AGRICULTURAL INNOVATION

Electromagnetic Soil Restoration

Global Market Prospects & Comparative Analysis

Global Analysis Market Insights Sustainable Tech

Problem solution

Today we have a way of electromagnetic control of locusts and not only with it (Colorado potato beetle, aphids, pests of grapes, pests of bananas, pineapples and other pests available in countries with humid and hot climate.), We have no problems and high costs were able to cope with a variety of diseases, called "Tropical Rage 4" (TR
4) posing a threat to the Cavendish banana varieties - they are the basis of the world
production and export of these fruits, the Virus " Panama disease"

To obtain an effective result, it is optimal to have a description and materials for laboratory research. If you have the results of research of your laboratories and the conclusions of experts on your problem, it will speed up and simplify our task. We will find the best solution to your problem quickly and efficiently.

Problem solution

The classic scheme of our equipment:

A complex treatment is carried out in the spring before Bud blooming combined with preparations for pest control (5-10% of the usually introduced volume), immediately after flowering similar treatment. Following the same processing is done 15-20 days after flowering in early summer from tests of pests such as the Codling moth. During fruit growth a constantly running equipment on a specific schedule processing space with the future harvest . After harvesting, processing is carried out to increase the yield for the next year (an increased number of flower buds are formed) and to protect plants from diseases. Yield increases by at least 30%, sugar content increases minimum by 0.5 units, extended shelf life.

Problem solution

The technology allows to eliminate lesions of powdery mildew, fruit moth, aphids, scab. (With additional equipment, we can solve the problem with worms and parasites in the soil and damaging the roots and infecting all fruit - bearing plants-destroy all the eggs of parasites and worms) for processing during the year on 500 hectares of plantations need 4-6 Autonomous installation with solar panels, which are installed on metal poles. And in the presence of parasites in the soil + 4-6 stand-alone installation with metal rods in the ground for tillage). To calculate the capacity of the equipment, we need the figures how many tons of bananas are going now from one hectare of plantations.

Problem solution

Conditions: provision of equipment for rent for at least a year. All the hardware after selecting settings, delivered and installed on prepared sites, posts etc by our experts. The safety of the leased equipment is made by the tenant. (round-the-clock protection of each installed device is desirable)

We warn that in case of attempt of opening of the equipment not by our experts, the equipment becomes unusable. In case of theft or displacement of the equipment from the installation point, the equipment will be automatically turned off and removed from the operating state. All equipment has proximity sensors, attempts to open, dismantle, sound and light alarm, GPS/GLONASS sensors. Video/ audio monitoring sensors.

An example of the effect of technology on soil restoration.

Before and After exposure to technology.

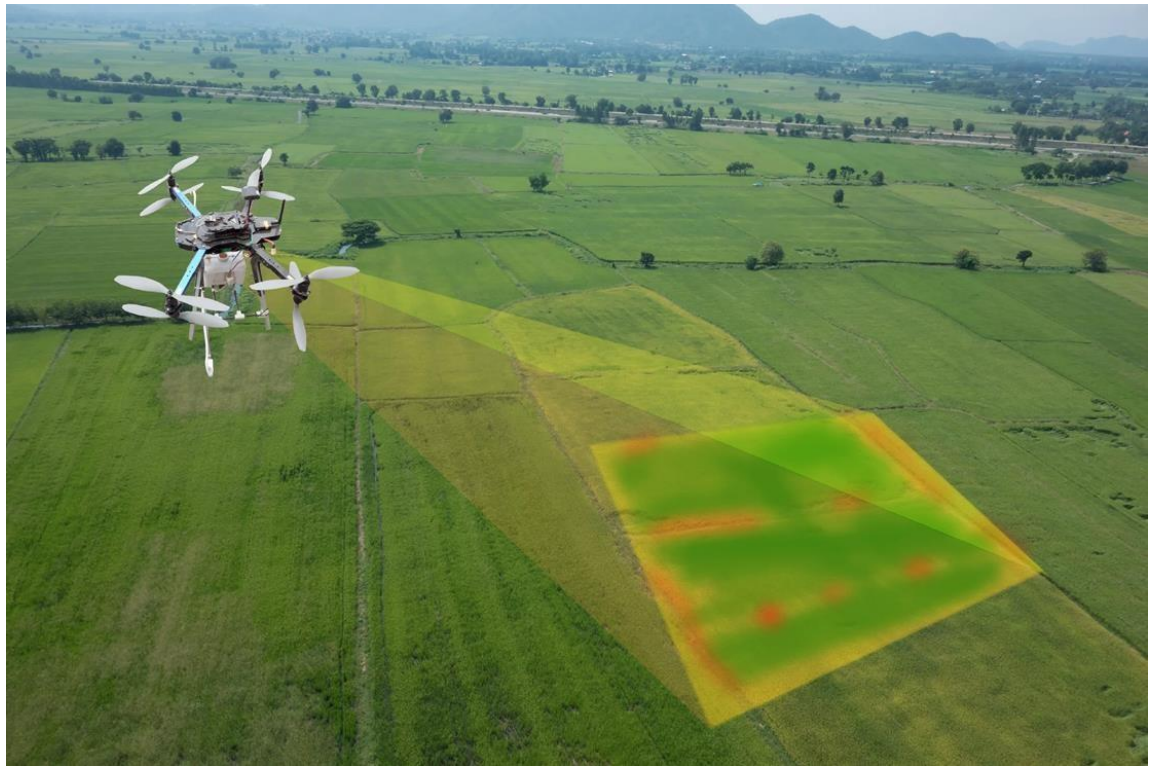
The period of technology impact on the processed object is 1 month.

Before and After

Industrial example

Industrial design with an independent power source (solar battery) and an Autonomous generator for processing plantations.

Agro aircraft drone



mobile industrial example and an Autonomous generator for processing plantations. Agro aircraft drone

mobile industrial example and an Autonomous generator for processing plantations.

Agro aircraft drone

Soil regeneration generator

Our company suggests implementing a new technology to restore the natural structure and fertility of soils. The technology allows to restore the physical and chemical parameters of the soil, its natural microbiological background, to disinfect from the pathogenic microflora. The use of technology makes it possible to efficiently clean and restore areas that have been contaminated with oil products or substances with similar properties. The development of the technology was started in 1972 in the laboratory of LIDAR RAS USSR. Since 1986, its successful production deployments have taken place in various regions of Russia and Ukraine. During the last three years , the technology has been improved and today it is ready for industrial implementation. Currently, it is a ready-made product for mass use.

Technology capabilities

The technology is based on a universal method of controlling processes using low-frequency electromagnetic fields of low intensity. The method allows to activate or suppress the vital activity of microbiological objects, inhibit the development of pathogenic microflora, and control the course of chemical processes. An important advantage of the technology lies in the fact that the means to achieve its high efficiency is not the introduction into the processes of artificial elements, unusual for them from nature, but also the normalization of these processes and the elimination of the consequences of violent influence on them occurring in the soil and plant organs. Due to electromagnetic processing in the contaminated areas, the natural background of useful soil microflora is restored, vital activity of soil-forming microorganisms and animals is activated, the structure, agrochemical and agrophysical properties of soils are normalized.

Technology capabilities

The humus content in the soil is increasing. There comes a dynamic balance of intertwining processes of humification and mineralization of organic substances, both in the soil and systematically entering it. That is, soil fertility is increasing.

Light soils increase moisture capacity, water retention capacity. Consequently, the leaching of nutrients from the plow layer is reduced, the nutrition of plants is improved, and their resistance to drought is improved.

Heavy soils improve water and air permeability, increasing the amount of available moisture. The soil becomes more friable with a fine-lumpy structure. A decrease in the non-capillary porosity is prevented, leading to stagnation of moisture on the surface. On the soils treated on the proposed technology, the resistance of cultivated plants to unfavorable external factors increases. Plants better tolerate drought and frost.

TECHNOLOGY OVERVIEW

Electromagnetic Soil Restoration

A paradigm shift in sustainable agriculture

Core Technology

Low-frequency electromagnetic fields activate or suppress microbiological activity, inhibit pathogenic microflora, and normalize soil processes without chemical intervention.

Pest Control

Effective against locusts, Colorado potato beetle, aphids, grape pests, banana pests, and other tropical climate pests through electromagnetic field disruption.

Soil Regeneration

Restores natural soil structure, fertility, and microbiological background. Disinfects from pathogenic microflora and cleans oil-contaminated areas.

Key Performance Metrics

Yield Increase	30%+
Sugar Content	+0.5
Shelf Life	Extended

System Specifications

- **Autonomous Operation**
  Solar-powered with GPS/GLONASS tracking
- **Coverage Capacity**
  4-6 units per 500 hectares
- **Security Features**
  Proximity sensors, anti-theft, video monitoring
- **Treatment Schedule**
  Pre-bloom, post-flowering, fruit growth phases

NAVIGATION

Contents

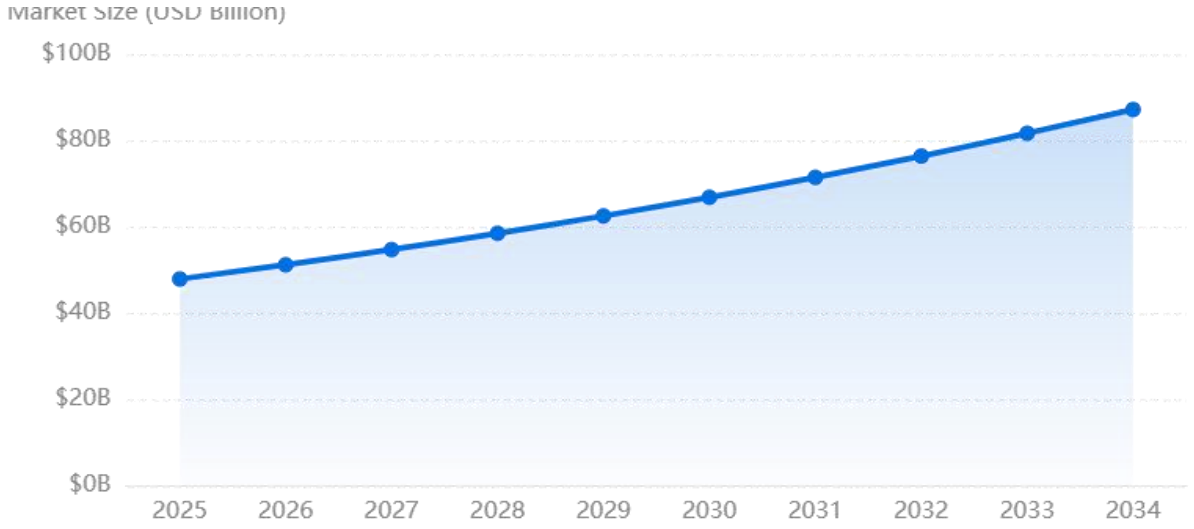
GLOBAL MARKET ANALYSIS

Soil Restoration Market

Market size, growth trajectory, and key drivers

2025 Market Size	2034 Projection	Equipment Market
$47.82B	**$87.13B**	**$6.91B**
Global soil remediation	CAGR 6.89%	By 2033 (7.2% CAGR)

Market Growth Projection (2025-2034)



Key Market Drivers

Strict Environmental Regulations
Government mandates for land cleanup

Soil Contamination Concerns
Industrial pollution and waste disposal

Sustainable Agriculture Demand
Growing focus on regenerative practices

Critical Statistics

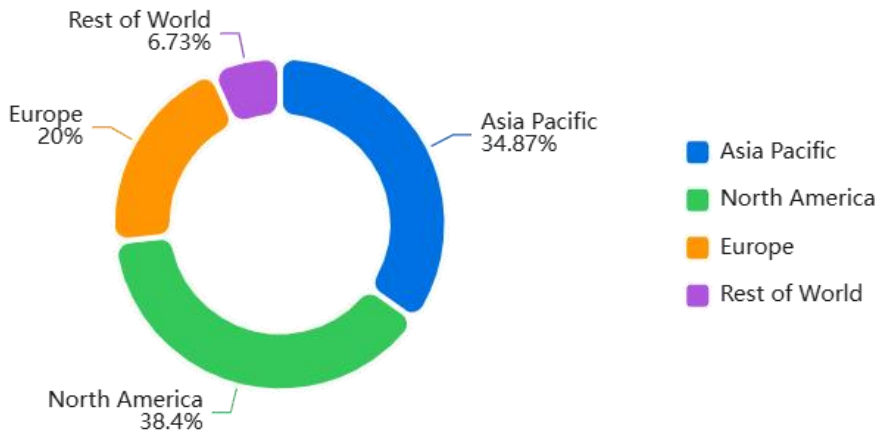
Contaminated Sites	Rising Globally
China Soil Contamination	~16%
Brownfield Projects	Increasing

REGIONAL ANALYSIS

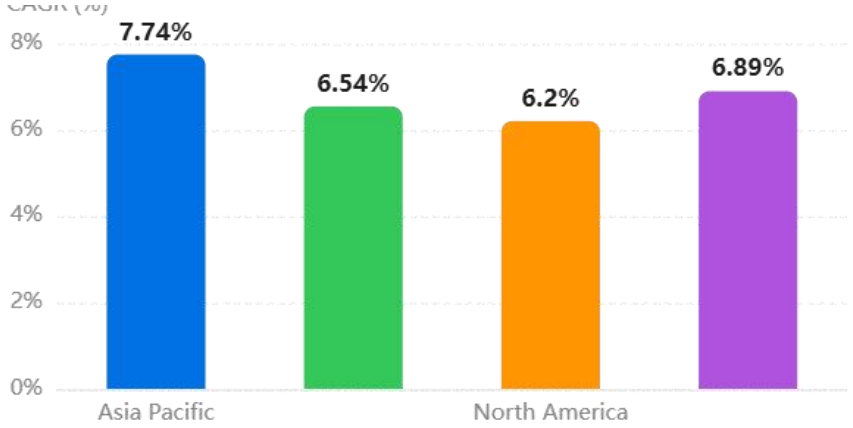
Regional Market Share

Comparative analysis of regional markets and growth trajectories

Regional Market Distribution (2024)



Growth Rate Comparison (CAGR 2025-2034)



Asia Pacific

Market Share	34.87%
2024 Value	$16.82B
CAGR	7.74%

China: 16% soil contaminated; massive remediation programs

North America

Equipment Share	38.4%
Key Driver	EPA Regs
Focus	Brownfields

Strong environmental enforcement, extensive remediation

Europe

Growth Rate	6.54%
Fastest	CAGR
Policy	EU Strategy

EU Soil Thematic Strategy, strict contamination regulations

Rest of World

Share	~20%
Key Regions	LATAM, MEA
Opportunity	Emerging

Growing awareness, increasing investment potential

ADOPTION ANALYSIS

Technology Adoption by Country

Precision agriculture adoption rates across leading markets

Country/Region	Technology	Adoption Rate	Key Insights
Denmark	All PA Technologies	78% of crop area	Leading European adopter; 67% RTK GNSS guidance, 57% sprayer section control
Australia	Autosteer	86% large grain farms	First country with commercial GNSS (1997); 44% yield monitoring adoption
United States	Yield Monitoring	70% corn crop area	93% autosteer in Northern Great Plains; VRT at 37% for corn
Canada	Autosteer	27% of all farms	48% in Saskatchewan; 32% soil sample testing adoption
Hungary	Variable Rate Tech	4.9% of farms	Growing from 2.8% (2020); 5.3% guided steering adoption
France	GNSS Geolocation	50% of farmers	20% yield monitors, 10% VRT, 8% satellite remote sensing

Key Insight
Larger farms adopt PA faster; farm size is a critical factor

Trend
Autosteer and yield monitoring lead adoption globally

Challenge
VRT and advanced tech adoption remains below 15% in most regions

CRITICAL APPLICATION

The TR4 Banana Crisis

Fusarium Wilt Tropical Race 4: A global threat to food security

Cavendish Banana

The global standard variety accounts for **95% of world banana trade** and **50% of global production**.

Threat Level

80%

of global plantations at risk

$25B

global economic risk

Impact

- 100% crop loss potential
- Soil unusable for 50+ years
- No effective treatment exists
- Threatens smallholder livelihoods

Global Spread Timeline

1. **1970s - Asia**
   First detected in Taiwan and Southeast Asia
2. **2013 - Africa**
   Reached Mozambique and African continent
3. **2019 - Latin America**
   Detected in Colombia; major producing region at risk
4. **2021-2023 - South America**
   Peru (2021), Venezuela (2023) confirmed cases

The Opportunity for Electromagnetic Technology

With no effective chemical treatment available, electromagnetic soil restoration offers a promising alternative. The technology's ability to **disinfect soil from pathogenic microflora** and **restore natural microbiological balance** could provide a breakthrough solution for TR4-affected regions. Field validation and rapid deployment are critical.

COMPARATIVE ANALYSIS

Technology Comparison Matrix

Electromagnetic vs. conventional soil restoration methods

Technology	Market Share	CAGR	Effectiveness	Environmental Impact	Cost Profile
Chemical Remediation Oxidants, stabilizers	41%	7.8%	Rapid neutralization of hazardous contaminants	High - Chemical residues, groundwater risk	Moderate OPEX, chemical purchase ongoing
Biological Methods Bioremediation, bacteria	~25%	8.57%	Effective for organic contaminants; slow process	Low - Eco-friendly, sustainable	Low OPEX, long treatment duration (weeks-months)
Physical Remediation Soil washing, thermal	45.7%	6.5%	Highly effective for petroleum hydrocarbons	Moderate - Energy intensive	High CAPEX, high energy costs
Electromagnetic Emerging Technology	<5%	15%+	**Dual pest-soil treatment, 30%+ yield increase**	**Very Low - Chemical-free, sustainable**	**Moderate CAPEX, very low OPEX**

Unique Advantages

- ✓ No chemical residues
- ✓ Autonomous solar operation
- ✓ Dual pest + soil treatment
- ✓ Long-term cost efficiency

Market Challenges

- — High initial investment
- — Limited awareness/education
- — Regulatory approval needed
- — Field validation gaps

Growth Potential

- ↑ Fastest growing segment
- ↑ Sustainability-driven demand
- ↑ Chemical-free regulations
- ↑ Emerging market opportunities

INVESTMENT LANDSCAPE

Investment & Growth Trends 2025

Capital flows and emerging opportunities in AgTech

Precision Farming Market
$21.45B
by 2032 (9.5% CAGR)
From $11.38B in 2025

Soil Treatment Market
$54.22B
by 2029 (6.0% CAGR)
From $42.92B in 2025

Indoor Farming Tech
$68B
by 2029 (12.9% CAGR)
From $37B in 2024

Top Investment Priorities

Robotics & Automation — High
Mechanical weeding, autonomous harvesting, drone spraying

AI & Machine Learning — High
Predictive analytics, computer vision, decision support

Biotechnology — High
Gene editing, biologicals, epigenetics, biostimulants

Regenerative Agriculture — Growing
Soil health, carbon sequestration, sustainable practices

Emerging Opportunities

Satellite & Drone Monitoring
30% of Danish farmland using satellite/drone imagery (2023)

Cloud & Data Analytics
Cloud storage adoption: 14% (2017) → 40% (2023)

Blockchain Traceability
Supply chain transparency, premium market access

Agrivoltaics & Energy
Solar integration, green hydrogen from agricultural waste

Investor Insight

GLOBAL PROSPECTS

Market Opportunities by Region

Strategic positioning and regional potential analysis

Asia Pacific

Largest market opportunity

- **Massive Agricultural Base**
  Extensive farming operations across China, India, Southeast Asia
- **Rising Contamination**
  China: ~16% soil contaminated; national remediation programs launched
- **Government Initiatives**
  Beijing 2025 action plans for soil pollution control
- **Fastest Growth Rate**
  7.74% CAGR; $16.82B (2024) → $32.90B (2034)

Market Readiness

Europe

Sustainability leadership

- **Stringent Regulations**
  EU Soil Thematic Strategy, mandatory remediation requirements
- **Sustainability Focus**
  Green Deal, carbon neutrality goals drive chemical-free solutions
- **Brownfield Redevelopment**
  Urban renewal projects require soil restoration
- **Premium Market**
  High willingness to pay for sustainable technology

Market Readiness

North America

Technology adoption leader

- **38.4% equipment market share**
- **70% corn yield monitoring adoption**
- **Strong EPA enforcement**
- **Large-scale farming operations**

Barriers: High equipment costs, ROI concerns

Latin America & Africa

Emerging opportunities

- **Brazil & Argentina: Large-scale farming**
- **TR4 banana crisis in Ecuador, Colombia**
- **Growing awareness & investment**
- **FAO training programs expanding**

Barriers: Limited infrastructure, financing gaps

COMPETITIVE POSITIONING

Strategic Market Position

Competitive advantages and market entry strategy

Competitive Advantages

1. **Chemical-Free Operation**
   Zero toxic residues, meets organic certification requirements, biodiversity-safe
2. **Dual Treatment Capability**
   Simultaneous pest control + soil restoration; addresses multiple problems
3. **Autonomous Solar Power**
   Off-grid operation, 24/7 monitoring, GPS tracking, anti-theft security
4. **Proven Results**
   30%+ yield increase, +0.5 sugar content, extended shelf life

Market Entry Strategy

Phase 1: Pilot Programs
Target high-value crops (bananas, grapes) in crisis regions

Phase 2: Strategic Partnerships
Collaborate with agricultural cooperatives, government programs

Phase 3: Certification & Standards
Obtain regulatory approvals, build industry standards

Phase 4: Scale & Diversify
Expand to row crops, forestry, urban agriculture

Target Markets: Asia Pacific (China, India), Europe (Germany, Netherlands), Latin America (Brazil, Ecuador)

Business Model

- ✓ Equipment leasing (1+ year)
- ✓ Full service installation
- ✓ Performance-based pricing
- ✓ Maintenance & support

Target Customers

- Large-scale plantations
- Agricultural cooperatives
- Government programs
- Organic certified farms

Revenue Potential

4-6 units	500 ha
Yield increase	30%+
Payback period	1-2 seasons

ROI attractive for high-value crops

THE FUTURE OF AGRICULTURE

A Paradigm Shift in Sustainable Agriculture

Electromagnetic soil restoration technology represents a transformative approach to addressing global food security challenges.

Chemical-Free

Zero toxic residues, organic certification ready, biodiversity-safe

Global Impact

Address TR4 crisis, restore degraded soils, secure food supply

Market Ready

Proven technology, $87B market by 2034, 15%+ growth potential

> With global soil degradation accelerating and food security at stake, innovative solutions combining electromagnetic treatment with AI and autonomous systems will define the next era of agricultural productivity.