Innovative Approaches to Collecting Agricultural Technology Adoption Data

synergy across agribusiness
TECHNOFIN

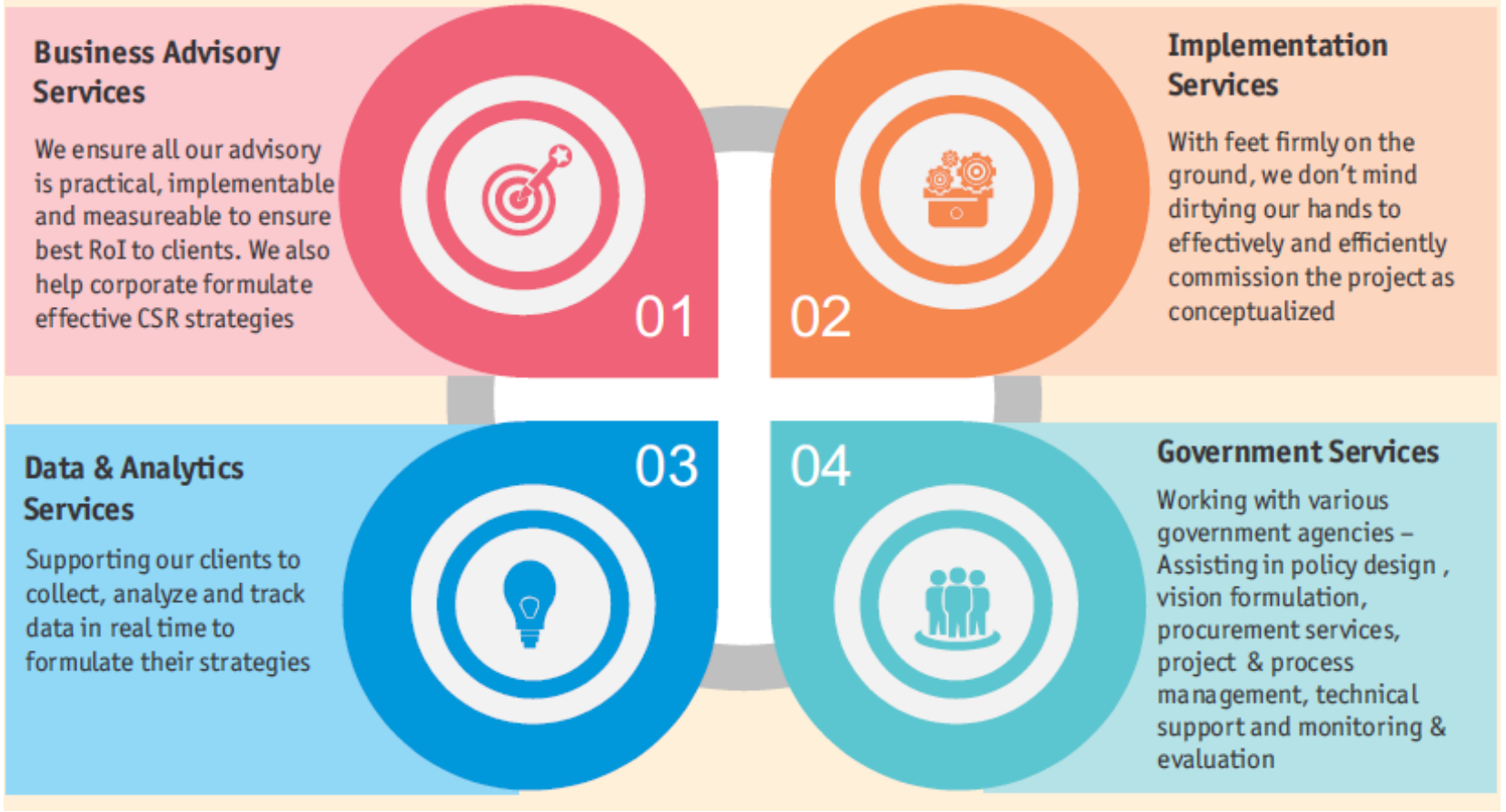
Experiences from a pilot study in Haryana and Bihar, India





Synergy Technofin – A boutique Management Consulting Company specialized across agribusiness

Synergy Technofin – Range of Services



Our Partners – Corporate

In addition, Synergy Technofin has helped many entrepreneurs set up and operate enterprises in the various sub-sectors of agribusiness

Our Partners – Government, Research Institutions and Multilateral Agencies

- Small Farmers' Agribusiness Consortium (SFAC), Ministry of Agriculture, (GoI)
- Agricultural and Processed Food Products Export Development Authority, Ministry of Commerce (GoI)
- Central Warehousing Corporation (CWC)
- National Horticulture Board (NHB), Ministry of Agriculture (GoI)
- Meghalaya Basin Development Authority (MBDA) (IFAD funded project)
- Departments of Agriculture / Horticulture / State Planning Commission (Jharkhand, Haryana, J&K, Madhya Pradesh, Meghalaya, Telangana, Tamil Nadu, Uttar Pradesh)

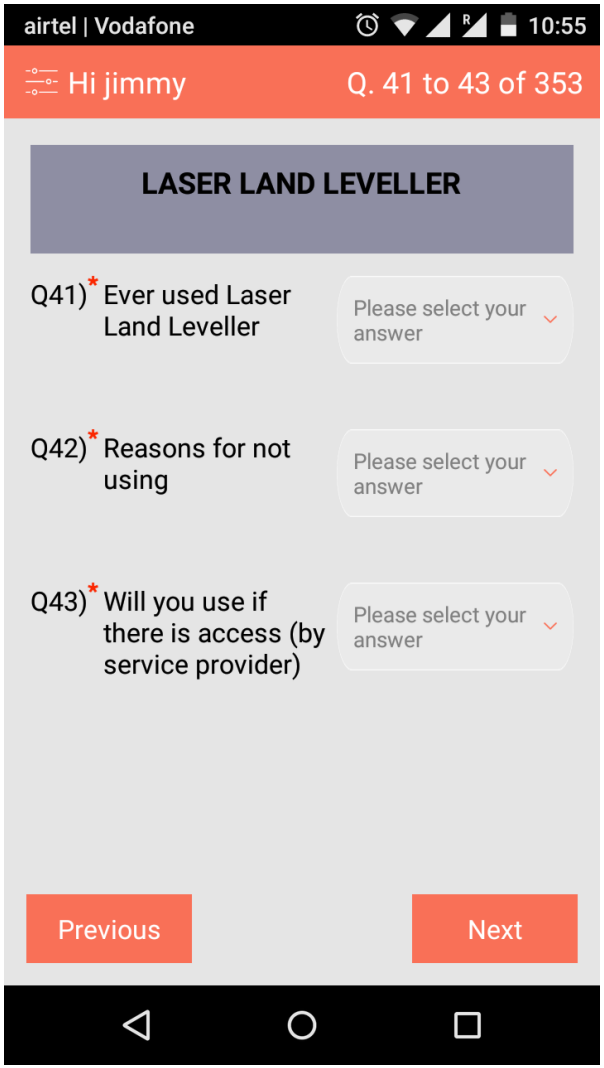
Our Partners – Government, Research Institutions and Multilateral Agencies

- Ministry of Natural Resources, Ontario (Canada)
- Forestry Innovation Investment (FII), British Columbia (Canada)
- International Food Policy Research Institute (IFPRI)
- International Maize and Wheat Improvement Centre (CIMMYT)
- Ministry of Agriculture and Forests, Royal Government of Bhutan
- CII / FICCI / ASSOCHAM

Motivation for study

Challenges	Opportunity	Institutionalising Learning
•Use of mobile phone for capturing field data; •Multiple indicators to be captured; •Engaging and working with Local Enumerators.	•Ideal platform for validating usability of mobile application for survey; •Setting-up a network of LEs, which could be mobilized to carry out regular and wide-ranging surveys	•Adoption of technology for large scale surveys; •Create faster response system to field challenges; •Establish quality control of data; •Develop cost-effective systems for large scale surveys.

Innovative features of the approach – Use of Android Mobile Application



- **Android based survey application developed in-house.**
- **Any number of new surveys can be created.**
- **Intuitive mechanism to skip questions not required to be answered in scenarios – Maximizing efficiency of enumerators.**
- **Ability to scrutinize and correct data in real-time.**
- **Ability to work offline and data can be synced with server when in network area.**
- **GPS Tracking Facility – Real-time monitoring of enumerators .**
- **Backend application – Questionnaire design and Direct Data download in required format – Eliminates data entry charges and reduces time in data cleaning.**

Advantages and Limitations of use of mobile application

Advantages	Limitations
• DATA QUALITY can be controlled live by having correct logics / algorithms.. • IMPROVED EFFICIENCY of enumerator by saving time to cover each sample through automatic skipping of irrelevant questions. • REAL-TIME TRACKING of field progress and enumerators through GPS tracking. • TIMELY FEEDBACK to enumerators by ensuring daily syncing of data – Eliminates time and resources for multiple rounds of data cleaning.	• Some of the enumerators have reservation in using mobile phone / pad for survey • All the enumerators may not have their own smart-phones; • Costs and time required at backend is slightly higher:

Advantages and Limitations of Local Enumerator Method

Advantages	Limitations
• Reduces cost of local logistics / local movement; • Easier to communicate with the farmers in their local language; For example, Laser Land Leveler is called as *Computer-Godi* (translated as "Computer-horse") in Karnal.	• It is challenging to find local enumerators; • LEs may or may not have experience of market research or surveys. • For most of the Les, survey is not the primary activity, i.e. it is difficult to manage deadlines. • Higher risk of influencing the respondents with LE's own knowledge and understanding of area / subject.

Evaluation of Conducting Survey Through Mobile App and Local Enumerator Method

Parameter	Use of Mobile Application	Use of LE Method
Cost-effectiveness	• Relatively HIGHER INITIAL development cost; • However, initial development cost can be amortized over multiple survey. • Highly Cost-effective for large-scale quantitative surveys.	• Initial cost of identification of suitable LE is very high; • Dropping-out of survey is major issue; multiple recruitment and training involve higher cost
Commercial Scalability	• Highly scalable model compare to traditional surveys, due to lack of logistics requirement and ability to simultaneously control multiple location survey..	• Scalable – if there is consistency of work • Challenge is to generating continuous work for LE to keep him/her engaged and make survey as primary source of income for him/her.

Evaluation of Conducting Survey Through Mobile App and Local Enumerator Method

Parameter	Use of Mobile Application	Use of LE Method
Design and Training	• Critical to develop survey software / app, which has scope for including / modifying agricultural parameters; e.g. Land size conversion.	• Training of LEs, not having agri. background or experience of working on agri. survey, is a challenge; • Regular dropping-out of LEs need multiple training.
Survey Monitoring	• Possibility of live tracking of enumerator; • Live data updation	• Need a supervisor to coordinate with Les
Data Quality	• Data quality is high because of in-built validations on the app. Less time spent on data entry and cleaning compared to paper-based surveys	• Intensive training and handholding required to ensure data quality because of LEs' lack of experience in conducting surveys.

Recent Projects using Mobile Survey Tool

Project Scope	Client	Sample Size	Time period
Rapid Assessment Survey of Livelihood scenario in Meghalaya, India, for validating the indicators required for a Baseline Study.	Meghalaya Basin Development Authority	100	Sept 2015
Mapping all the horticulture farmers in census mode in Manipur, India.	Dept. of Horticulture, Manipur	150,000	Ongoing
Baseline study for USAID funded project on Climate Resilient Agriculture in 9 states in India.	Skymet Weather Services Pvt. Ltd.	1,700	June 2016
Survey on production and marketing systems of food grains in Tripura, India.	Govt. of Tripura	1,200	upcoming

Market Scenario for agricultural technology adoption data

Market Need	Current Process	Gap

• Private companies – Data on market penetration in specific geographies, market share and market size.
• Actionable insights is in high demand – Segments of adopters, how to reach segments, efficiency of existing initiatives, etc.
	• Reliance on "wisdom" of field personnel and experience of management.
	• Some data collection done at field level; need based surveys.
	• Very less action on survey results.
		• Proposition for conducting multiple rounds of survey on same technology at regular intervals:
		  • Seeds and other inputs – Annually
		  • Machinery/Drip Irrigation, etc – Once in 2-3 years
		• Development of actionable insights from such studies.

Business Model for regular Adoption Surveys

- Surveys to be based on AIDA Model – Awareness, Interest, Desire, Action. Need to measure all four levels in technologies studied; current pilot studied Awareness and Action.
- Different technologies have different adoption curves and different Product Life Cycles. For example
  - Hybrid Seeds – 1-2 seasons
  - Liquid fertilizers – 2-3 years
  - Large Machinery – 3-5 years
- Critical factors
  - Regularity of survey
  - Tracking of progress
  - Delivering actionable insights

Crop Monitoring – combination of Satellite & UAV

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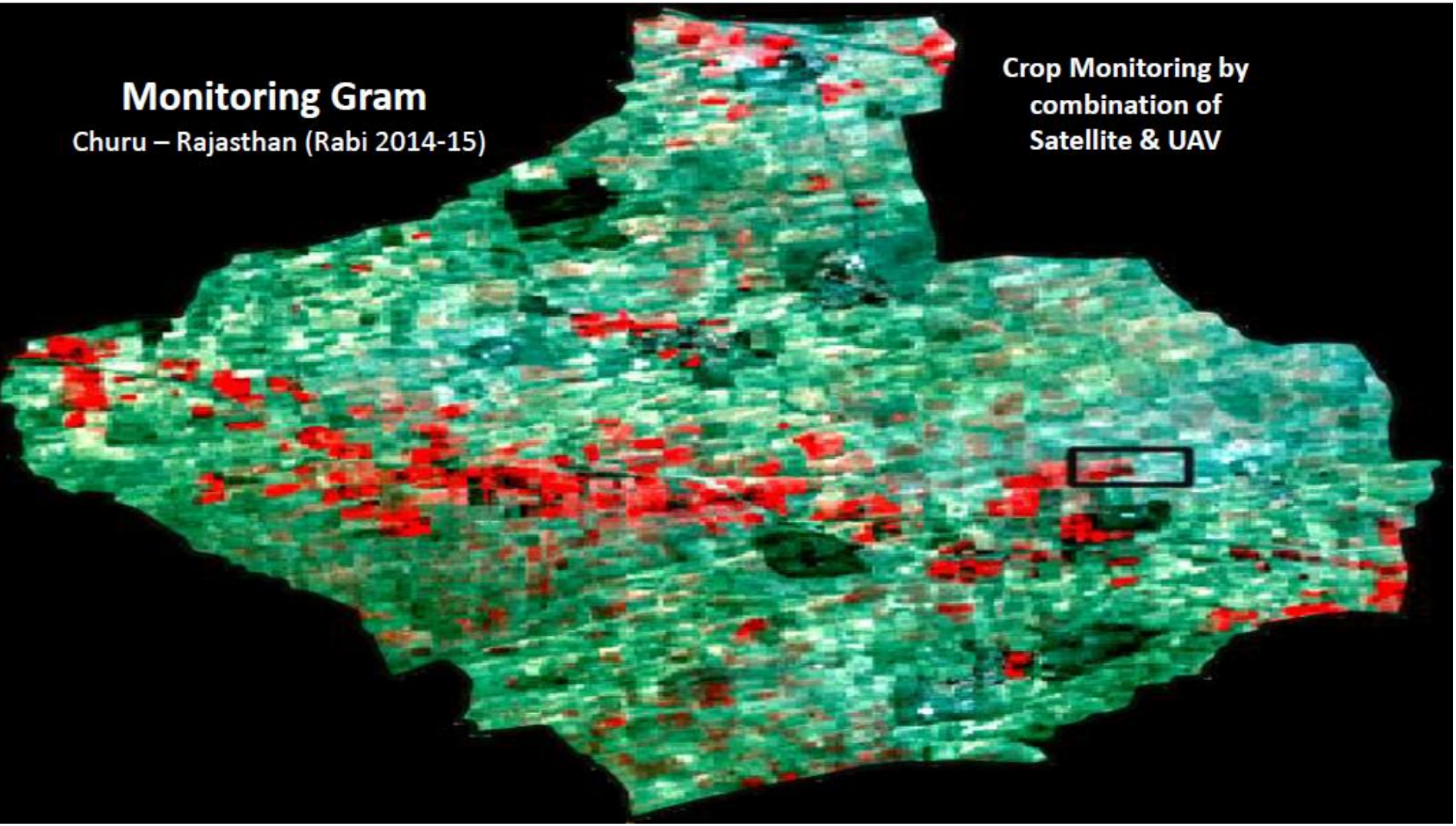

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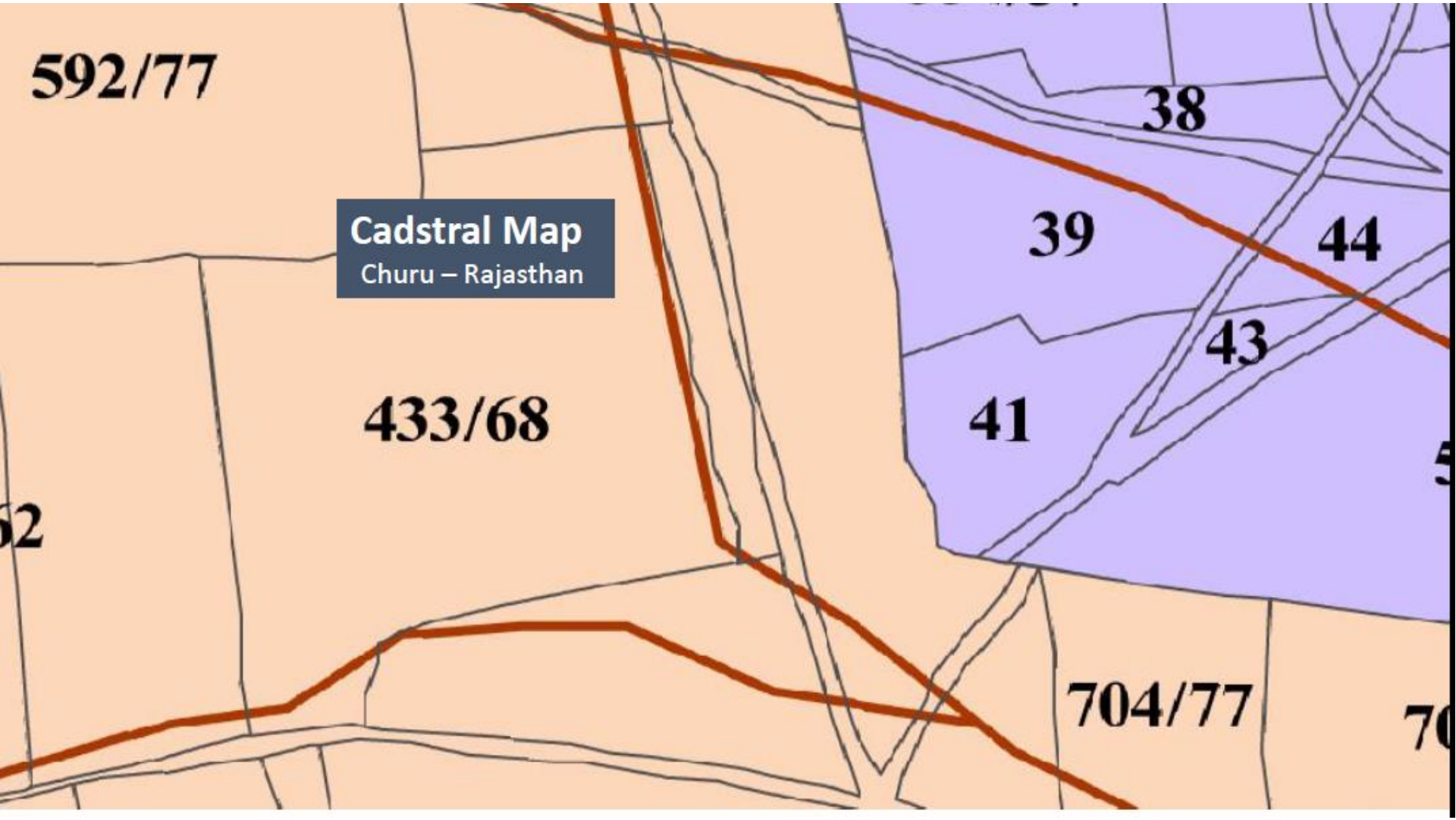

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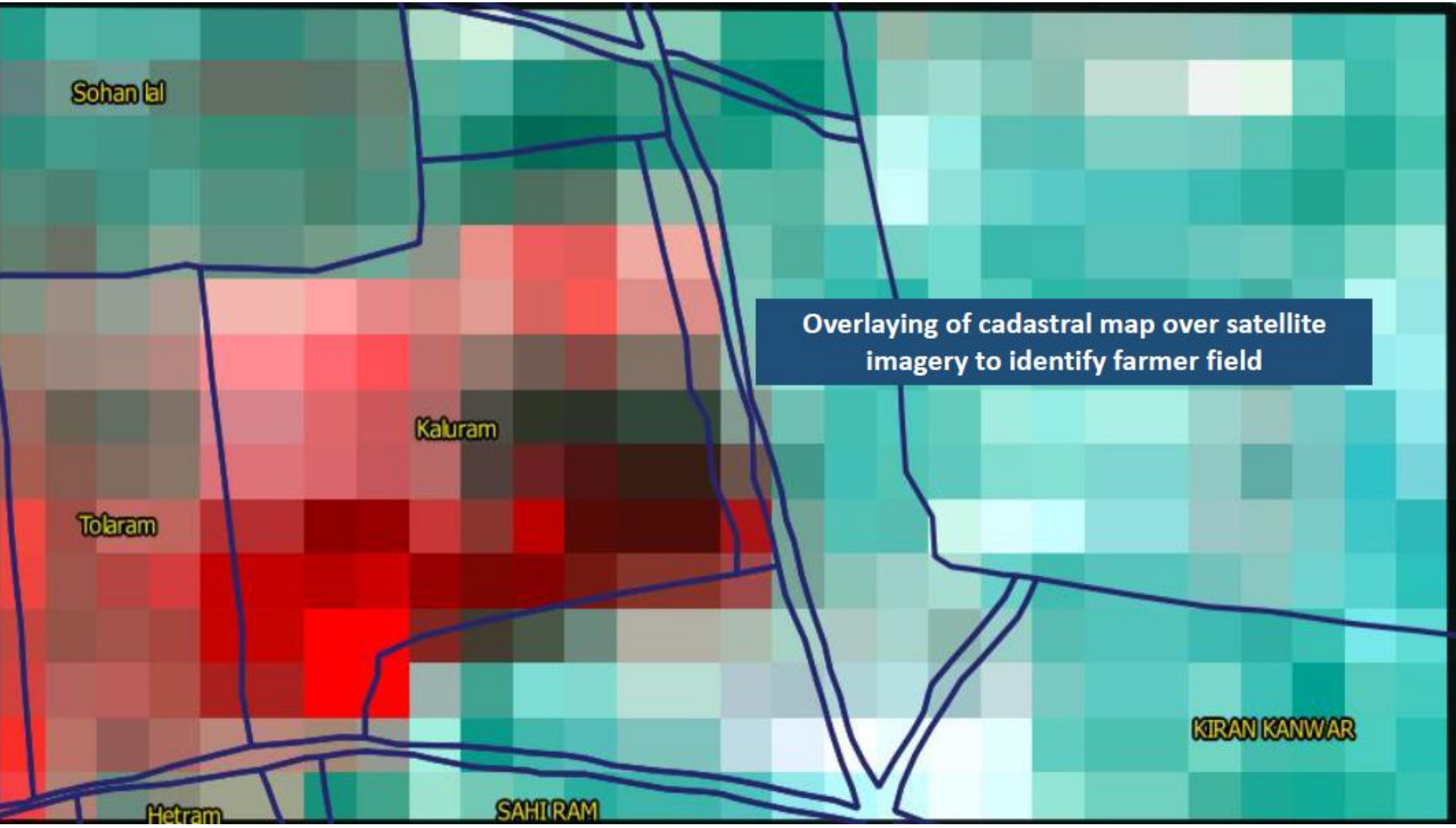

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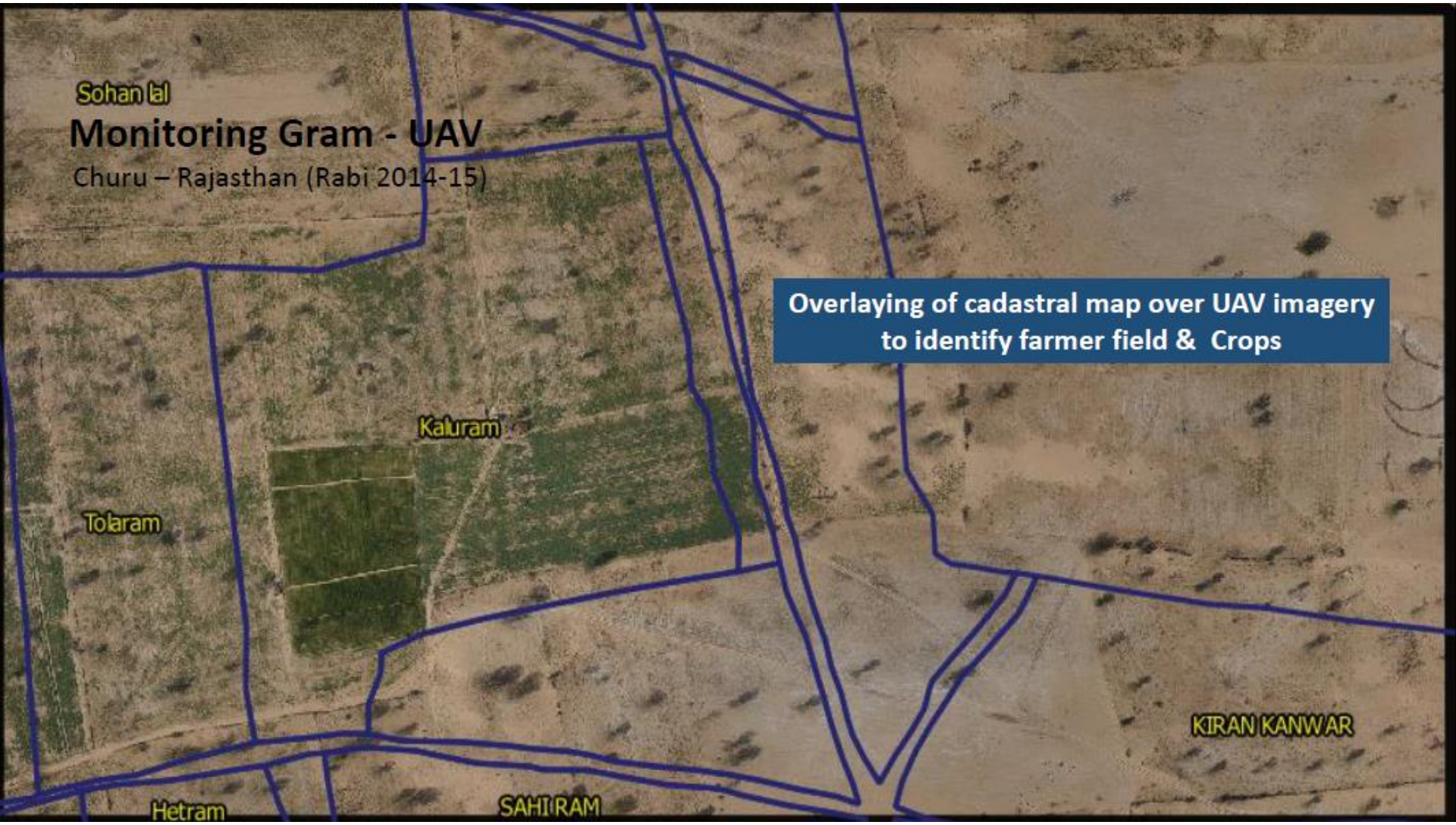

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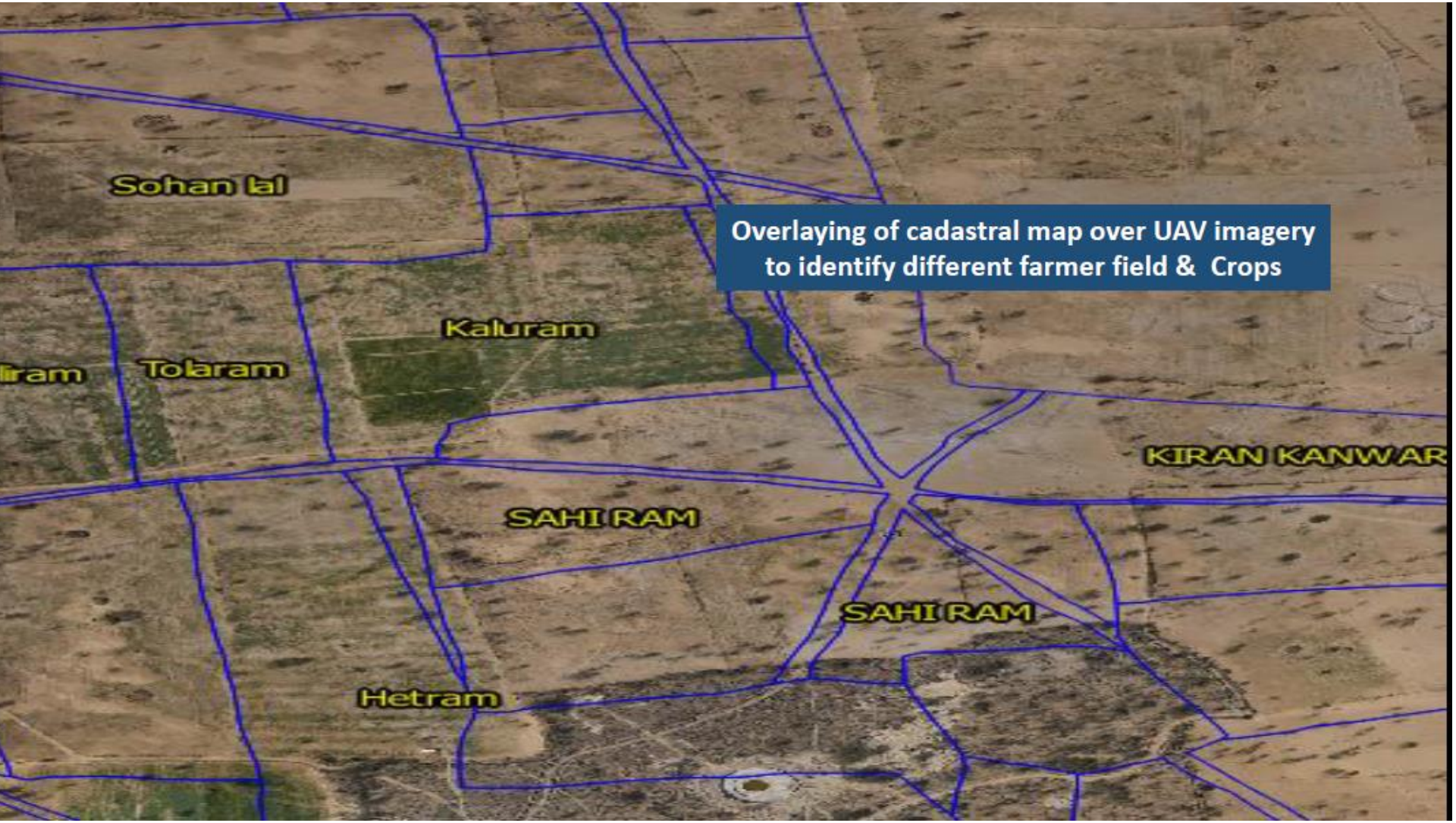

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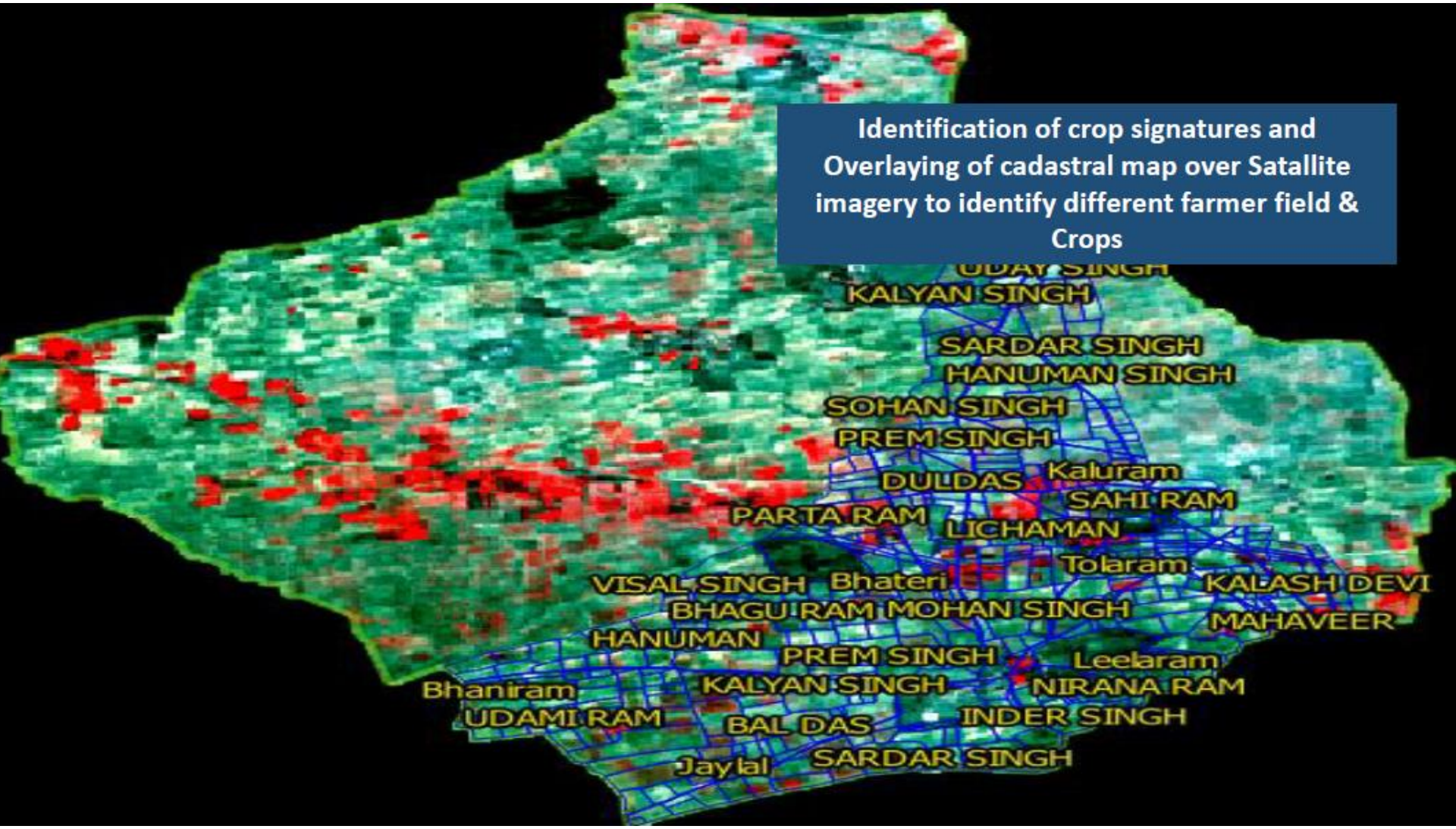

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Thank You

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