

## **Mapping land use through multi-temporal NDVI image data and knowledge on practiced local crop calendars**

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### **Abstract:**

Availability of timely crop data in space and time is critical for planning and implementing agricultural policies by natural resources managers. Remote sensing techniques are a valuable tool to generate such data. For the study area, decadal 1-km resolution SPOT/VEGETATION NDVI profiles were stratified and differentiated using a time series from 1998 to 2002. The profiles were correlated with practiced and known crop calendars and the available soil map.

The objective of the work presented in this paper is to map crop types with the aid of local crop calendars, soil types and local expert knowledge in a spatio-temporal domain. The crop calendars, seasonality and soil combinations include: sorghum, safflower, Bengalgram, sunflower and groundnut in rainfed heavy textured soils; sunflower, groundnut, blackgram, greengram and redgram in rainfed light textured soils; and rice, sugarcane, wheat, sunflower, groundnut in irrigated areas. The study area is the Nizamabad district of the Andhra Pradesh state in India. The study area has a distinct spread of soils and terrain coupled with seasonality. This made it a suitable area to explore the land use mapping method. The available multi-temporal NDVI layers were classified into 30 classes using an unsupervised method. Crop Calendar Class recognition was achieved by visually comparing and (supervised) generalising the 30 profiles into 14 final classes. Comparing the NDVI profiles with crop calendar data shows a good spatial identification of all four out of five dominant crop calendars followed.

The classification was validated using statistical data on areas cropped. Shown is that the results can support the monitoring of cropping intensity and crop performance. The maps generated through this study are used as input by a land use planning project operational in the study area.

**Keywords:** SPOT4/VEGETATION, NDVI, crop calendars, land use mapping