



## **Deforestation and its Environmental Impact and Management : An Analytical Study of District Etawah Uttar Pradesh**

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### **Article Info**

Volume 4, Issue 6

Page Number : 100-104

### **Publication Issue :**

November-December-2021

### **Article History**

Received : 15 Nov 2021

Published : 30 Nov 2021

Forest is a major resource and plays a vital role in maintaining ecological balance and environmental setup. Over utilisation of forest resource has resulted in its degradation. The changes in tropical forest cover are matter of global concern due to its ability to balance carbon cycle. Rich forest resource not only boosts economic development, it maintains sustainability of ecosystem and healthy environment. The prosperity and welfare of the society directly depends on sound and healthy forest cover of a region. In the present study and attempt has been made to analyze the impact of deforestation on environment of the study area and its management. The main objectives of this study are to evaluate the present forest cover, to find out the causes and rate of deforestation; to assess deforestations' impact and to suggest remedial measures to control deforestation and promote afforestation. District Etawah lying in the southwest of Uttar Pradesh has an area of 2,311 square km with the population of 15,81,810 (2011 census). In the district the forest blocks consists mostly of ravines and some wasteland. The Yamuna and Chambal ravines are very old. It appears that the ravines have been formed due to relative level of banks and the geological structure. The total forest area (reserve and protected belt) is 301.04 square kms, i.e., 13% of total geographical area. The forests are "Northern Acacia Shrub" type of forests "Sethi's classification". The flora of Etawah district comprises of 560 species out of 123 species bear medicinal value in the district. Deforestation is a common phenomena and its impact has been seen in the form of various geo-environmental problems. Soil erosion, loss of soil fertility, increase in temperature and decreasing rainfall, increasing carbon dioxide, etc, are the major problems of Etawah district.

**Keywords:-** Forest Cover, Sustainability, Northern Acacia Scrub, Soil Fertility.

**Introduction-** Forest is a major resource and plays a vital role in maintaining the ecological balance and environmental setup over utilisation of forest resources has resulted in its degradation the prosperity and welfare of society directly depends on sound and healthy forest cover of a region. The methodology used in the present study is based on primarily and secondary data and maps.

**The study area** - Etawah district lying in the Southwest of Uttar Pradesh extends between 26° 28' north latitude and 79° 04' East longitudes the district shares its Northern boundary with Jalaun district and Eastern Boundary with Auraiya and Western boundary with Agra district. Etawah district covers an area of 2,311 square km with the population of 15,81,810. In Census 2011, the population growth over the decade 2001-2011 was 12.911488.



Etawah is a segment of Kanpur division, for the administrative convenience the district has been divided into 6 Tehsil, 8 block and 692 villages. The district headquarter is Etawah town

Physically speaking Etawah is a part of Ganga - Yamuna 'Doab' region. The entire district is drained by Yamuna and its tributary which is Chambal are the only perennial streams in the area. Both the rivers flow through deep ravines that create a peculiar type of physiography.

Climate is probably the most important determinant of vegetational pattern and has a significant influence on forest distribution, species dominance, plant productivity and its general ecology of forest. The average annual rainfall of district Etawah is 791.6 mm. The climate is sub humid and it is characterized by the pleasant cold season and a hot dry summer. About 90% of rainfall takes place from June to September. The mean daily maximum temperature in May is 42.2 degree Celsius, mean daily minimum temperature is 26.2 degree Celsius and maximum temperature rises to 46 degree Celsius or over.

The land surface in the central part of the study area is covered by thick soil cover. Whereas thin to significant soil cover occur along river beds, where sand is predominant. Soil types are generally the same as occur in Ganges Alluvial plain.

**Forest area-** The total forest area (reserve and protected belt) is 301.04 sq.km, which is about 13 percent of the total geographical area. The forest block consists mostly on ravine tracked and some flat wasteland. The Yamuna and Chambal ravines are very old. It appears that ravines have been formed at relative levels of banks and geological structure, unfit for other uses. The vast area under ravines come under heavy grazing and reckless hackings, this subsequently accelerated the erosion and extinction of Woodland wherever it has existing. Later for protection of the ground from erosion and further deterioration and for the creation of fuel and fodder reserves the area was closed to grazing and 'babool', 'Sisso' and 'Neem' were shown. The wasteland were previously the property of the zamindars and were generally devoid of any tree or shrub growth. They were scattered all over in small and big patches near villages or along the river banks and were grazing grounds for the cattle of neighbouring villages. After the abolition of zamindari the state government transferred it to the forest department then a large tract of land became available where plantation was possible.

The pioneer work for the protection of land from erosion by planting forests had been taken up as early as 1888 Mr Fisher, The then collector of Etawah. He induced the zamindars to permit the waste land to be managed as a single unit with a view to conserve Timber. It covered about 2000 acres of area. This forest is said to be largely responsible for saving Etawah city from the erosive action of river Yamuna. The total forest area (both reserve and protected) is 301.04 sq.km, which is about 13% of total geographical area.

**Forest types-** According to Champions and Sethi's classification, the forests are "Northern Acacia Shrub" type forest. The flora of Etawah district comprises of 560 species out of it 123 species bear medicinal value like Arjun, Neem, Bael, Indira Jav, Babul and Arvsa.

The trees founded mainly in district are of Dhak (*butea monosperma*), Amla (*Emblica officinalis*), Arjun (*Terminalia Arjuna*), Asna (*Terminalic Alata*), Balera (*Terminalia Ballirica*), Bargad (*Ficus Bengalehsis*), Barhal (*Artocarpus Lakoocha*), Sheesham (*Delbergia Sisso*), Jamun (*Syzygium Cumini*), Peepal (*Ficus Religiosa*), Vilayati Babool (*Prosopis Juliflora*), Chhyankar (*Prosopis Cineraria*), Reunj (*Acacia Leucophoea*), etc.

In ravines region about 90% plantations is of *Prosopis Juliflora* with *Prosopis Cineraria* and *Acacia Leucophoea*, in the proper drained area Sheesham and bamboos are also planted.

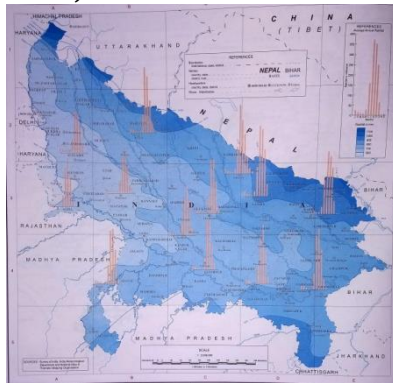
Besides ravine regions, Usarland (Saline land, Alkaline and waterlogged area) spread over a large area. The tree which are planted in this area are Juliflora, Arjuna, Kanji, sheesham, ficus, peepal, etc. The area all along the canal tract is protected forest.

Due to rain gap area Etawah district faces problem of survival of plants. Therefore a proper irrigation should be adopted (like pitcher). The Government of India or state government

provide enough money for plantation but less money for irrigation, hence survival of trees is difficult. This unbalanced effort could not save the ecosystem of this area.

### Problems

- Etawah district area faces climatic change due to geomorphological Uphill, particularly Aravali belt, increasing height of Karnal to Mount Abu. Though it is very slow process (in only cm in thousand years) the southern plate is shifting towards North in the foot of Himalayas, i.e. why, the Aravalis geomorphologically are uplifting.
- Rainfall decline and diversion of south east monsoon towards south eastern area and Etawah lies in a gap area for monsoon rain. The Monsoon stream from Gujarat goes through towards Rajasthan and the stream along Satpuras towards west become weaken.



**Rainfall Distribution  
of Uttar Pradesh  
(Etawah Dist.)**

- This situation creates blockage in the route of monsoon and the rainfall mostly spread over Rajasthan and Gujarat. The study area, Etawah district climate is shifting towards arid from semi-arid particularly, Yamuna – Chambal doab region.
- The other reason is Canal irrigation which is continuously making the land saline and alkaline, water logging and soil deterioration towards Usarland, particularly Jaswant Nagar, Safai, Bharthana Tehsil of Etawah district.

Due to these reasons the broad leaf plantation could not be successful now. To fight against this condition some suggestions are made here.

### Suggestions

- Towards north east direction a shelter belt should be form of Eucalyptus hybrid, Ashoka (*Polyalthia longifolia*) bamboos trees.
- Middle height trees should be planted as a green belt towards north south direction in roadsides. This will work as wind breaker.
- Afforestation with irrigation techniques in the arid zone should be adopted for example, each tree must be planted with a pitcher of at least 2 litre capacity and should be filled and least once in a week.

- The plantation should be a limited number of tree about 500 to per hectare of suitable places where irrigation is possible by head load water carriage in ravines.
- The plantation should be Limited in number that could be saved and survived by protection and proper irrigation. The techniques plantation is bulk to make a record of more than 1000 to 2000 per hectare is a faulty technique which is of no use.

### **Conclusion**

The whole study has resulted that the climate change occur day by day, but density of forest can fight against the problem, for this aim tasks should be done for not only survival of plant but for the plants protection also with the development of irrigation techniques for plants as suggested above these types of efforts can prevent soil erosion and the trees leave humidity to the air for much precipitation.

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