(*i*) *Tubewells and Wells*

The programme of installation of tubewells and construction of wells in the district is being implemented as per guide-lines given by IDA (International Development Agency). The major share of arranging finances falls upon the Primary Land Development Banks, although Commercial Banks have also been given areas for advancing loans. The agency provides 25 per cent/33⅓ per cent subsidy on the cost of projects undertaken by small/marginal farmers and gives 3 per cent risk fund on the loaning done by the Primary Land Development Banks. The progress has been as under :

Tubewells (For operational area)

(Rs. in lakhs)

Year	Physical targets	Achievements			
	(Number)	Number	Loan	Subsidy	Risk fund
			(Rs.)	(Rs.)	(Rs.)
1971-72	1,500	368	20.51	—	0.60
1972-73	500	989	56.54	12.02	1.49
1973-74	1,000	1,251	77.25	20.36	1.51
1974-75	900	1,040	69.66	18.09	1.29
1975-76	560	399	25.95	7.15	0.40
1976-77	650	649	43.38	6.56	0.35

Wells (For operational area)

(Rs. in lakhs)

Year	Physical targets	Achievements			
		Number	Loan	Subsidy	Risk fund
	(Number)		(Rs.)	(Rs.)	(Rs.)
1971-72	270	96	3.85	0.49	0.12
1972-73	50	62	2.36	0.49	0.07
1973-74	50	45	2.84	0.57	0.07
1974-75	50	13	1.04	0.12	0.01
1975-76	50	—	—	—	—
1976-77	50	—	—	—	—

(*ii*) *Blasting of wells*

In mountainous/sub-mountainous region, (Sohna, Rewari, Punahana, Firozpur Jhirka and Ballabgarh blocks), where rocks are met with in the wells,

normal boring operations are not feasible. Such wells have water but it cannot come up due to these obstacles. With the help of the Agricultural Engineering Cell of the State Agricultural Department, the agency has re-commissioned these wells by blasting the rocky obstacles. Seventy five per cent subsidy was given to small/marginal farmers for these works. The progress of the scheme has been as under :

Year	Rocky wells blasted	Subsidy
	(Number)	(Rs. in lakhs)
1971-72	5	0.05
1972-73	16	0.33
1973-74	16	0.27
1974-75	17	0.35
1975-76	—	—
1976-77	13	0.10

(*iii*) *Deep tubewells*

In Bawal, Khol and Rewari blocks, the general economic condition of the small farmers is very bad as they depend only on rain. The quality and quantity of the crops are poor and the small farmers live below poverty line. The State Government ordered the undertaking of hydro-physical studies and underground exploration of this area with a view to providing irrigation facilities to the farmers. The Minor Irrigation and Tubewell Corporation of the State Government, after detailed exploration, showed that it was possible to tap deep underground water strata for irrigation purposes. As deep tubewells were beyond the capacity of the small farmers, the agency readily took up the programme in collaboration with the MITC to install such tubewells in these areas. Almost similar conditions obtain in Hodal block and parts of the Palwal tahsil. The agency has supported a programme of 63 deep tubewells out of which 41 have been completed. A deep tubewell when fully developed is designed to irrigate 40 hectares of land.

(*iv*) *Community tubewells*

Another scheme of the State Government to set apart panchayat lands for purposes of cultivation has received attention from the agency. Many panchayats had not been able to put to full use their cultivable lands on account of shortage of funds for investment in tubewells and such like programmes. The agency has supported and undertaken a scheme of com-

munity tubewells by which the panchayat lands would be irrigated. These wells will be owned by the panchayats and benefits would go to the small farmers. The agency provided a sum of Rs. 8.55 lakh for installation of 223 community tubewells on panchayat lands till March 31, 1977.

Land development works.—These works include the construction of water channels and land levelling. Small/marginal farmers are given 25 per cent/33⅓ per cent subsidy for such works. The achievements are as under :

(Rs. in lakhs)

Scheme/year	Target	Achievements			
		Number	Loan	Subsidy	Risk fund
	(Number)		(Rs.)	(Rs.)	(Rs.)
Water Channels					
1971-72	260	36	0.89	0.11	0.03
1972-73	64	142	5.56	0.65	0.16
1973-74	250	159	6.28	0.79	0.20
1974-75	200	91	3.78	0.50	0.11
1975-76	200	5	0.87	0.08	0.01
1976-77	200	213	8.86	0.82	0.15
Land levelling					
1971-72	—	—	—	—	—
1972-73	25Hec.	24 Hec.	0.10	0.01	—
1973-74	100Hec.	20 Hec.	—	0.07	—
1974-75	50 Hec.	4 Hec.	0.08	0.02	—
1975-76	50 Hec.	2 Hec.	0.06	0.03	—
1976-77	—	10 Hec.	0.53	0.03	—

Demonstration, storage, and agricultural implements

(*i*) *Demonstration*

The agency has been encouraging packa practices for good production from farm lands. As the key to the succ of agricultural policies lies in the response of the farmers, the agency came out with its plan of demonstration programme. It has undertaken 3,768 demonstrations of different crops with application of package practices, particularly to fertilizers and water.

(*ii*) *Storage bins*

As protection to every grain of the small farmer is essential, the agency has supplied 526 storage bins of small size which can be used both for storing seed or grain.

(*iii*) *Market* (*Development of markets*)

The agency has supported the programme for development of marketing facilities at Sohna and Farrukh Nagar, Palwal, Hodal, Hathin and Rewari.

(*iv*) *Agricultural implements*

The agency has also taken up a programme under which the small farmers get the desired machinery to protect crops from pest attack and to complete its harvesting operations as early as possible. For early completion of harvesting operations it has supplied 537 threshers. As the small farmers have little disposable production, these machines would enable them to undertake post-harvesting operations for other farmers on the custom basis which would add to their own increased income.

Subsidiary occupations.—The small/marginal farmers do not get sufficient income from agriculture alone to meet their needs. To augment their financi l resources, programmes for providing them with subsidiary occupations have been formulated. These subsidiary occupations are very much linked with their farm occupation and include dairying, poultry farming and sheep breeding.

(*i*) *Dairying*

The programme of dairying has been prepared on the following two principles :—

(i) Supply of quality milch buffaloes

(ii) Arrangement of infra-structure for marketing of the milk produced

The agency has arranged loans for small farmers through cooperative and commercial banks, Rs. 1,600 is given as loan and Rs. 400 as subsidy for purchase of one buffalo. The loan is not given directly to the loanee; it is given to the person from whom the buffalo is purchased. The teams of the farmers are taken to cattle fairs where they are free to select the buffaloes. The veterinary doctor accompanying the team, inspects and tattoos the buffalo there and then. These loans are advanced only to those small/ marginal farmers who become members of Milk Producer Cooperative Societies. The progress achieved is as under :

(Rs. in lakhs)

Year	Achievements			
	Buffaloes purchased	Loans	Subsidy	Risk fund
	(Number)	(Rs.)	(Rs.)	(Rs.)
1971-72	269	4.73	1.04	0.16
1972-73	832	12.90	3.21	0.36
1973-74	768	15.28	1.99	0.36
1974-75	1,648	32.86	8.01	1.08
1975-76	1,483	29.66	8.20	0.90
1976-77	1,800	36.00	5.28	0.68

As for the marketing of milk, the agency decided to provide the infrastructural facility. A Milk Chilling Centre at Bilaspur was set up at a cost of Rs. 4.77 lakh and commissioned in December 1973. The capacity of this centre is 10,000 litres expandable to 20,000 litres per day and it is being run and managed by the Haryana Dairy Development Corporation.

The agency has advanced Rs. 2.57 lakh to the corporation to set up another Chilling Centre at Hodal. The agency had also persuaded the National Dairy Development Board and the Haryana Dairy Development Corporation to set up two Chilling Centres at Nuh and Rewari under their 'Operation Flood' programme. The total chilling capacity of 4 chilling centres would be 60,000 litres expandable to 1,00,000, litres per day. The Nuh Centre started working in February 1975.

To utilise the milk of these four chilling centres, Milk Plant at Faridabad[1] is being set up by the Haryana Dairy Development Corporation. Thus a self-reliant infra-structure has been created.

To feed these chilling centres, a net-work of Milk Producers Cooperative Societies has been set up. The number of these societies increased from 68 to 155 by May 1974. This number was 120 on March 31,1977. Some of the defunct societies have been weeded out. The total membership of these societies was 10,417 out of which 7,812 were of small/marginal farmers. These societies had till March 1977, supplied 112.43 lakh litres of milk to the Milk Chilling Centre, Bilaspur. The gross value of this milk was Rs. 174.05 lakh.

The producer members are ensured remunerative price for the milk. It is related to the fat content in the milk.

(*ii*) *Poultry*

Poultry is another occupation for which small/marginal farmers are being assisted. A sum of Rs. 2,000 as loan and Rs. 500 as subsidy are for setting up a 100-layers poultry unit. The achievements are as under : provided

(Rs. in lakhs)

Year	Achievements		
	Number	Loan	Subsidy
		(Rs.)	(Rs.)
1971-72	2	0.04	0.01
1972-73	35	0.70	0.18
1973-74	112	2.44	0.43
1974-75	11	0.26	0.31
1975-76	34	0.82	0.26
1976-77	—	—	—

(*iii*) *Sheep breeding*

The sheep breeding scheme is yet to be implemented but spade work has already been done. There is enough scope for sheep breeding in Sohna,

1. It has started functioning since March 31, 1979.

Nuh, Firozpur Jhirka and Punahana blocks where grazing sites are available in Aravalli ranges.

Those farmers who already own at least 20 sheep would be supplied 20 more sheep. Rs. 2,250 would be given as loan and Rs. 750 as subsidy.

Rural Artisans Scheme.—The main aim of this scheme is to meet the requirements of repairs and maintenance of agricultural implements of small farmers. It was proposed to train the existing rural artisans by means of reorientation courses to be conducted in the local Industrial Training Institutes. The rural youth has also been imparted training in the trades of electrician and *mudha*-making. The Industrial Training Institute-trained electricians were given loan and subsidy for setting up of their own workshops. The agency has borne the entire expenditure on the training programme. Twentyfive per cent subsidy has been given on the capital cost of setting up of the workshops. Thirtynine artisans have completed their one-year training under electrical trade. Seven *mudha-making* artisans have been given loans amounting to Rs. 0.14 lakh.

Assistance to Cooperative Institutions.—To strengthen the cooperative structure so as to meet the credit requirements of the farmers, the agency has taken the following steps :—

1. It advanced Rs. 10 lakh as loan to Central Cooperative Bank, Gurgaon, to strengthen its non overdue position.

2. It gives managerial subsidy on a tapering basis to Central Cooperative Banks and Primary Land Development Banks to meet the cost of the additional staff employed for handling the loaning business generated because of the agency.

3. It provides managerial assistance to milk cooperative sccieties on a tapering basis to meet the initial burden due to expenditure on staff.

Cross-Breed Calf-Rearing and Poultry Development Schemes.—The two central sector schemes of cross-breed calf-rearing and poultry farming are separately funded by the State Animal Husbandry Department. Under the cross-breed calf-rearing programme, 514 small/marginal farmers and landless agricultural labourers have been issued ration cards till March 31, 1977 and a sum of Rs. 0.87 lakh has been incurred by the agency for supplying feed to these participants. Under the Poultry Development Scheme, the agency has been able to arrange loan worth Rs. 16.03 lakh and provided sub-

sidy of the value of Rs. 5.69 lakh to 456 small/marginal farmers and landless agricultural labourers for setting up of 100-layer poultry units till March 31, 1977.

Funds.—The agency had till March 31, 1977, received Rs. 199.38 lakh as grants-in-aid from Government of India. As against this, it had spent Rs. 212.83 lakh under various programmes.

It would not be out of place to mention here that the Government of India prepares a report on the working of Small Farmers Development Agencies in the country and according to the report for the years ending March 1973 to March 1977 prepared by the Ministry of Agriculture, Government of India, the Small Farmers Development Agency, Gurgaon, received the following position amongst all Small Farmers Development Agencies in the country in respect of arrangement of production credit under crop loan system through cooperative and commercial banks and utilisation of grants-in-aid received from the Government of India :—

Year	Arrangement of production credit under crop loan system	Utilisation of grants-in-aid
1972-73	2nd	2nd
1973-74	1st	1st
1974-75	2nd	1st
1975-76	5th	1st
1976-77	5th	3rd

During 1976-77, the agency also secured 6th position in the arrangement of long term credit through cooperative institutions for the implementation of its various programmes. The agency ranked first in the State and 5th in the country in the overall performance of implementation of its programmes.

Aggregate loaning.—The position regarding aggregate loaning through

cooperative and commercial banks is as follows :—

(Rs. in lakhs)

Kind of loan	Amount of loans arranged by SFDA, Gurgaon through					
	Commercial Banks		Cooperative Banks		Total	
	Number	Amount	Number	Amount	Number	Amount
		(Rs.)		(Rs.)		(Rs.)
Short term loan	1,839	22.74	1,36,625	1,051.47	1,38,464	1074.21
Medium term loan	4,590	97.55	2,909	56.11	7,499	153.66
Long term loan	171	9.33	5,305	321.64	5,476	330.97
Total :	6,600	129.62	1,44,839	1,429.22	1,51,439	1558.84

ANIMAL HUSBANDRY

Animal husbandry activities in the district are looked after by the Deputy Director, Intensive Cattle Development Project. He is assisted in his work by seven Senior Class II Officers, viz. District Animal Husbandry Officer, Cattle Development Officer, Office-in-Charge Centralised Semen Bank, Fodder Development Officer, Statistical Officer, Dairy Extension Officer, Assistant Director Calf Rearing and also by 40 Junior Class II Officers (Veterinary Surgeons). Besides, there are 34 Veterinary Compounders, 5 Animal Husbandry Assistants and 120 Livestock Assistants.

Under the breeding programme, cross-breeding is being done in cows and selective breeding in buffaloes. For sheep breeding, rams of improved breed are supplied to the breeders.

Disease control covers prophylactic vaccination of animals every year and providing free hospital facilities to sick animals.

For keeping a milch animal in productivity stage for a long period, it is necessary to provide it with a properly balanced feed. Since the grazing areas have almost all disappeared due to pressure in land, the animals are being increasingly stall fed. Accordingly, there is the necessity of growing more green

fodder. The farmers are provided with seed and fertilizers on subsidiary basis to grow more green fodder in their fields.

Marketing facilities for milk are provided through Milk Cooperative Societies organised at village level. Milk from such societies is brought to the chilling centres.

Livestock Population.—The district possesses a fairly large number of livestock which include cattle, buffaloes, sheep, goats, camels, pigs and others. Gurgaon is a home-breeding and an exporting tract. Cattle raising is, however, done primarily to meet the requirements of the family and as a side line of agriculture. The district ranks third in cattle population in Haryana, i.e. next to the Hisar and Karnal districts. The livestock population as per 1971 Livestock Census is 8.23 lakh and poultry bird 2.30 lakh. The break-up of livestock population[1] is as under :

Livestock	Number (in lakhs)
Cattle	3.20
Buffaloes	3.30
Sheep	0.40
Goats	0.90
Camels	0.05
Pigs	0.20
Others	0.18
Poultry	2.30

Cattle and buffaloes.—Cows and buffaloes play an important role in rural economy and agricultural operations even in the present mechanised age. It is not only the milk and its by-products which are being exported from this district to Delhi, Rajasthan and Uttar Pradesh, but also the bullocks, which provide the chief power for agricultural operations. The district is well known for world famous breeds of Haryana cows and Murrah buffaloes. Haryana cow is reared generally for its male produce, the bullock, which is valued for its draught capacity and speed. Haryana bullocks fetch premium prices.

1. The population of livestock has been based on the average number of livestock in each village.

The Murrah buffalo is famous for high milk-yield all over India and is the main milch animal of the district.

The cattle and buffalo population which numbered 6.50 lakhs in 1971, accounted for 78.8 per cent of the total livestock. The female population of cows and buffaloes was 0.99 lakh and 1.76 lakh respectively. Their relative figures *vis a vis* those of males were :

(in lakhs)

	Males above 3 years		Females above 3 years				Calves below 3 years	
	Breeding bulls	Others	In Milk	Dry	Not calved even once	Others	Males	Females
Cows	00 (a)[1]	1.40	0.50	0.41	0.06	0.02	0.42	0.40
Buffaloes	00 (a)	0.40	1.21	0.45	0.09	0.01	0.51	0.97

Intensive Cattle Development Project, Gurgaon.—Consistent with the latest breeding policy enunciated by the Government of India for exotic strain in the non-descript cattle for increasing milk production, an Intensive Cattle Development Project, was started from October 1967. Though the district is well known for Murrah and Haryana breeds, a fair majority of these are non-descript type and un-economic. The scheme envisages a systematically planned method for the best utilisation of superior germ plasm obtained from superior stock throughout the district. The technique of artificial insemination is used to maximise utility of available number of approved bulls to the maximum extent. Controlled breeding has been progressively brought through removal of all scrub bulls in the area. To upgrade the non-descript and low milk yielders, exotic semen is being used. To provide breeding facilities effectively, 6 artificial insemination centres with 102 stockman centres are at work. The figures of artificial insemination done and calves born year-wise are given below :

Year	Artificial insemination done		Calves born	
	Cows	Buffaloes	Cows	Buffaloes
1973-74	5,856	10,455	1,042	3,134
1974-75	7,600	11,832	1,582	3,340
1975-76	8,305	6,444	1,702	3,539
1976-77	8,653	7,496	1,664	1,117

1. Denotes less than 1,000.

Frozen Semen Bank, Gurgaon.—It was established with the assistance of Royal Danish Government in 1975-76 under the DANIDA Assistance Programme. The main object of the project is to produce high yielding cross-bred cattle in a large number by intensive cross-breeding in local cows using imported frozen semen from superior exotic bulls of Jersey and Holestian Friezeen breeds. The bank receives frozen semen from other countries too and store it for utilisation in Intensive Cattle Development Projects at Gurgaon, Karnal and Meerut (U.P.).

This is a Centrally assisted project administered by the State Animal Husbandry Department. The existing facilities at Centralised Semen Collection Station have been developed into a central frozen semen bank to discharge its functions. Equipment such as Liquid Nitrogen Plant, Liquid Nitrogen Storage Containers, Semen Storage Containers and other accessories were received in 1975 under DANIDA Assistance Programme. In addition, a generator was also received. During the period of 5 years (from 1975), 1,25,000 doses of frozen semen will be imported.

The Liquid Nitrogen Plant was installed in May 1975 and the production started the same year. Liquid nitrogen is catering to the requirements of Intensive Cattle Development Project, Gurgaon, and Meerut (U.P.) and Indo-Australian Cattle Breeding Project, Hisar, for preservation of semen. In addition, liquid nitrogen gas is also sold to Haryana Agricultural University, Hisar, and Haryana Development Corporation, Bhiwani.

From April 1976, freezing of semen obtained from the bulls stationed at the project in mini strows was also started. Up to the end of 1976-77, use of frozen semen had been introduced in 15 Stockman Centres and in the near future this facility will be introduced in other centres. The training of technical personnel engaged in artificial insemination in frozen semen technique has been started and 19 Veterinary Assistant Surgeons and 15 Stock Assistants have been trained.

Disease Control

Apart from common diseases affecting livestock, the district in the past was most frequently visited by a number of contagious diseases namely, rinderpest or cattle plague (*mata*), haemorrhagic septicaemia (*galghotu*), foot and mouth disease (*muh khur*), black quarter or black-leg (farsujan), internal parasites, external parasites, ticks and lice. These diseases generally appeared due to unhealthy surroundings and drinking of unhygienic water by animals

from dirty water sources, i.e. village ponds and *ganda nalas*. People used to resort to religious rituals and local treatment, mostly unscientific.[1]

With the advancement of knowledge and science and provision of adequate prophylactics and curative facilities, the incidence of animal disease has been considerably reduced.

For the most part of the year now, there is no outbreak of any contagious disease. It is only during the monsoon season that in some low-lying areas, the outbreak of haemorrhagic septicaemia among the animals is observed. The prophylactic vaccination programme against this disease is, therefore, taken up much earlier before the onset of monsoons every year. As a result of this, the number of outbreaks has been reduced and there has been no loss among the cattle.

In the rural areas bullock and camel carts are popular as a means of communication. Bullocks and camels are extensively used for ploughing purposes also. Unfortunately camel is vey susceptible to a wasting disease known as *surra*. To protect camels from this deadly disease and also to treat the affected camels, sufficient quantity of medicines is stocked in vet[illegible] hospitals and dispensaries. Amongst sheep, sheep-pox halber is [illegible] prophylactic vaccination is administered to prevent the ou[illegible] disease, which has been substantially controlled. Foot and mouth disease is prevalent but prophylactic vaccination is administered in small number as it is not feasible to protect all the cattle on mass scale due to the high cost of vaccine. However, cross-breed animals are being protected from this disease. For haemorrhagic septicaemia disease, prophylactic vaccination is done before the summer and winter rains which keeps the disease under control.

Veterinary hospitals.—In the wake of livestock development programme, the subject of disease control, for combating the various contagious and non-contagious diseases, assumes a great importance. The district has 25 veterinary hospitals, 9 veterinary dispensaries, 6 regional artificial insemination centres, 101 stockman centres, 6 poultry extension centres and 4 sheep and wool centres for providing treatment and breeding facilities. Their place of location is shown in Table XVIII of Appendix.

A veterinary hospital functions under the charge of a Veterinary Assistant Surgeon, assisted by a Veterinary Compounder or a Stock Assistant and Class IV attendants, while a Veterinary Dispensary is run by a Veterinary Compounder with the help of Class IV attendants. An Artificial Insemination

1. *Gurgaon District Gazetteer*, 1910, pp. 115-16.

Centreis run by a Veterinary Assistant Surgeon with one Veterinary Compounder or Stock Assistant and Class IV attendants. A Stockman Centre is run by a Stock Assistant with the help of Class IV attendants. A Poultry and Sheep Extension Centre is run by a Stock Assistant with the help of Class IV attendants.

Fodder Development Programme

The practice of feeding the animals has not been systematic. For most part of the year, the animals are fed only on dry fodder such as wheat *bhusa* and *karbi jowar*. It is only during the rainy season that a little of green fodder is available for grazing.

The present inadequacy of feed and fodder resources to the nutritional requirements of the country's livestock population is known. The lack of adequate fodder is one the main causes of present low productivity of our cattle. Good quality green fodder for maintaining proper health and efficiency of both milch and draught animals is essential. An ordinary cow fed on balanced feed can produce more milk.

With the increase in irrigation facilities the farmer is interested in cash crops and the area under fodder has not increased considerably. The cross-bred animals with high milk potential are economical only when animals are kept on proper balanced feed which needs abundance of green fodder.

The programme of fodder development continued to receive attention under Intensive Cattle Development Project. Seeds and fertilizers are supplied at subsidised rates for growing of improved varieties of fodder and grasses. For the development of fodder during *kharif* season, the seeds of cowpeas, J.S. 20, *mackchari*, *guar* (*gwara*) and *bajra* are distributed and *berseem*, oats, Jai and Japan Rape are supplied during *rabi* season. Under fodder development programme mini kits received from the Government of India are given to the farmers free of cost.

The utility of improved seed cultural practices and inter cropping by laying out demonstration plots in cultivator's own field are explained. During 1976-77, 501 such plots were laid out and up to March 31, 1977, 1,638 plots were organised since the inception of the scheme.

Dairy Farming, Milk and its Marketing

During the first quarter of the 20th century the manufacture of ghee which was regularly prepared by the zamindars, was the only form of dairying carried on in the Gurgaon district. The quantity manufactured was of course

the largest in tracts where there were large number of buffaloes. The zamindars either took ghee to the *bania* for sale or the *bania* used to collect it after going round the villages. Delhi being the nearest market, the zamindars sold it directly to wholesale dealers there; but generally they made transactions through a middleman who made a profit of about 6 pies per rupee (about three per cent). On an average a cow yielded 5 seers (about 4.7 kilograms) of milk and a buffalo 8 seers (about 7.5 kilograms). By 1910, the price of dairy produce, like the price of stock, had doubled. Now a rupee could fetch 10 seers (9 kilograms) of milk or 1 seer (0.9 kilogram) of ghee as compared to 20 seers (18 kilograms) of milk and 2 seers (1.8 kilograms) of ghee a few years earlier.[1]

The district had the following number of breedable cows and buffaloes in 1961, 1966 and 1971 respectively :

Year	Breedable cows and buffaloes	Total livestock population
1961	2,35,104	7,49,983
1966	2,40,800	8,33,900
1971	3,27,196	9,56,733

The details given below are revealing :

	1961		1966		1971	
	Cows	Buffaloes	Cows	Buffaloes	Cows	Buffaloes
In milk	55,541	71,987	47,600	94,600	58,045	1,46,639
Dry	43,865	46,315	40,700	48,700	49,362	53,355
Not calved even once	6,140	9,323	3,400	4,700	6,685	9,960
Others	1,348	585	100	1,000	2,137	1,013
Total :	1,06,894	1,28,210	91,800	1,49,000	1,62,229	2,10,967

It is apparent that both 1966 and 1971 registered an increase in the number of buffaloes and a decrease in the number of cows as compared to the year 1961. As already explained, the cow is a low yielder. As such, it is not looked after very well. It is mainly reared for male calves required for cultivation purposes and they are exported to Uttar Pradesh and Rajasthan.

1. *Gurgaon District Gazetteer*, 1910, pp. 113-14.

A buffalo with a life span of 15—20 years gives 7-8 issues and yields milk for 310 days in a year after delivering its calf. The cost of a buffalo yielding on an average 8 kilograms milk per day ranges from Rs. 2,000 to Rs. 2,500. The price of a cross-bred pregnant heifer is Rs. 1,200 to Rs. 1,500 while that of a non-pregnant heifer is Rs. 700 to Rs. 1,000 according to the age of the animal. A heifer gets pregnant at the age of 2—2½ years. A cross-bred cow, like a buffalo, has a life span of 15—20 years, but it gets pregnant almost every year, thus giving the maximum of 10 issues. It yields milk for a full year (276 days). The cost of a cross-bred cow, yielding 10 to 12 kilograms milk per day on the average varies from Rs. 2,500 to Rs. 3,500. The local breed cow gets pregnant at the age of 4½ years and yields about 3 to 4 kilograms milk per day. Its price ranges from Rs. 500 to Rs. 600. The local breed heifer fetches only Rs. 100 or so as nobody wants to feed it for 4½ years to get only a small quantity of milk. Such heifers are just let loose by the owners. The loose cattle are captured by the Cattle Catching Parties and if not claimed within the prescribed time, are auctioned. The male calves are, however, carefully nurtured as they turn into good bullocks. The price of a pair of such Haryana bullocks ranges from Rs. 2,500 to Rs. 3,000.

The district commanded the third position in the State on the basis of livestock population but despite its being rich in cattle wealth, no organised dairy industry had been developed. The farmer and the milk producer could only be interested in maintaining quality milch animals for commercial milk production if he could find a ready and remunerative market for his milk near at hand. Milk is a perishable commodity and requires too much care for maintenance of its quality and wholesomeness at all stages from production to consumption. It was not possible for the farmer to carry milk to the dairy for sale as his means were limited and he could not maintain a carrier.

Under these conditions there was no organised marketing of milk in the Gurgaon district till 1960. Small quantities of milk were collected from the area in an unorganised manner by private traders for sale in Delhi. In 1959, Delhi Milk Scheme was initiated by the Government of India to cater for the milk requirements of Delhi in an organised manner. It was also to provide a fair remunerative market for milk producers in areas in the neighbourhood of Delhi.

The scheme commissioned its first Milk Collection and Chilling Centre in the district at Ballabgarh in August 1960. In November, the same year, another centre was commissioned at Palwal. The centre at Sohna was started

in January 1962.[1] These Milk Collection and Chilling Centres are equipped with modern plants and machinery to receive, chill and store milk in hygienic conditions. The centres are equipped with laboratories to test the milk for its hygienic quality and purity. Milk was collected from the areas around these Centres through the medium of contractors who gave money as loans to the producers of milk for buying cattle. They pocketed unproportionately huge profits by procuring milk at much cheaper rates from these loanees. Gradually, cooperative societies of milk producers, were formed which supplied milk directly to the scheme and they have thus been saved from exploitation by private contractors.

Milk produced in areas in the vicinity of the Milk Collection and Chilling Centres is received directly at these centres. From far-off places, however, Delhi Milk Scheme itself collects milk through transport provided by it. The suppliers are also provided with sanitary milk cans and ice for chilling the milk in order to maintain its freshness till it reaches the Milk Collection and Chilling Centres. The milk is further chilled to lower temperature and stored in insulated storage tanks and is then despatched to the Central Dairy of the Delhi Milk Scheme at Delhi in insulated road tankers.

The Delhi Milk Scheme covers a large part of the Gurgaon district and as the table below shows, the quantity of milk procured by it increased steadily from year to year up to 1969-70. Thereafter, a steady decline set in. The reason for it was that most of the milk was being taken over by the Haryana Dairy Development Corporation :

Year	Total quantity procured (quintals)
1	2
1962-63	72,210
1963-64	63,739
1964-65	67,138
1965-66	1,12,570
1966-67	1,52,856

1. Delhi Milk Scheme, in the near future, proposes to establish two more Milk Collection and Chilling Centres at Bhadas and Punahana in the Firozpur Jhirka tahsil. Proposals are also under consideration for setting up of centres at Utawar (tahsil Nuh) and Firozpur (tahsil Palwal).

1	2	
1967-68	1,65,053	
1968-69	2,10,771	
1969-70	2,56,056	
1970-71	2,52,498	
1971-72	1,04,692	(only from Palwal Centre)
1972-73	1,33,470	
1973-74	85,796	
1974-75	1,28,290	

The Intensive Cattle Development Project through its marketing cell, started organising milk cooperatives with the object of maximum profits to the milk producer. Till March 31, 1975, 108 Milk Cooperative Societies were organised. The following table gives the picture of progress in this field:—

Year	Total milk supplied through Milk Cooperative Societies (lakh litres)
1969-70	5.55
1970-71	11.67
1971-72	19.43
1972-73	28.05
1973-74	20.98[1]
1974-75	32.58

Side by side with facilities for the marketing of milk, steps have taken towards increasing milk production by advancing loans to members for the purchase of good quality milch animals. The loans advanced for this purpose since the start of this project amounted to Rs. 40,48,718 up to March 31, 1975. The technical know-how about dairy industry is also provided to these societies.

For the Milk Marketing Cell, a Dairy Extension Officer and Assistant Registrar, Milk Cooperative Societies, assisted by Dairy Extension Assistants,

1, Decrease was due to drought conditions,

Cooperative Inspectors and Sub-Inspectors are working under the Deputy Director, Intensive Cattle Development Project, Gurgaon.

SLAUGHTER HOUSES

The district has seven recognised slaughter houses at Gurgaon, Ballabgarh, Palwal, Faridabad, Sohna, Hodal and Farrukhnagar. The animals in the slaughter houses are inspected by the Veterinary Surgeons before and after their slaughter to ensure that the meat being made available for human consumption was free from disease. Being adjacent to Delhi, the district has a ready market for the sale of meat and other animal products, viz. bones, hides and skins. From the year-wise number of animals slaughtered, as given below, it is evident that the consumption of meat is on the increase :

Year	Animals slaughtered
1973-74	31,640
1974-75	43,625
1975-76	59,184
1976-77	70,316

GAUSHALA DEVELOPMENT

According to the old concept, *gaushalas* were the institutions opened under a religious sentiment to house the unproductive and useless cattle and were run on charity. To give new meaning to the old concept, an idea was mooted to convert these *gaushalas* into Cattle Breeding-cum-Milk Producing Centres with some financial assistance and technical guidance. The income from the sale of milk and animals of the *gaushalas* helps a lot in running the *gaushalas* which also serve as breeding units. The four registered *gaushalas* in the district are at Hodal, Chhainsa, Gurgaon and Farrukhnagar. Of these, only the *gaushala* at Gurgaon is aided under the scheme 'Development of Gaushalas'.

SHEEP BREEDING

According to 1971 Livestock Census, the sheep population is 0.40 lakh, which has fairly good scope for the development of sheep and consequently of wool industry. Sheep provide necessities of vital importance (meat for food, wool for clothing, skin for industrial enterprise and manure for agriculture). Although the number of sheep is large, these are not of good quality wool yielders. In order to bring about improvement in sheep stock, four Sheep and Wool Extension Centres have been set up at

Sohna (tahsil Gurgaon), Nuh, Sondhad (tahsil Palwal) and Firozpur Jhirka. Each centre is looked after by a Stock Assistant with other Class IV attendants. Superior rams, kept at the centres, are supplied to the breeders during the tupping season and are taken back after the tupping season is over. Veterinary aid and other sheep husbandry facilities have also been made available.

Horse Breeding

With the advancement of mechanisation, there is no interest in horse breeding by the public and at present horse breeding is of no economic interest to this area. However, some increase in the number of ponies has resulted from the fact that animals were purchased from outside for local use at brick kilns and for pulling carts.

Camels

No camel breeding programme has been taken up in the district. Whatsoever the additional demand, it is met with from the Rajasthan State.

Piggery

There is no Government owned or private piggery farm where the breeding of pigs could be pursued on scientific lines. Pigs are reared by Scheduled Castes; the breed is indigenous and the animals are poor in constitution and fat. To develop this industry, the Yorkshire pigs are produced at Government Pig Breeding Farms at Ambala and Hisar. These are supplied to the breeders at subsidised rates for the improvement of local pigs. The veterinary hospitals and dispensaries attend to the work of disease control of pigs and provide technical know-how for establishtning piggery farms. According to 1971 Livestock Census, the pig population is 0.20 lakh. Pigs are slaughtered locally for meat.

Poultry Development

The poultry population, according to 1971 Livestock Census, was 2.3 lakh. One day old chicks of White Leg Horn, produced at the Government Poultry Farm, Ambala, were made available to the breeders at subsidised rates. This breed has a laying capacity of 200 to 250 eggs per year. Veterinary hospitals and dispensaries in the district train the poultry farmers in the latest techniques of poultry husbandry and help them in setting up poultry farms. Mass vaccination, debeaking and dewarming are also carried out by these institutions.

There are six Poultry Extension Centres at Badshahpur, Gurgaon, Nuh, Faridabad, Ballabgarh and Firozpur Jhirka. Each centre is locked after by

a Stock Assistant with Class IV attendants. Delhi being in the neighbourhood of the Gurgaon district, provides a very good market for eggs and table birds all the year round.

Problem of stray animals.—The State Government has formed a cattle catching party to round up wild, stray and useless cattle which create problems for the farmers. The panchayat approaches the Gaushala Development-cum-Cattle Catching Officer having headquarters at Chandigarh and a party is deputed in the affected area for rounding up the animals. The animals are put to auction. The unsold ones are sent to Gosadans where these are housed till they die.

FISHERIES

The Fisheries Department in the district is represented by a Fisheries Development Officer who is in charge of all fisheries development activities. He is assisted by four Fisheries Officers, one Assistant Fisheries Officer and other supporting staff. The Fisheries Development Officer functions under the administrative control of the Director of Fisheries, Haryana, Chandigarh.

There are fairly vast potentital water resources for fisheries in the district. Details of the waters notified under the Punjab Fisheries Act, 1914, are given in Table XIX of Appendix. Fishing rights in these notified waters are auctioned to members of the public from the 1st September every year for a period of one year.

There is a considerable scope for developing fish culture in perennial bunds and ponds. Out of about 100 protective and storage bunds in the Gurgaon district, those forming the perennial lakes are Badkhal, Dhauj, Dumdumma, Suraj Kund (Peacock Lake), Rithaj and Bundwari. These lakes are developed for production of fish for sale and also as angling resorts.

Fish culture is being popularised not only by panchayats but also by individuals. The fish seed farm at Badkhal supplies fish seed of Major Carps at the rate of Rs. 50 per thousand for stocking culturable water area in the district. A Fisheries Research Centre headed by Fisheries Research Officer has been established at Fish Seed Farm, Dumdumma to tackle day to day problems. Fish seed of Major Carps is also available in abundance from the inundated areas near river Yamuna and other flooded waters.

Almost every village has one or two ponds used mainly to provide water for cattle and for washing purposes. Although vegetarian, the villagers have started taking interest in developing the ponds for fish culture. The

Gram Panchayats are gradually becoming conscious of the benefits of fishery resources and a number of these have begun to increase their revenue by auctioning the village ponds.

The number of professional fishermen in the district is small most of the fishing parties come from Uttar Pradesh. The Meos of the pur Jhirka and Nuh tahsils and the Rajputs of the Palwal tahsil ake up fishery as a part-time job.

The annual production of fish in the district is estimated at 425 metric tonnes. Cold storage facilities are not essential Most of the fish-catch is exported to Delhi from where it is despatched to Calcutta, Dehradun, Simla, etc. Weed fishes generally processed are dried and are exported to Assam where it has a good market. The income to the State from this source is about Rs. 4.25 lakh and to the panchayats Rs. 5 lakh per annum. The fishery industry provides employment opportunity to about 1,300 persons and subsidiary avocation to about 2,300 demobilised men in the district.

The species of food fish available in the district are :

1. MAJOR CARPS

Labeo rohita **(Rohu).**—It is a column-bottom feeder, and grows to three feet or more in length. It is a very popular variety.

Labeo calbesu **(Kalbans).**—It is relatively slow growing and attains a size of about three feet (0.9 metre).

Catla catla **(Thaila).**—It is a surface feeder and the fastest growing carp fish. It is quite popular when not exceeding two feet (0.6 metre) in size. The large specimens, reaching up to six feet (1.8 metres), are rare.

Cirrhina mrigala **(Mori).**—It is a bottom feeder and grows to three feet (0.9 metre) or more.

2. CAT FISH

Wallago attu **(Malli).**—It is a predacious and piscivorous fish, and grows to a size of about six feet (1.8 metres). It is a good game fish.

Mystus seenghala **(Seenghala).**—It attains a length of over four feet (1.2 metres).

Notopterus notopterus **(Pari).**—Scales on sheeks much larger than on body, maxilla does not extend the hind edge of the body. Grows to two feet (0.6 metre) or more.

Notopterus chitala **(Moh).**—It is a game fish growing to about 1½ feet (0.4 metre) in size.

Silonia silondia **(Silond).**—It prefers strong stream and clear deep waters. It grows to a size of six feet (1.8 metres), and is considered good for eating.

Rita rita **(Khagga).**—It is a game fish. It is much esteemed as food but is a very foul feeder.

3. MINOR CARPS

Labeo gonius **(Seercha).**—It attains nearly five feet (1.5 metres) in length with scale darkest at margins, but many have red lunnules on them.

Labeo bata **(Bata).**—It attains two feet (0.6 metre) in length.

Girrhana reba **(Reba).**—A bony fish which attains one feet (0.3 metre) in length.

Pangasius pangesius **(Pangus).**—It attains four feet (1.2 metres) in length and is a foul feeder.

Bagarius bagarius **(Gonch).**—It grows up to six feet (1.8 metres) in size and is probably the largest fish caught on rod and line in India.

Chella baccila **(Chilwa).**—It attains at least seven inches (0.2 metre) in length. It is used as live bait for fishing with rod and line.

Mastacemblus armatus **(Bam).**—It prefers ponds or places of water which abound in mud. It is excellent food.

Callichrous patoa **(Pabod).**—Its colour is silvery with a badly marked shoulder spot.

Callichrous bimaealatus.—It attains a length of at least a foot and half (0.4 metre). It is excellent as food and is called 'butter fish' for its better quality.

Hemiramphus-sp **(Half beak).**—Its body is narrow and compressed. It attains a length of at least 10.5 inches (0.26 metre).

Mugil corsula **(Hard Vicku Wahre).**—The fish of this variety swim with their eyes just above the surface of water, giving appearance of a number of tadpoles. As soon as they are disturbed, they dive down with great speed. They attain a length of one and a half feet (0.4 metre).

FORESTRY

The Gurgaon district is covered by the Gurgaon Forest Division which is under the charge of the Divisional Forest Officer, Gurgaon. The controlling officer of the division is the Conservator of Forests, Hisar Circle, Hisar, who functions under the overall control of the Chief Conservator of Forests, Haryana, Chandigarh.

The activities of the Forest Department are : (i) to produce maximum wood from the waste lands available ; (ii) to reduce the soil erosion by wind and water by raising shelter belts and wind-breaks along roads, canals, bunds and boundaries of agricultural fields; (iii) to mitigate the dry climatic conditions by growing trees wherever possible ; (iv) to meet the local requirement of firewood, timber and wood for industrial uses.

The Gurgaon Forest Division comprised five forest ranges, viz. (i) Gurgaon Range, (ii) Nuh Range, (iii) Palwal Range, (iv) Sohna Range, and (v) Ballabgarh Range. These ranges were further subdivided into blocks and beats. The charge of a range is ordinarily held by a Forest Range Officer, and the charge of block is held by a Deputy Ranger or a Forester, whereas a beat charge is supervised by a Forest Guard. The technical and executive staff looks after the existing forest areas belonging to the Government as well as private individuals which are notified as closures under section 38 of the Indian Forest Act, 1927 and under sections 4 and 5 of the Punjab Land Preservation Act, 1900 as applicable to Haryana. The staff is also responsible for the execution of afforestation works.

Till about 1930, there were no forests in the district. In the *Gurgaon District Gazetteer, Statistical Tables*, 1935, *Table* 27, the following areas are shown as under re-afforestation operations in the district :—

Name of forest 1	Area (Acres) 2
1. Bhondsi	630
2. Raisina	1,203
3. Raipur	157
4. Rehna	317
5. Biwan	50
6. Mandha	134
7. Tankri	268

1	2
8. Rithauj	200
9. Sanpki Nangli	211
10. Harchandpur	306
11. Taphusi	387
12. Firozpur Jhirka	124
13. Khol	1,205
14. Sohna	1,375
15. Indri	364
16. Malhai	138
17. Khori	166
18. Khaleta	166
19. Haryahera	274
Total :	7,675

All the road strips were transferred to the Forest Department in 1950 for management. Similarly canal banks, railway strips of the Northern Railway and flood protective bunds were put under the charge of the department for afforestation.

The area under forests is classified according to ownership, viz. Private and State. Forests owned by corporate bodies and private individuals are included under Private Forests. The State Forests on the basis of legal status are categorised as Reserved, Protected and Unclassed. Reserved Forests are permanently dedicated either to the production of timber or other forest produce and in them the right of grazing and cultivation is seldom allowed. In Protected Forests, these rights are allowed subject to certain restrictions.

The following area was under forest in the district :—

Classification of forests 1	Area 2
	(Hectares)
STATE FORESTS	
Reserved	404
Protected	4,003
(i) Road strips	2,812
(ii) Canals and Bunds	1,066
(iii) Railway strips	115
Unclassed	491

1	2
PRIVATE FORESTS	
Closed under section 38 of the Indian Forest Act, 1927	209
Closed under sections 4 and 5 of the Punjab Land Preservation Act, 1900	12,022
Total :	17,1191

The districts has a chain of low Aravalli hills starting from Gurgaon-Delhi border towards Rajasthan in the south. These hills had vegetation, the remnants of which are still visible at various places. The forests on the hills are mostly privately owned or p- chayat areas. Restrictions for saving these areas from denudation was i- posed for the first time in 1948. These natural forests contain species like *Khairi* (Acacia Senegal), *Dhouk* (Anogeisus pendula Edgew), *Dhak* (Butea monosperma Lamk.), *Papri* (Holoptelea integrifolia Planch), Rounj (Acacia leucophloea), Inderjo (wrightia tincloria), Chamaror (Erhetia laevis), Grevia populifolia, etc. *Shisham* and *Nim* are found in the foot hil's and plains and *Kikar* is grown in the plains. Its bark is good source of tanning. *Shisham*, *Nim* and *Kikar* are valuable as timber, firewood, and for making agricultural implements. The plantation of eucalyptus trees in the plains along roads, canals and boundaries of agricultural fields is the recent development in forestry. It is used as firewood and pulp wood for paper industry.

1. The otal area under forests showu here does not tally with the figure shown at p.145 of this Chaper due to different definitions followed by the Forest and Land Records Departments. The Forest Department reckons entire area including non-wooded area under its control as the forest area whereas the Land Records Department calculates on the basis of actual area under forests.

The works executed under different schemes are given below :

Name of Scheme	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
1. Raising of economic plantation along rail, road and canal strips (RKM)	876	120	81	325	284	360	772	500	638	400	330
2. Raising of economic plantation in plains (Hect.)	—	—	—	—	20	20	25	10	20	10	20
3. Farm forestry (Hect.)	—	—	—	2	88	145	70	35	60	20	34
4. Quick growing species (Hect.)	76	67	14	—	—	—	—	—	—	—	—
5. Raising plantation on national highways (RKM)	—	—	—	—	—	650	—	—	—	—	—
6. Nature conservation (Hect.)	—	—	—	—	—	—	—	—	—	40	40
7. Air strips (Hect.)	—	—	—	—	—	—	—	—	—	155	274
8. Panchayat land (Hect.)	—	—	—	—	—	—	—	—	—	—	80
9. Soil conservation works on water shed basis (Hect.)	97	40	30	87	80	—	20	50	45	23	30
10. Soil conservation in desert areas (Hect.)	108	230	50	115	—	—	—	—	—	—	—
(RKM)	568	350	348	100	145	100	—	—	—	—	—
11. Rehabilitation of eroded hills (Hect.)	—	—	—	15	21	23	80	110	104.5	85	98
12. Stream bank stablization (Hect.)	—	—	—	10	10	10	—	—	—	—	—
13. Afforestation of Suraj Kund (Hect.)	—	25	4	—	12	9	7	—	—	—	—
14. Afforestation of Badkhal Lake (Hect.)	—	40	4	3	30	10	7	2	—	—	—
15. Crash Programme for Rural Employment (Hect.)	—	—	—	—	—	220	80	120	—	—	—

Forest produce.—The produce from the forests consists of timber, firewood and grasses. There are no herbs worth exploiting. The income derived from the sale of forest produce for the years 1972-73 to 1976-77 is shown below :

Year	Income from forest produce
	(Rs.)
1972-73	3,82,106
1973-74	3,45,380
1974-75	4,64,837
1975-76	4,01,574
1976-77	3,95,841

NATURAL CALAMITIES

Water, a great gift of nature, poses two problems in the Gurgaon district; its seasonal excess and its general deficiency. The lands are mostly *barani* but, paradoxically enough, there have been serious floods in parts of the district. The causes of floods differ from tahsil to tahsil.

FLOODS

Floods have been caused by abnormal rains and the seasonal overflow of the Yamuna, Sahibi Nadi and Landoha Nullah. Heavy floods in the catchment areas of the present Gaunchi and Nuh Drains, blockade of water in Paosar Drain in Rajasthan, less discharge from the regulator on Ujina Drain, deliberate cuts in drains and breaches in the bunds have been other factors responsible for flooding various areas of the district.

Heavy rains increase the volume of water in river Yamuna and cause floods along the western bank of its course, that is in the *Khadar* areas of the Ballabgarh and Palwal tahsils. The situation in the riverain villages sometimes becomes too alarming. Floods cause heavy damage to standing crops, life and property, and also necessitate the shifting of some *abadis*, especially in villages Lalpur (tahsil Ballabgarh) and Solra and Bholra (tahsil Palwal). However, this problem is often not so acute for the water flows away automatically with the receding of the level in the Yamuna. But at some places the accumulated water stays for months together and minimises the possibility of

the following *rabi* sowing. The villages generally affected in this way are as follows :—

Ballabgarh Tahsil

Akbarpur, Sheikhpur, Mauzamabad, Harphala, Nanglia, Jodian, Mohana, Bhanakpur, Qabulpur Bangar, Samepur, Majori, Sabupura, Ladhalo, Shahpur Kalal, Bhahalpuri, Bashkula, Mohabatpur, Yakubpur, Lalpur, Dadsia, Dalelpur, Sherpur, Ismailpur, Aganpur and Chandpur.

Palwal Tahsil

Bhond, Bagpur Khurd, Bholra, Solra, Rajpur Khori, Dostpur, Hassainpur, Thanthri, Hasanpur and Bagpur Kalan.

Ring Bunds have been constructed in the following villages for protection against the floods in river Yamuna :—

Ismailpur, Agwanpur, Dalalpur, Lalpur, Bholra, Nangla Sunehri, Nangla Brahman, Nangla Peruke, Shekhpur, Rajpura, Dostpur, Bhond, Kherli, Basantpur, Sherpur and Mohabatpur.

Up to Independence (1947) and even for quite a few years thereafter, there were a large number of depressions round Palwal town which used to get filled up during heavy rains. The existence of a net-work of canal distributaries south of Palwal had also widened the natural course of the drainage towards the Yamuna in many places causing water-logging and *reh*. Some 14 drains and drainage cuts were provided by the Agra Canal authorities to prevent the deterioration by water-logging. However, these drains were not designed to deal with abnormal flooding. In the west of the Palwal tahsil also, there were a disconnected series of depressions which too got flooded in heavy rains to cause havoc in the whole of surrounding area. At that time the drainage of these depressions was not considered appropriate as any attempt to do so would merely transfer the danger, greately enhanced on the way, to the Mathura district and the then Bharatpur State. However, syphons were provided where irrigation channels interfered with the natural drainage of flood water.

The matter was seriously taken up only after Independence and the problem was tackled through the Gaunchi Main Drain and its system which serves an area of 257 square miles (665.63 square kilometres) lying between the left side of the Gurgaon Canal (comprising the Ballabgarh and Palwal tahsils and a part of the Nuh tahsil) and the right side of the Agra Canal. The drain starts from village Gaunchi and crosses the Gurgaon Canal through a syphon

at RD 2,24,000 and ultimately falls into the Yamuna in the Uttar Pradesh after traversing a distance of 46 miles (74.03 kilometres).

The construction of Gaunchi Main Drain in its first phase was started in 1959-60 with a small pilot section. Later on, in 1962-63, its capacity was increased to 5 cusecs per square mile (2.5 kilometres) run off factor and link drains Sarahala, Pirthala, Palwal, Ranika, Dhatir and Khirbi were also constructed. Inadequacy of the main drain and its link drains was still felt in the subsequent years. Therefore, during 1966-67, the work of increasing the capacity to 10 cusecs run off factor was taken up. This work has been completed in almost all parts of the drain and only a few reaches remain to be remodelled. Between 1964-65 and 1970-71, new link drains, viz. Janauli, Manpur, Hathin, Ratipur, Mitrol Nos. I and II, Banchari, Sondh, Siha, Dighot and Bamni Khera were constructed. After the heavy floods of 1971, it was experienced that the drain and its system still did not provide the desired relief against flood waters. In the seventies, the annual rainfall in this area had been more than 20 inches (508 millimetres) whereas in 1959-60, it was only 6 to 7 inches (152.4 to 177.8 millimetres). Accordingly, it was decided to remodel the main drain and other drains like Dighot-Pingore System, Banchari, Sondh and Gailab. Four more link drains, viz. Tumasra, Khatela, Gudhrana and Kot Bahin were also excavated. Pump houses were constructed at the outfalls of Kot Bahin, Banchari and Sondh link drains as the flood waters of these drains could not flow into the main drain by gravity when it was running full. Other measures in the offing include the raising and strengthening of the banks of the drains to check damage from overflowing of water and providing inlets to clear local depressions. Relief is also provided by making relief cuts of allowing outflow of water through the existing inlets when the level in the Gaunchi Main Drain subsides.

All these measures are expected to go a long way in checkmating the recurrence of floods in the Ballabgarh and Palwal tahsils.

The undulating character of the land is mainly responsible for floods in the Pataudi block. The overflow of Sahibi Nadi and its tributaries like Indori causes floods in this side. In order to reduce floods caused by Sahibi Nadi, more spans near Khalilpur village have been provided below the railway line so that the water may pass freely without any obstruction.

As already mentioned in Chapter I, the Landoha brings flood havoc to most parts of the Firozpur Jhirka tahsil and the south-eastern parts of the Nuh tahsil. The villages affected are Deola Nangli, Bajhera, Ujina, Sangel and Jajuka in the Nuh tahsil and Doha, Rajoli, Bhakroji, Agon, Badopur, Maholi, Righar,

Akhnoka, Padla, Nangli, Sakras, Kherla Khurd, Kalika Bas, Hamjapur, Jargali, Malhaka, Kultajpur, Mandi Khera, Jalalpur Firozpur, Marora, Balai, Sadipur, Aterna Shamasabad, Bhadas, Aqlimpur Firozepur, Umra, Umri, Banarsi, Ghaspur, Sukhpuri, Sultanpur Nuh, Khan Mohammadpur and Dhanibas in the Firozpur Jhirka tahsil. A scheme has been evolved for the moderation of the Landoha floods through Raoli-Kanmeda Bunds and Ujina-Kotla Complex. It has been discussed in detail earlier under the heading "Moderation of Landoha Nala Floods." On its completion not only the floods will be checked but also all the waters will be utilised to bring prosperity to the people of the area.

Heavy floods in the catchment area of the present Nuh Drain affected the villages of Ghangola and Silani, (tahsil Gurgaon), Bhirawati, Raniaki, Indri, Gangoli, Chhapera, Tain and Dhanduka (tahsil Nuh). The project estimates of constructing the Nuh Drainage System was sanctioned in 1960-61. The drain was completed during 1964-65. The total catchment served by this system is 188 square miles (486.92 square kilometres). The drain strarts from village Ghangola and falls into the Ujina Lake. The total length of the drain is 1,04,145 feet (31,743.4 metres) with design capacity of 329 cusecs. It serves an area of 1,60,000 acres (64,749.76 hectares) within the irrigation boundary of the Gurgaon Canal System. Kherli Kankar Drain and Parauli Drain have their outfalls into the Nuh Drain at R.D. 36,480 and 96,800 respectively.

Another factor leading to floods is the blockage of water in Paosar Drain into Rajasthan territory which also causes floods in the two tahsils of Nuh and Firozpur Jhirka, particularly, in the villages on the southern side of Punahana block. Paosar Drain crosses the Rajasthan Canal in the Rajasthan territory through a syphon beneath the canal. The Rajasthan authorities close the syphon and this results in the accummulation of excessive water in the Haryana area. On each such occasion, a request has to be made to the Rajasthan authorities to keep the syphon open to avoid flooding in Haryana territory. A 16 kilometres long bund with an average height of 5-6 feet (1.5 to 1.8 metres) has been constructed by Uttar Pradesh all along the southern boundary between Haryana and Uttar Pradesh opposite Bichor village. This is bound to cause very heavy flooding in the Haryana villages on this side.

The Ujina Drain originates from Ujina Lake near village Ujina and flows along the villages Rajhera, Alawalpur, Shikrawa, Mohammadpur, Ter, Shah Chokha, Mamlika, Lohinga Kalan, Gokalpur and Ranauta Dhondal and then enters Rajasthan near village Khalluka. The Rajasthan authorities sometimes do not allow more than the agreed 400 cusecs discharge through the regulator of Ujina Drain which results in the accumulation of water in the villages

of the Firozpur Jhirka tahsil. These are : Gokalpur, Nimkhera and Inchapari on the right side and Dhondal, Ranauta, Manota, Lohinga Kalan and Jamalgarh on the left side of the drain. The left bank of the drain has been strengthened to avoid flooding of villages situated on that side.[1]

Floods are also caused by cuts in drains and breaches in bunds, which are deliberately made by the villagers to save their own lands from the ravages of excessive water. It mostly happens in the Firozpur Jhirksa (particularly in Bhond and Kanmeda bunds), Nuh (particularly Chandaini bund) and Palwal tahsils. The villagers of Dhanibas, Umra and Sultanpur Nuh sometimes make cuts in the Kotla bund which result in the flooding of villages Ganduri, Kherli, Nuh, Gohana, Partaphas and Ranika of the Firozpur Jhirka tahsil and Birsika, Dihana, Akaira, Kotla, Malab and Marora of the Nuh tahsil. A police check post is established in the rainy season to check such acts of mischief.

The damage caused by floods and heavy rains in the district since 1956 is shown in Table XX of Appendix.

Famines and Droughts

Owing to uncertainty of rain and the large percentage of cultivation dependent entirely upon it, the district has from time to time suffered severely from droughts, beginning with the dreadful *chalisa* famine. The years of droughts and their nature are shown below[2] :

Year 1	Nature of drought 2
1783-84	Severe famine
1803-04	Scarcity
1812-13	Scarcity
1817-18	Scarcity
1824-25	Scarcity
1833-34	Severe famine

1. For further details, see 'Moderation of Landoha Nala Floods' in this Chapter.
2. (i) *Gurgaon District Gazetteer*, 1883-84, pp. 7, 28.
   (ii) *Gurgaon District Gazetteer*, 1910, pp. 155—66.
   (iii) Deputy Commissioner, Gurgaon.

1	2
1837-38	Severe famine
1843-44	Scarcity
1850-51	Scarcity
1860-61	Famine
1868-69	Scarcity
1869-70	Famine
1877-78	Famine
1883-84	Scarcity
1896-97	Scarcity
1899-1900	Famine
1905-06	Scarcity
1907-08	Scarcity
1929-30	Famine
1930-31	Famine
1939-40	Famine
1951-52	Scarcity
1959-60	Scarcity
1964-65	Scarcity
1965-66	Scarcity
1968-69	Scarcity

No details are available about the earlier droughts. In 1781 and 1782, there had been little rain and so the harvest was poor; and the winter rain of 1782-83 completely failed. Hence with no *rabi* crop of April 1783, a severe famine broke out in the then Punjab. The drought which had been raging for the past two years, and had become most acute in that year became known as the *chalisa* because it occured in the year 1840 Bikrami Samvat. So terrible was the visitation that thousands of persons died of absolute starvation.[1]

1. Hari Ram Gupta, *History of Sikhs*, Volume II, *Cis-Sutlej Sikhs*, 1769-1799, 1944, pp. 145-46.

The effects of the famine of 1860-61, scarcity of 1868-69 and famine of 1869-70 were greatly mitigated by the timely relief afforded by Government. In 1877-78, the famine was more severe in the district than in any other part of the State and hundreds of people were reduced to semi-starvation. It was dreadfully fatal to the cattle. Some 30,000 plough bullocks and 1,20,000 cows and young stock were estimated to have perished. With the rains of *kharif* 1878, the apparition of famine disappeared.

In 1883-84, the then Gurgaon district, in common with the then Hisar, Delhi, Karnal and Rohtak required measures of relief. The six preceding harvests, with the exception of 1883 harvest which was average, had been poor and consequently the people were exceptionally impoverished. Scarcity was seriously felt and distress prevailed more or less throughout the district.

Following 1883-84 was the scarcity of 1896-97. It was slight and only affected the village workers who were relieved by employment in digging and clearing tanks in the Rewari, Gurgaon, and Nuh tahsils and in work on the Kasan, Bahora and Jharsa Roads in the Gurgaon tahsil and on the Sohna-Firozpur Road in the Nuh tahsil.

The scarcity of 1896-97 was succeeded by the famine of 1899-1900, and large-scale relief measures were taken up. The loss of cattle was, however, very severe and was estimated at two-thirds of the total number in the district.

The district experienced famines again in 1929-30 and 1930-31. In these years, the people were confronted with the problem of fodder famine. About 1,17,000 maunds (43,670 quintals) of fodder was procured from distant areas for distribution in the affected areas of the district. The condition of the sufferers was further aggravated by damage done to crops by locust. Naturally, the distress was most acute in the unirrigated tracts. To help the poor people, five test works were opened in November 1929, one in each of the five out of the six tahsils of the district, the then Rewari tahsil being the only exception. The number of works was steadily increased to 19 and the daily average of persons benefited to 58,277. These were closed in September 1930, due to the timely and sufficient rainfall in July 1930. These operations cost roughly Rs. 5½ lakh.

September 1930, was again a rainless month and as the *rabi* crop could not be sown satisfactorily, it was a failure to the extent of 55.6 per cent. In 1931, four test-works were reopened, one in each of the tahsils Gurgaon, Rewari, Palwal and Firozpur Jhirka. More works had to be opened bringing the total number to 14.

To the drought of 1930-31 were added crop calamities in the form of

roli (rust) and *chepa* (an insect); the former considerably damaged barley and wheat while the latter practically destroyed the *sarsaf* (*sarson*) crops. The expenditure on test and relief works during 1931 was to the tune of Rs. 1,50,000. Gratuitous relief was also provided to a certain extent in the affected areas.

During 1929-30 and 1930-31, *taccavi* loans, in additoon to remissions and suspensions to the extent of Rs. 7,43,664 and Rs. 7,37,645 respectively were distributed to tide over distress. The land revenue and canal *abiana* were remitted to the extent of Rs. 2,59,496. The following amounts of *taccavi* were suspended from *kharif* 1928 to *kharif* 1930 :—

Kharif 1928	Rs. 4,81,162
Rabi 1929	Rs. 4,47,307
Kharif 1929	Rs. 5,05,162
Rabi 1930	Rs. 3,64,926
Kharif 1930	Rs. 3,75,709

The Famines of 1929-30 and 1930-31 were succeeded by the famine of 1939-40. In these years also the first problem was fodder. Relief was provided from both direct and indirect sources to the tune of Rs. 50,67,983. In fact this district had been very unlucky in having a series of bad years and there was no indication of the termination of the repetition. Since 1928-29, no harvest touched the settlement average. The Rewari tahsil was the worst affected by scarcity. Practically, the whole tahsil was without any means of sustenance from land in 1938. The landless labourers suffered more than any other class of people.

These famines were often followed in subsequent year by exceptionally heavy rainfall. Malaria, which existed in an endemic form, would break out and take a heavy toll of people already enervated by hunger and want. An enquiry conducted by the Board of Economic Enquiry, Punjab, sometime in the thirties, showed that 46 per cent of the landowners of this region died without leaving male heirs. This was probably due to the low vitality of the people.

There has been no famine since 1939-40, but scarcity still occurs. The scarcity conditions prevailed during 1951-52, 1959-60, 1964-65, 1965-66 and 1968-69. In 1951-52, 74 villages in the then Rewari tahsil were affected by drought. The extent of damage was 50 per cent or more in 21 villages. To meet the acute shortage of fodder 86,271 maunds (32,200 quintals) of fodder was imported from outside the State. The foodgrain shortage was also felt at certain places. To overcome this situation, 45 ration shops were opened in the rural areas and 15 in the urban areas. A sum of Rs. one lakh was

distributed as fodder *taccavi* in kind. Besides, out of the total demand of Rs. 1,12,767 of land revenue of *Kharif* 1951, a sum of Rs. 34,016 was suspended.

The tahsils of Nuh and Firozpur Jhirka witnessed scarcity conditions in 1959-60. A total of 58 villages were affected. The Government sanctioned Rs. 2,24,000 for the construction of ponds and Rs. 11,16,000 for the construction of roads and employed the people from scarcity hit areas on these works. A sum of Rs. 3 lakh was given as fodder *taccavi*. The *taccavi* loan amounting to Rs. 17,765.25 and land revenue for *kharif* 1959 amounting to Rs. 6,066 were suspended.

The then Rewari tahsil again experienced scarcity conditions in 1964-65 when 41 of its villages were affected. Although there was scarcity of fodder, there was no scarcity of food. To meet the fodder shortage, 36,835 maunds (13,748 quintals) of fodder was supplied. Relief works amounting to Rs. 1,50,000 were undertaken to provide employment to the people of these areas.

Drought conditions again prevailed in the district in 1965-66 and 1968-69. Although 505 villages were affected in 1965-66, there was no shortage of food and fodder. However, the monsoon completely failed in 1968-69 and this led to drought conditions in 833 villages covering a population of 5,36,987. To offset this natural calamity, a sum of Rs. 17,15,500 was distributed as *taccavi* loans. Land revenue amounting to Rs. 7,985 and *taccavi* loans amounting to Rs. 5,61,748 were suspended besides the remission of land revenue amounting to Rs. 30,929. Local relief works involving an expenditure of Rs. 4,55,000 were undertaken to provide employment to the people of the affected areas.

Now with better means of transport, Government is well equipped to cope with any emergency and food can be rushed immediately to the affected areas. However, it cannot be said safely that famines would not re-appear. The existing irrigation facilities are not sufficient to cope with the drought conditions in case of failure of rains. On the completion of various development programmes, particularly extension of irrigational facilities through a network of canals, tubewells/pumping sets, it is hoped that recurrence of famines would be prevented. But even if famines come, they will not raise their old ugly spectre.