

1. Project Title : Developing Remote Sensing based methodology for Collection of Agricultural Statistics in Meghalaya (An R&D Component under FASAL)

2. Scope and Objectives:

The project is in operation as an R&D component under the FASAL Project implemented by SAC, Ahmedabad. NESAC is collaboration with IASRI, New Delhi in implementing the project with the participation of Directorate of Economics and Statistics (DES), Govt. of Meghalaya. Under this project the methodology for acreage estimation of paddy crop based on ground survey, remote sensing and GIS has been developed. In the pilot phase, the methodology was applied in one district viz. Ri-Bhoi in the year 2004-05 and was validated in the same district and taking one more district viz. Jaintia Hills in the year 2005-06. DES has reconciled the estimates of winter paddy acreage in these two districts after a thorough field check of maps prepared by NESAC. Since, 2007-08 crop season, rice acreage estimates have been made for all the 7 districts of Meghalaya and results are found satisfactory.

Under the same project crop area estimation was also attempted for other major crops of the State of Meghalaya like Maize, Potato, Ginger, Pineapple and Banana during the year 2006-07 and 2007-08. The methodology developed for multiple crops needs some refinement. Accordingly, it was also decided that the exercise on multiple crops should be repeated during 2008-09 in the selected districts with suitable modification of the methodology.

Objectives

- Paddy acreage estimation for entire state of Meghalaya
- To develop remote sensing based sampling methodology for multiple crop acreage estimation in Meghalaya.

3. Centre : North Eastern Space applications Centre, Umiam, Meghalaya,
Indian Agricultural Statistics Research Institute (IASRI)
Directorate of Economics and Statistics (DES), Govt. of Meghalaya

4. Funding Agency : SAC, Ahmedabad

5. Study Area : Meghalaya state

6. Brief Methodology

The methodology comprises of developing a sampling approach based on ground survey, satellite data and GIS mapping. Attempt has been made to evolve a spatial stratified sampling design based on slope, cultivated area (vegetation cover) and habitation through digital data. Multi date remote sensing data of LISS III sensor have been used in the study. Efforts of using LISS IV data as a sampler has also been made. SRTM data were used to

generate DEM of the study area. Block-wise cultivated area in each district has been obtained through satellite data in order to develop estimates for the area under each crop in a district.

7. Data Used : IRS P6 LISS-III
IRS P6 LISS-IV (MX)

8. Current status of the Project: Paddy acreage estimation has been made for entire state of Meghalaya at district level. NDVI and MXL based classification technique was adopted for delineating the paddy growing areas. Training sets were generated based on detailed ground survey for image classifications. Acreage estimation of winter paddy in Meghalaya in 2009-10 has been made and supplied to DES, Govt. of Meghalaya.

Satellite data (IRS P6 LISS III and LISS IV) analysis was done to delineate the total crop areas along with other land use land cover classes in the selected four districts viz., East Khasi Hills, Ri-Bhoi, East Garo Hills and West Garo Hills employing both digital and visual interpretation techniques. Map with crop area distribution in the study areas provided the inputs for spatial stratification for selection of sample villages as designed by IASRI. SRTM-DEM data has been used for extraction of elevation information. Selection of sample villages was done with proportional allocation of 9 strata and field data were collected in specified format. Analysis of survey data has been made and integrated with the satellite based estimate to bring out the final estimates of the selected crops

9. Utilization: Crop acreage estimates brought by NESAC has been used by Dept. of agriculture, Department of horticulture and Directorste of Economics and Statistics, Govt. of Meghlaya

10. Duration: October 2008 to December 2009