26. Discrimination of Coffee plantation types (Arabica and Robusta) using geospatial technology

Aim

The extent of coffee types, yield and price depends on two major coffee types Robusta and Arabica. The geographic location and spatial extent of these two dominant coffee types are important inputs for the Coffee Board and currently, spatial database is not available. The suitability of coffee types for particular region depends on climatic and terrain parameters. The shade tree type and density also vary with type of coffee with relatively higher shade density for Arabica coffee. The present research study has been initiated to explore the use of pedo-climatic and terrain parameters for discrimination of two dominant coffee varieties, namely Robusta and Arabica and to characterize shade tree types and density using very high-resolution data.

Scope

A national level project has been concluded for generation of coffee map of India in collaboration with Coffee Board. However, some of the challenges in Coffee Sector still needs to be addressed, especially discriminating coffee types, which is very critical input for Coffee Board for production estimation and agro-advisory services. In addition, shade tree types and density play an important role in cultivation of coffee plantations. The project is conceptualized based on the assumption that particular coffee type is predominantly present in a region which is having suitable climatic and topographic regimes. Important pedo-climatic and terrain parameters will be integrated for possible discrimination of Robusta and Arabica varieties. The use of VHR datasets from Cartosat-2 series shall also be attempted to characterize shade tree diversity and density.

Current constraints / Challenges

- Presence of both coffee types in the same suitability regimes.
- Availability of compatible climatic and terrain data in spatial format
- Availability of cloud free VHR satellite data for the study area

Expected Outcome

- Methodology for discrimination of coffee types and customization of GIS tool for implementation
- Spatial distribution of two dominant coffee types(Robusta and Arabica) and its extent

Timeframe

2021 – 2023