

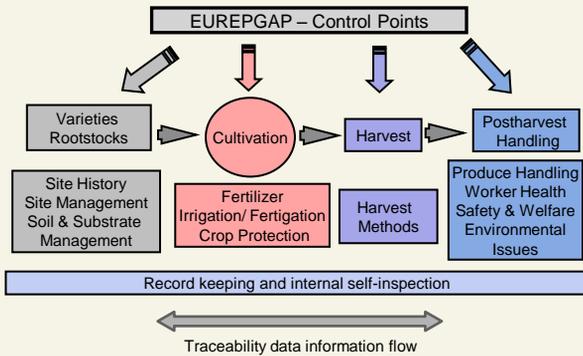
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Background Information

The Project Healthy Structuring - "Nutritional and Structural Design of Natural Foods for Health and Vitality" aims to develop innovative processing solutions to provide safe and stable tomato, carrot and broccoli based foods with optimal nutrient content, pleasing texture and with minimal need of heat treatments and additives to provide structure. One of the strategies was the identification of growth and storage conditions providing optimal raw materials.

Along the activities of Healthy Structuring relevant issues of traceability of vegetables arose while obtaining raw materials and pursuing traceable cultivation data to investigate the effect of specific agronomic measures and growing conditions on nutrients. Consequently it was of interest to study the traceability of vegetables and its relationship to nutrition parameters. The gathered experiences of traceability in the practice showed compatibility with the findings of the TRACEBACK Food Chain Analysis and furthermore with the Traceability Reference Model (TRM).



Scheme 1. Requirements of EUREPGAP standard influencing quality and nutrients.

Objectives

- To investigate procedures of monitoring plant nutrients supported by the tracing of specific agronomic measures and growing conditions data.
- To find elements of traceability included in quality assurance systems to assist food producers in getting information about changes in nutrient composition of vegetables from farm to processing start.
- To analyze the aspects covered by the quality assurance systems EUREPGAP and its suitability for the improvement and maintenance of nutrients for healthier products.
- To compare the practical experience of Healthy structuring in traceability with the findings included in TRACEBACK's Traceability Reference Model.

Methods

- Traceability data of selected fresh produce (broccoli, carrots and tomato) were collected by EUREPGAP standard procedure (see Scheme 1). All raw material suppliers for the project are EUREPGAP certified for consistency of data and traceability purposes.
- With traced back agronomic data of cultivations and researched information, agronomic trials were performed on carrot and broccoli in the second year of experimentation.
- Comparison of "in the field" traceability experience of Healthy Structuring's research consortium with respect to the findings in Traceback.

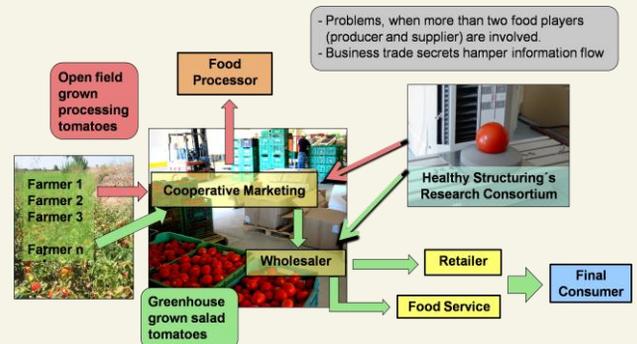
Table 1.

Compatible findings of practical traceability experiences of Healthy Structuring in terms of those in Traceback

The importance of transmitting data from the origin to the final customer. Some data do not have standardization application identifiers e.g. origin, and variety.
Incomplete traceability along the food chain: traceability from one food player to another is not always fully assured or key data transmitted
The internal traceability does not include all the necessary information to trace the product and/or to refer to quality and food safety issues
Visibility, transparency, data accuracy and standardized identification are technological core issues of targeted food chains.

Results

- The requirements of EUREPGAP concerning management of agronomic measures and growing conditions and therefore product safety, are traceable.
- The management of agronomic measures and growing conditions to influence nutrient concentration is only possible to a certain extent. Variety determined contents is the most important selection parameter.
- Access to information of production practices and traceability data is almost impossible to obtain for the food producer/consumer (Scheme 2). Traceability data retrieval proved arduous. In exclusive contracts, the situation is certainly different.
- The efforts for obtaining EUREPGAP traceability data of the raw materials evidenced the small role of consumers (in this case the research consortium) in the traceability food supply chain, and especially without the leverage of big retailers.



Scheme 2. Traceability in theory and practice.

Conclusions

- Changes in the certifications to include information of bioactive substances and nutrients of commercial vegetable varieties would require major efforts because fruit & vegetable producers in a competitive environment will not compromise for nutrients in detriment of yield or resistance of the crop.
- The traceability issues encountered in the Project Healthy Structuring reflected traceability critical points within the EUREPGAP Standard for fruits & vegetables, but also confirmed the findings of the TRACEBACK Food Chain Analysis for Traceability, which afterwards formed part of the Traceability Reference Model.
- Additionally, this practical case showed the relevance of how a Food Chain Analysis in the context of traceability can be essential to detect bottlenecks and critical traceability points.