

MILLETS in upland regions of Odisha (**MURO**) for crop diversification, climate resilience and enhanced Food and Nutritional Security

Geospatial and Big Data Sciences Cluster,
Resilient Farm and Food Systems ,

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru-502324, Telangana, India

Email: MuraliKrishna.Gumma@icrisat.org

Why is this project required?

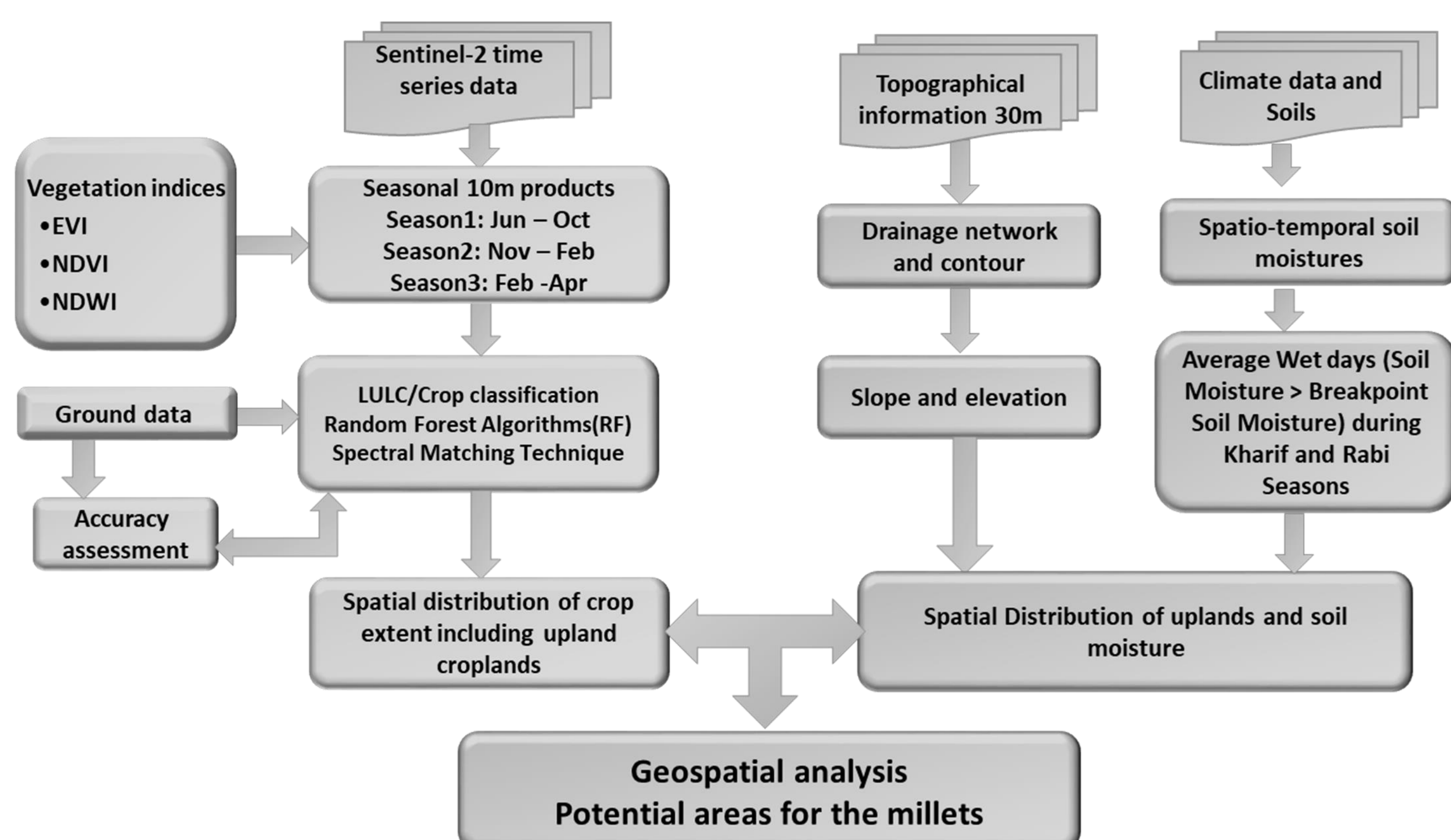
- In Odisha, agricultural practices predominantly revolve around rice cultivation, particularly in rainfed ecosystems. However, the reliance on rice poses significant challenges, including susceptibility to water scarcity and moisture stress, leading to low yields and inadequate financial returns for farmers. Additionally, nutritional deficiencies, as highlighted by the National Family Health Survey (NFHS) 2015-16, further underscore the urgent need for intervention. Thirty-four percent of children suffer from malnutrition, emphasizing the critical importance of addressing food and nutritional security issues.
- The "**MILLETS in upland regions of Odisha (MURO)**" project offers a solution by promoting the cultivation of millets as an alternative to rice. Millets, known for their resilience to adverse weather conditions and high nutritional value, provide a dual-purpose option by serving both as food and feed crops. This project aims to diversify crops, enhance climate resilience, and improve food and nutritional security in Odisha, thereby addressing pressing agricultural and socio-economic challenges.

Where is this Project Targeted?

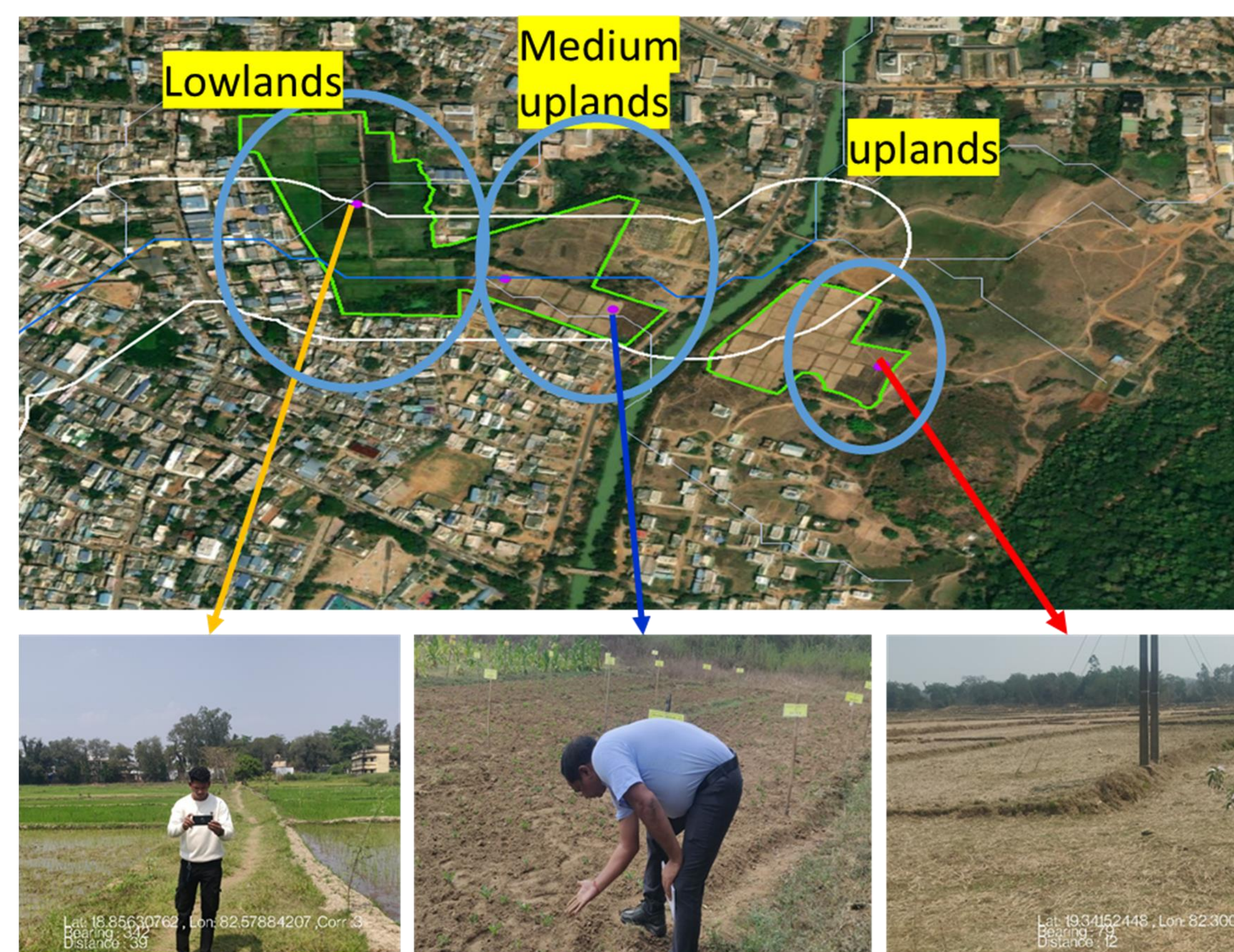
- The project is strategically targeted towards the northern and eastern parts of Odisha, encompassing districts characterized by rainfed agriculture and high frequencies of drought. Specifically, the target districts include **Nabarangpur, Keonjhar, Sundergarh, Nuapada, and Koraput**. These regions are significant for upland rice cultivation, yet face risks associated with erratic weather patterns and low agricultural productivity.
- In identifying areas where the economics of upland rice cultivation is risky and uneconomical, the project aims to introduce millets as viable alternatives. The selected millet varieties—Pearl millet, Sorghum, Little millet, and Foxtail millet—have been chosen based on their suitability to the local agro-climatic conditions and their potential to thrive in drought-prone environments.

Materials and Methods

- The project utilizes geospatial technology to identify suitable areas for interventions.

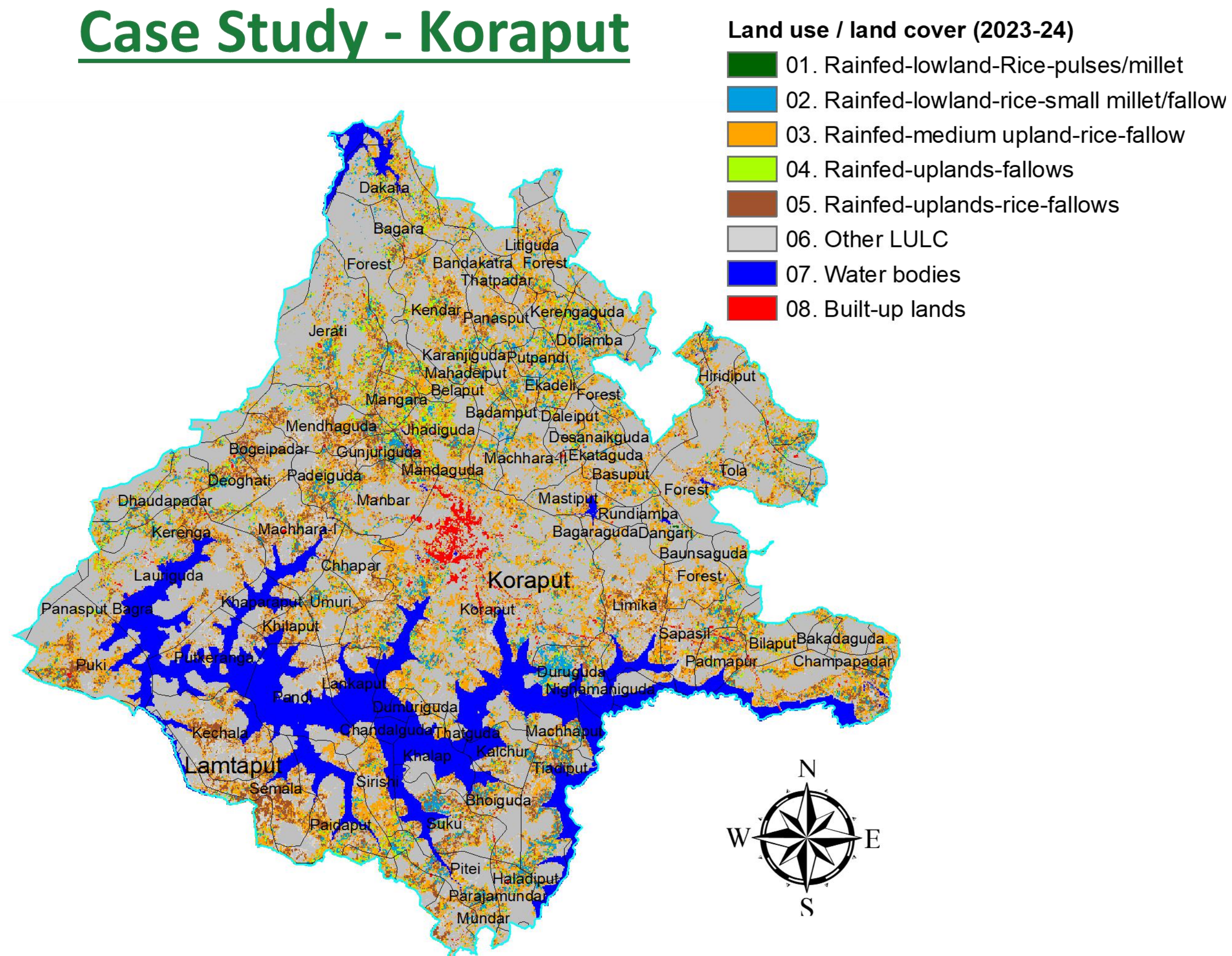


Observations



Crop	Duration	Average yield (kg/ha)	Market price	Total income (Rs/ha)
Pearl millet	80-90	1400	25	35000
Little millet	85-95	1200	35	42000
Foxtail millet	75-85	1200	35	42000
Sorghum	110-120	1000	32	32000

Case Study - Koraput



Suitable crops	Classes	Area in Ha		Total value of production in INR (lakhs)
		Boipariguda	Koraput	
Small millet/sorghum	03. Rainfed-medium upland-rice-fallow	21203	10104	13149
Pearl millet	04. Rainfed-uplands-fallows	5986	2067	2819
Small millet	05. Rainfed-uplands-rice-fallows	4606	4244	3098

"By adopting millet cultivation in Koraput, there is potential to generate a total income of **19,065 Lakhs (approximately 22.97 million USD)** per season."