triple Project, Sutlej Valley Project, Haveli Project (constructed in the last 60

years of British rule in Punjab) and parts of Sirhind, Western Jamuna and Upper Bari Doab Canals, brought water to the arid, thinly populated and sparsely cultivated regions in the south-western and south-eastern plains of Punjab [46]. It converted the extremely barren areas into some of the most flourishing districts in Asia inhabited by sturdy and industrious colonists in the well laid out villages.

As the government wanted to bring more areas under cultivation to increase its income by the increase in the land revenue and water advantage rate, large bodies of colonists were brought from the crowded districts of central Punjab. The total area colonized was about 5.5 million acres, which was more than one sixth of the total cultivated area. In 1929-30, the government earned 9.33% from the canal system of 20,000 miles which increased to 12.6% upon its whole canal system of 23,209 miles and its capital outlay of Rs.46 crores in 1945-46[47].

Canals helped to increase the agricultural production both by bringing more areas under cultivation and by the increasing yields in the area already cultivated .The total area irrigated by canals had risen from 28,58,166 acres in 1890 to 1,12,45,873 acres in 1922;1,35,30,787 acres in 1940 and 1,57,50,464 acres in 1945-46.In 1901, 22% of the cultivated area was irrigated by canals which rose to 44% in 1937-38[48].

7.1.1. Water-logging Problem from canals

While the canal irrigation had enhanced the prosperity of Punjab, yet the canals proved to be a mixed blessing. No doubt, the irrigation facilities had a positive impact on yield per acre and also served as an insurance against drought, but the excessive use of irrigation water and wrong alignment had shown injurious effect on soil and also on the yield per acre because of water-logging or formation of alkali pans close to the soil surface. In 1920s, districts like Sheikhpura, Gujranwala, Sialkot and Gujrat, the water-logging conditions had thrown a considerable area out of cultivation. It led to appearance of *kallar* or *reh* which devastated the vegetative qualities of land to make it barren in 4-5 years, i.e., the seed ceased to germinate or the crop would not grow up to its final stage. It was due to the fact that the bed of canal being high above the level of the surroundings; the water rose up to its own level by percolation; unfertile salts came to the surface of soil to sabotage the productivity of land.

During the period of provincial autonomy, the Unionist party took remedial measures through its Irrigation Department, like digging of drains to carry off the seepage water, closure of canals for prolonged periods and the running of canals low as far as possible .A portion of the water-logged area had been reclaimed in a few years. In addition, the Haveli Canal Project and the Thal Project was started and thus extended the blessing of irrigation to new acres.

In 1929-30, in spite of the fall of the prices, the value of crops grown on canal irrigated land throughout the province was Rs.49 crores and in 1944-45, it was about Rs.126 crores [49]. The canals, also, enhanced the income of the State and increased the prices of irrigated land.

7.2. Irrigation by Wells

The next important source of artificial irrigation, which was extensively used in Punjab, was the Well-irrigation and would irrigate more area than the canals towards the end of the 19th century. It played an important role in the rural economy by the protection of the crops. During the period of diarchy, one third of irrigation was by wells which went on increasing in the last decade of 19th century.

Wells were of two types- *pakka* or masonry and *kachcha* or non-masonry. In Punjab, there were 3, 17,708 masonry and 22,060 non-masonry wells in 1938-39 which rose to 3, 29, 329 and 17,593 respectively in 1943-44 [50].

Well-irrigation was very popular in the districts of Jalandhar, Sialkot, Amritsar, Ludhiana, Jhang, Muzzafargarh, Montgomery, Lahore and Gujranwala [51] as here the land was most fertile. Wells were also sunk in the predominantly canal-irrigated tracts(*nahri*) whose primary purpose was to use these wells as an insurance against drought as these were put into operation only during dry season .With the development of Well-irrigation, emphasis shifted from extensive to intensive cultivation around well lands. Moreover, it also contributed to the process of consolidation of holdings by means of mutual

exchanges among the zamindars in some parts of the province.

The construction of wells by the private enterprise was largely financed by their own and partly through the *'taccavi'* loans granted liberally by the government in pursuance of the recommendations of Irrigation Commission during the time of distress. The *taccavi* loans proved to be an essential relief measure in famine. The large increase in the number of the masonry wells was primarily the result of the private enterprises, whereas, the ratio of new wells constructed with the government loans i.e. *taccavi* loans was very low [52]. When the danger of old wells running dry was apprehended (1927), the local officers would refuse the grant of *takavi* for new wells. In mid 1937, the officers were directed to grant *taccavi* loans for reconditioning of old wells. The *taccavi* would, be given for new wells if it did not adversely affect the water-table of the tract.

A large number of wells were also sunk with strainers and tubes which increased the capacity of the wells. A beginning was made in the replacement of animal power by oil-engine and electric motor[53].To solve the problem of spreading irrigation over areas where canal irrigation was impossible, the agricultural engineers of the province were engaged in the task of increasing the supply of water in the wells. One such practice was the boring a hole in the well and putting in of a plain or tube-well pipe in the bore to connect the ordinary wells in the subterranean supplies. The water extracted from one tube-well may irrigate up to 350 acres as compared with the 10 to 15 acres irrigated by an ordinary well. During the years ending 1943-44, 81% of the 540 wells annually bored in the province proved successful [54]. Short improvisation was made and a form of irrigation intermediate between perennial canal and a good well was developed. This was done by inserting a 'strainer tube-well'. The strainer tube-well was a device by which the water in the deep-seated layers coarse sand could be raised to the surface by a pump driven by an old engine, whereas, the method of drawing of water from wells with the help of bullocks were proving to be very costly and time-consuming. A strainer tube-well was often 260 feet in depth and was capable of watering 200 to 400 acres .The total number of tube-well operated in the province in the late 1930s exceeded 10000 [55].

7.3. Miscellaneous means of irrigation

"Other sources" of irrigation were embankments, springs and streams. Irrigation from embankments continued as before, but made a trifling proportion of the total irrigated area in the Punjab. In the Salt Range and the hill tracts of Gurgaon, torrents were embanked and water spread over the fields as required. In the hills and sub mountain tracts, a considerable area chiefly under the rice was irrigated by small channels (*kuhls)* taken out of a river or stream and often carried along the hill side [56].

The broadest division of cultivation was into irrigated [including wells (*chahi*), canal (*nahri*) and *abi.* The last term described a small amount of land watered from tanks or *jhils* in the plains and a larger area in the hills irrigated by *khuls* or small artificial channels while unirrigated (*barani*) cultivation dependent on rain or on flooding or percolation from rivers (*sailab)* [57, 58].The irrigated area (in acres) by various sources in the Punjab is mentioned below in Table 5[57,58]**.** It indicated that out of the total area irrigated by all sources, nearly 70 % of the area was irrigated by canals (both government and private) in 1938-39 which increased to 74 % by 1943-44. The area irrigated by wells was 26% in 1938-39 but decreased to 23 % by 1943-44. If average of 5 years (1936-40) was to be considered, the total area cultivated was 212 million acres; of which 54.5 million acres of total area irrigated and 30.5 million acres of area was irrigated by the government works. If we take into account the average of next 5 years (1941-45), the total area cultivated was 216.6 million acres; the total area irrigated was 58.1 million acres and 33.6 million acres were irrigated by the government works [58]**.**

Table5. Irrigated Area in Punjab

Year	Area (acres) under Irrigation in Punjab		
	Canals Govt. (Private)	Wells (Tanks)	Other Sources
1938-39	1,11,65,192 (4,44,098)	47,49,094 (41,526)	1,42,968
1939-40	1,14,05,798 (4,53,873)	47,21,922 (34,559)	1,51,292
1940-41	1,15,64,788 (4,75,061)	46,81,633 (46,927)	1,29,837
1941-42	1,16,38,987 (4,52,158)	46,18,110 (47,815)	1,57,675
1942-43	1,21,09,550 (4,54,504)	38,62,368 (37,517)	1,52,590
1943-44	1,24,83,235 (4,94,865)	42,16,056 (37,769)	1,50,307

Table 6.showed the growth in irrigation facility in Punjab during Provincial Autonomy [59]:

Table 6 Irrigated Area Growths

Year	Area irrigated(Lakhs of acres)
1936-37	119
1937-38	123
1941-42	131
1945-46	143

3.10. Land Revenue, Water Rate and Water Advantage Revenue

Three types of assessments were made on lands irrigated by canals- land revenue, water rate and water advantage revenue. Besides land revenue, another important tax was *abiana /water rate* (irrigation duty), which was charged on lands irrigated by canals. The basic aim of British revenue policy was to maximize revenue per unit of land. This policy forced the authorities to try to bring village wastes under cultivation or reserve these for the use of cultivators and to reserve the 'open wastes' outside the village areas for the government. Some of these were later used to resettle cultivators in the canal colonies [60].The water rate was, generally, paid by the cultivator for each field which received water in a harvest. Different acreage rates being charged for different crops. The rates were far below the economic value of the water supplied, as it was not the policy of the government to exclude landowners from sharing in the profit arising from improvements effected at its expense. While the land revenue was fixed on all matured areas, the water rate charged varied considerably with the crops grown and was different on different canals. It ranged between Rs.7-8-0 and Rs.12-0-0 per acre for sugarcane, between Rs.4-0-0 and 7-8-0 for rice, between Rs.3-4-0 and 5-4-0 for wheat, between Rs.3-0-0 and 4-0-0 for cotton and between Rs.2-0-0 and Rs.3-4-0 for millets and pulses. No extra charge was made for additional watering [61]. If a crop failed to mature, or if yield was below normal, either the whole or a part of irrigation assessment was remitted.

Income from irrigation duty was a chief source of revenues of the government. Between 1921-22 and 1935-36, it ranged from 35 to 40 % of the total government revenue receipt.

In canal irrigated areas, besides water rate, water advantage rate tax (land revenue) due to irrigation was assessed and the government collected Rs.170 lakhs in 1931-32.The canals yielded an annual income of Rs.6.3 crores which constituted the largest single item of revenue to the government out of a total of Rs.23.27 crores in 1945-46 and produced crops worth Rs.116 crores annually [62].

Another tax on the land was *chahi.* It was levied on the lands which were irrigated by wells. It was levied in two ways. First, the amount was fixed for a well which was further distributed proportionately over the areas irrigated by it. This was known as *Nal chahi.* Secondly, to the land revenue of the areas irrigated by a well, some more amounts were added. In 1927, the *chahi* rate was rationalized and reduction was made in the irrigation duty during 1933-42[63].The well water extracted at least three times as much duty as canal water. Owing to the cost of lifting, it was generally used for high grade crops. The government encouraged the sinking of the wells by giving *taccavi* on easy terms (5% to 6.5%).It simplified the process of granting loans for

agricultural improvements and increased the amount to be advanced by successive Acts.

3.11. Agricultural Education

With the development in the irrigation facilities and the adoption of improved seeds, the increase in agricultural education affected, though indirectly, the yield per acre. The setting up of the Department of Agriculture in the Punjab in 1906 was a landmark in the history of scientific agriculture. It had 7 experimental farms, 15 district farms to work out local problems and 9 more for growing seeds. By 1946, its number increased to 12, 13 and 14 respectively [64].Its functions were of three types: agricultural education, research and demonstration and propaganda; most important being the distribution and sale of pure seeds of various crops. It encouraged fruit growing and fruit preservation and guided educated persons, usually graduates, to adopt agriculture as their career. The ministry gave them 79 grants of 50 acres each during the 1937-38 in the Lower Bari Doab, the Nilli Bar Colony and elsewhere in order to create a class of farmers who may set an example of improved agriculture and 'better living' for others [65].

In 1909, Punjab Agricultural College at Lyallpur was opened with a farm and was affiliated to Punjab University in 1917. Later, it started courses for the B.Sc. (Agriculture) and M.Sc. (Agriculture) degrees and also a number of non-university courses to meet various needs of the community. The research department of this College had experimental farms at Lyallpur, Gurdaspur, Hansi, Sirsa, Multan, Montgomery, Rawalpindi and Jalandhar which would work in connection with the testing of the relative merits of different types of crops, seed selection, evolution and testing of new implements and the rotation of crops. They also had botanical sections. New varieties of various crops were evolved. Among American cottons – 289F and 4F ; in wheat, varieties such as 11 and 8A along with commercial varieties C-591 and C-518 continued to spread rapidly along with a new variety of wheat i.e. C-228; in sugarcane, two varieties were evolved i.e. Co. 396 and Co. 421.Even new varieties of improved rice of high yield and good quality, including 246-Palman-Sufaid and 346-Mahlar were evolved and given out to cultivators which improved their financial positions[66].Special Rural Development scheme was inaugurated in 1948 which enabled the department to break fresh ground and extended its operations in villages and localities hitherto unvisited and to introduce the use of improved seeds . From 1916 to 1946, the number of agricultural colleges increased from five to nine, and their students from 445 to 3110.

3.12. New Agricultural Implements

The transformation in agricultural implements were primarily aimed at reducing the drudgery of certain operations performed both by the human and animal power. The increasing manufacture and use of sophisticated and more efficient implements, particularly, made of iron marked the beginning of the process of mechanization. Primitive agricultural implements were replaced by improved implements; primarily the wooden implements by iron implements. More important among the new implements were sugarcane-crushers, Persian wheels, ploughs, fodder-cutters, harrows and drills. The more sophisticated, durable and light iron implements like the sugarcane press, Persian wheel , fodder-cutter, harrow and the iron-plough became very popular. In addition, several improved implements such as furrow-turning ploughs popularly known as iron ploughs, hoes, drills, harrows, reapers, fodder-cutter and winnowing machines were introduced. The iron Persian wheel had been replaced by the old Persian wheel. In case of plough, the country plough or universal plough was the most common in the Punjab. In its improved types, the most popular was Meston plough which was local made and cheap enough at the price of Rs.11 compared to another plough i.e. Raja plough with cost Rs.37-8-0. By 1947, the Raja plough disappeared and was replaced by Meston plough with cost Rs.7-4-6 without beam or handle, which the cultivator usually supplied himself [67]. The Meston plough was suited only to lighter soils and its shares were constantly breaking. Though the iron plough had been introduced and it was gaining popularity but still, their adoption was extremely slow due to several reasons such as ignorance, conservatism, lack of capital, small holdings and the inability of village blacksmith to repair them. While there were 24, 53,096 wooden ploughs in 1940 the number of iron ploughs were only 76,723[68].

Gurdaspur district having 21 iron foundries produced a wide range of agricultural implements. In 1931, about 5,000 foreign made agricultural implements were in use. In between 1941-1947, improved implements were increasingly used [69].The use of chemical fertilizers was also steadily increasing.

Many agricultural operations like ploughing, sowing, harrowing, hoeing, fencing, weeding, watering, reaping, threshing and winnowing were carried out by the people keeping in view the land and its resources. Weeding and hoeing were resorted to only for more valuable crops. Field was ploughed chiefly with the help of wooden plough. The seeds were sown through different method such as – by scattering the seed broadcast on the surface, called *chhatta;* by dropping the seed into the furrows by hand called *kera;* and by drilling through a tube attached to the plough handle by the ploughman himself, called *pora*. The last method, if skillfully used, deposited the seed into the bottom of the furrow and was employed when the surface was dry. The second was employed in moderately moist and the first in thoroughly moist soils [70]. They were improved upon by the use of a few sowing drills which found favor only with big cultivators in the canal colonies .A study conducted in 12 villages in separate districts observed that [71]:

"Almost every village was said to have experienced no change in implements used. Villagers were sometimes aware of new plows being publicized and in a few villages new plows were being brought. But the unanimous opinion was that the old plows were better for various reasons. The new plows were said to be expensive, would strain oxen, non repairable locally, suited for large fields only, expose and dry out under-soil and less effective in uprooting weeds. New plows had been tried in at least five of the villages. Mechanical seed drillers, which were sown to produce substantially higher yields, were also rejected for the same reasons as given for new plows. When iron pots were used on Persian wheels in one village was reduced because the improved efficiency made it desirable to lower the operating time".

3.13. Two Main Harvests

The system of cultivation prevalent in the Punjab plains centered round two harvests. The *rabi (harhi)* or spring or winter crops consisted of wheat, barley, poppy, tobacco, linseed, mustard, pepper, oilseeds, *taramira*, ginger, *zira*, safflower, vegetables, fodder crops like *senji* and *jawi* while *kharif (saunni)* or autumn or summer crops were sugarcane, cotton, maize, millets, rice, sesame, hemp, *kangni*, ragi, vegetables, pulses like *mah*, *mungi*, *moth*, fodder crops like *charri* and *swank* . The *rabi* crops were sown from the latter part of September to the end of December and harvested from April to June. The *rabi* was the main crop of the Punjab and comprised the three-fifths of the total agricultural produce. The *kharif* crops, except cotton and sugarcane, was sown between June and August and reaped from early September to the end of December. The spring sowings quickly followed the extra (*zaid)* harvest, chiefly comprising of tobacco, melons and similar crops, harvested late in June. The *rabi* was sown immediately after the *kharif* was harvested. In the areas protected by artificial irrigation, the operations of both the harvests began at usual times, while elsewhere they depended on the outbreak of the rainfall. These crops were supplemented by vegetable and garden produce. Garden produce like fruits grown both in the garden of hills as well as in the plains supplemented the agricultural produce.

By Sept. 1937, owing to the favorable climatic conditions at the time of sowing, the total area sown under *kharif* and *rabi* harvests increased to 13.69 and 18.95 million acres respectively [72]. But in the next season, both *kharif and rabi* harvest decreased to 13.46 and 18.12 million acres respectively due to the unfavorable climatic conditions at the time of sowing. The decrease was 3% as compared to the total sown area by June 1937 but it increased by one % as compared with the average of last ten years. Again, there was a decrease of 2, 31018 and 8, 57,343 acres in the total sown area under *kharif* and *rabi* harvests, respectively owing to the unfavorable climatic conditions [73].

3.14. Rotation of Crops

The advancement in the canals not only increased the acreage and yield but also brought a change in the crop pattern of agriculture in the province. It stimulated the cultivation of certain valuable crops like wheat, cotton, sugarcane and replaced the pre-canal staples like *jowar* and *bajra* .In addition, three minor food crops (rice, *bajra*, gram) and some of the

fodder crops were also in vogue. In the canal colonies, the chief rotation was wheat, *toria*, cotton, or two crops of wheat in succession followed by *toria* and cotton. On well-irrigated lands, the main rotation was wheat, maize, *senji* and sugar-cane, or wheat, cotton, *senjii and sugarcane;* but small areas of tobacco, potatoes, melons and other vegetables were also grown in the neighborhood of the towns. The common practice followed in the *barani* tracts was wheat, gram or barely in the *rabi*, followed in the succeeding *kharif* by *chari*, *moth*, *mash*, *til* or cotton. With the advancement in the irrigation facilities, introduction of improved varieties of crops, more use of new improved implements, the cultivator also adopted rotation of crops instead of growing the same crop year after year. Under this system, the crops were raised in such an order or succession that the fertility of land suffered the least. The system of rotation of crops followed in the Punjab differed in different parts of Punjab and depended mainly on the supply of water. Common rotation in ordinary loam soil was to put in spring and autumn crop in succession and then let the land lie fallow for a year. Flooded lands were sown only for spring harvest.

Table7. Total area: Kharif and Rabi [73]

Year	Total area in acres	
	Kharif	Rabi
1937-38	1,34,56,392	1,81,16,215
1938-39	1,27,42,213	1,61,03,107
1939-40	1,30,62,259	1,68,84,591
1940-41	1,43,36,215	1,84,65,991
1941-42	1,38,77,779	1,84,21,450
1942-43	1,47.63,716	2,02,24,965
1943-44	1,44,98,932	1,85,03,886
1944-45	1,45,57,532	2,01,09,672
1946-47	67,19,854	75,63,566

The commercialization of agriculture brought changes in the cropping pattern - substitution of commercial crops for food crops ,i.e., from low profit crops like jowar, bajra and fodder to high paying crops such as wheat and cotton.

3.15. Main Crops

Wheat (*kanak*), cotton, sugarcane, bajra, gram, oilseeds, maize, jowar were the principal crops of Punjab; wheat being the principle crop. It was the staple food of most Punjabis and also the chief crop for sale and export, a source of dry fodder commonly used in religious rituals and a raw material for the flour milling industry. Cotton, sugarcane and tobacco were the chief commercial crops. Rice, bajra, jowar, *mong* were also considered as food crops.

3.15.1. Wheat

Wheat was grown all over Punjab and on all classes of lands except the very light unirrigated high lands or water-logged areas. It did best on medium loam soils. It was grown from the middle of October to the middle of December and was harvested in the end of April. The preliminary operations like harvesting, threshing and winnowing of wheat which largely influenced the quality of wheat were taken care of.

In 1868-69, only 1% of the wheat area was protected by the canals. But with the spread of irrigation, especially by canals and colonization of barren areas, the protected area of wheat was increased by nearly 151% in the next quarter of a century. In 1939-40, the area which was 2889 thousand acres increased to 3334 thousand acres by 1945-46. Previously, three main varieties of wheat were grown in Punjab. But with the advancement of irrigation and the contribution of Agricultural department, the improved and high yielding varieties of wheat - Punjab 11, 8-A, C-518 and C-591 were introduced. So the old three varieties lost their importance. Punjab 11 reigned supreme till 1924-25 and occupied an area of one million acres. Type 8-A was proved to be superior in yield and quality as compared to Punjab 11 and the area under 8- A increased manifold .By 1930, the area under new varieties was two million acres out of total cropped area of ten million acres .In 1945-46, the area under improved seed increased to 8.32 million acres out of total of 10.22 million acres [74].The production of wheat also increased from 1127 thousand tons (1939-40) to1189 thousand tons(1944-45). In between, production varied to some extent. In 1943, the wheat production was bumper one, i.e., 1241 thousand tons due to the 'Grow More Food' Campaign started in 1942.

Punjab was the topmost exporter of wheat in India. In the year ending March 1937, India exported 2,31,388 tons of wheat and 459806 tons in the

subsequent year. The quantity shipped abroad from Karachi was 2, 29,079 and 4,52,271 tons respectively [75]. With the beginning of export in 1936-37 after world depression, the price of wheat escalated and its average price in 1947 became more than three times higher than in 1939,i.e., from 3.04 per maund to Rs.10.12 per maund in 1943 but experienced recession during the following two years due to the tightening up of control and rationing measures. The excessive exploitation of economic resources during the war, the increasing demand for foodstuffs consequent upon the increase in population and the higher standards of living encouraged by excessive purchasing power in the hands of the masses, kept wheat prices high to Rs.17.89 per maund during 1948[76].

3.15.2. Cotton

Cotton (*kapas)*, almost exclusively an irrigated crop, was the next important crop in Punjab. Its best yields were obtained in the south-east districts (Karnal, Rohtak) and in the western canal colonies. There was a huge export of cotton from Punjab to Britain especially after the irrigation development facilitated its expansion. Since, the British manufactures clamored for long-staple Indian cotton, experiments were undertaken in the second half of the 19th century for the production of American cotton and the acreage under cotton increased by 183 per cent from 1901-02 to 1944-45[77]. There were two main classes of cotton in the Punjab, the indigenous country or *desi* cotton, and the American cotton. As the American cotton required a longer growing season than the indigenous varieties, it was all grown under irrigation, and mainly in the western part of the province. An improved variety of American cotton (4-F) which gave more yield and fetched higher price was introduced. Moreover, being a thirsty crop, the new variety was eminently suitable for the canal irrigated tracts. In 1914-15 and the area sown by 4-F was only 5 acres but it became increasingly popular in the canal colonies and formed no less than 54% on all the canal colonies [78]. The American cotton required a high level of labor input and paid-out costs per acre, where as the *desi* cotton required less paid-out costs per acre. Therefore, it was the large landowners and rich peasants only who could undertake the extension of the area under American cotton. Though, the American cotton made substantial increase in the acreage from 1922 onwards, but the data indicated that in the following years, the area under the *desi* cotton was larger than that under American cotton. The total areas under *desi* cotton and American cotton rose from 1.55 and 1.36 million acres in 1937 to 1.70 and 1.44 million acres, respectively, in the year ending September, 1938. The increase was due to high prices, early monsoon, favorable climatic conditions at sowing time and adequate supply of canal water. By 1940, the area under cotton was 2.6 million acres, of which 54.2% was under American cotton .In the year 1940, the area under *desi* and American cotton decreased partly due to scarcity of rain at the time of sowing and partly to a fall in the price of cotton last year. In the WW-II, the entry of Japan into the war closed the Far-Eastern market to Indian cotton. This created a serious position for the growers of short staple cotton and special measures were taken to reduce the acreage under that type of cotton with the double object of preventing the cotton market in India from being flooded with "unwanted" cotton and increasing the production of food grains as under "Grow More Food Campaign", one of the measures was the diversion of land from non-food to food crops. Manure and seeds had been provided free or at concession rates for land diverted from cotton to food grains. Propaganda was undertaken on a wide scale urging a reduction in the area under short staple cotton. So, the area and production of *desi* cotton decreased in 1942-43 compared to 1941-42; though it increased in 1943-44 but it was still less compared to 1941-42. Conversely, area and production under American cotton increased remarkably in 1942-43; fell in 1943-44 but again increased in subsequent years.

In 1937-38, the average price of *desi* and American cotton (unginned) were Rs.4-10-0 and Rs.5-12-0 respectively - less than as compared to last year owing to the high world production of cotton and reduced exports of India cotton to Japan .In 1939-40, the prices of *desi* and American (unginned) increased to Rs.6-9-0 and Rs.8-4-0. In between, came two new varieties: 285 F and 289 F [79]. The cotton cultivation was adversely affected by water-logging which deteriorated the quality of 4F variety of cotton.

3.15.3. Sugarcane

Another important *kharif* cash crop is sugarcane (planted in March and harvested from December to

early March) which occupied a relatively constant area in the 20th century. In India, the Punjab had the second largest area of sugarcane but in matter of yield, it was far below the rest of India. The crop could only be grown either under irrigation or where, as in the riverbeds, the underground water replaces irrigation on land which had heavy loam soils where a plentiful water-supply was available. The cultivation of sugarcane had more return value per acre but the amount of labor, manure and water was much greater for the production of an acre of sugarcane in comparison with the most of other crops. Its acreage registered an increase of 69% from 1901-02 to 1944-45.The demand for refined sugar was never really generated(only four sugar factories by 1939) as the people living in the rural areas largely consumed jiggery. This, coupled with foreign competition, lowered the prices and consequently profits. These trends restricted the increase in acreage under sugarcane. Most of the cane grown for the production of sugar was of *katha* variety, while that grown for the chewing consisted of a variety called *ponda*. The best areas for the growth of the cane were in the south-east of the province. Most suitable varieties evolved in the farms at Gurdaspur and Lyllpur were Co. 205 and Co. 223. Other seedlings like Co. 285 and Co. 290 were also finding favor with the farmers on account of their high yield both in tonnage and sucrose.

A study of twelve Punjab villages, in separate districts of the province, showed that nine of the twelve had at least tried improved seeds, and in four villages such seeds were being employed, particularly for varieties of wheat, American cotton and sugarcane. Reasons for rejection of improved seed were given as follows [80]:

"A sugarcane with double the yield of the local variety was said to have inferior juice and was hard to press; American cotton tried in one village was found to mature too close to the frost season and not yield as much; a brand of wheat in one village gave slightly higher yields but it was found that when the ears were cut, the grain fell; moreover, the straw yield was poor, and the grinding quality bad; in another case where improved wheat was tried it was found that the cattle would not eat the chaff, thereby causing a feed problem, and it was found that more labor was required for threshing. In general it was felt that the old seed was more suited to the local soil, and that new seed was too expensive. In one village where improved seed was tested by the Department of Agriculture, only the big landlords, whose farms were used, knew the results".

3.15.4. Barley

In 1930s, Punjab was the third highest producer of the bajra (a catch crop) after UP and Bihar; covering 9% of the total Indian area under it and only about 2% of the total cropped area. Its sowings would start from the end of October to mid November. Reaping commenced from third week of March and was completed by mid April. Being a hardy crop, it can flourish on scanty moisture supply. So in years of scanty rainfall unfavorable to wheat, barley was the best choice.

3.15.5. Bajra

Bajra, a major *Kharif* crop, was a staple food of rural Punjab and its acreage increased by 167% in 1901to 45. Its increased consumption would result from the increased export and price of wheat, besides its rationing during the war years. Its outturn was from 2 to 10 cwt**.** per acre on un-irrigated and irrigated land respectively.

3.15.6. Maize

Maize was grown more widely in the hill tracts and its acreage remained fairly constant over the period which registered a marginal increase of 14.6% from 1903-04 to 1944-45. Its yield varied from 4 to 1 cwt**.** on land dependent on rainfall and from 7 to 13 cwt**.** on irrigated land.

3.15.7. Jowar

It was sown as a fodder crop. Its area remained almost constant and depicted an increase of only 3% from1901-45.

The irrigated area under different crops from 1937-44 was represented in Table: 8. Star (*) indicated the miscellaneous food crops [81]

It should be noted that the introduction of the new varieties of crops were affected by the interests of the British. They gave more stress on those crops

which were needed either for the industries in England like cotton or flax, or for the markets of Europe like wheat or for the Europeans in India like English vegetables.

The Unionist government in the province made effort to secure to landholders and cultivators adequate price for their commodities and the markets of the Punjab by regulating the practices and usages in these markets. This was done through the Punjab Agricultural Produce Marketing Act, which aimed at eliminating various mal practices and undue charges.

Table8.CropAcreage Irrigated in Punjab [81]

Year	Wheat	Other cereals & pulses	*Food crops (Non-food crops)
1938-39	58,20,423	35,27,567	6,08,770 (68,78,305)
1939-40	57,97,219	37,74,427	7,41,710 (67,23,188)
1940-41	58,10,620	39,19,967	7,68,614 (66,61,540)
1941-42	58,13,281	39,80,657	7,30,022 (66,81,428)
1942-43	57,39,302	44,40,194	6,97,554 (59,82,778)
1943-44	59,76,357	45,86,679	7,99,738 (62,40,391)

Wheat covered the largest area (42%), next came the American and *desi* cotton (12 and 10 % respectively) and then the sugarcane (2%).

3.16. Grow More Food Campaign

The idea given by William Burns [82] was launched by the central government in 1942 after Japan's occupation of Burma. It was started for increasing output of food crops as the grain imports from Burma were cut off during WW-II. So a compulsory restriction was imposed on the cultivation of short staple varieties of cotton and replacing the corresponding area with food crops by using improved varieties of their seeds and the latest agricultural implements.

4. Conclusions

The impact of agricultural developmental policies in rural Punjab during the provincial autonomy years was not directly reflected in the increase in food grain production though the budget head of agriculture showed an increase of 197% in the years 1937-46. The onset of WW- II (1939-45), disturbed the economy and disrupted the economic activity in Punjab. The paucity of funds with the government influenced its policies which, in turn, proved to be dispiriting for the growth of agriculture with no respite as economic conditions of the province continued to deteriorate. Until 1944, the high prices which the farmers gained for wheat and other agricultural produce were out weighted by the increased prices and shortages of consumer goods. Later agricultural prices fell. But the beleaguered Unionists ministers were helpless due to the ban on the free movement of grains between the Punjab and the U.P. The grain prices, again, staged a recovery in early 1945, but as the year progressed, the zamindars became increasingly reluctant to market their produce. Political insecurity, the unfavorable prospect for the 1946 *rabi* crop and the enticement of black market, all together, contributed to the decline. By December 1945, wheat, maize and gram, virtually, disappeared from the open market.

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6. References and Notes

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