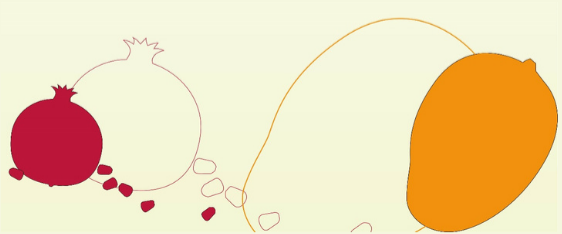
THE FRUITS AND VEGETABLES INDUSTRY SERIES

15 October 2026

Digital traceability and supply chain transparency: Policies for food safety and market access



Global Gateway

Funded by the European Union

Digital traceability in the fruit and vegetable sector

Reliable, shared data from field to shelf



Fenohery Tiana ANDRIAMANAMPISOA

Traceability

Food safety

Quickly identify and withdraw at-risk batches: pathogens, residues, foreign bodies

Compliance

Meet legal obligations, customer requirements and official controls

Trust

Prove origin and production methods: organic, local, labels, CSR initiatives

From paper ...

Tracing a batch takes hours (or even days), data scattered across each actor, evidence difficult to verify, etc.

... to digital

Data captured at source (scanning, sensors, ...), much faster searches, data shared between actors, time-stamped and searchable history, etc.

Basic principle and regulatory framework

- Unique identification of each trade unit via standardised codes (GTIN, barcodes, QR codes, ...)
- ability to link this information across digital systems, enabling rapid information flow in the event of a food safety crisis



- Exhaustive documentation of processing steps, including dates, locations, operators and handling conditions

Regulation

Traceability regulation varies across continents but is converging towards common requirements. For the EU, Regulation (EC) 178/2002 makes traceability mandatory for all food chain operators

From field to plate

Producer
Plot, harvest, inputs

Packing station
Sorting, grading, packaging, batch

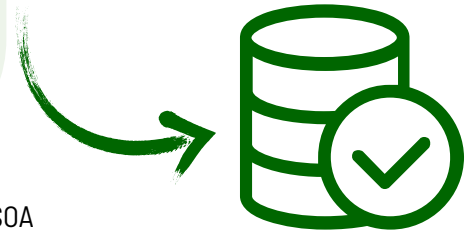
Logistics
Transport, warehousing, packaging

Store
Receiving, putting on sale

Consumer
Information from origin to sale, readable at the point of purchase

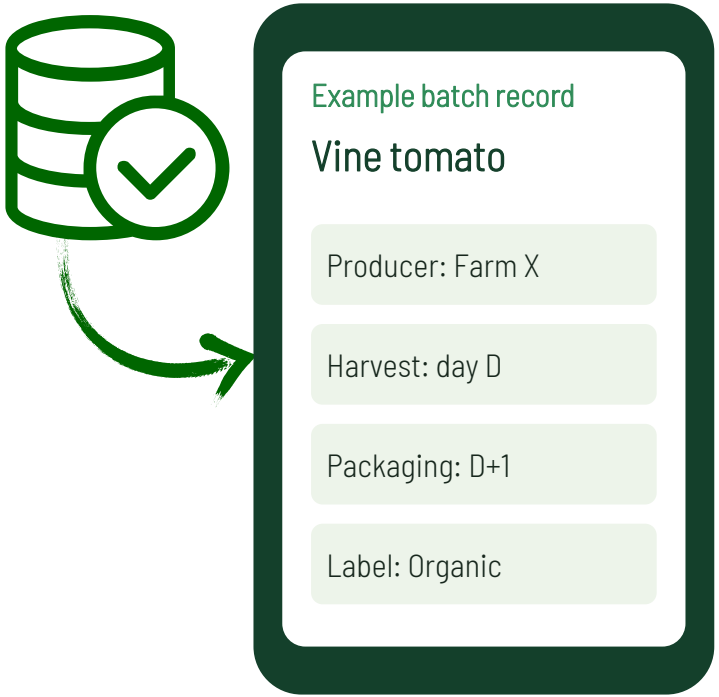
Records / logs

Nursery monitoring, field monitoring, irrigation, fertilisation, crop protection treatments, harvesting, produce washing, post-harvest treatment, packaging, etc.



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Transparency at every level



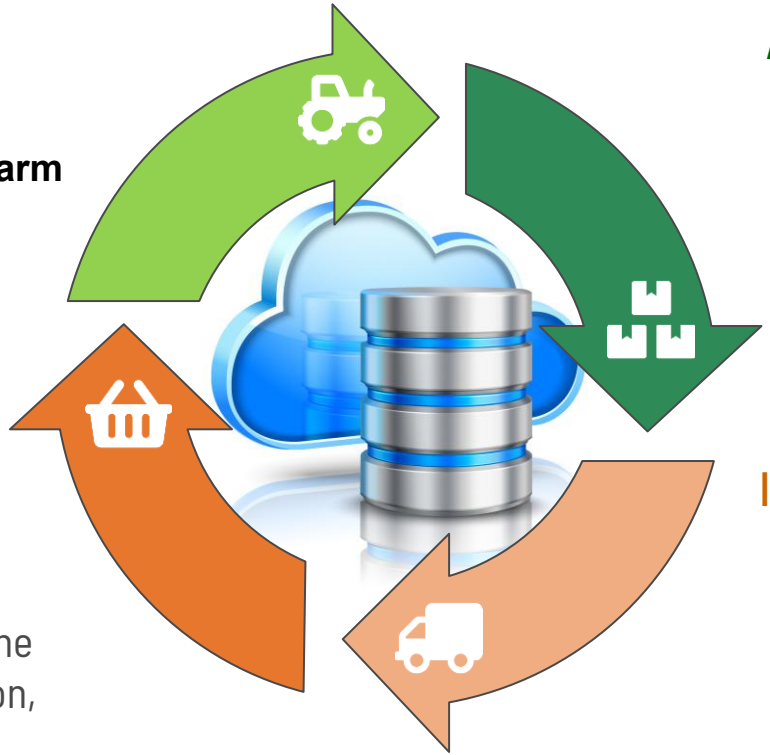
1. **Scan**
   The QR code on the label or the packaging
2. **View**
   The batch record: origin, producer, harvest dates, etc.
3. **Gain confidence**
   Labels, journey and storage conditions.

Trace and track a food product through every stage of production, processing and distribution (e.g. Regulation (EC) No 178/2002)

Architecture of a traceability system

On the farm

Internal traceability of **the farm** (plots, planting dates, crop operations) as well as **upstream** (input suppliers, seeds, crop protection products)



At the packing station

Traceability in **primary processing**: harvesting, sorting, grading, packaging, batching, packing, storage, ...

In distribution

Traceability in **logistics and distribution** : transport, warehousing, packaging, ...

At consumption

Information available to the consumer: label information, mobile app, ...

Technology solution

Agricultural ERP system

Enterprise Resource Planning (ERP) integrates traceability into overall management, including accounting, human resources and strategic planning : SAP Agriculture, Microsoft Dynamics 365 Agriculture, ...



SaaS platform

SaaS platform dedicated to traceability, offering a cloud solution accessible from all types of devices (computer, tablet, smartphone), particularly suited to **medium-sized operations** : Ekylibre, FarmLogs, AgriDigital, ...

Blockchain

Blockchain systems are emerging for premium supply chains, guaranteeing data immutability valued by consumers, particularly in Europe

Technologies used

Batch identification

Following a rigorous coding system compliant with international standards (GS1)

Marking

- Barcode
- RFID
- QR code



Connected equipment

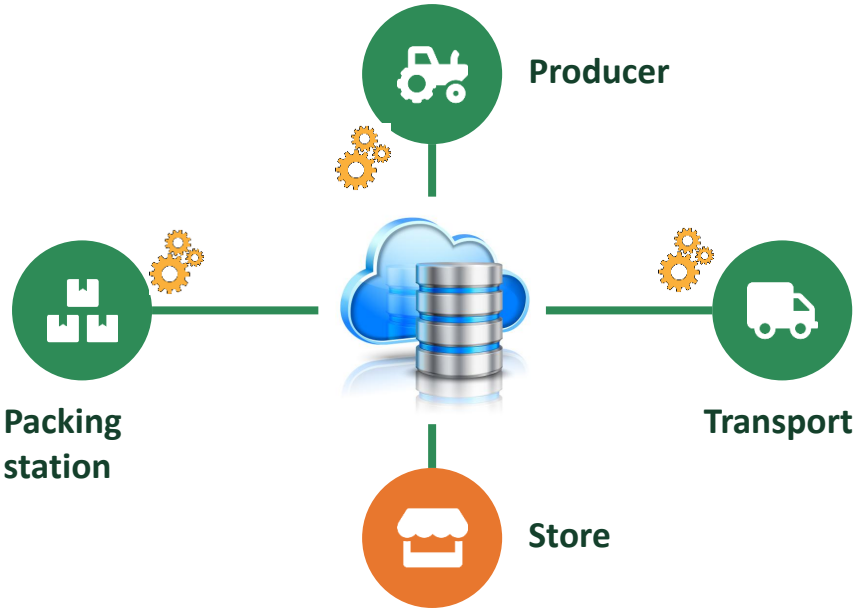
- Tractors with RTK GPS
- Geolocated plots
- IoT sensors: temperature, humidity, ...

Mobile solution

- Documentation via basic app / SMS

Interoperability in service of traceability

- **Technical**: Ensures the physical connection and communication protocols between networks, sensors (RFID, QR codes) and the traceability system
- **Syntactic**: Defines the format and structure of shared data so that machines read the same "grammar"
- **Semantic**: Harmonises the meaning of data and business vocabulary (e.g. product codes, units of measure) to ensure identical interpretation by all actors.
- **Organisational / Process** : Aligns workflows and procedures between the different links in the chain



EPCIS GS1 standard for describing events along the chain

Challenges

Rural context

Limited logistics infrastructure, low rate of digital equipment in rural areas, a multiplicity of scattered small producers



Bulk products

Bulk products (without individual packaging), batches mixed during sorting and packaging, numerous small producers, manual data entry, ...

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Thank you

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