Ajayu (Spirit in Aymara)
Agri-Fintech AI Platform

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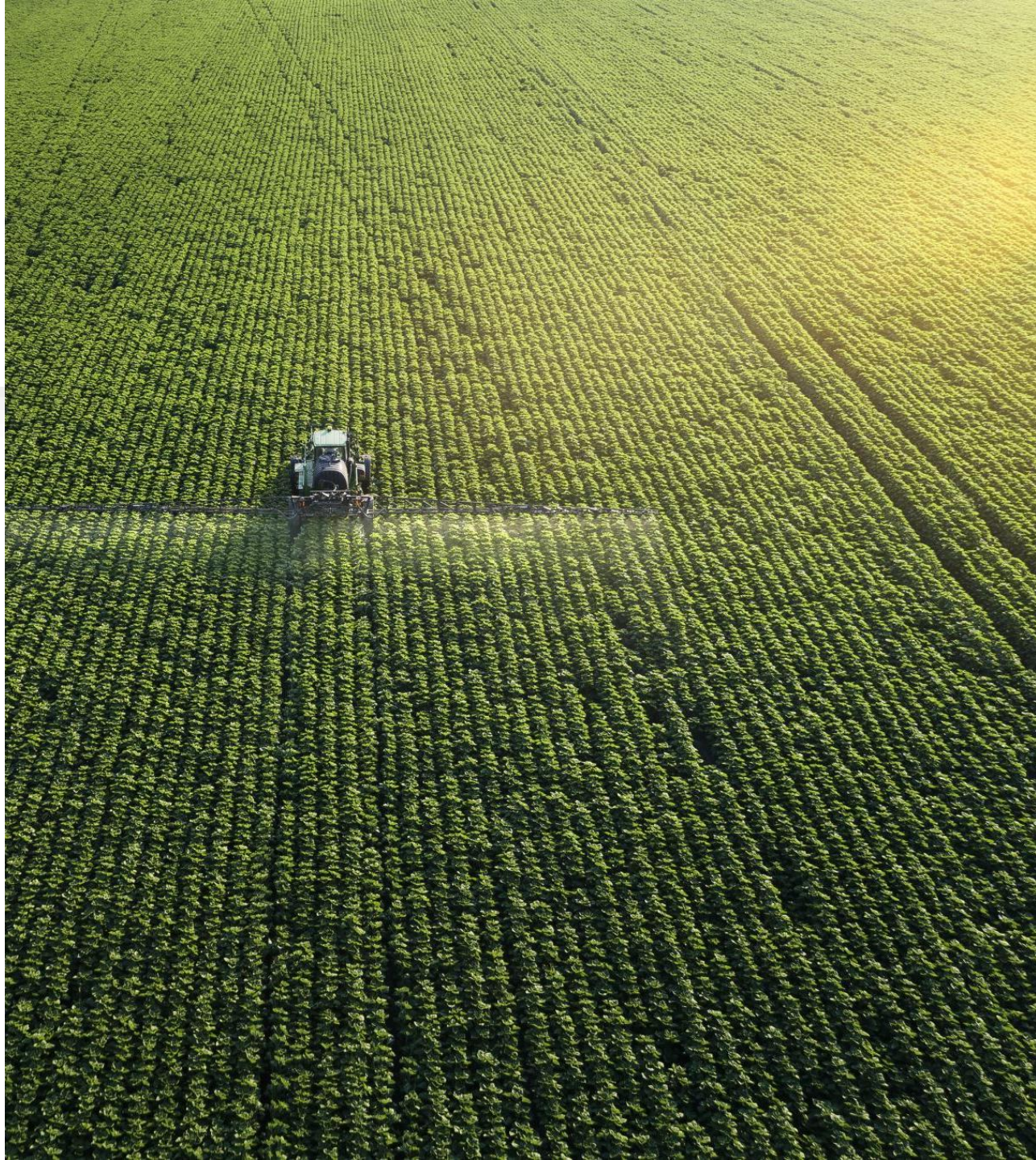
Integrated Data Intelligence for Sustainable and Inclusive Agricultural Finance

Powered by District-Level Spatial, Climate, Land, Labor, and Export Insights

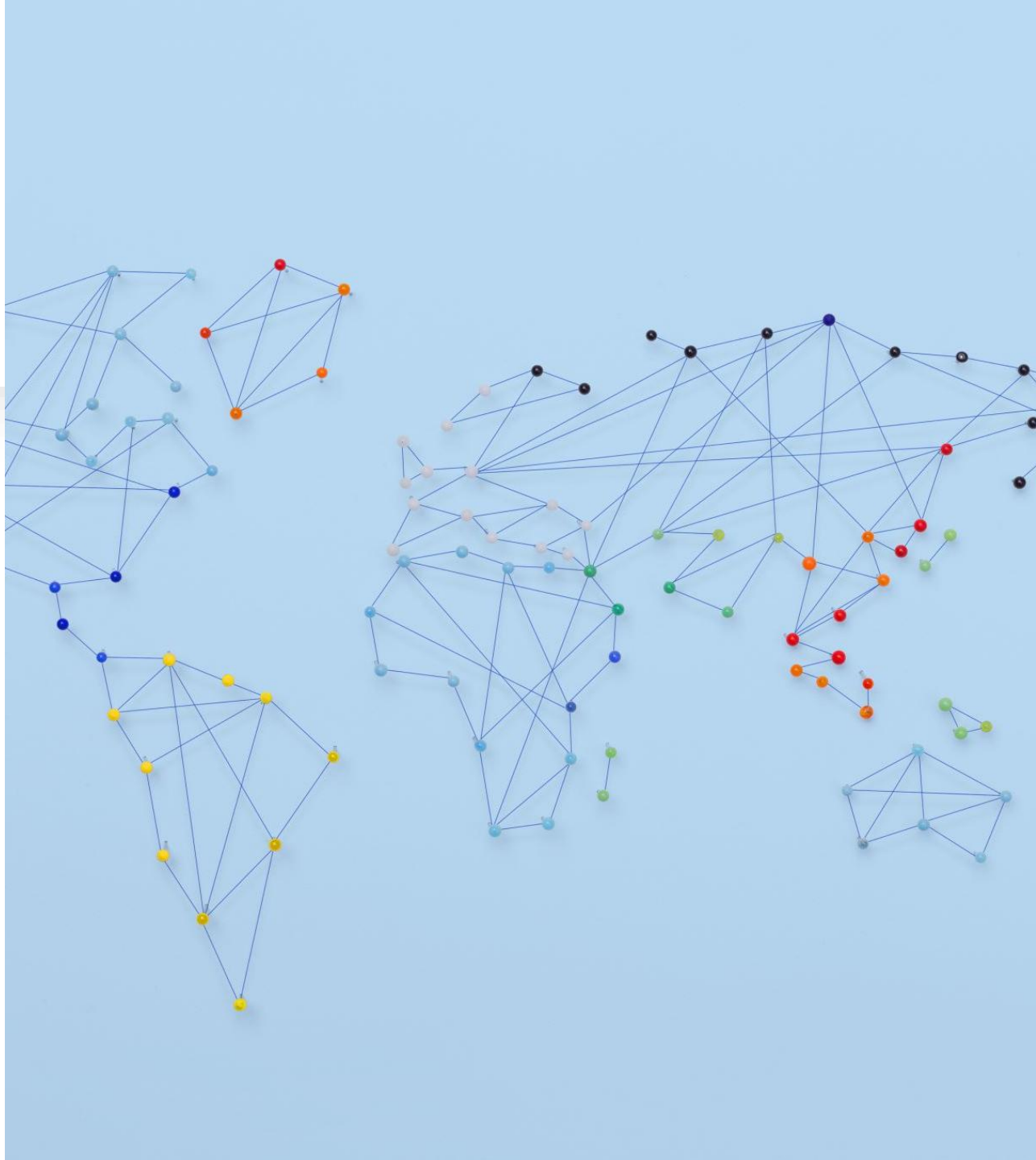
Executive Summary

- Objective: to integrate climate, spatial, socioeconomic, and production data into a modular AI system that supports credit, traceability, insurance, and grant scoring **for over 800,000 U.S. export-linked horticultural producers in Peru**.
- Problem Statement: Peruvian farmers face fragmented access to finance, limited digital traceability, and uneven adaptation to climate risks. Traditional models do not account for granular, district-level disparities in water, land, labor, and training.
- Technical Solution: Ajayu is a modular AI framework built on Peru's official geospatial and agricultural datasets containing geospatial, agricultural, and exports metrics, as well as metrics from IoT layers. It uses over 60 engineered metrics grouped into six financial risk intelligence domains: Climate, Water, Land Use, Labor, Training, and Traceability.



Spatial & Geolocation Framework

- UBIGEO-linked geospatial dataset with 1,892 districts / 196 provinces / 25 regions
- Includes: latitude, longitude, altitude, area (km^2)
- Enables mapping of climate, productivity, logistics, and financial access
- Supports real-time dashboarding and risk mapping



Climate & Environmental Indicators

DISTRICT-LEVEL RAINFALL, TEMPERATURE, AND HUMIDITY (HISTORICAL AND AVERAGE)

DROUGHT EVENT TRACKING WITH FREQUENCY SCORING

RAINFALL SEASONALITY AND TEMPERATURE EXTREMES INTEGRATED INTO RISK MODELS

FEEDS AI-BASED YIELD PREDICTION AND CREDIT SCORING

Water Access & Agricultural Use

DISTRICT-LEVEL ACCESS TO WATER RESERVOIRS AND IRRIGATED LAND

AGRICULTURAL WATER CONSUMPTION BY CROP AND REGION

IRRIGATION PRESENCE SCORED BY EXTENSION AREA

SUPPORTS WATER CREDIT MODELING AND DROUGHT RESILIENCE PLANNING

Land Use, Cropping & Production

LAND USE BY FARMING PURPOSE AND CROP TYPE

ANNUAL HARVESTED AREA BY DISTRICT AND CROP

IRRIGATED VS NON-IRRIGATED LAND BY EXTENSION

FEATURES: LAND PRODUCTIVITY, IRRIGATION RATIO, CROP ROTATION DIVERSITY

Employment & Socioeconomic Profiles

DISTRICT-LEVEL AGRICULTURE EMPLOYMENT RATES

FARMER DENSITY COMPUTED PER KM^2

LABOR INTENSITY MAPPED TO LAND AND PRODUCTIVITY METRICS

SUPPORTS INCLUSION SCORING AND COOPERATIVE READINESS

Training & Capacity Building Layer

TRAINING ACTIVITIES NUMBERS, TRAINING PARTICIPATION, ACCESS

AI-FLAGGED TRAINING GAPS IN FINANCIAL LITERACY, SUSTAINABLE FARMING, AND AGRI-TECH

MASSIVE MOBILE/INTERNET PENETRATION ENABLES MOBILE-FIRST DELIVERY

DISTRICT-LEVEL TRAINING FOCALIZED DELIVERY CHANNEL SCORING (PER PRODUCT/LOCATION)

Integrated AI Feature Matrix

OVER 60 DISTRICT-LEVEL FEATURES GROUPED BY CATEGORY: CLIMATE, LAND, WATER, LABOR, TRAINING, EXPORT

FULLY SPATIAL MASTER DATASET WITH GEOSPATIAL AND SOCIO-ECONOMIC INTEGRATION

SUPPORTS CREDIT SCORING, PRODUCTIVITY PREDICTION, PORTFOLIO STRESS TESTING

INPUT-READY FOR ML PIPELINES, POWER BI DASHBOARDS, AND AUTOMATED SLIDE GENERATION

Synthesis: Ajayu

BUILT FROM PERU'S MOST GRANULAR PUBLIC DATA SOURCES

DESIGNED FOR REAL-TIME CREDIT AND YIELD SCORING

SUPPORTS SUSTAINABLE FINANCE, CLIMATE RESILIENCE, AND INCLUSIVE GROWTH

A SCALABLE, REPLICABLE MODEL FOR ANDEAN AGRI-FINANCE TRANSFORMATION