IIT Tirupati Navavishkār I-Hub Foundation | भारतीय प्रौद्योगिकी संस्थान तिरुपति TIRUPATI | NM-ICPS | विज्ञान एवं प्रौद्योगिकी विभाग DEPARTMENT OF SCIENCE & TECHNOLOGY | INCUBATION AND INNOVATION IIT KANPUR / STARTUP INCUBATION AND INNOVATION CENTRE IIT KANPUR | ScaNxt WHERE AGRICULTURE MEETS TECHNOLOGY

Powered By
GEO-INTEL LAB

SMART SOIL TESTING AND PEST, NUTRIENT AND AGRONOMIC ADVISORY SYSTEM

Agriculture

Pilot District
Varanasi, Uttar Pradesh

Geospatial Innovation Accelerator
FIRST IIT Kanpur

Technology Summary

A portable, chemical-free device using infrared spectroscopy, IoT, and AI/ML to measure six soil parameters (NPK, Organic Carbon, CEC, clay content) in few minutes. It provides instant results via the Bhu Parikshak app, cloud storage for tracking, and AI-driven fertilizer recommendations, enabling precision agriculture for smallholder farmers.

An IoT-based, solar-powered device with AI-powered cameras, UV light, and pheromone traps for real-time pest monitoring. It identifies pest species, logs data, integrates weather patterns for predictive analytics, and sends alerts via the Agrolens app, reducing pesticide use and crop losses.

Both products form an integrated ecosystem for soil health and pest management, delivering data-driven insights through the Agrolens app to optimize crop yields and promote sustainable farming practices.

Technology Readiness Level:
9

Value Proposition:

ScaNxt Scientific Technologies delivers an GIS integrated integrated, AI- and IoT-powered ecosystem that empowers smallholder farmers with data-driven soil health and pest intelligence, enabling precision agriculture at an affordable cost. Our BhuParikshak Smart Soil Testing Device and AI-based Pest Detection System work together to provide instant, accurate, and actionable insights on soil nutrients, pest threats, and fertilizer requirements, all accessible via the Agrolens app.

By eliminating chemical testing, reducing pesticide dependency, and optimizing fertilizer use, ScaNxt enhances farm productivity, profitability, and environmental sustainability. The solution bridges critical information gaps in rural agriculture, offering lab-grade accuracy in the field and GIS integrated predictive intelligence that helps preventing crop losses.

Market Potential / Deployment Plan

ScaNxt operates in a massive global opportunity size with a Total Addressable Market (TAM) of USD 25 billion, driven by the convergence of IoT in agriculture, AI-powered solutions, and soil testing technologies. Within this, our Serviceable Available Market (SAM) is USD 2 billion, representing the segment directly aligned with our core offerings in soil diagnostics, pest management, and post-harvest solutions. From this, ScaNxt is strategically positioned to capture a Serviceable Obtainable Market (SOM) of USD 250 million in the near term, leveraging our proprietary chemical-free soil testing technology, AI-driven pest detection, and affordable farmer-centric model. This clearly demonstrates that while we are targeting a realistic market share, we are embedded in a multi-billion-dollar growth space, ensuring scalability, sustainability, and long-term impact.

Deployment Plan (Next 12–18 Months):

- Scale BhuParikshak and Pest Detection Systems across cluster of 10,000+ villages in collaboration with Village level entrepreneurs, FPOs, agri-input companies, CSR programs and governments.
- Expand exports through strategic partnerships in Africa and Southeast Asia.

Applications

ScaNxt's deep-tech solutions, BhuParikshak Soil Testing Device and AI-based Pest Detection Station, are being successfully deployed across India and internationally to drive precision, affordability, and sustainability in agriculture. With over 1,000+ IoT hardware units deployed, 60,467 farmers served, and 60,401 plots registered, ScaNxt is transforming field-level decision-making and productivity.

Our technologies are currently operational across 25+ states, 150+ districts, and 6 countries, reaching farmers through 150+ B2B partners and several Farmer Producer Companies (FPCs) such as Keshavpura FPC and Swabalambi Odragreen FPC. We also collaborate with leading NGOs and CSR foundations including Ambuja Cement Foundation, HCL Foundation, Adani Foundation, and Isha Outreach to integrate climate-smart practices at the grassroots.

In the agri-industry ecosystem, ScaNxt partners with enterprises such as Aries Agro and ITC to deliver data-driven soil, pest, and advisory services. These applications collectively empower smallholders, enhance productivity, and build a sustainable, climate-resilient agriculture value chain.

ScaNxt's integrated deep-tech ecosystem has broad applications across the agricultural value chain, from soil health management to pest control.

Soil Diagnostics & Fertility Management: The BhuParikshak Soil Testing Device enables instant, chemical-free soil analysis, helping farmers, agronomists, and FPOs make data-driven fertilizer and crop planning decisions. It supports precision nutrient management and reduces chemical fertilizer dependency.

Pest Detection & Crop Protection: The AI-based Pest Detection Station enables real-time pest monitoring, species identification, and predictive alerts, allowing early intervention and reducing crop losses by up to 30%. It is applicable in field crops, horticulture, and plantation systems.

Policy & Research Applications: Aggregated soil and pest data support agri-departments, research institutes, and policy makers in formulating region-specific climate-smart strategies.

Environmental / Social Impact

ScaNxt's integrated technologies directly contribute to emission reduction and climate resilience by optimizing resource use across the agricultural cycle. BhuParikshak, our real-time, chemical-free soil testing device, empowers farmers to apply the precise type and quantity of nutrients needed, significantly reducing the overuse of synthetic fertilisers. Our AI-powered Pest Detection System facilitates early pest identification and enables targeted spraying, drastically reducing the reliance on blanket pesticide applications. This minimises chemical runoff into the environment and cuts down on emissions from excessive pesticide production, transport, and use of fuel-powered sprayers indirectly. Moreover, the adoption of these technologies is expected to reduce resource usage, specifically water, fertilisers, and pesticides by 15-30%, promoting greater cost efficiency and minimizing environmental impact.

Socially, ScaNxt fosters rural entrepreneurship and inclusive growth. By training village youth and Farmer Producer Organizations (FPOs) to operate our devices, we create local green jobs and enable farmers to make informed, profitable decisions. With a reach of 60,000+ farmers across 25 states, our impact extends beyond productivity, it builds climate resilience, financial stability, and self-reliance for India's agricultural communities.

Contribution to Sustainable Development Goals (SDGs)

SDG 8, 9, 12 & 13

Surendranagar, Gujarat, India

Battery slot
Buzzer
LED
Ergonomic design, slip free grip
Power Button
Reset Button
Charging Indicator
Charging Slot- Type C
Soil Cup

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