

CHAPTER IV AGRICULTURE AND IRRIGATION

INTRODUCTION

Agriculture occupies the foremost place in the economy of Ambala district as more than 50 per cent of the total workers of the district were engaged in cultivation or allied occupations. The government is making all efforts to develop the agricultural sector by distributing improved seeds, fertilizers and pesticides, increasing irrigation facilities and promoting modern techniques of multiple cropping practices and improved agricultural implements. It also keenly promotes animal husbandry, fisheries and forestry which play a subsidiary but an important role in the agricultural economy. This combined and multi-pronged approach is considered very essential to develop this vital sector of the district economy.

LAND UTILISATION

The total area of the district according to the village papers measured 3,73,701 hectares in 1977-78. The broad use of the land in 1977-78 is shown below :

Nature of land use	Area (Hectares)	Percentage to the Total Area
Cultivated ..	2,58,455	69
Forest ..	25,184	7
Uncultivated ..	90,062	24

(The utilisation of land since 1967-68 has been shown in Table VII of Appendix.)

The cultivated area (net sown area and the current fallows) is 69.3 per cent of the total area of the district. The percentage of cultivated area to the total area in the Haryana State is 85.1. The corresponding smaller figure of 69.3 per cent for the district is due to a portion of the district lying in the hills.

IRRIGATION

The average annual rainfall in the district is 985.1 mm and is the highest of all districts in the state. There are comparatively very few years in which the rains fail altogether, though the rainfall is irregular and the variations from year to year are considerable. It generally increases from the south-west to the north-east and varies from 905.7 mm at Ambala to 1,063.2 mm at Dadupur. This uncertainty necessitates, the development of artificial sources of irrigation to take advantage of richness of the soil and to ensure against droughts. The district forms part of the semi-hilly region and is intersected by many streams and rivulets. Except for the Yamuna, all other streams are seasonal. The

river Yamuna which forms the eastern boundary of the district is perennial and is the source of Western Yamuna (Jumna) Canal system providing irrigation to the Haryana State. The configuration of the district makes it difficult to provide extensive irrigation facilities. Due to variations in level, canal irrigation is only possible in the tracts of Ambala and Jagadhri tahsils which have a uniform level. The depth of ground water in Kalka and Narayangarh tahsils varying from 100 ft. (30.48 metre) in the areas just below the hills to 30 ft. (9.14 metre) in other areas makes an extensive use of well irrigation in these tahsils difficult. Hence well irrigation is only possible in the plain areas of the district in Ambala and Jagadhri tahsils.

In 1923-24, the total irrigated area in the district was insignificant. It was 4 per cent of the total cultivated area in Jagadhri tahsil, 1 per cent in Ambala tahsil and 2 per cent in Narayangarh tahsil. The sources of irrigation were limited to masonry or temporary kacha wells, the Western Yamuna (Jumna) Canal in the Jagadhri tahsil, some occasional irrigation from kacha tanks, *kuhls* or ducts in Morni hill portion of Narayangarh tahsil.¹

There has been a considerable improvement in the irrigation in the district since then. The opening of the Narwana Branch of Bhakra Canal system, installation of the tubewells and other minor irrigation schemes have led to an increase in the irrigated area of the district. Consequently in 1977-78, 34 per cent of the net sown area in the district was irrigated through various sources.

The following table shows the area irrigated through different sources during 1967-68 to 1977-78 :—

(Thousand Hectares)

Year	Government Canals	Tanks	Wells and Tubewells	Other Sources	Total
1967-68	6	—	28	5	39
1968-69	6	—	42	6	54
1969-70	6	—	59	6	71
1970-71	9	—	80	5	94
1971-72	7	—	89	6	102
1972-73	6	—	90	6	102
1973-74	7	—	91	6	104
1974-75	7	—	108	5	120
1975-76	8	—	105	6	119
1976-77	8	—	125	5	138
1977-78	7	—	128	4	139

1. *Ambala District Gazetteer*, 1923-24, p. 4 (although *kuhl* or duct irrigation might be prevalent in the hilly area of the Kalka tahsil but the reference in the *Ambala District Gazetteer*, 1923-24, is not available because Kalka was not included in the Ambala district in that year.)

The principal sources of irrigation in the district include wells, tubewells, canals and *kuhls* though the tank irrigation is also adopted in the Ambala tahsil on a very limited scale.

Wells and Tubewells

The wells and tubewells are the principal source of irrigation in the district and 34 per cent of the net irrigated area is served by them. Although there are a few non-masonry wells in Jagadhri tahsil yet most of the percolation wells are masonry. These are found in large numbers in Ambala and Jagadhri tahsils whereas sub-soil water level being fairly high, not much difficulty is experienced in sinking them. The percolation wells are also found in Narayan-garh tahsil and to some extent in Kalka tahsil but these are located mostly in plain areas where sub-soil water is not too low. Water is raised either with manual labour or by tubewells. Different methods of raising the water with manual labour like *dhingli*, *charasa* and *harat* are devised according to the depth of ground water. *Dhingli* is a lever contrivance for raising water with manual labour. The water is lifted by means of a bucket suspended with a long rope tied to one end of a long wooden bar. The bar is pivoted on a perpendicular post to form a sort of see-saw. The height of the post depends on the depth of the water level. The bar is not pivoted at the centre in order to make one portion short. The short end of the bar is weighted so as nearly to counter-balance the weight of the long arm and bucket full of water. The bucket is lowered by the man in charge who draws the long end of the lever by a pull at the rope. This method is normally used for a lift of about 15 ft. (4.57 metre) or less. This device is, however, not very popular in the district. *Charasa* consists of a large leather bag holding about 140 to 180 litres of water, fastened to one end of a rope which passes over a strong wheel fixed over the well. The leather bag is lowered in the well. The rope which is fastened to the leather bag is drawn by the bullocks and the water from the leather bag is emptied into a cistern, generally by a man who operates the *charasa*. The rope is then detached from the bullocks and the leather bag is again lowered in the well and the operation is recommenced. *Harat* or Persian wheel consists of a continuous chain of buckets passing over a vertical wheel fixed on the top of well. The wheel is rotated by means of a wooden or iron gear which is worked by a pair of bullocks walking round in a circular tract. The use of these traditional methods of raising the water is on the wane and its place is being taken by tubewells and pumping-sets. Well irrigation is mainly a function of private enterprise. The state only encourages their construction through agricultural loans and liberal rules in the matter of land revenue assessment. The government also grants *taccavi* loans for sinking of wells and repairs of old wells.

Tubewells and pumping sets were introduced after the Independence. The pumping-sets initially replaced the old traditional manual method of raising

water from the wells. With the electrification of villages in Haryana, electrically-operated tubewells being economical, are getting popular. The government encourages the installation of tubewells by providing loans on easy terms. Special schemes have been formulated for advancing loans under the Agricultural Refinance Corporation Scheme, from the land mortgage banks, and from Small Farmers Development Agency and Marginal Farmers and Landless Agricultural Labourers Agency. The government also undertook the installation of tubewells through Haryana State Minor Irrigation Tubewells Corporation for providing irrigation to the farmers. The Jagadhri Augmentation Tubewell Scheme was also launched, under which 123 tubewells were installed to augment the canal water-supply of Western Yamuna (Jumna) Canal during the lean season when sufficient water is not available in the Yamuna river. Besides augmentation of water-supply, the scheme also helped to remove the water-logging from the area. The following table giving the number of wells, tubewells and the area irrigated by wells and tubewells during the last ten years shows unmistakably the value of the tubewell scheme in promoting the irrigation :—

Year	Number of Wells	Number of Tubewells		Area Irrigated by Wells and Tubewells (Hundred hectares)
		Private Tubewells	Government Tubewells	
1967-68	2,710	470	71	280
1968-69	2,728	4,367	135	420
1969-70	2,955	6,722	135	590
1970-71	1,379	9,563	135	803
1971-72	2,233	10,688	156	864
1972-73	1,572	11,796	219	920
1973-74	1,476	13,675	294	956
1974-75	1,693	13,778	370	1,098
1975-76	1,590	14,373	434	1,055
1976-77	1,590	14,583	493	1,248
1977-78	1,586	14,707	516	1,279

Canal Irrigation

Canal irrigation in the district is provided by two canal systems, viz. the Western Yamuna (Jumna) Canal and the Bhakra Main Canal. The Western Yamuna (Jumna) Canal is, the oldest in the state. Dug originally during the reign of Firuz Shah to conduct water to the royal gardens at Hisar and Hansi, it incidentally irrigated the intervening tracts also. It was re-excavated in Akbar's reign for supplies from the Yamuna and the Somb into the Chautang and on to Hansi and Hisar. This was a perennial canal as is testified by the ancient bridges at Karnal and Safidon (district Jind). It was further improved in A.D. 1643 during the reign of Shah Jahan by Ali Mardan Khan with the object of diverting water to Delhi. The river supply was tamed about 22.5 kilometres below the present head-works of the canal and the water was led along the drainage line through Panipat and Sonipat to Delhi. During the decline of the Mughal empire, the canal which by then was known as Shah Nahar gradually silted up.

It was only in 1885 that the old canal was closed and relegated to a position of a drainage line, and the new realigned canal was opened.

The Western Yamuna (Jumna) Canal had long rotational closures. To remove this deficiency, the Narwana Branch from the Bhakra Main Canal was linked up with the Sirsa Branch and Main Branch of the Western Yamuna (Jumna) Canal in 1954-55 so as to feed and make them perennial. A brief description of the canals irrigating the district is given below :

Western Yamuna (Jumna) Canal.—The Western Yamuna (Jumna) Canal takes off from the Yamuna at Tajewala head-works (Ambala district) where a very strong masonry weir is built across the river. Between Tajewala and Dadupur the canal follows for the most part in the old river-bed. The slope is fairly steep and the current very strong. At Dadupur there is a level crossing over the combined Pathrala and Somb torrents which have an outfall in the canal. The surplus supplies escaped through Pathrala Dam in the river and the required supplies are directed into the canal. From Dadupur the canal flows south in an artificial channel to Buria, below which a remarkable spur of the high lands forces it to make an abrupt curve to the east. During the rest of its course in Jagadhri tahsil, it hugs old high bank of the Yamuna pretty closely, and flowing south-west passes below the railway bridge at Abdullapur (Yamuna-nagar) and finally leaves the tahsil at Daurang.

There are two old channels of the Western Yamuna (Jumna) Canal, namely, 1-R and 2-R distributaries which extend irrigation between the Western Yamuna (Jumna) Canal and the Pathrala stream. These channels are nearly as old as the Western Yamuna (Jumna) Canal. In 1965, 1-L Minor and later

in 1973, 2-L Minor of the Western Yamuna (Jumna) Canal were also commissioned to provide irrigation facilities to the areas between the Western Yamuna (Jumna) Canal and the river Yamuna. All these distributaries and channels of the Western Yamuna (Jumna) Canal provide irrigation in Jagadhri tahsil.

A carrier channel known as Augmentation Canal takes off from the Western Yamuna (Jumna) Canal at its RD 68036 near Yamunanagar and falls into the Western Yamuna (Jumna) Canal at RD 125512 near Munak (Karnal district). The Augmentation Canal traverses the district for 9 kilometres and augmentation tubewells have been installed to augment the water-supply in the canal and to solve the problem of water logging in the area.

The total area of the district irrigated by the channels and minors of the Western Yamuna (Jumna) Canal during 1976-77 was 4,889 hectares.

Narwana Branch of the Bhakra Main Canal.—The Narwana Branch of the Bhakra Main Canal was constructed in 1954-55 to augment supplies of the Western Yamuna (Jumna) Canal. It off takes from Bhakra Main Line and supplies water to Sirsa Branch and Main Branch of the Western Yamuna (Jumna) Canal. A few distributaries like the Sheikhpur minor of Ghuram distributary, Malaur, Naneola and Baknaur minors, Jansua distributary and Thaska distributary take off from Narwana Branch and provide irrigation in the intervening area.

The total area irrigated in the district by these channels of Narwana Branch during 1976-77 was, 4,401 hectares.

Naggal Lift Irrigation Scheme.—The Scheme proposes to bring an area of about 63,000 acres lying between the Dangri (Tangri), Narwana Branch and the Haryana State boundary under flow irrigation. This area has a slope from north-east to south-west and can not be commanded by gravity flow of water from Narwana Branch. Accordingly, Naggal Lift Irrigation Project was commissioned which plans to take off water from proposed Satluj-Yamuna Link Canal through Kanwala distributary and lift it by pump-houses to various minors spread over the area. The project is in progress and will bring the said area under irrigation with the commissioning of the Satluj-Yamuna Link Canal.

Tank Irrigation

Tank as a means of irrigation is prevalent only in small parts of the Ambala tahsil and does not play any significant role in the agricultural economy of the district.

Kuhl or Duct Irrigation

Kuhl irrigation is prevalent in hilly areas of the district. The sources of water-supply to the *kuhls* are perennial and non-perennial springs, and

small streams. The land owners make small *kuhls* to carry the water to their fields. The government of late has also been providing this system of irrigation for farmers in the hilly area. Loans and subsidies for new *kuhls* or the repair of old ones are provided. The Haryana State Minor Irrigation and Tubewells Corporation has also undertaken to provide new *kuhls* in the area. In 1977-78, 2,421 hectares of land was under *kuhl* irrigation in the Ambala district.

AGRICULTURE

Agriculture constitutes the main economy and is the mainstay of the majority of people of the Ambala district. After Independence, most of the area fit for cultivation has been brought under plough and the district has made notable progress in the field of agriculture after the formation of Haryana in November, 1966. This is evident from the fact that the foodgrains production which was only 169 thousand tonnes in 1966-67 increased to 385 thousand tonnes in 1977-78 thus registering an increase of over 128 per cent during the period. The production of wheat, rice and other major crops also registered a manifold increase during the period.

Set up of the Agriculture Department

Prior to October, 1966, the district was under the Deputy Director of Agriculture, Nabha (Punjab) for plain areas and under the Deputy Director of Agriculture, Palampur for hilly areas. From October, 1966 to February, 1967, the district remained under the Deputy Director of Agriculture, Hansi. The district remained under the Deputy Director of Agriculture, Jind from March, 1967 to February, 1968. From March, 1968, the district was placed under the Deputy Director of Agriculture, Ambala. He is assisted by a Seed Development Officer, 18 Agriculture Inspectors and other field staff.

The Agriculture Department guides the farmers in the latest technological advancement in agricultural production. These include intensive methods of cultivation for higher production per unit area through new cropping patterns, preparation of crop plans, control of various pests and diseases affecting agricultural crops and gardens, use of fertilizers and good seeds, and laying out of demonstration plots to show to the cultivators the superiority of new strains and agronomic practices recommended for the district. The agriculture inspectors impart training and education to farmers in their respective areas on matters relating to improved seeds, fertilizers, improved agricultural implements and appropriate agricultural practices.

Soils

The soils of the district vary from one tahsil to another; even the soils in one tahsil vary in their texture after every 5 to 6 kilometres. The hilly and sub-mountainous parts of Pinjore, Narayangarh, Bilaspur, Chhachhrauli and Raipur