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Remote Sensing and AI Pilot for Improving Crop Monitoring and Yield Estimation in Honduras

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This Pilot is part of the SISAGRO implementation Phase 1

COMRURAL III

Innovation for Rural Competitiveness Project

Policy Support to Establish an Information System for the Agri-Food Sector (SISAGRO) in Honduras

Remote Sensing and AI pilot for improving crop monitoring and yield estimation in Honduras

Institutional Strengthening of SAG through the SISAGRO Platform

Generation and Access to Information

Private Sector

Public Sector

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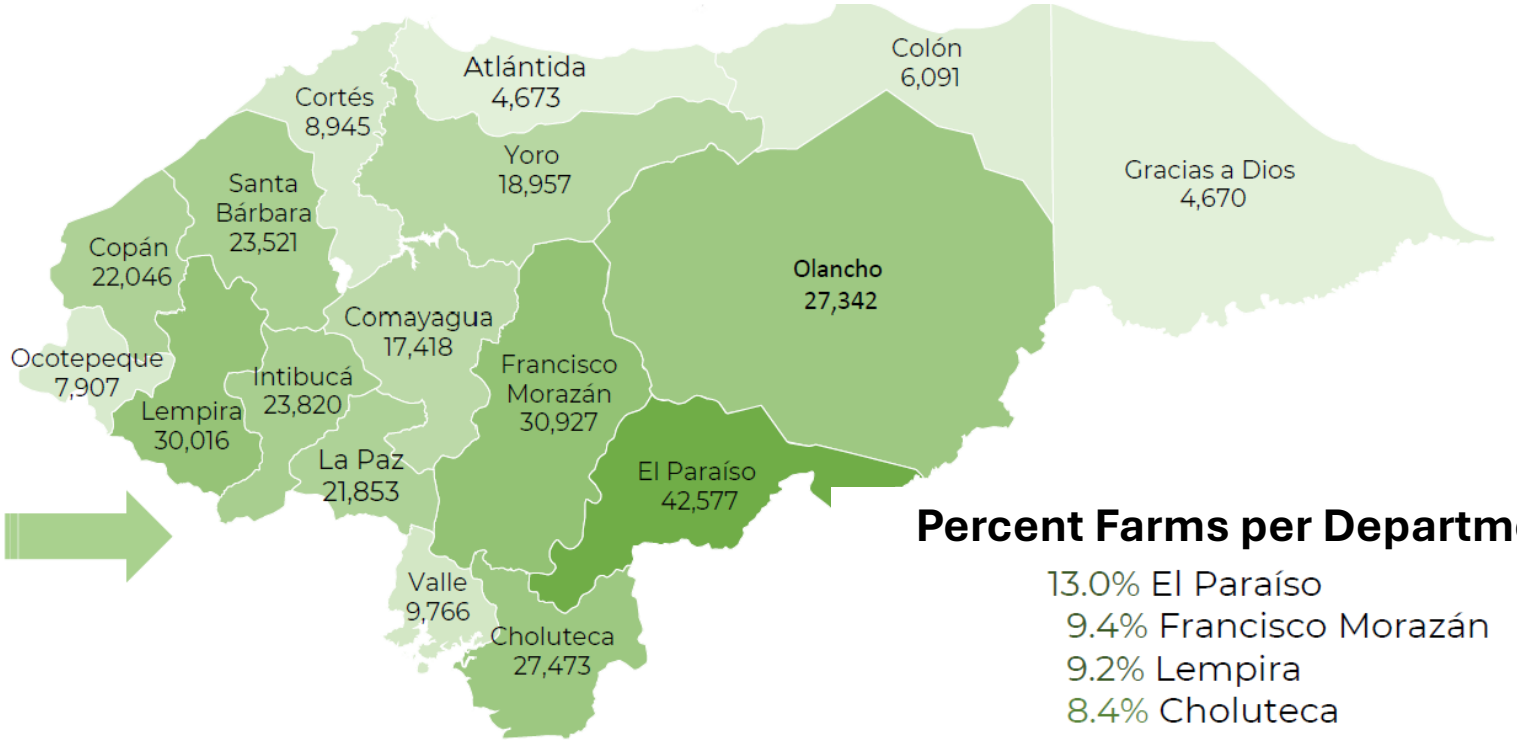
How many and where are maize and bean farmers?

326,914
Farmers

328.002
Farms

2024 Staple Grains Farm Distribution per Department



Percent Farms per Department

13.0% El Paraíso
9.4% Francisco Morazán
9.2% Lempira
8.4% Choluteca

8.3% Olancho

Source: Instituto Nacional de Estadísticas de Honduras, 2025

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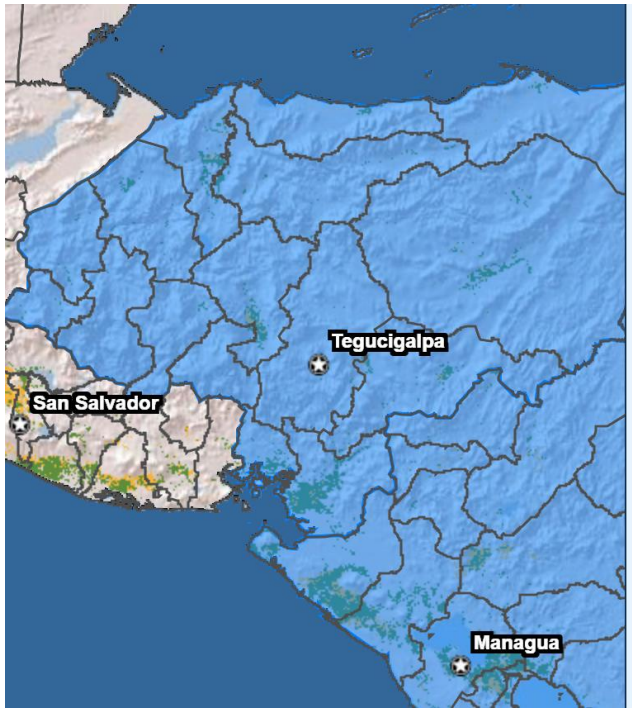
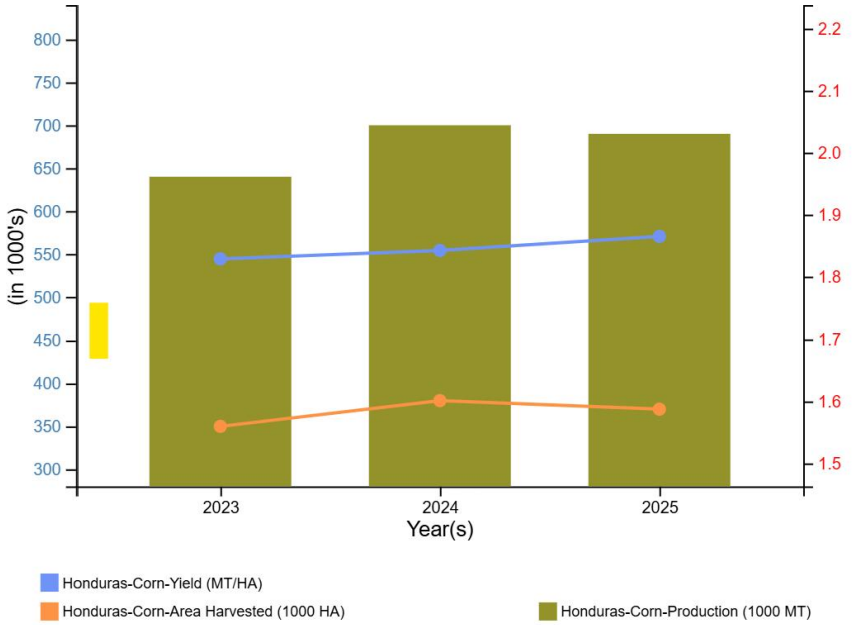
Maize and Beans Production 2023-2025

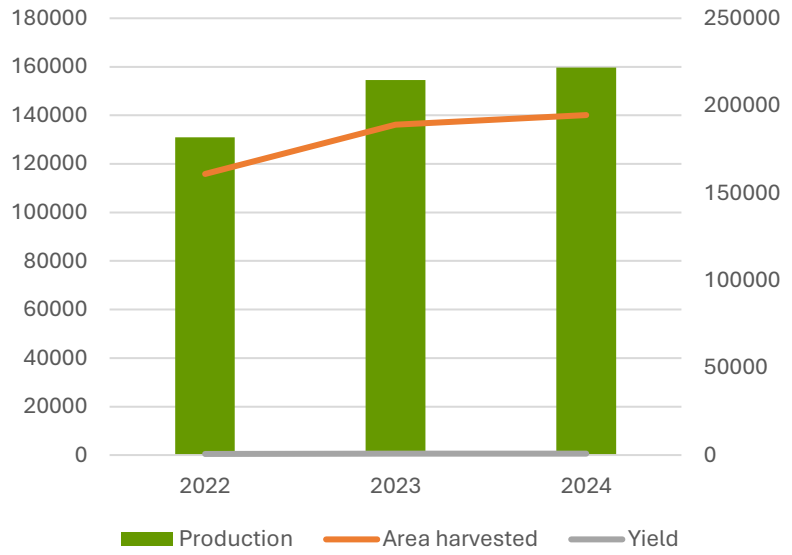


Maize



Source: USDA PSD Online https://apps.fas.usda.gov/PSDOnline/

Beans



Source: FAOSTAT, 2026

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Structure of the Pilot

Supporting the development of the SISAGRO platform	A policy note describing the pilot model and roadmap for scaling to national level
Conducting a pilot to estimate corn and bean planted areas and yields	Sampling design, Data collection for the departments of Olancho and El Paraíso
	Pilot yield prediction for the 2026/27 harvest season in Olancho and El Paraíso
	Validation report and user guidelines for integrating the yield prediction module into SISAGRO
	Consolidated manuals and technical guide
Strengthening institutional sustainability and capacity	Two in-country consultations and/or technical workshops
	Two international knowledge exchange visits

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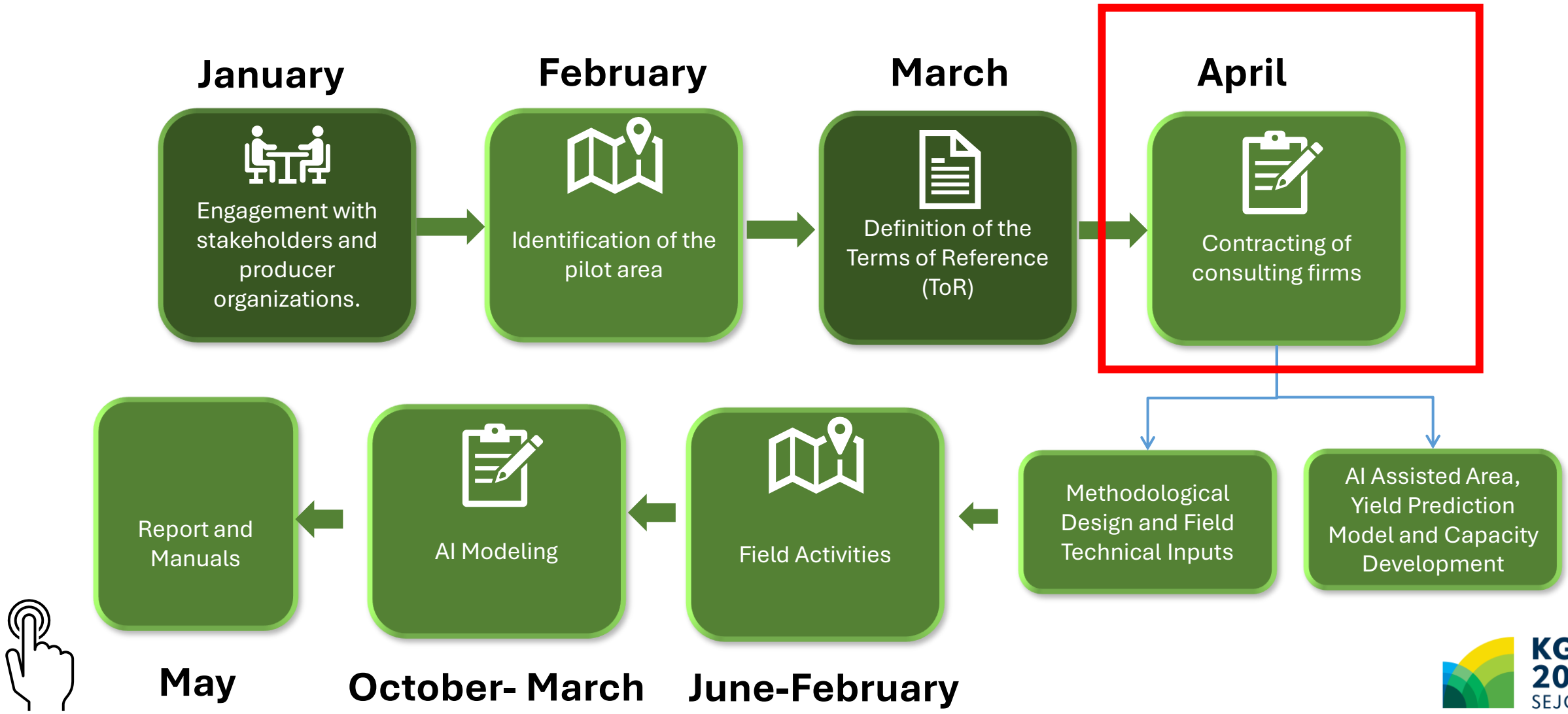
Preparatory Activities 2026 - 2027



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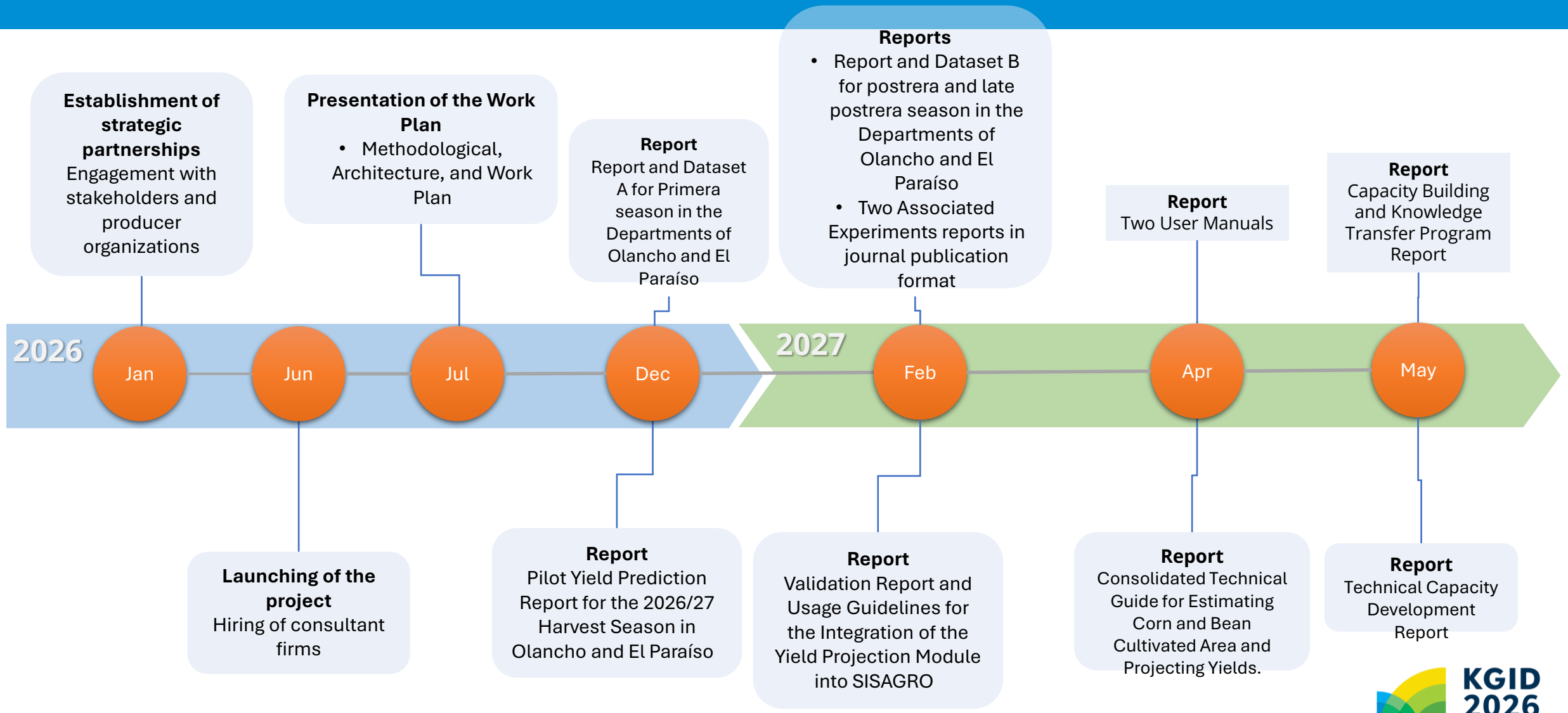
Implementation Timeline



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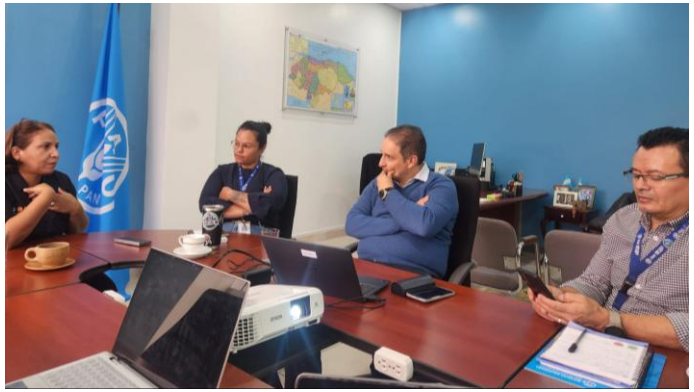
Socialization and Diagnostics: Olancho and El Paraiso

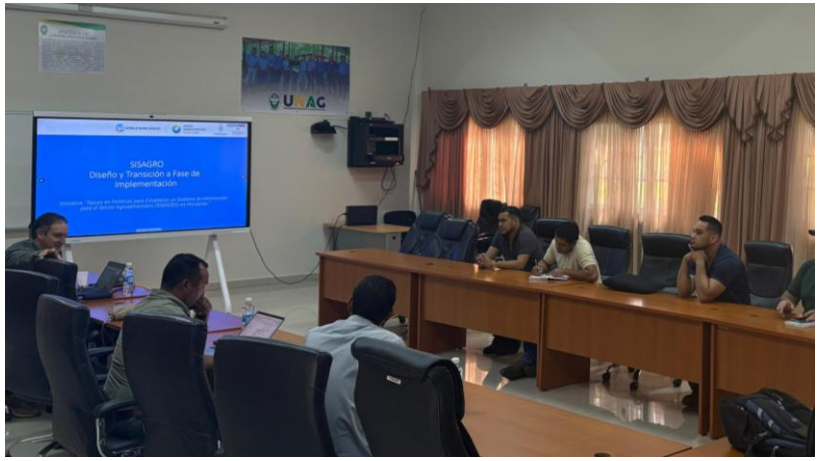
SAG

PROGRANO



FAO

ARSAGRO



UNAG

ZAMORANO

BACK

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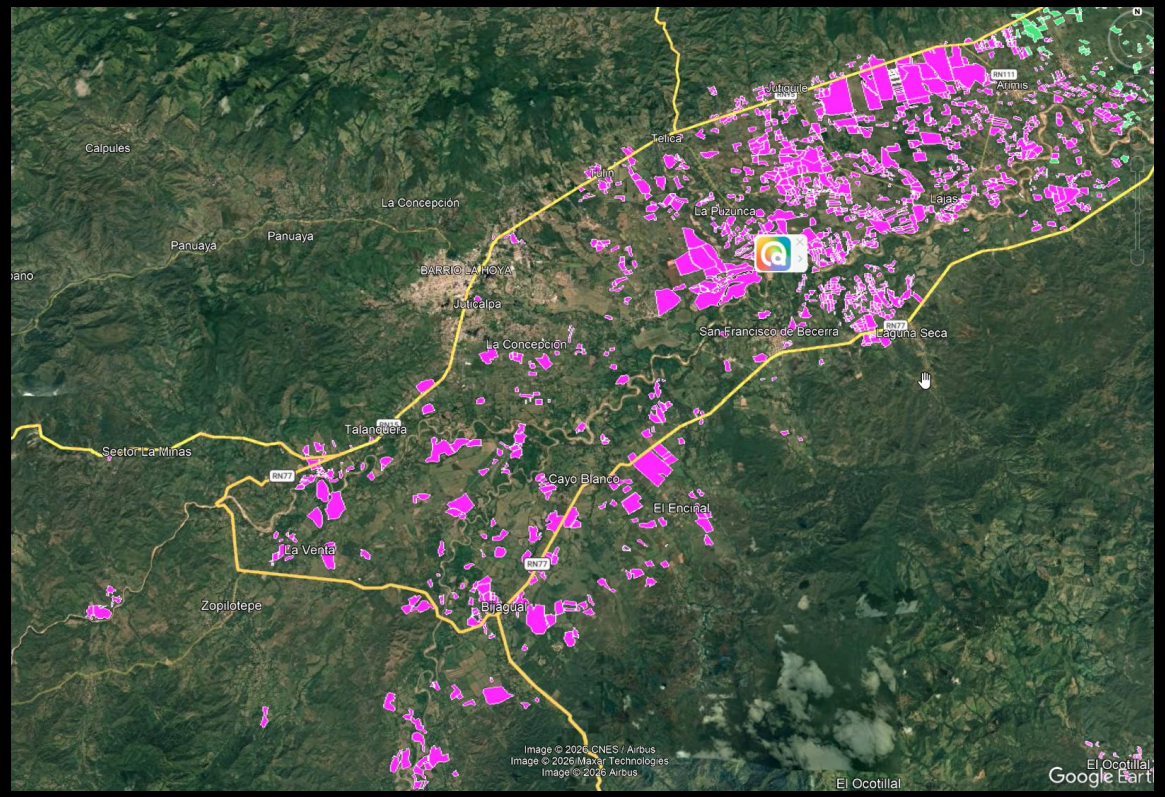
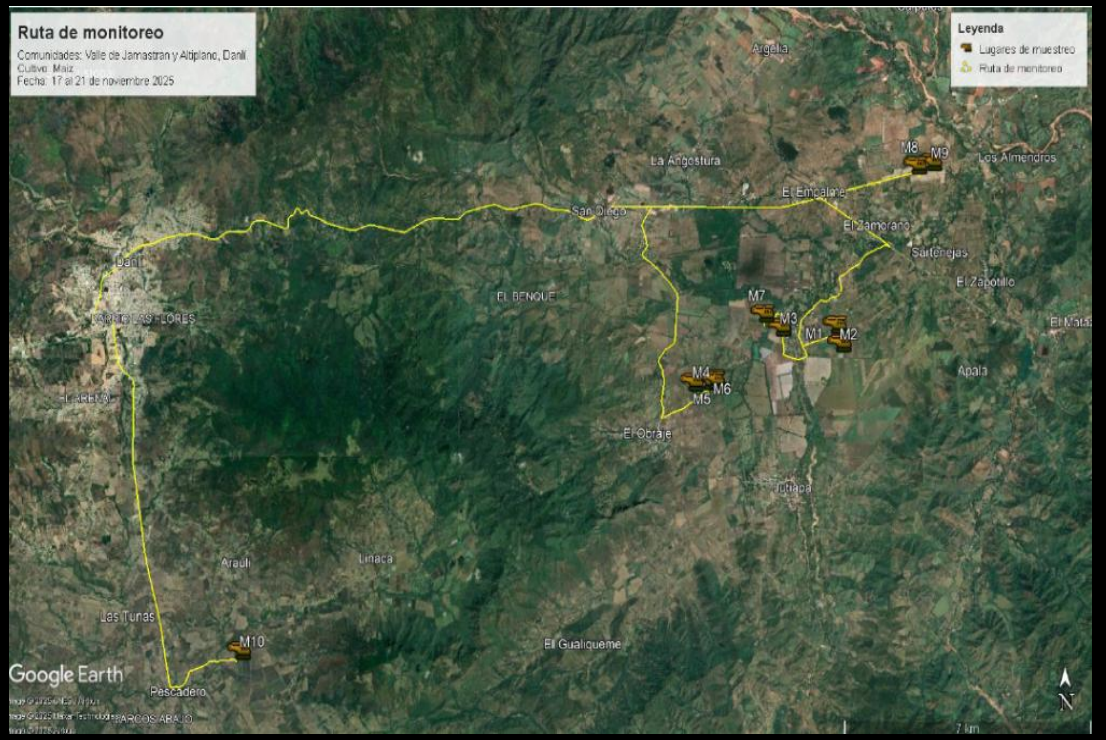
Maize Pilot Geographical and Farm Scope: Olancho and El Paraiso

Olancho (Lepaguare–Catacamas): 112 commercial maize farms, 10-1000 Ha





El Paraiso (Jamastrán Valley): 77 commercial maize farms, 2-154 Ha

BACK

Gap Analysis: Olancho and El Paraiso

1 Data Acquisition

- **Satellite imagery**: open source (10m/pixel, No Hi Res <1m/pixel
- **Drone imagery**: RGB, NIR
- Weather data: 3 AWS Olancho, 2 El Paraiso
- **Field data**: 2023 -2025 commercial only

2 Crop Area Mapping

- **NDVI/EVI** : Yes, 2023-2025 commercial
- **AI classification of crop types**: no

3 Crop Growth Monitoring

- **Track seasonal vegetation**: yes, limited to commercial
- **Detect anomalies**: yes, at national level only GADAS, farm level commercial only

4 Crop Model Assimilation

- **Simulate growth**: no. Fertility and weather data missing at farm level. Soilfer and ZARC FAO
- **Assimilate LAI & biomass**: no

5 AI Yield Estimation

- **ML neural networks/DL CNN models on satellite + weather time-series**: no
- **Bias Correction**: no. Incomplete field estimations, no uncertainties measured

6 Production Monitoring

- **Area × Yield**: limited to commercial, field measurements not systematic
- **Regional production**: limited to commercial
- **Decisions: agroindustry and SAG**

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Pilot-associated research 2026-2027

Component	Experiment
Crop identification	Field-validated: maize, beans, pasture, bare soil: uncertainties and biases
Crop Area	Uncertainty components and biases: satellite vs. drone vs. field measurement
Crop Yield Model	Compare model fit and cost effectiveness of open-source Sentinel-2 satellite imagery (10m/pixel) vs. high-resolution PlanetScope imagery (<1m/pixel)

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Pilot escalation roadmap

Landscape	Department	National
- 2027-2028 conducted by SISAGRO: Pilot expanded to semi-commercial scale	**2029** SISAGRO monitors and reports Olancho and El Paraiso three planting seasons: *primera, postrera and late postrera 2029*	**2030** First annual maize and bean production report

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THANK YOU

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