

User Guide: Blockchain Agricultural Produce Tracking System

Overview

This guide provides step-by-step instructions for all stakeholders (farmers, distributors, retailers, and consumers) to use the blockchain-based agricultural produce tracking system.

Getting Started

System Requirements

- Web browser (Chrome, Firefox, Safari) for web interface
- Smartphone with camera for mobile app (Android/iOS)
- Internet connection
- Ethereum wallet (MetaMask recommended)

Accessing the System

- **Web Interface:** Navigate to the deployed frontend URL
- **Mobile App:** Download and install the React Native app

For Farmers

Registering Produce

1. Access the web interface and log in as a farmer
2. Navigate to "Register Produce" section
3. Fill in the following details:
 - Origin: Location of the farm
 - Quality: Certification grade (e.g., Organic, Grade A)
 - Initial Price: Starting price per unit
4. Enter your Ethereum private key for transaction signing
5. Click "Register" to create the produce batch on the blockchain
6. Note the generated Produce ID for future reference

Managing Produce

1. View all your registered produce in the dashboard
2. Update quality information or pricing as needed
3. Deactivate produce batches when sold or expired
4. Monitor transfer requests from distributors

For Distributors

Receiving Produce

1. Log in to the web interface as a distributor
2. Browse available produce batches from farmers
3. Select produce to receive and enter logistics information:
 - Transportation method
 - Storage conditions
 - Expected delivery time
4. Confirm receipt to log the transfer on the blockchain

Managing Inventory

1. View received produce in your inventory dashboard
2. Update storage conditions and quality checks
3. Transfer produce to retailers with updated pricing
4. Generate reports for compliance and auditing

For Retailers

Receiving from Distributors

1. Access the retailer dashboard
2. Review incoming shipments from distributors
3. Verify produce quality and documentation
4. Accept or reject shipments based on quality standards
5. Set retail pricing for consumer sales

Managing Sales

1. Update pricing based on market conditions
2. Generate QR codes for each produce item
3. Attach QR codes to physical products
4. Monitor sales and inventory levels

For Consumers

Verifying Produce

1. Download and open the mobile app
2. Grant camera permissions for QR scanning
3. Point camera at the QR code on the produce
4. App automatically scans and retrieves produce information

Understanding Verification Results

The app displays:

- **Origin:** Farm location and farmer information
- **Quality:** Certification and quality grades
- **Price History:** All price changes from farm to store
- **Transfer Chain:** Complete journey of the produce
- **Timestamps:** When each step occurred

What to Look For

- **Consistent Pricing:** Ensure prices increase reasonably
- **Verified Quality:** Check for proper certifications
- **Complete Chain:** Verify all transfers are documented
- **Recent Updates:** Ensure information is current

Advanced Features

Batch Tracking

- Use Produce ID for detailed batch information
- View all items from the same batch
- Track recalls or quality issues across batches

Price Transparency

- Compare prices across the supply chain
- Identify unfair markups
- Make informed purchasing decisions

Quality Assurance

- Access quality certifications
- View storage and transportation conditions
- Report quality issues directly on the blockchain

Troubleshooting

Common Issues

QR Code Not Scanning

- Ensure good lighting
- Hold phone steady
- Clean camera lens
- Try different angles

Transaction Failures

- Check Ethereum wallet balance
- Verify network connection
- Ensure correct private key
- Wait for network confirmation

App Not Loading

- Check internet connection
- Clear app cache
- Restart the app
- Update to latest version

Support

- Contact system administrator for technical issues
- Report quality concerns through the app
- Access help documentation in the app menu

Security Best Practices

Wallet Management

- Never share your private key
- Use hardware wallets for large transactions
- Enable two-factor authentication
- Regularly backup wallet information

Data Privacy

- Only necessary information is stored on blockchain
- Personal data is encrypted
- Access is role-based and auditable

Safe Usage

- Verify QR codes on official products only
- Report suspicious activities
- Keep app and wallet software updated

Compliance and Regulations

Food Safety Standards

- System complies with GS1 standards
- Supports HACCP principles
- Enables traceability for recalls

Legal Compliance

- Immutable records for regulatory reporting
- Audit trails for all transactions
- Data retention according to regulations

Future Updates

- Stay updated with app notifications
- Check for new features regularly
- Provide feedback for system improvements

This guide will be updated as new features are added. For the latest information, check the app's help section or contact support.