CHAPTER - 4

LAND USE, CROPPING PATTERN & NATURAL ENVIRONMENT

4.1 Land Use and Cropping Pattern

The basic idea of land use classification for the purpose of EIA study is to assess the distribution of the existing land according to its actual use. Land use of an area is an important indicator of environmental health, human activities and of the various degrees of interplays between these two. The soil quality, water availability, agricultural practices, urban development and climate may largely dictate the use of land, human activities significantly alter the natural environment to make it fit for a certain use or by forcibly resorting it to a land use of their own choice. This section presents land use scenario as well as agricultural status and natural vegetation in the study area, primarily based on the data from secondary sources, observations and field data collection.

4.1.1 Land Use Pattern

Land use pattern data as obtained from 2001 census records is presented in Table 4.1 and is discussed below.

The land belonging to villages in the study area has been classified in the following categories :

- Forests
- Cultivated land (Irrigated and Un-irrigated)
- Culturable waste land
- Area not available for cultivation

The study area covers 86 revenue villages in the 10 km radius around the plant site. Table 1.2 shows the list of revenue villages/towns in study area along with their bearings and distances with respect to the site, area and population as per the Census data of 2001.

The number of villages/towns and total area of the three zones of study area at a glance is as below:

Radial Zones	Number of villages/	Total Area (Hectares)
0-3 km	5	3292
3-5 km	11	4354
5-10 km	70	23580
Total	86	31227

Broadly the 10 km radius study area is classified into traditional categories such as areas under Forests, Cultivated land (Irrigated and Unirrigated), Culturable Waste land and 'Area Not Available for cultivation'.

The main features of land use pattern, as derived from Table 4.1 are as under:

1. Forest area	2 (0.005%)
2. Cultivated Land	
i) Irrigated area	26425 ha. (84.6%)
ii) Unirrigated area	256 ha. (0.82%)
3. Culturable waste	943 ha. (3.02%)
4. Area not available for agriculture	3632 ha (11.6%)
Total	31227 ha.

The study area has negligible forest land and out of cultivated land 84.6% is irrigated and 0.82% is unirrigated besides 11.6% area is not available for agriculture.

4.1.2 In compliance to the TORs of MoEF land use data for the area was obtained from Environmental Information Centre (EIC) based on the land use map and satellite imagery. The EIC report is placed at **Annexure 4.1** alongwith land use map and satellite imagery. The major categories of areas under different land use identified by this data are as under :

a)	Fallow land	-	49.58%
b)	Agriculture land	-	35.55%
c)	Settlement & Habitation	-	7.66%
d)	Plantation / Orchards	-	1.24%
c)	Open / barren land	-	1.11%

Areas under water body, Open / degraded vegetation, industrial area, river and canal, and other miscellaneous uses is occupied by less than 5% of total land area.

4.1.3 Cropping Pattern

4.1.3.1 Introduction

The prominent harvests are Rabi, Zaid and kharif. Zaid has small importance in the area. The monsoon crop i.e. kharif season, which extends from June to September, include Sugarcane, paddy, fodder, pulses and vegetables, while the post monsoon crops i.e. rabi season, which extends from November to March are predominantly Wheat, Sarson, Chara, potato,

pulses and vegetables, etc. Paddy and wheat are the staple food crops of the study area. Tables 4.2, 4.3 and 4.4 shows the area under different crops grown during Rabi, Zaid and rabi season respectively.

4.1.3.2 Extent of Cropping During Rabi, Zaid and Kharif Seasons

Out of the total cropped area of 13307 ha. during Rabi season 11426 (85.9%) is under wheat cultivation and 1449 ha. (10.9%) under fodder crop.

Total cropped area under Zaid cultivation is 2168 ha. Which is distributed amongst Massor, potato, chara, wheat, pulses and vegetables.

Out of the total cropped area of 27196 ha. During kharif season 21560 ha. (79.3%) falls under sugarcane, 3498 ha. (12.9%) under chara and 1955 ha. (7.2%) under Paddy cultivation The areas under other crops individually occupy only a small amount of cropped area.

As observed during the socio-economic survey by the EST team and Census records common agricultural implements are tractors, cultivators, harrows and sprayers and there are very less fruit crops.

4.1.3.3 Irrigation Facilities

Table 4.1 provides villagewise detail of irrigation by source. It is observed that out of the total area, irrigated area is 84.6% for the entire study area, ranging from 10.47% in 0-3 km, 13.9% in 3-5 km and 75.7% in 5-10 km radius. The area irrigated from Electrical tube wells is highest as 48.9% followed by tubewells and canals accounting for 24.8% each, 1.5% from other sources. The water in study area is available at a depth of 80-250 feet for handpumps, 20-30 feet for open wells and 80-200 feet for tubewells. Therefore, amount of ground water is available to a large extent for irrigation and other uses in study area.

4.2 Biological Environment

The section covers the prevalence of living forms (both plants and animals) in the study area. Such impacts can be either in terms of strain to the living forms as manifested in visible damage or disease, growth, reproduction, and in the long term, the change in occurrence/prevalence and in the ultimate extinction of certain sensitive/ endangered species, if any. In the present study only higher plants and animals (aves, reptiles and mammals) were considered.

4.2.1 Natural Vegetation in Study Area

The climatic conditions of the study area are suited for growth of natural vegetation cover. Due to absence of forest in the area, no patches of thick vegetation exist. The floral species in the area are of common type and are devoid of medicinal and rare plant species.

During major part of the year, the vegetation is active and remains dormant only for a few months. This type of vegetation is common in open waste land and cultivated fields. After the first shower of monsoon in May, the ground which is barren becomes covered by green grass. As the monsoon advances, the ground vegetation becomes dominant and completely covered till late in December.

The climatic conditions of the study area are well suited for a good natural vegetation cover. The area has a very hot summer, a moderate rainy season and a dry winter. The monsoon has good annual rainfall.

Different types of species of shrubs, climbers and grasses were identified and are listed in Table 4.5.

4.2.2 Natural Fauna

Wild life is not expected in the study area as there is no thick forest/ vegetation. There is no animal or bird sanctuary in the study area. Wild cats, and wild dogs are common. Among aves, those that occur commonly are Jungle crow, & kites, pigeon, Koel, etc. Common birds and wild animals, based on the observations by field team or information collected from DFO, Muzaffarnagar and RFO, Range – Kairana, Dist. Muzaffarnagar and through discussions with local population, exist in the study area. The list of fauna encountered in the study area is given in Table 4.6.

4.2.3 Livestock

Live stock plays an important role in rural area in raising the income of farmers. Cows, Cross breed cow, and buffaloes are the main sources of milk, while male cattle being used for ploughing the fields. Sheep and goat are also reared for wool and milk, Horse, Pig and Poultry is also found in abundance. The details of Live stock population and poultry farms in all three zones of study area are summarized in Table 4.7. Common animals of value prevalent in study area are cow, buffalo, goat, horse, sheep, pigs and donkey. There is a sizeable number of poultry farms in the study area as shown in Table 4.8. A sizeable number of household earn subsidiary income by selling milk. Common animal diseases as per Veternary Hospital, Shamli given in Table 4.9 are Pneumonia, Mestititis, Anoroxia, pyroxia

Worms, Tympany, etc. The animals are intensively vaccinated in the hospitals.

4.2.4 Human Health

Human health data was collected from two sources, one Charitable Dispensary of Shamli Sugar mill and other from C.H.C. Shamli given in Tables 4.10 and 4.11 for the years 2009 and 2010. Besides this some registered Private practitioners are available in the villages of the study area. As per the records common diseases in the study area are Acute diarrhoel diseases, Acute Respiratory diseases, Enteric fever, body ache, and other diseases.

4.3 Conclusions

As per the revenue data of 2001 for the study area, on an average, 85.4% of the total land is under cultivation out of which 84.6% is irrigated and 0.82% is unirrigated. Culturable waste land is 3.02% while 11.6% is area recorded as 'Area Not Available for Cultivation'.

Main crops of the area are sugarcane, paddy, wheat, Maize and chara (fodder) crops.

Varying species of plants and trees as herbs & shrubs, climbers and grasses, depending upon the soil conditions are observed in the study area. Some varieties of animals, birds and reptiles were observed during the field studies. There is no endangered plant and animal species reported in the study area.

Agriculture has a significant role in the area. Two main crop seasons are kharif and rabi. Sugarcane, Paddy and wheat are the common cultivated food crops of the study area. The crops suffer from only common diseases which are not harmful to crop yields. Irrigation facility is not so well developed in the study area, which restricts good crop production during the monsoon period.