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CONFERENCE & EXPO

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Agri-Logistics & Market Intelligence: from Harvest to Consumer

Dr. Deivasigamani VASUDEVAN
Senior Consultant (Information Systems)
NAFED

NAFED at a Glance

- Established in 1958; registered under the Multi State Co-operative Societies Act.
- Apex national federation of agricultural marketing cooperatives in India.
- Mandate: promote co-operative marketing of agricultural produce to benefit farmers.
- Core functions: procurement, storage, processing and marketing of agricultural and allied commodities.
- Nodal agency for price stabilization under schemes such as Operation Greens and Price Support Scheme (PSS).

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Digital Procurement Backbone : e-Samridhi portal

- Unified digital procurement platform developed and operated by NCDEX e Markets Ltd. (NeML) for NAFED and partner State agencies.
- Supports MSP procurement of pulses and oilseeds under the Price Support Scheme (PSS) through fully digitized workflows.
- Farmer-centric web portal and mobile app for self-registration, Aadhaar authenticated enrolment, application tracking and scheduling visits to procurement centers.
- Integrated procurement, inventory and payment modules enabling direct credit to farmers' Aadhaar seeded bank accounts
- Has already handled very large volumes of pulses and oilseeds, with transactions running into tens of thousands of crores and benefitting lakhs of farmers through transparent, timely payments.

DIGITAL REVOLUTION BY NAFED

The e-Samridhi Initiative

From Harvest to Consumer: Challenges

- Even with digital platforms like e-Samridhi, physical value chains remain fragmented with uneven infrastructure across regions.
- Significant post-harvest losses due to inadequate storage, delayed evacuation and limited cold-chain capacity.
- Volatile arrivals and prices driven by climate variability, global markets and local sentiment.
- Limited use of integrated, real-time data in planning procurement, logistics and market interventions.
- Information asymmetry persists across farmers, cooperatives, traders, processors and policymakers.

Why Space & Geospatial Intelligence ?

- Satellite-based crop acreage, health and yield estimates at district and sub-district scale.
- Early detection of crop stress and weather risks to support advisory and risk management.
- Fusion of remote sensing with ground and transactional data (e.g., e-Samridhi) for reliable production outlooks.
- Spatial decision support for locating procurement centers, warehouses and logistics routes.
- Data backbone for market intelligence, price stabilization and risk reduction across value chains.

NAFED–ISRO (SAC, Ahmedabad) MoU

- Develop models for acreage, health status and yield estimation for pulses, oilseeds and key horticultural crops using satellite remote sensing data.
- Create a customized web-based portal for sharing crop estimates with NAFED, integrated with its operational systems and digital platforms such as e-Samridhi.
- Continuously refine model estimates using NAFED's historical procurement and price data.
- Jointly prepare detailed work plans and undertake cooperative work in areas of common interest.
- Build capacity of NAFED's IT and operational teams through training and outreach programme.

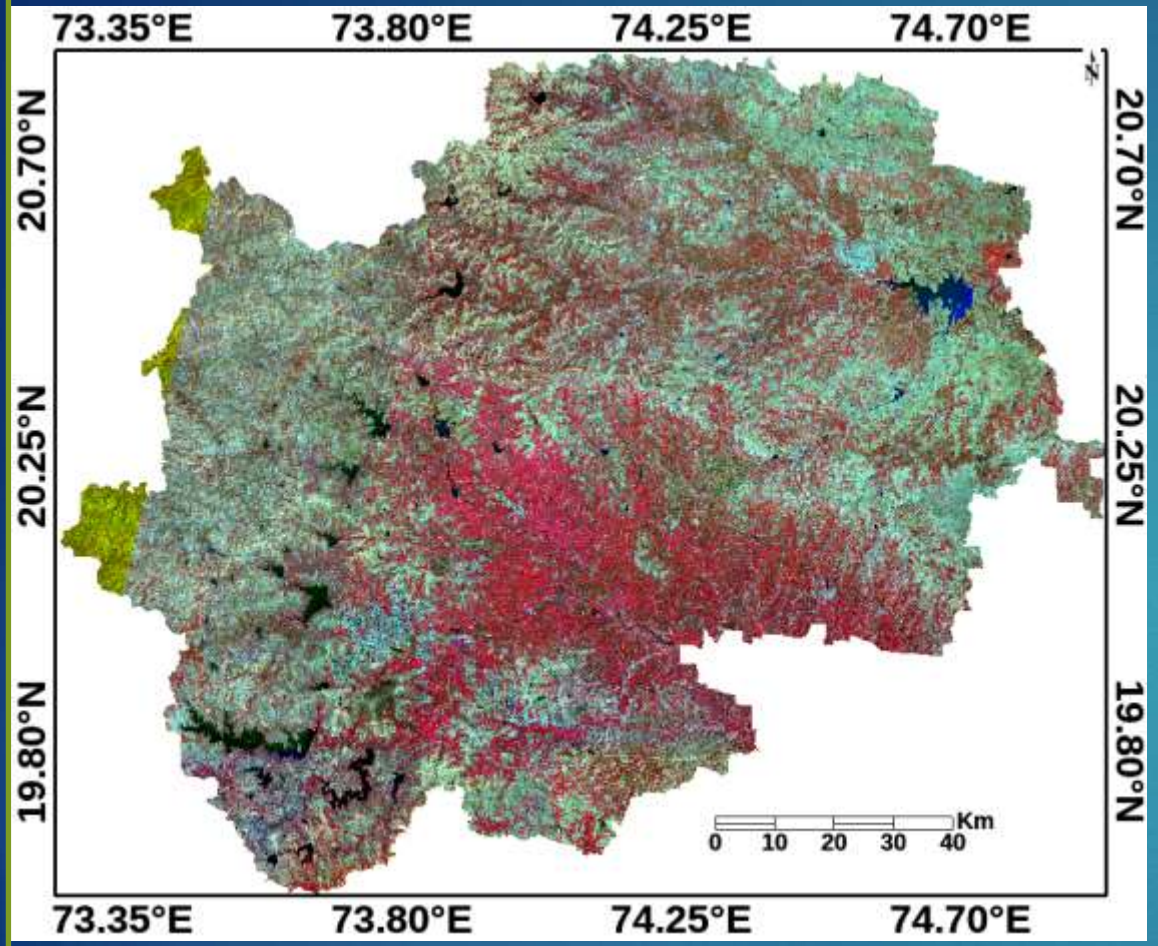
NAFED–ISRO: Scope of Collaboration

- Appointment of focal persons on both sides to ensure effective coordination and communication.
- Secure sharing of historical procurement and price data by NAFED for model calibration.
- Regular operational crop estimates from SAC to support procurement planning, logistics and disposal decisions.
- Training of NAFED officials on model testing, calibration and implementation of satellite-based analytics.
- Joint development of reports and knowledge products on satellite-based crop estimation and its applications.

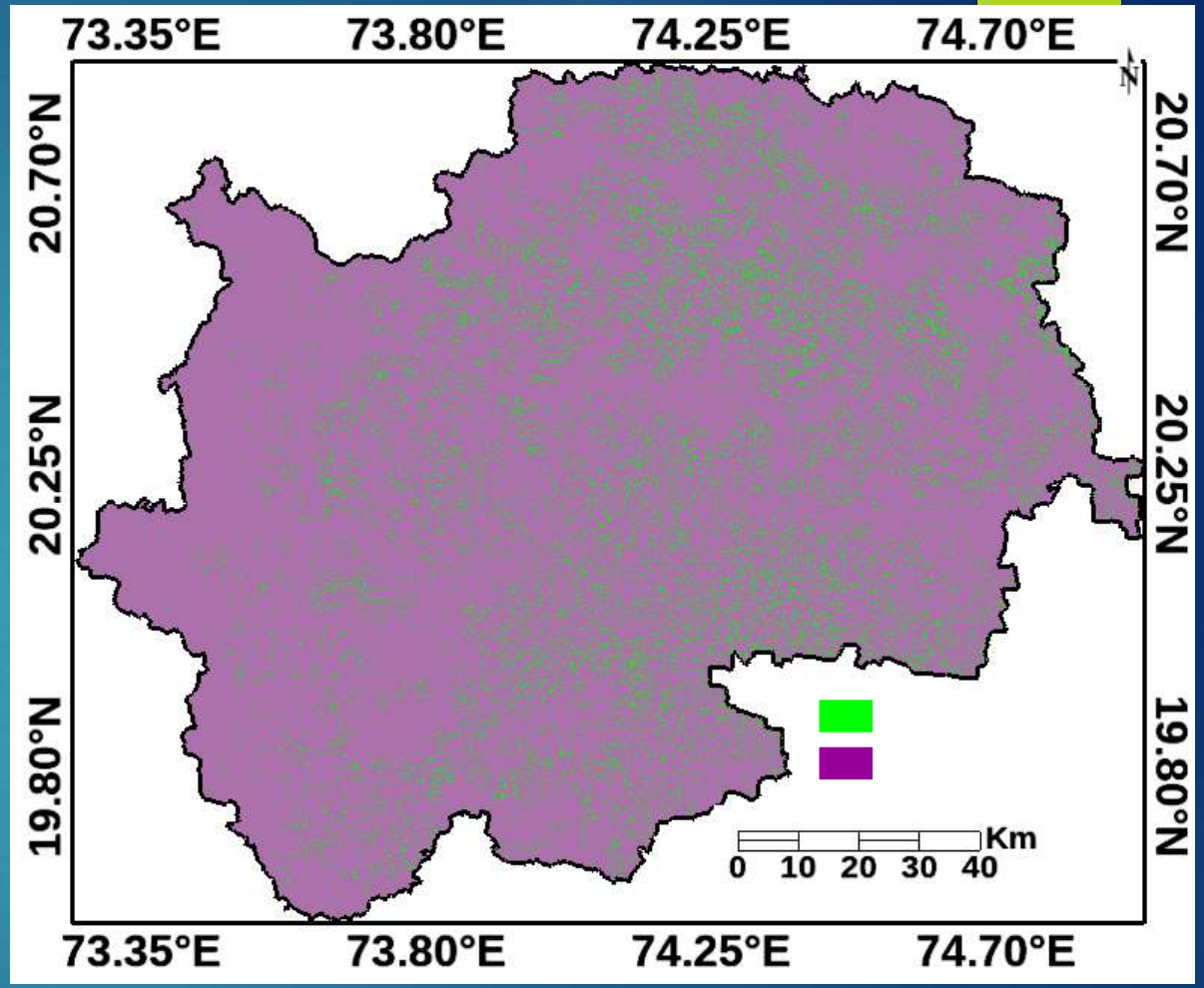
Nashik Onion Pilot – Demonstrating Operational Value

- Location: Nashik district, Maharashtra – late rabi onion season.
- Onion crop map generated using satellite data combined with Ground Truth (GT) polygons from NAFED field staff.
- Onion acreage for rabi and late rabi seasons estimated at tens of thousands of hectares with high classification accuracy.
- Demonstrates feasibility of early acreage estimates for planning procurement centers, storage and inter-state evacuation.
- Provides a template for extending similar pilots to pulses and oilseeds integrated with e-Samridhi operations.

FCC of Nashik District April 2025



Classified Onion (green) of Nashik District April 2025



Onion Acreage = 93,377 ha

OmAgri – AI-Driven Digital Agriculture (Potential Partner)

- Experience in integrating AI/ML and ICT-based solutions into agriculture value chains.
- Capabilities across plot segmentation, crop status assessment, crop classification and acreage estimation.
- Sowing date identification, crop health monitoring and harvesting monitoring using remote sensing and analytics.
- AI- and satellite-based yield prediction models, developed and verified with leading space applications centers.
- "Krishi-care" digital platform enabling plot-level advisory, weather alerts, market information and service linkages.

From Intelligence 2 Execution –Workflow

- **Pre-season**:
  - Use satellite-based acreage and sowing maps to anticipate surpluses and deficits.
  - Configure e-Samridhi procurement plans – centres, capacities, procurement windows and manpower – based on production outlook.
- **Mid-season**:
  - Monitor crop health and stress; update yield forecasts with latest satellite and ground data.
  - Trigger targeted advisories, risk mitigation and input support through partner platforms.
- **Harvest**:
  - Track harvesting progress and spatial distribution of harvested area.
  - Optimise timing and location of e-Samridhi procurement operations, labour and transport fleets.
- **Post-harvest**:
  - Integrate stock, arrivals, e-Samridhi transaction data and price data to guide buffer stocking, market releases and exports.
  - Enable traceability and quality differentiation for institutional buyers and consumers.

Integrating e-Samridhi with Geospatial Intelligence

- Overlay satellite-based crop maps with e-Samridhi farmer registration and transaction data to identify underserved pockets.
- Use yield and acreage forecasts to prioritize opening and scaling of procurement centers in space and time.
- Feed cleaned e-Samridhi operational data back into models to improve calibration and accuracy.
- Develop integrated dashboards for NAFED and State agencies combining satellite layers, e-Samridhi data and logistics status.
- Create a virtuous cycle: more accurate intelligence driving better operations, which in turn generate richer data for future intelligence.

Impact & Way Forward

- **For farmers**: better prices, timely procurement, reduced distress sales and lower post-harvest losses through integrated digital and geospatial systems.
- **For markets and consumers**: more predictable supplies, improved quality and stable prices through informed interventions.
- **For policymakers**: objective, spatially explicit evidence to design and calibrate schemes and market interventions.
- **Next steps**: scale the NAFED–ISRO crop-estimation backbone to more crops and states; deepen integration with e-Samridhi and other NAFED digital platforms.
- Collaborate with partners such as ISRO, State agencies and FPOs to create end-to-end, geospatially enabled and digitally transacted value chains.

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Thanks…

dvasudevan@nafed-india.com
+91-9810184295