

Soil Distribution Pattern of Jhunjhunu Region, Rajasthan

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Abstract: The district is irregular hexagon in shape in the northeastern part of the State lies between 2702" east longitudes. It is surrounded by Churu district on the northwestern side Hissar and Mahendragarh district of Haryana State in the northeastern part and by Sikar district in the west, south and south eastern part-2. For the propose of administration the district is divided into five administrative subdivision viz, Chirawa, Udaipurwati, Jhunjhunu, Khetri and Nawalgarh Six Tehsil viz Jhunjhunu, Chirawa, Khetri, Nawalgarh, Buhana, Udaipurwati and eight Panchyat Samities viz Jhunjhunu, Chirawa, Khetri, Nawalgarh, Buhana, Udaipurwati, Alsisar and Surajgarh.

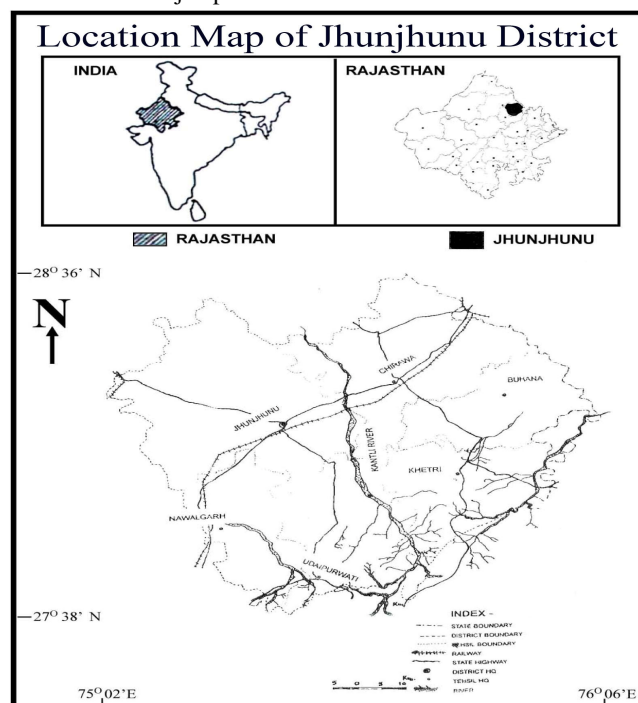
1.1. STUDY AREA :

The total geographical area of the district is 2928 square Kms. This stands at 1.73 percent of the total area of the state from the points of area, Jhunjhunu district stand at 22nd place among the existing 33 districts of the state most of the part of the district is coerce by blow sand and dunes which for part of the great that desert sand shifting and active dunes are main hazards to cultivation. Soil erosion is the Result of constant deforestation and mining activity which have resulted in baring the slopes. The hilly area in south eastern part of district is characterized by hills of Aravalli range, running in north easterly direction. The highest peak, 1051 m high is in the south of Lohagar village bordering Sikar district. Hills are almost barren of vegetation except a few bushes of acacia and cactus. The undulating area with small isolated hills having steep slope lies in the south western part of district. The major portion of

hills is found in Khetri and Udaipurwati tehsils. The general elevation above mean sea level rests between 300 and 450m Quaternary level forms are represented by sand and colluvial deposits of talus and scree at piedment slopes.

The desertic plain generally lying at an altitude of about 300m amsl occupies the northern part of the district and is covered with sand dunes. The general slope of the area is from south to north. Sand dunes are drifting in nature.

District Jhunjhunu is situated in Arid Rajasthan plain known as Rajasthan. It comprises of Rolling hills, some of the arrival ranges in the southeastern side running in the south eastern Direction and range of the Aravali Hills in extreme southeastern of Udaipurwati existing towards Singhana and Khetri in the east, viz Nawalgarh-Khetri upland its general elevation above means sea level is between 300 to 450 meters.



The highest peak is in the south of Lohagarh village and its height is 1051 meters, this is no perennial river in the district katti and Dohan are only seasonal rivers. River katti originated from Khadela hill sides of Shrimadhapur Tehsil. Sikar and enters near south west of Udaipurwati tehsil running towards north –west direction and ultimately disappears in the sandy tracks of the Churu District. This river, however, divides the district almost into two parts. Similarly Dohan River also originates from Shrimadhapur hills and flows to north –eastern direction passing through some eastern part and ultimately disappears in sandy tracks of Mahendragarh district of Haryana Besides, there. Major streams of Udaipur Lohagarh ki nadi chandrawati and sukh nadi. There is no lake in the district however small tanks are in existence in some areas. There are only four tanks used for irrigation purposes. There is also a bound of “Ajit Sagar” about 11Km. from Khetri on Nizampur road.

The district of Jhunjhunu is poor in forest resources as the total area under forest including hills is reported to be 39613 hectares which is 6.65 % of total geographical area of the districts. The forest coverage is below the state average of about 9 % under forest. If compared to the 13 % of forest area at national average. The district comes out to be roughly half of the national average. The major species available in forest is ‘Jant’ tree or Khetri (prosaic species) it is found in abundance and is utilized for various purposes as providing fodder to the animals supplying fuel for domestic purpose and checking soil erosion. Other species found are Babul, Shisham, Neem, Peepal, Hingotia, Karli, Akara, Mango trees, Ber tree etc. Among the wild animals, Baghera, soor, Languor, Lakkar Bhaga, Bhedia, Lomari, Gidar, etc. are generally found snakes other poisonous and non-poisonous are also found in the district.

1.2. INTRODUCTION :

The unconsolidated and loose materials of rock lying on the surface of the earth which is fit for growth of plants. Soil is not only a mixture of rock, it contains living organic substances also. These organic substances continue to operate in plant and animal organisms of the rock mixture. This mixture, through chemical, physical and biological actions converts carbohydrates, proteins, etc. into many types of substances which supply the vegetation with food.

The biological portion of the soil consists of a mixture of leaves, fruits, branches, the residue as well as parts of animals, etc. in various stages of decay. The micro-organisms which are usually present are fungi, bacteria, protozoa, insects, etc. The number of these micro-organisms in one gm of soil exceeds one million.

Despite the recent great strides in technology and mechanization, agriculture has remained the world's most important primary industry, in which the soil plays a pivotal role. About 66 percent of the global population, comprising of farmers derives its living directly from the soil. There are no natural resources more important than soil resources.

Whatever its production capacities, whether high in some places of irrigated pockets or low in major areas of dryland and desert, due to inherent limitations, the soil resource of Rajasthan, as a medium of growing crops, has furnished directly or indirectly, a significant share in the income of the

state, Rajasthan, being geographically the largest state in India, has proportionately a greater soil resource. Therefore, the soil resource in the state needs to be used extensively so that the state finds an appropriate place in the national food, fibre and fodder production and the state economy is sustained without and depletion through erosion, degradation or overuse. The information and knowledge of soils of the state which could be gained through the study of their physical and chemical properties and their geographical distribution pattern, is essential prerequisite for their proper utilization, management and conservation. It also helps proper selection of crops better land use.

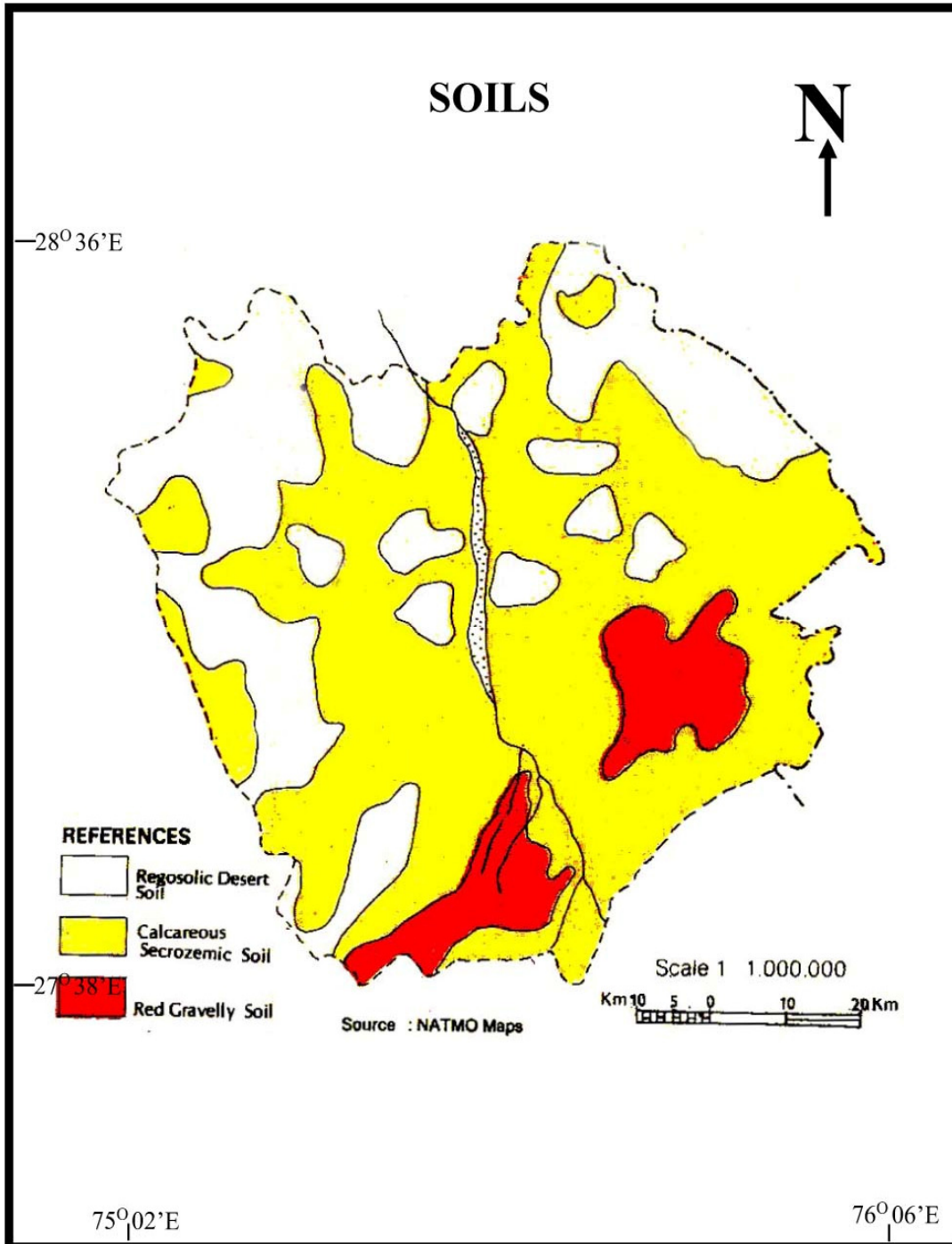
When seen in detail at the village level, the soils of Rajasthan are complex, and highly variable reflecting a variety of differing parent materials, physiographic land features, range of distribution of rainfall and its effects, etc. However, broadly, the soils can be put in five major groups, based on the basic fabric of soils i.e. soil texture which governs its many other properties. They are, (1) sandy soils or light soils, (2) sandy loam or light medium soils, (3) loam or medium soils, (4) clay loam to clay or heavy soils and (5) skeletal soils or shallow rocky and hilly soils.

The soils are generally evaluated for their production capacity through study of their ability to supply plant growth requirement in terms of water, nutrient and rooting media. The capacity to retain, as also to conduct soil moisture in profile, depends upon the soil texture, soil porosity and soil structure. For example, heavy soils due to their fine texture and porosity, provide effective capillary tubes for moisture movement. In loose sandy soils, due to big particles and pores, with fewer fine capillary pores, there is lesser soil moisture movement. Further, heavy soils are more difficult to work with implements than in light soils. During dry hot periods, however, heavy soils that get compacted resist wind erosion, but under heavy rainfall, due to their low infiltration rates, they generate high surface run off and thus cause extensive soil erosion through water. On the other hand, the sandy or light soils that are loose and single grained are more prone to wind erosion and are often subject to sand drift, but due to their coarse and open texture, coarse pores and resultant high infiltration capacity, they are not susceptible to water erosion, even during heavy rain bursts. Medium texture soils have moderate condition between the above extremes. As such, these different soils create different types of habitats for plant growth, and therefore, the crop choice and cropping patterns on such kind of soils greatly vary.

Soils are thus, variable in their soil-water-plant relationship, conservation needs and production potentials. To assess the potential of agricultural development and to plan proper conservative land use, soil survey is the basic requisite. The knowledge of soils gathered through such survey is not only useful in finding our agriculturally potential areas but also those areas which have remained unnoticed under one or the other soil degradation process for a long period and are now considered as problematic areas. Further, the agronomical and soil moisture conservation technologies, developed for crop production, are often more suitable, particularly for one or the other kinds of soils. Therefore, the distribution of such differing

soils depicted through soil survey maps, is useful for easy and proper transfer of such technologies to suitable areas. Soil resources is also a malleable environment molded by the agriculturist in many ways e.g. its production capacity can be improved through improvements of its fertility by use of organic manures and fertilizers. Its sustainability can also be maintained by its conservation against damages through

erosion, preventing Salinization, alkalization, compaction, depletion in nutrient level, etc. These all are known soil degradation processes which lessen the current or potential capability of soils to produce crops or biomass. Many technologies are available to check this and conserve soils for sustained productivity.



1.3. SOIL TYPES :

The distribution of soil is given below.

1.3.1. DESERT SOIL :

It covers 2666 sq.km.area forming 44.97 percent of Region. Occurs extensively in the central part of the area covering parts of all the blocks except Surajgarh block.These are yellowish brown, sandy to sandy loam, loose, structure less, well drained

with high permeability. They are scanty of vegetation due to severe wind erosion and wind velocity high.

1.3.2. SAND DUNES SOIL:

It covers 2149 sq.km.area forming 36.25 percent of Region. Present mostly in northern part of the Region covering parts of Alsisar, Buhana, and Chirawa blocks.These are non-calcareous soils, sandy to loamy sand, loose, structureless and well drained.In favourable localities they cultivated.

1.3.3. RED DESERTIC SOIL :

It covers 468 sq.km.area forming 7.90 percent of Region. Rests in parts of Jhunjhunu and Nawalgarh blocks. These are pale brown to reddish brown colour, structureless, loose and well drained having texture from sandy loam to sandy clay loam. Suitable for agriculture but suffers from adverse climatic conditions.

1.3.4. LITHOSOLS AND REGISOLS OF HILLS :

It covers 329 sq.km.area forming 5.55 percent of Region. Found on Delhi hills and hill slopes between Khetri and Gudaurji and south of Udaipurwati in parts of Khetri and Udaipurwati and Nawalgarh blocks. They are shallow with gravels very near the surface, light textured, fairly drained, reddish brown to grayish brown in colour. Cultivation is restricted because of limited root zone.

1.3.5. OLDER ALLUVIUM :

It covers 316 sq.km.area forming 5.33% of district. Found in southern most parts of the area in parts of Khetri, Udaipurwati and Nawalgarh blocks. They are derived from alluvium and are non-calcareous, semi-consolidated to unconsolidated brown soils, loamy sand to sandy loam in texture. Well drained and occupy gently sloping terrains.

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