

Punjab Project: Assessment of Trees Outside Forest in Punjab

The state of Punjab in the Northern part of India has always been in the forefront of development. Although the forest area is only 6% of the state's geographical area, sizeable amount rural areas in Punjab has been planted extensively with trees like Eucalyptus, Poplar, Shisham, Drek, etc. However, since no accurate assessment of Trees Outside Forests(TOF) was carried out in Punjab earlier, it was felt that such an exercise needs to be carried out in order to assess the distribution of different species, their number and volume for effective planning and management. With this idea in mind, Punjab forest Department requested Forest Survey of India, Dehradun to carry out the inventory of TOF in both rural & urban areas of Punjab.

The major objectives of the Project were:

1. To estimate number of trees outside forests(Rural and Urban Areas) in different diameter classes.
2. To assess growing stock (Wood Volume) of trees available in rural and urban area outside forests.
3. To assess different species of trees available in rural and urban areas outside forests.

Forest Survey of India, Dehradun initiated the work in 2003 and completed in the end of 2005. While the design of the methodology, data processing, analysis and report writing was done at the FSI headquarters, the field work was carried out by the regional office of FSI at Shimla. The total outlay for the project was Rupees twenty lakhs(Excluding the cost of PAN Scene).



Trees on Farmlands



Trees along Roads

The methodology used by FSI for this project is same as used for national level inventory of TOF. The assessment was done separately for rural and urban areas. For assessment of rural TOF, LISS-III and PAN images for each district were merged and a classified image was prepared having three classes namely block, linear and scattered. On the basis of pilot study, optimum size of plots and

numbers of sample points were determined in each stratum. Enumeration and measurement of all trees on each sample points was done and results were finally aggregated at the district level. For urban areas, the assessment was done using UFS blocks as sample points. The UFS blocks are division of urban centers of a district in blocks having well defined natural boundaries. These blocks are formed on the basis of population or household size. Species wise and diameter class wise number of stems & stems per hectare and volume of trees under each stratum for both rural and urban areas was estimated by using stratified random sampling and ratio method of estimation.



Farm Plantation



Canal Side Plantation

Major Findings:

The total estimated stems in TOF in Punjab are 61.2 million of which 57.8 million are in rural areas and 3.4 million in urban areas. The number of stems per hectare in the state is estimated as 13.12. The total estimated volume of wood in TOF is 19.85 million cum of which 94 percent is in rural areas and 6 percent in urban areas. The State of Punjab has a vast potential of increasing its tree cover as the state has 92.7 percent of its total geographical area as Culturable non-forest area (CNFA). CNFA is the net geographical area outside Forest area excluding certain unculturable lands like, river and riverbeds, water bodies etc that cannot support vegetation. The dominant species in TOF of Punjab are *Eucalyptus spp.* (23.7%), *Populus spp.* (21.0%), *Melia azadirachta* (10.8%), *Dalbergia sissoo* (10.4%), *Morus sp.* (7.5%), *Mangifera indica* (4.5%), *Acacia arabica* (4.2%), *Azadirachta indica* (2.0%), *Syzygium cumini* (1.8%) and *Zizyphus mauritiana* (1.4%).