UNECE CONFERENCE TRACEABILITY OF AGRICULTURAL PRODUCE

PALAIS DES NATIONS, GENEVA, 3 NOVEMBER 2015

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SUMMARY OF DISCUSSIONS

Traceability: main issues

Traceability has become a topic of close attention over the past ten years but despite many efforts and success stories, traceability remains one of the top three obstacles to efficient supply chains. Consumers, traders, and regulators are demanding more information and expecting increasingly rapid responses. While previously it may have been enough to know where a product originated, there has been a recent surge of new issues related to food safety, food fraud, production methods, food and feed ingredients, labour-related issues[1], and reducing risks. All this reinforced the need for better traceability of food and its

[1] The International Labour Organization (ILO) could not be present at the meeting. The presentation on tracking social responsibility including labour is available at http://www.unece.org/fileadmin/DAM/trade/agr/meetings/wp.07/2015/PPTs/02_CarlaHenry-ILO.pdf .

BACKGROUND

As part of this year's seventy-first session, the Working Party on Agricultural Quality Standards and the UNECE secretariat organized the UNECE Conference on Traceability of Agricultural Produce which was held in Geneva on 3 November 2015. The conference brought together over 70 participants from 28 countries, including representatives of the public and private sector, academia, international organizations and NGOs.

The aim of the conference was to review challenges and solutions for increased traceability of agricultural produce, present concrete traceability solutions from different sectors, and discuss how international marketing and quality standards can support traceability efforts.

The ideas and recommendations from the conference provide input to the discussions in UNECE's Working Party on Agricultural Quality Standards and its Specialized Sections. Following the conference, the Working Party decided to set up a discussion group on traceability which will include public and private sector participants to take the issue forward.

ingredients. Do the systems and processes currently in place make it possible to ensure full transparency, visibility and traceability across the entire supply chain? How difficult is it to obtain the necessary, true and authentic information about produce? Is traceability affordable to all? What progress has been made and where will the next years lead us? Speakers at the conference presented the many different facets of traceability – the advantages, the costs, the development angle, the technical-and standard-related advances as well as an outlook towards future developments.

Speakers highlighted that the ***benefits of traceability*** which include increased food safety, greater consumer confidence, compliance with regulations, precise and fast recalls, cost savings, and enabling premium pricing. They stressed that the ***challenge*** was not so much a lack of tools for tracing produce but the ***interoperability of traceability systems.*** Many companies today have a host of systems that record traceability-related data at various stages of the business processes (e.g. ERP system, logistics system, marketing systems). However, these systems are often not connected. To fully benefit from traceability while achieving it at a realistic cost, companies would need to connect the traceability-related data into one system. This would enable them to meet different regulatory obligations with one system. Such a system could be used for different purposes, including product tracing but also for recalls, avoiding counterfeiting, stock management and spoilage reduction.

On the data harmonization and solution side**,** speakers also highlighted the multitude of different data-carrier solutions (such as barcodes, 2D barcodes, RFID), which have existed since several years already. Given the users' extensive investment in this kind of hardware (such as barcode readers) and the related IT infrastructure, suppliers and retails are slower to adopt new types of data carriers. Customers appear to be quicker when it comes to adopting new technology which is mainly the result of the rapid uptake of smartphones. Therefore, for customer communication, industry and retailers can use 2D barcodes and transmit a multitude of information. For suppliers they still need to use data bars as well as barcodes.

There also appears to be a ***need for standardizing lot numbers.*** Today, many companies use their own lot numbers. However, to ensure the global uniqueness of any lot number it is necessary to connect the lot number to a global article identification system, in addition to ensuring that different actors have unique identifiers (i.e. unique numbers identifying the company).

Confidentiality of data was noted as a challenge when it comes to implementing traceability solutions. Companies might be reluctant to share data for competitiveness reasons, while efficient tracking systems require information to be searchable. This requires the identification of trusted third parties to securely store traceability data so that information can be searched at all stages of the supply chain if the need arises.

Food fraud in general has become a prominent problem over the past years and authorities and the private sector alike have been solicited to work on efficient and effective solutions. Traceability has a major role in addressing this issue. At the same time, although there are many ways of tracking the authenticity of food, e.g. through individual numbering, holograms, chemical makers, it was noted that true authentication will always require that such tools are complemented with physical inspection and testing.

Traceability in developing countries was considered a particular challenge. Several causes were mentioned, including a lack of systems, infrastructure and enabling policy frameworks, low capacity of producers, and confusion between several standards and software applications. Therefore, companies and organizations continue to exchange data manually and most records are paper-based. Developing countries also have a large number of smallholder farms, often in remote or badly connected areas, which make it more difficult to introduce traceability systems (e.g. livestock traceability in nomadic societies). At the same time, fundamental technology barriers have been lowered considerably also in developing countries with the introduction of new technologies such as mobile phones in the most remote corners of the world. The main challenge today appears to be developing and disseminating solutions that can be used by small growers, farmers and traders such as uploading information via more widely-spread technology such as smartphones or tablets.

Supporting traceability: successes and failures of current approaches and systems

In a supply chain every link is of equal importance. **INFORMATION ON TRACEABILITY IS THEREFORE ONLY AS RELIABLE AS THE WEAKEST LINK IN THE CHAIN.**

Until now, in supply chains, traceability information has mostly been shared through ***sequential forwarding,*** i.e. each party passing on the information to the next step in the chain. This system of cumulative tracking means more information is added at each step. It was noted that this way of recording traceability information is both heavy and prone to error, especially as soon as transactions involve more than four parties (which is the case for many retail supply chains). Another option for storing traceability-related information is using ***centralized databases***, i.e. all information from various parties is stored in one place. It was pointed out that this was costly, only possible in limited communities (smaller than the national level or only for certain products), and provided only limited value to industry. A possible solution for the future that was presented involved the creation of a ***traceability network using a cloud-based approach***. This solution implies that every trading partner records traceability information at source, with key data fed to searchable registries in the "cloud". Queries to those registries would give the details of the company holding the information in question. This would allow a quick identification and follow-up while avoiding the sensitivities associated with sharing detailed data. Such a solution relies on an ***event-based approach*** to recording traceability, which is possible by using the Electronic Product Code Information Services (EPCIS) Standard of GS1. Event-based data already exists in many enterprise resource-planning systems, and, therefore, might be available in companies' systems.

Examples of traceability initiatives and standards that were presented included the ISO 22000 family of standards on food safety management (currently undergoing revision), with a focus on the ISO 22005:2007 guidance on traceability in the feed and food chain. The latter outlines the basic principles and requirements for the design and implementation of a feed and food traceability system.

Another example was the ***Blue Number initiative***, recently launched by the International Trade Centre (ITC)**,** the UN Global Compact and GS1. This new tool is intended to help developing country producers' access to markets by giving a GS1-issued Global Location Number (the "Blue Number") to all interested farmers. In addition, an ITC online sustainability marketplace helps farmers to provide information on the origin and sustainability of their products. ITC has also developed the Standards Map[2] online tool which aims to make it easier for farmers to enter new markets and market segments. In particular, the Standards Map helps farmers learn about the standards required to trade in particular markets, to compare these requirements and to participate in more sustainable production and trade.

While not involved in developing standards for traceability, the World Trade Organization's ***Standards and Trade Development Facility (STDF)*** helps developing countries with the implementation of traceability systems and acts as a knowledge platform for sharing experiences and disseminating good practice. Through the STDF, the WTO has supported projects related to the traceability of mangos in Mali; a movement control system for cattle in Costa Rica; and is currently financing the project preparation phase for livestock traceability in Mongolia. Such projects not only help developing countries improve their trade capacities but also help them comply with international sanitary and phytosanitary requirements contained in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is currently working on a ***standard for traceability of agricultural produce***. This standard provides the data structure for all traceability-related information that is exchanged between the parties. It is based on the UN/CEFACT Core Component Library which holds the advantage that a traceability system based on the the UN/CEFACT traceability standard allows for re-use electronic information contained in trade, transport or regulatory documents (e.g. customs declaration, phytosanitary certificates). This makes it possible to integrate traceability information into the overall information flow of the supply chain. The first version of the UN/CEFACT standard focusses on the traceability of livestock and fish. The long-term objective is the development of an integrated traceability standard for all products in agricultural value chains. The UN/CEFACT standard is based on ISO/IEC 19987 which in turn builds on the GS1 EPCIS standard.

GS1 which recently launched a ***Global Meat and Poultry Traceability Guideline*** announced the formation of a new global traceability group which will update the 2005 version of GS1's standard for traceability, set the direction for traceability across supply chains and identify ways to enable interoperability between traceability systems. The group is expected to conclude its work by the end of 2016.

[2] http://www.standardsmap.org/

Traceability in various agricultural sectors

In the areas covered by the work of UNECE's Working Party on Agricultural Quality Standards and its Specialized Sections, traceability remains high on the agendas.

- In the trade of **SEED** for example, fraud has increased over the past years and this led to a growing demand for better traceability.
- In the area of **MEAT**, traceability solutions have been introduced over the years and are relatively advanced. However, this had not prevented large-scale international food fraud in meat such as the recent horsemeat scandal.
- In the trade of **FRESH FRUIT AND VEGETABLES,** inspection services are faced with packages marked with a number of codes which are often not easily identified as code marks or, when they can be identified as code marks they cannot be traced back to a company or the origin of the produce. In addition, while in the trade of fresh fruit and vegetables the number of transactions and operations is limited, produce does not always travel in its original packages throughout the entire supply chain. While the labelling system is flexible enough to reflect this, the currently used traceability systems have issues revealing in full what happened along the supply chain.
- In the area of **NUTS AND DRIED FRUIT**, traceability challenges are linked to supplies from developing countries where affording traceability and software solutions remains a challenge. In addition, while there are many standards and software applications, not all data has been standardized yet and it is not always clear if the same information is transmitted.

Tracing from plate to farm: Global business and their traceability systems

As part of their supply chain management and to comply with the legislation adopted in the past years, global buyers of agricultural produce such as large retail chains as well as producers, farmers and growers have put in place various systems and processes which ensure traceability. In the European Union, it is mandatory to have systems in place to trace the origin and destination of food and feed products one step up and down the supply chain. For fish, there are additional requirements to be met, namely tracing where each lot of fish to where it was caught, by which vessel and by which method.

The global retail sector

Innovative solutions to comply with such legal obligations (e.g. to show the origin of fish) have recently started to be developed. One such solution is fTRACE, developed by the Metro Group and GS1, together with some other large retailers, manufacturers and traders. This system allows consumers to check the origin and other information regarding each product real-time through a smartphone application. It currently covers three product categories (fish, meat as well as fresh fruit and vegetables), with more than 30,000 products of 240 companies from 18 countries already in the system and currently more than 300 further companies in the actual on boarding process. The traceability solution had been rolled out for fish and meat in Metro's stores in Germany during 2014, and is currently being expanded to other products and operations internationally.

While consumers increasingly ask for more information about the products they buy, traceability requirements imposed by regulators are not the same for the different types of products (food and non-food). Consequently for internationally operating retail chains such as Metro, the only efficient way forward is a ***traceability solution which tracks all types of products on a global level***. Metro's traceability solution is therefore built to be scalable, so that it can track all kinds of products in any number of countries. The solution makes use of the EPCIS Standard of GS1, which allows the capturing of all business process events as "EPCIS events". The event-related data generated can also be used for business process analysis, and process optimization, which creates further incentives for companies to join this traceability system.

The solution enables companies along the supply chain to upload information about their product directly into the system, and avoid the problem of having to rely on the sequential forwarding of information. Another advantage of such a system is that it doesn't exclude small producers as it allows connecting to the internet via computers or tablet to enter their product traceability information into the system. In the future, this could eventually be done via mobile phones sending text messages to a suitable server as in very remote areas in developing countries the only information networks available are mobile phone networks.

The farm and production level

Traceability starts at the production site – e.g. the farm - but not all actors along the supply chain are equally able or have the appropriate solutions to follow and track their products from farm to fork. The location, the size, the financial resource endowment and the level of horizontal or vertical integration of production are important factors which will influence the degree of sophistication of the traceability system used.

One example presented was Irelands' largest poultry producer (Manor Farm of Carton Group) who emphasized that ***traceability should not start with a system; it should be integrated into the way of operating.*** For this company, successful traceability has to be done in "closed loops" and be inherent part of the existing computer platforms and software of the company. The company believed that only in fully integrated production and distribution systems can recalls happen at the speed that consumers, and increasingly regulators, expect. The company therefore used its existing financial systems and platforms along with GS1 type standards to develop and operate its traceability solution at very low cost. The system allows for full traceability from the hatcheries and feed lots to the final poultry product. It enables the company to publish the name of the farmer/breeder on each pack of chicken sold, which in their experience increased consumer trust in the quality of the product.

Trade in agricultural commodities – the case of seeds

Key agricultural commodities such as seeds are also increasingly faced with having to look for efficient and affordable traceability solutions. The reasons for this are two-fold: there is on one hand the increased risk of fraud in the sector and, on the other, the need to ensure that plant breeders receive the appropriate royalties due for their work and any related patents. In Europe, seeds are generally sold in bags with labels, and traceability is assured until the seal of the bag is broken. Systems of online label finders have been developed to address the issue of fraud, enabling customers to verify that the

label is correct. However, there are important issues that have not yet been addressed which include better labelling as well as measures for verifying traceability once the seal of the bag is broken.

Process-oriented quality control and traceability

A more sector overarching approach is linking ***systematic process-oriented quality controls across all stages of food production to traceability requirements.*** In Germany, the Qualität und Sicherheit (QS) quality scheme is an inspection scheme for food from farm to shop, which enables self-assessment, traceability and labelling. This scheme requires full documentation of the flow of goods with lot numbers, as well as internal traceability processes to ensure that information can be compiled within four hours and be made available to QS.

Way forward

The Conference on traceability showed a range of existing and possible future solutions and their possible applications. While progress has been made, very important issues continue to hamper the traceability of all products and traceability on a global scale. Company-internal-tracking processes, especially in large retail supply chains or in fully integrated productions are already in advanced stages and can be developed faster and easier. ***Solutions for those outside the large supply chains remain a challenge.***

Harmonization and compatibility in general and inter-operability in particular remains an issue. In addition, the regulator's role in traceability systems (both on national and international levels) and the regulator's access to information in case of fraud or food safety alerts are other topics which require further discussion.

How will it be possible for authorities to become a more active and informed part of the traceability chain? ***Where*** is the limit between necessary information and privacy? ***How*** can traceability solutions be better harmonized to improve inter-operability? ***How*** can solutions become more coherent, affordable and manageable for all? ***What*** could UNECE do to better link traceability efforts and concerns with existing requirements set forth in the standards' labelling sections?

Following the Conference, the Working Party on Agricultural Quality Standards therefore decided to continue the discussions the dialogue between the public and the private sector in a ***traceability discussion group*** to identify areas for further action, in particular on strengthening the traceability component of agricultural quality standards. It could be envisaged that this discussion group helps identify key issues of interest to both regulators and the private sector such as access to data; recognition of code marks or storage of traceability data.

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