

Indian Institute of Information Technology, Lucknow



Blockchain Technology

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Fertilisers Industries



AgroTrust

Innovating Agriculture for a Sustainable Future

Company Vision and Mission



Vision



To revolutionize agriculture by leveraging blockchain for transparent, authentic, and efficient supply chains.

Mission



To create a secure, traceable ecosystem that combats counterfeits and empowers stakeholders in agriculture.

Area of Scope

Sector: Agriculture and Supply Chain

Problem: Counterfeit fertilizers and pesticides, lack of transparency in distribution, and inefficiencies in supply chain management.

Idea Description:

- ✓ End-to-End Traceability
- ✓ Product Authentication
- ✓ Smart Contracts
- ✓ Immutable Records



Idea Description

AgroTrust is a blockchain-based platform designed to ensure transparency, authenticity, and efficient distribution of fertilizers and pesticides.

Key Features

- ✓ **End-to-End Traceability:** Tracks agricultural inputs from production to distribution and usage.
- ✓ **Product Authentication:** QR codes on product packaging allow farmers to verify the authenticity of the product.
- ✓ **Smart Contracts:** Automates compliance and ensures transparent transactions.
- ✓ **Immutable Records:** Blockchain ensures that all data are secure, tamper-proof, and accessible to stakeholders.



Domain Understanding

Current Value Chain:

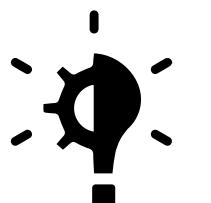
Manufacturers → Distributors → Retailers → Farmers



Pain Points:

- High prevalence of counterfeit products that affect crop yields.
- Lack of transparency in the movement and usage of fertilizers and pesticides.
- Inefficient inventory management by distributors and retailers.

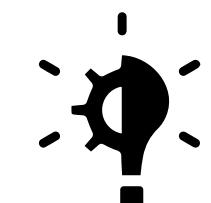
Value Chain disruption by AgroTrust



Tracking and Authentication



QR Code Integration



Data Visibility

Technology



Core Technology

Blockchain: Decentralized ledger to record transactions securely and immutably. Eliminates intermediaries and fosters direct interaction between stakeholders.

Smart Contracts: Self-executing contracts stored on the blockchain. Automatically enforce terms and conditions based on predefined rules.

Data Storage and Retrieval

Off-chain storage for large data files (e.g., product certificates, audit records).

On-chain references ensure secure access and authenticity verification.

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Frontend Technology

User-friendly interface for:

- Farmers to register products.
- Consumers to verify product authenticity.
- Utilize frameworks like React for dynamic UI development.
- Implement Web3.js or ethers.js for blockchain interaction.
- Features include:
 - **Product Registration Form:** Input fields for batch ID and manufacturer details.
 - **Verification Tool:** A search bar for consumers to check authenticity.
 - **Dashboard:** Display registered products and system analytics for admin users.



Backend Technology

Use Node.js or Django to build a robust backend:

- **API Creation:** Design REST APIs for product registration, retrieval, and verification.
- **Database Integration:** Store supplementary data in a secure database (e.g., MongoDB or PostgreSQL).

Blockchain integration: Use Web3.js or ethers.js to interact with smart contracts. Handle blockchain transactions securely and efficiently.

Features include:

- **Authentication:** Secure login for farmers and admins.
- **Product Management:** APIs to add, update, or retrieve product information.
- **Data Sync:** Ensure seamless syncing between on-chain and off-chain data.



Geography and Regulations

- **India:** A major agricultural economy where counterfeit agricultural inputs are a significant problem.
- **Africa:** Emerging markets with similar challenges in agricultural supply chains.

Regulatory Bodies

India:

- Ministry of Agriculture & Farmers Welfare (agricoop.nic.in)
- Central Insecticides Board & Registration Committee (cibrc.gov.in)

Africa:

- AUDA-NEPAD (nepad.org)
- Kenya's Pest Control Products Board (pcpb.go.ke)



Relevant Regulations

- **India: Fertilizer (Control) Order, 1985**
- **Africa: Regional guidelines on pesticide regulations by AUDA-NEPAD**



AGRO TRUST

COMPETITIVE LANDSCAPE

Cropin

 **AgroStar**

PORTER'S FIVE FORCES



SWOT Analysis

OPPORTUNITY

- Untapped Markets in Developing Countries
- Expansion into Related Domains
- Government and Private Sector Support
- Increasing Consumer Demand for Transparency

THREATS

- Regulatory Complexity
- Resistance to Change
- Competition from Established AgriTech Platforms
- Cybersecurity Risks

STRENGTHS

- Blockchain-Driven Innovation
- Robust Value Proposition
- Alignment with Global Trends

WEAKNESSES

- Digital Literacy and Rural Connectivity Challenges
- High Initial Costs
- Scalability Issues



Funding

- Platform Development (\$200,000)
- Marketing and Awareness Campaigns (\$150,000)
- Regulatory Compliance and Partnerships (\$150,000)

Time for Launch

Year 1: Product Development and Pilot Testing

Year 2: Launch in India and Africa

Potential Partners

Fertilizer Manufacturers and Pesticide Companies

NGOs Promoting Sustainable Agriculture



Risk & Mitigation Strategies

RISKS

- Adoption Challenges
- Regulatory Risks
- Financial Risks
- Technological Risks



Mitigation Strategies

- Conduct extensive awareness campaigns
- Collaboration with legal experts and local authorities in the early stage.
- Focus on partnerships with government programs and private stakeholders.
- Robust encryption methods, regular audits

References

01

[Agro Chain - The Life of Wealth in Agriculture | IEEE Conference Publication](#)

03

[The rise of blockchain technology in agriculture and food supply chains - ScienceDirect](#)

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[Emerging opportunities for the application of blockchain in the agri-food industry](#)

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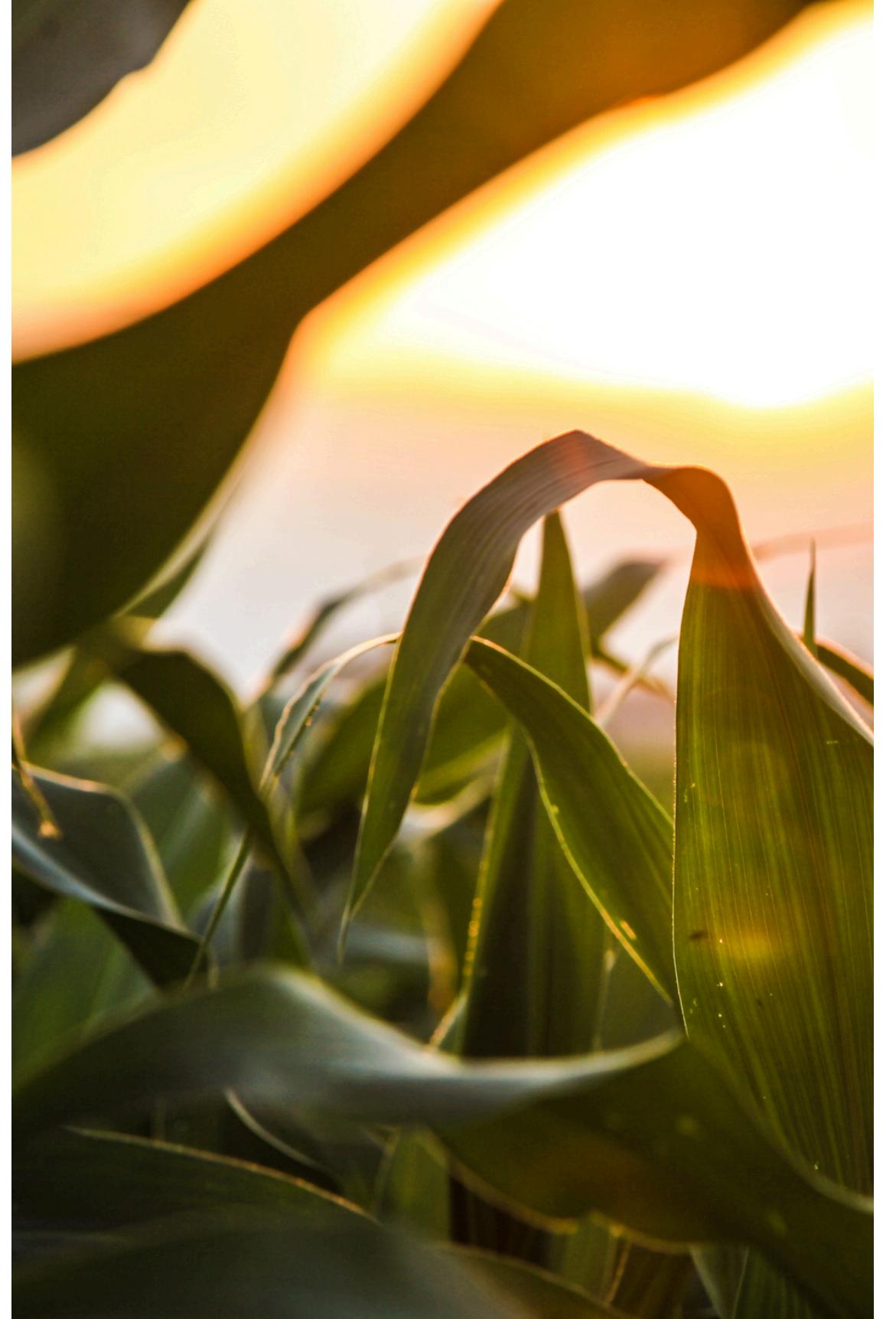
[The Dilemma of Fraudulent Pesticides in the Agrifood Sector: Analysis of Factors Affecting Farmers' Purchasing Behavior in Egypt](#)

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[Blockchain and artificial intelligence-empowered smart agriculture framework for maximizing human life expectancy - ScienceDirect](#)

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<https://chatgpt.com/share/67574c45-9b48-8001-8450-02f7e2981fe9>



Thank You!

