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# FarmDigital: Compliance to international certification schemes mapped

The melon, grape and potato case explained

Y. Dijkxhoorn, R. Robbmond and J.W. Kruise



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This research presents the current situation of compliance data sharing. The results of the study aim to contribute to the design of a system according to user-specific requirements in order to reduce overhead and to make compliance easy. The following sectors have been analysed as an in-depth case study: the Costa Rican melon sector, the South African grapes sector and the Dutch potato sector.

Key words: compliance, certification, trade, fruit, vegetables, potato, horticulture.

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# Preface

This research was conducted as part of the FarmDigital programme. It presents the current situation on compliance data sharing in the fruit and potato sector. The results of the study aim to contribute to the design of a system according to user-specific requirements in order to reduce overhead and to make compliance easy. The study describes specific requirements requested by farmers and by other parties. The following sectors have been analysed as an in-depth case study: Costa Rican melon sector, South African grape sector and the Dutch Potato sector.

Data have been collected among farmers with support from Agriplace bv, N&S Del Tropical SA and OTC Holland. The authors want to thank these organisations for their support. We would also like to thank the interviewed stakeholders for their willingness to share their insights on the compliance and logistic dynamics of the different sectors.



Prof. dr. ir. Jack (J.G.A.J.) van der Vorst  
General Director Social Sciences Group - Wageningen UR

# Summary

The fruit and potato sectors are faced with various standards, sustainability protocols and a specific buyer checklists. These standards, protocols and buyer certificates cover similar issues and on occasion the same farmer is asked for the same pieces of evidence to audit the compliance with the protocols. Standardisation in data gathering and sharing is limited, leading to overhead for all stakeholders along the value chain. This study presents the current situation on compliance data sharing in the fruit and potato sector.

The results can contribute to the design of an information-system according to user-specific requirements to reduce overhead and to make compliance easy. The study describes specific requirements requested by farmers and by other parties. The following case studies have been analysed:

- Melon sector (from Costa Rica to the Netherlands)
- Grape sector (from South Africa to the Netherlands)
- Potato sector (within the Netherlands).

To address the issue of compliance data sharing, there is a need for standardisation of data collection methods in an information infrastructure that links transparency requirements of consumers, standard-setting organisations and buyers and thereby facilitates the data collection of growers and access to markets.

The table below provides an overview of the characteristics and compliance issues in the different case studies.

**Table S.1**

*Main characteristics and compliance issues*

	Melons Costa Rica	Table grapes South Africa	Fresh table potatoes the Netherlands
Area	4,627	16,229	74,068*
Sector size (tonnes)	125,598	315,000*	3,871,458
Export (tonnes)	116,040	283,239	1,039,935
Export share vs prod (%)	95	90	25
Number of (exporting) farmers	25**	330	6,780
ICT and FMIS adaption	Low	Average	Average-High
Top voluntary schemes	GLOBALG.A.P., Rainforest Alliance, Tesco Nurture SMETA-ETI	GLOBALG.A.P., SMETA-ETI, organic certificate, SIZA	GLOBALG.A.P.
Number GLOBALG.A.P. firms	19	330	1,906
Key compliance issues	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires.
Key identified principles	Sharing is ok	Sharing is ok	Sharing is ok

Source: FAOSTAT, UNCOMTRADE, GLOBALG.A.P. database, own research

\* Ware potatoes are potatoes grown for human consumption as fresh table potatoes or in a processed form but excludes seed potatoes and starch potatoes

\*\* Estimate



---

# 1 Introduction

## 1.1 Background

Consumers and retailers are demanding transparency of farm practices for health and food safety as well as socio-economic and environmental sustainability. Transparency is not only limited to health and food safety standards alone, but also relates to compliance with social standards. For instance, a majority of the Dutch retailers and fruit and vegetable importers now request more than one standard.

Consequently, growers are faced with the request to comply with different standards from different buyers, various sustainability protocols and a number of buyers' specific checklists. However, the majority of these agriculture-related data is still paper-based, spread over different systems and difficult to exchange between the people who want to access it. As a result entrepreneurs in the agricultural sector spend more and more of their time registering and publishing all kinds of data, as the government, certification bodies, banks, clients, the retail sector and consumers all demand more insight into how safe and sustainable their food is.

Although these checklists and certificates cover similar issues and on occasion ask for the same pieces of evidence, standardisation in data gathering and sharing is limited. This increases the overhead for all stakeholders along the value chain. To address this issue, there is a need for standardisation of data collection methods in an information infrastructure that links transparency requirements of consumers, standard-setting organisations and buyers, thereby facilitating the data collection of growers and access to markets.

This deliverable presents the current situation and contributes to the design of a system according to these requirements. It is part of the FarmDigital Work Package 1 (see Text box 1) and presents a specification of the framework for three case studies. It focuses on the specific compliance and logistic processes by farmers and other parties to describe different case studies:

- Melon sector (from Costa Rica to the Netherlands)
- Grapes sector (from South Africa to the Netherlands)
- Potatoes sector (within the Netherlands).

### Text box 1: About FarmDigital

FarmDigital is an action research programme which is currently working towards a situation in which compliance data only needs to be entered once and can be shared easily. It aims to achieve this goal by standardising data and developing and implementing an independent, digital platform for people to use. For more information visit the website [www.FarmDigital.nl](http://www.FarmDigital.nl)

## 1.2 Objective

This study presents the current situation and can contribute to the design of a system according to user-specific requirements. It focuses on the specific requirements requested by farmers and by other parties in different sectors.

---

## 2 Method and approach

### 2.1 Case studies for detailed insights

Case studies are an important tool to identify possible differences between the sectors. By mapping the processes and the information exchanged we are able to provide a detailed overview. A case study method refers to a research strategy which focuses intensively on individual cases to draw insights about causal relationships in a broader population of cases. Case research is particularly appropriate for certain types of problems: those in which research and theory are at their early, formative stage (Benbasat *et al.*, 1987) and 'sticky practices based problems where the experiences of the actors are important and the context of action is critical' (Bonoma, 1985). Therefore a case study research approach has been chosen as a research method to gain insight into information exchange related to compliance. The use cases represent different sectors in multiple countries and therefore they can provide insight into a larger class of cases. They are an important tool to identify possible differences between these sectors. By mapping the processes and the information exchanged we are able to gain detailed insight into compliance in agri-food supply chains.

The first phase of the case study consisted of a desk study in which relevant secondary data (e.g. trade and production statistics) about the different sectors were gathered and analysed.

The second phase consisted of interviews with key stakeholders to collect primary data (Table 2.1). Interviews were conducted both in the Netherlands and abroad. In addition, during a business council meeting with a number of project partners a discussion session was organised to harvest requirements. Finally, the results have been presented and discussed in a workshop in which representatives of the business actors Levarht, Agrico and OTC participated. Based on this workshop the case studies were further improved.

In Costa Rica, various producers of melons for the export market were interviewed and in South Africa one exporter of grapes was interviewed, representing 4 growers on 5 different locations. For these interviews we used a semi-structured questionnaire to provide in depth information on the key issues in the different value chains. The questionnaire is presented in Appendix 1 and was carried out in South Africa and Costa Rica by our local partners.

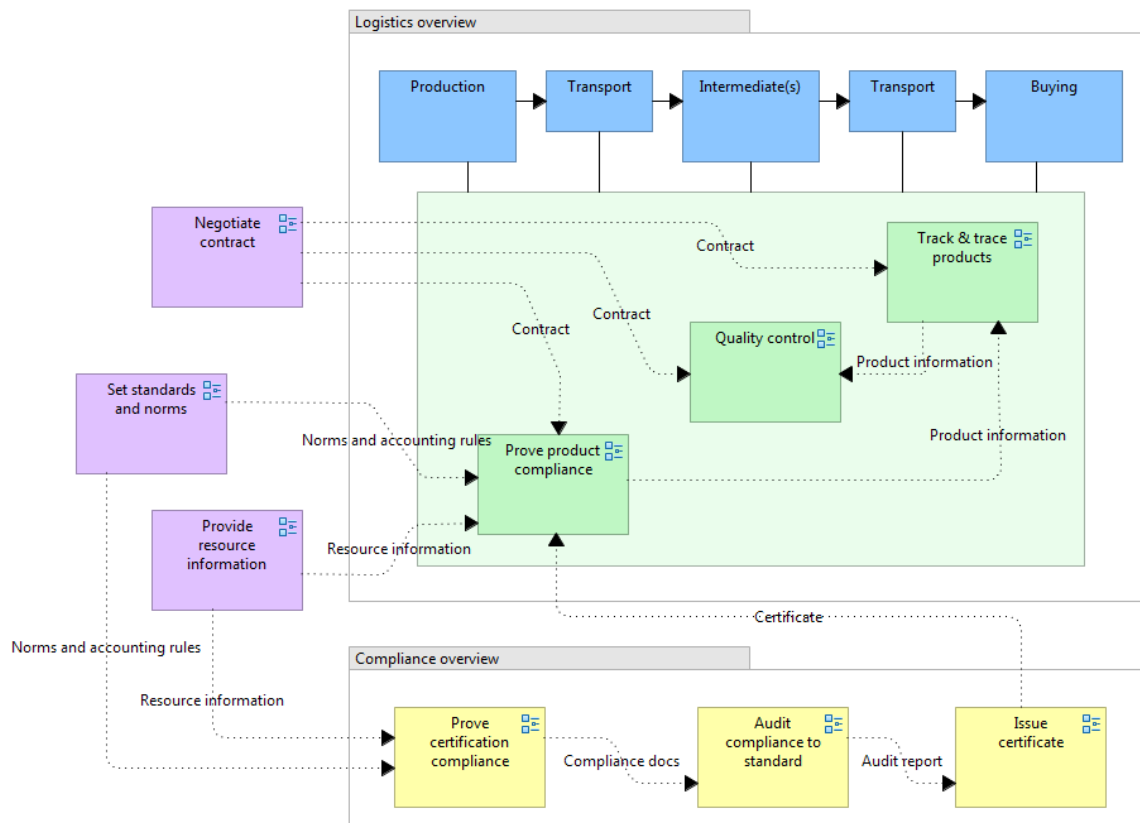
**Table 2.1**  
*Key VC actors interviewed*

Group	Name	Value chain role	Location	Interview	Business council	One-to-one validation	Workshop
Farmers and exporters	Monserrat y Maria	Producer of melons for export market	Costa Rica	X			
	Agropecuaria Dona Nena	Producer of melons for export market	Costa Rica	X			
	Rica Fruta	Producer of melons for export market	Costa Rica	X			
	Cons. Agroexportador San Roque	Producer of melons for export market	Costa Rica	X			
	SFG Dulce	Producer of melons for export market	Costa Rica	X			
	Hnos. Vargas Dulce	Producer of melons for export market	Costa Rica	X			
	Los Colones	Producer of melons for export market	Costa Rica	X			
	Agricola Vargas & Slaas de Orotina	Producer of melons for export market	Costa Rica	X			
	Grupo Agrícola Navarro	Producer of melons for export market	Costa Rica	X			
	Orex	Exporter	South Africa	X			
	Zwartbooisberg Farm	Producer of grapes	South Africa	X			
	Krantzberg Boerdery	Producer of grapes	South Africa	X			
	Retief Boerdery	Producer of grapes	South Africa	X			
	Krismar investments	Producer of grapes	South Africa	X			
	Other parties	Gourmet	Producer of potato	The Netherlands		X	
Maatschap C en M Kamer		Producer of potato	The Netherlands		X		
OTC		Importer of grapes	The Netherlands	X		X	X
Staay Food Group		Importer of grapes and melons	The Netherlands	X			
Levarth		Importer of melons	The Netherlands	X		X	X
Jumbo		Retail sale of potatoes, grapes and melons	The Netherlands	X	X		
Agrico		Trade of potato	The Netherlands	X		X	X
St. Veldleeuwerik		Standardisation organisation	The Netherlands		X		
Countus		Accountancy and advise	The Netherlands		X		
Agriplace		Platform prototype	The Netherlands		X		X
Frugicom	Sector organisation	The Netherlands		X			

As part of the study, one-to-one validation sessions with stakeholders were held in November and December 2015. The key value chain actors were invited to reflect on the preliminary findings to validate and to comment on our preliminary findings.

## 2.2 Reference model

A reference model was developed by Kruize *et al.* (2016) to give an overview of the current general logistic and compliance flows. This is presented in Figure 2.1 and is explained in Section 2.2.1 and Section 2.2.2.



**Figure 2.1** The reference model with an overview of main processes and information flows

### 2.2.1 Processes that provide information

There are three groups of processes described that provide information; 'negotiate contract', 'Set standards and norms' and 'Provide resource information'.

In 'Negotiate contract', the processes are included that are related to the contract negotiations between the different actors in the supply chain. The processes result in a contract that describes norms and accounting rules for 'Prove product compliance', 'Quality control', and 'Track & trace products' that are end-customer specific.

'Set standards and norms' also provides input in the form of norms and accounting rules, but focuses on the primary production of agricultural produce. In this case the norms and accounting rules are specific for a certain certification standard the actors comply to.

'Provide resource information' are the processes in which supply chain partners prior to production on the farm (agricultural inputs) supply information about it to the other actors.

### 2.2.2 Compliance overview

The processes in the compliance overview group are related to certification. 'Prove certification compliance' is a process in which actors that apply for certification gather the needed compliance documentation. This 'Prove certification compliance' process can be performed by a farmer, farm assurer or farmers' organisation. Subsequently, this compliance documentation serves as input for the process 'Audit compliance to standard' in which the audit organisation checks compliance resulting in an audit report. If positive, this audit report leads to a certificate in the 'Issue certificate' process.

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### 2.2.3 Logistics overview

The logistics overview contains process groups that relate to production, transport, intermediate(s) and buying. The processes groups can be performed by farmers, farmer organisations, processors and traders.

In 'Prove product compliance' actors prove their compliance to norms and accounting rules regarding product deliveries. Inputs are the certificate, norms and accounting rules, resource information and the contract. The norms and rules are set by customers and defined in a contract. To prove product compliance, proof of certification of the farmer and resource information of other supply chain actors is sometimes needed.

In 'Track and trace products' the product information from the process 'Prove product compliance' is linked to the relevant products as they travel through the supply chain. These processes ensure the connection of the physical product with the correct product information. Implementation measures for product identification may be physical such as equipping the products with barcodes for identification during packaging or they may involve information management activities such as product information aggregation and provision. Its output is product information that can be linked to product deliveries so that in the process 'Quality control' customers can verify the product's compliance to the required norms that are drawn up in the contract.

In the case of subcontracting or other dependencies on third-party suppliers (e.g. contractors), resource information from the process 'Provide resource information' is an input for the processes 'Prove compliance certification' and 'Prove product compliance'.

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## 3 Case study I: melons from Costa Rica

### 3.1 Introduction

The export of melons represented a value of about EUR46m in 2013. That year the total exported volume was about 117,000 tonnes. The main export destinations were the US and EU. The total exported value was roughly divided 50-50 between those destinations. The Netherlands was by far the largest European importer with a total volume of 57,000 tonnes in 2013.

The production season of melons is counter-seasonal compared to the melons produced in Spain. The melons from Central America are imported to the EU market between February and May.

### 3.2 The melon sector in Costa Rica

#### 3.2.1 Agriculture in Costa Rica

According to recent World Bank Figures, agriculture makes up about 5.6% of the country's GDP (2013), and 13.4% of the labour force works in this sector (2012). The main agricultural products produced are coffee and various fruits such as pineapples, bananas, melons, watermelons and mangoes. In the FAO statistics watermelons and other melons are distinguished (Table 3.1). Costa Rica produces various types of other melons (e.g. Galia, Cantaloupe and Honeydew). The total production volume of the other type of melons has decreased by about 35,000 tonnes since 2011.

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Table 3.1

*Area and production volume in Costa Rica*

		2011	2012	2013
Watermelons	Area harvested in ha	1,063	1,253	1,335
	Production in tonnes	52,282	61,628	65,661
Melons, other (Inc. Cantaloupes)	Area harvested in ha	5,122	4,590	4,627
	Production in tonnes	160,810	132,017	125,598

Source: FAOstat

#### 3.2.2 Production of melons in Costa Rica

Production of melons takes place throughout the entire country of Costa Rica. It is estimated that Costa Rica has 25 melon producers. About 2 of them cultivate an area of more than 1,000 hectares. The remaining producers are smaller in size with an average of only 5 to 10 hectares. There are no smallholder producers in Costa Rica. Not all producers export themselves but deploy an exporter instead.

The melon production process takes on average 52 to 54 days from planting to harvesting.

#### 3.2.3 ICT adoption by Costa Rican melon farmers

ICT adoption among melon farmers in Costa Rica is low. The interviewed farmers indicate that they do not use any Farm Management Information Systems (FMIS). However, they do use normal MS Office tools, e-mail, and in some cases software for logistics, inventory, accounting and planning.

### 3.2.4 Certification of Costa Rican melons

The main certification schemes that are relevant in the production process of melons for this particular value chain are the following:

- GLOBALG.A.P
- Tesco Nurture
- Rainforest Alliance
- SMETA-ETI

#### *GLOBALG.A.P.*

GLOBALG.A.P. is an initiative by retailers belonging to the Euro-Retailer Produce Working Group. GLOBALG.A.P. is the world's leading farm assurance programme, translating consumer requirements into Good Agricultural Practice (GAP). In Costa Rica 19 producers and groups of producers of melons are certified.

#### *Tesco Nurture*

Tesco Nurture (TN) was launched in 1992, to ensure Tesco delivers world class quality fruit and vegetables for their customers. It is an exclusive, independently accredited, quality standard that assures that Tesco fruit and vegetables are grown in an environmentally and responsible way. Individual growers are independently audited and monitored regularly to ensure they continue to meet the exacting standard ([www.tesco.com](http://www.tesco.com)).

#### *Rainforest Alliance*

The Rainforest Alliance (RA) works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behaviour. The RA Certified is an internationally recognised scheme of environmental, social and economic sustainability ([www.rainforest-alliance.org/](http://www.rainforest-alliance.org/)).

#### *SMETA Ethical Trade Initiative*

The ETI Base Code is founded on the conventions of the International Labour Organisation (ILO) and is an internationally recognised code of labour practice ([www.ethicaltrade.org](http://www.ethicaltrade.org)).

### 3.2.5 Export of melons from Costa Rica

The export of melons represented a value of about EUR46m in 2013 (Table 3.2). The total exported volume was about 117,000 tonnes in 2013. The main export destinations were the US and EU. The total exported value was divided 50/50 between the US and the EU. Within the EU, the Netherlands imported by far the largest volume of melons (57,000 tonnes), followed by the UK (17,000 tonnes) and Belgium (12,000 tonnes).

Table 3.2

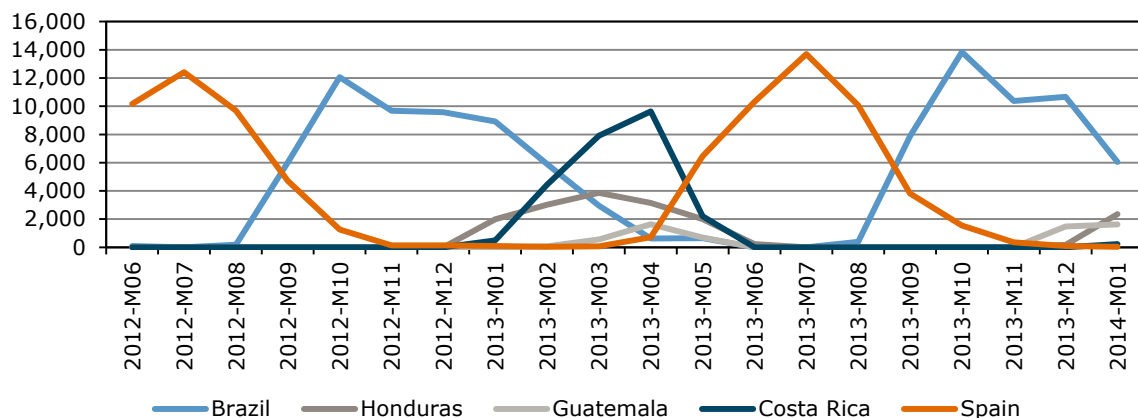
*Value of exported watermelons and other melons from Costa Rica to the world*

		2011	2012	2013
Melons, fresh, other than watermelons	Value in EUR	49,404	54,088	46,361
	Volume in tonnes	143,669	129,906	116,596

Source: UNComtrade

### 3.2.6 Import of melons in the Netherlands

The Costa Rican melon season is between February and May. During the rest of the year Dutch importers procure melons from Spain (European summer) and Brazil (September-February). Figure 3.1 gives the Dutch import seasonality of melons per month.



**Figure 3.1** Dutch import of melons per month in tonnes  
 Source: UNComtrade

### 3.2.7 Transport of Costa Rican melons to the Netherlands

After production the melons are transported from the grower to a nearby port. Often this is Limon on the Caribbean sea with direct access to the Atlantic Ocean. From there the melons are shipped for 2 to 3 weeks to the EU. The main ports of arrival are Rotterdam or Antwerp.

The containers are cooled at a temperature of 3-10 degrees Celsius, depending on the melon variety. The watermelons and the Honeydew are cooled at approximately 10 degrees Celsius. The Galia and the Cantaloupe are cooled at colder temperatures of about 3-4 degrees Celsius. During shipment the containers are equipped with data loggers that record the temperature during transportation.

## 3.3 Melon case study description of processes and information exchange

Figure 3.2 gives a schematic overview of the different steps in the melon value chain from farm to retail.

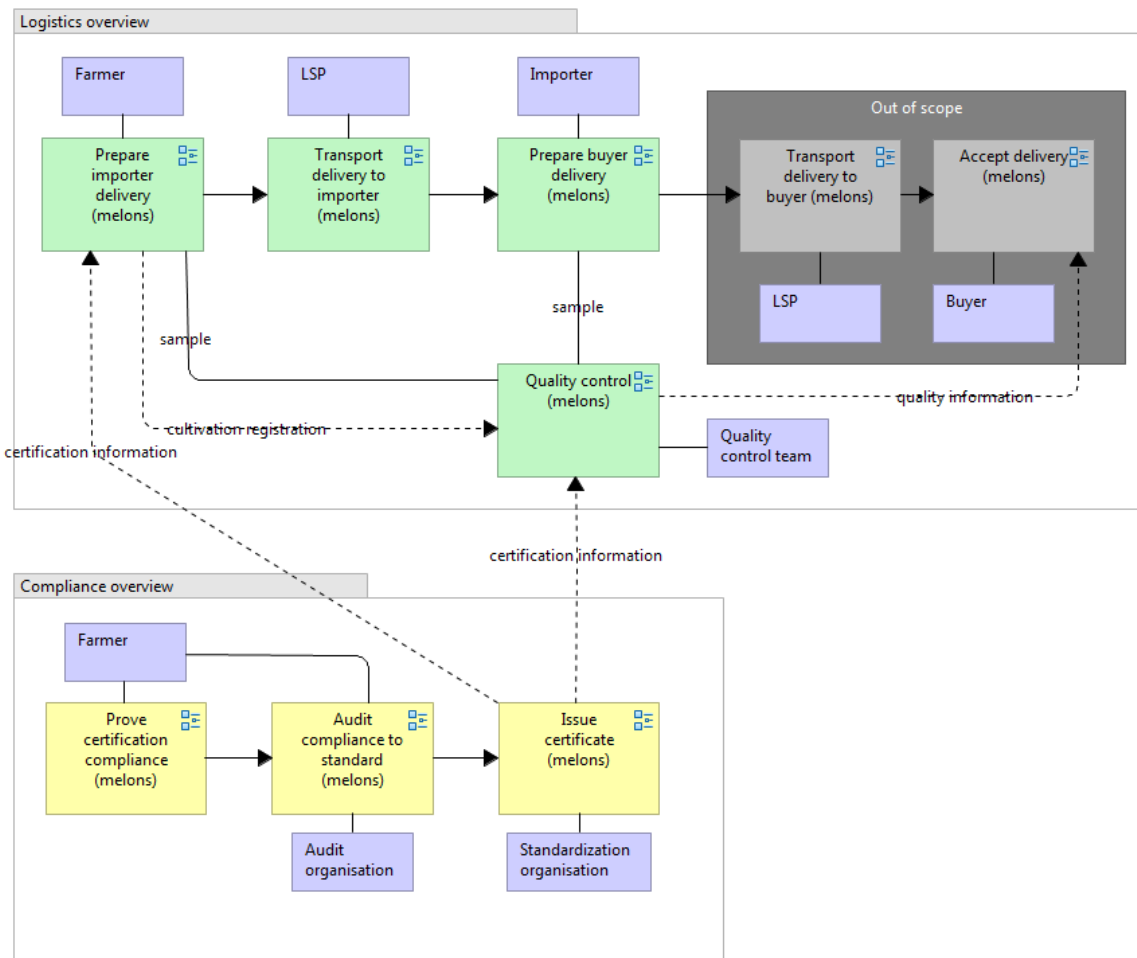
The logistic overview starts with the farmer where the melons are prepared for transportation. Then the melons are handed over to the logistic service provider (LSP) who transports the melons to the importer. After that the importer accepts the melon shipment. At the farm and at the importer the compliance of the melons to the agreed certification standards is audited by an independent auditor and checked by the importer by checking samples of the product and certificates and other due diligence information before delivery. Results are shared on request with the customer.

After acceptance of the shipment by the importer the melons are transported and accepted by the retailer, but these processes are considered out of scope for this project.

Prior to the logistic processes, production takes place at the farm. During production the farmer ensures compliance of his production with certification standards. These standards are set by the standardisation organisations (such as GLOBALG.A.P.) and audited by independent external auditors (such as LSQA, PrimusLabs or NSF in Costa Rica). The external audit is paid by the farmer. If the farmer complies to the standard according to the auditor, the standardisation organisation issues the certificate. The certificate is valid for a certain period (in case of GLOBALG.A.P it is valid for 12 months). In an online database (e.g. GLOBALG.A.P) the buyer is able to check the validity of the certificate. However checking this for each supplier is costly and inefficient for importing wholesalers.

Further on in this section we will elaborate on the separate steps.





**Figure 3.2** Logistic overview of the chain

### 3.3.1 Importer delivery

Figure 3.3 describes the preparations at the farmer in Costa Rica of a delivery of melons to the Logistic Service Provider (LSP) in the Netherlands.

#### *The melons are packed in boxes*

After harvest the melons are packed in boxes. The GLOBALG.A.P. number (GGN) is printed on the boxes (when requested by the customer) and also carries the name of the producer. Other information on the box is the size of the fruits and the approximate weight of the box. In addition, every box receives a stamp that holds a traceability code that refers to the harvested plot and the date of harvest.

The certification standards do not require the exporters to use a GLN identification number. In most cases, farmers in Costa Rica use their own traceability code that they stamp on the box.

#### *The boxes are placed on pallets*

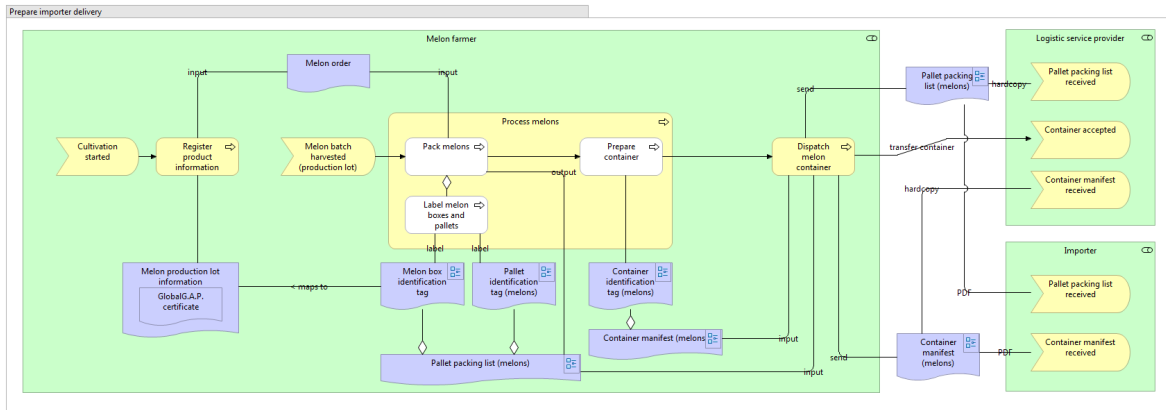
The boxes with melons are subsequently placed on a pallet. Every pallet has a fixed number of boxes (depending on the size of the box, variety of melon, type of packaging, destination, mode of transport). Every pallet receives a pallet number. On each pallet exporters allocate a barcode that corresponds with this number and the number is added to the container manifest. The melons are stored in cold rooms.

#### *The pallets are put in containers*

After the pallets are prepared, they are placed in a cooled reefer container. The container manifest accompanies the shipment and is sent by email to the importer as a PDF file or in any other format.

This contains all pallet numbers and for each pallet it contains also the product type, variety, box type (cardboard), information of the label, number of boxes on each pallet, traceability code of the boxes and the different sizes in each box.

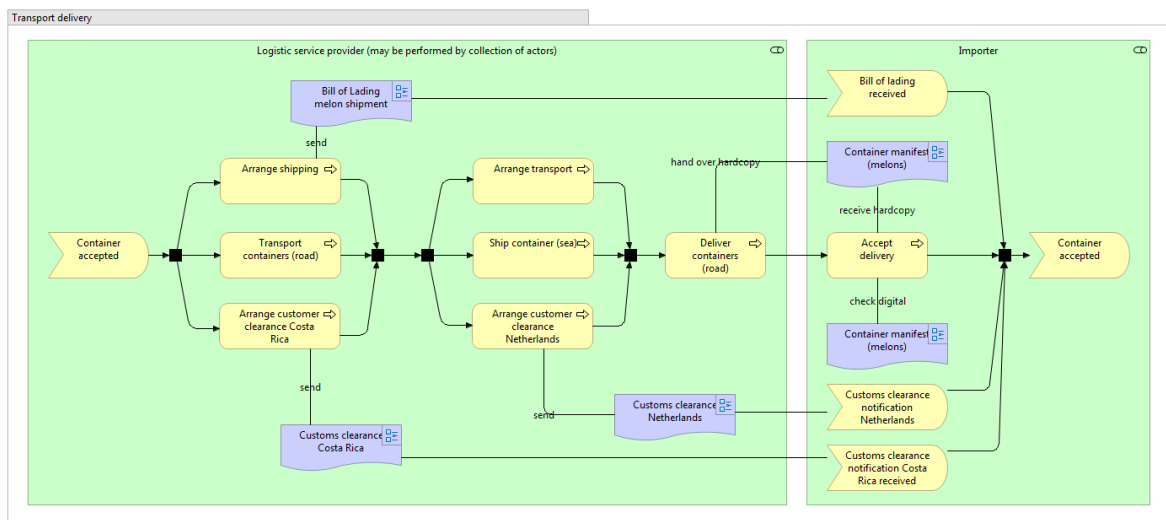
The container is collected by the local LSP to the nearby port. The local LSP is often working for the handling agent in Europe which is hired by the importing company. They arrange the transportation. This includes booking the container on a vessel and taking care of the import and export procedures. These procedures are not discussed in this report since this is out of the scope of the project. Each container has a tracking number which can also be used for online tracking of the container and vessel.



**Figure 3.3** Prepare import delivery

### 3.3.2 Transport delivery

At arrival in the port of destination, the produce is often transported to the warehouse of the importer. At arrival in the warehouse of the importer, the shipment receives a shipment reference number (partijnummer in Dutch). This number is linked to the container manifest sent by the farmer. In Appendix 2 a detailed overview of the documents shared between the farmer, LSP and the importer is presented. From there on the shipment is prepared for transportation to the final destination and the shipment reference number is provided to the buyer, often mentioned on the invoice. The figure below presents an overview of the entire logistic process.

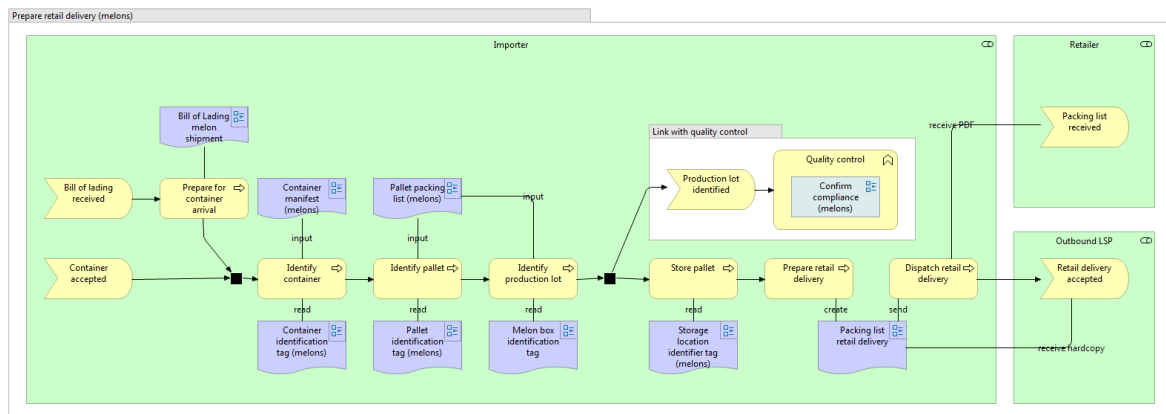


**Figure 3.4** Transport delivery

### 3.3.3 Retail delivery

Based on the information in the Bill of Lading, the importer prepares an efficient handling of the produce at arrival. When the container has arrived, the importer identifies the container by the container identification tag and checks with the container manifest. The pallets are collected at the inbound dock. Here an independent or own quality inspection takes place (see Section 3.3.4 for more information). The container is unpacked and the pallets receive a pallet label with barcode. If this label is detached from the pallet, it is considered lost. If necessary, a sample is taken from the delivery for further laboratory analysis. This is carried out only once per season per plot (not necessarily per plot, since some farms manage many plots). The pallets are stored in the warehouse. In the warehouse the forklift driver places the pallet on the warehouse shelf. He then links the pallet to the shelf using a barcode scanner.

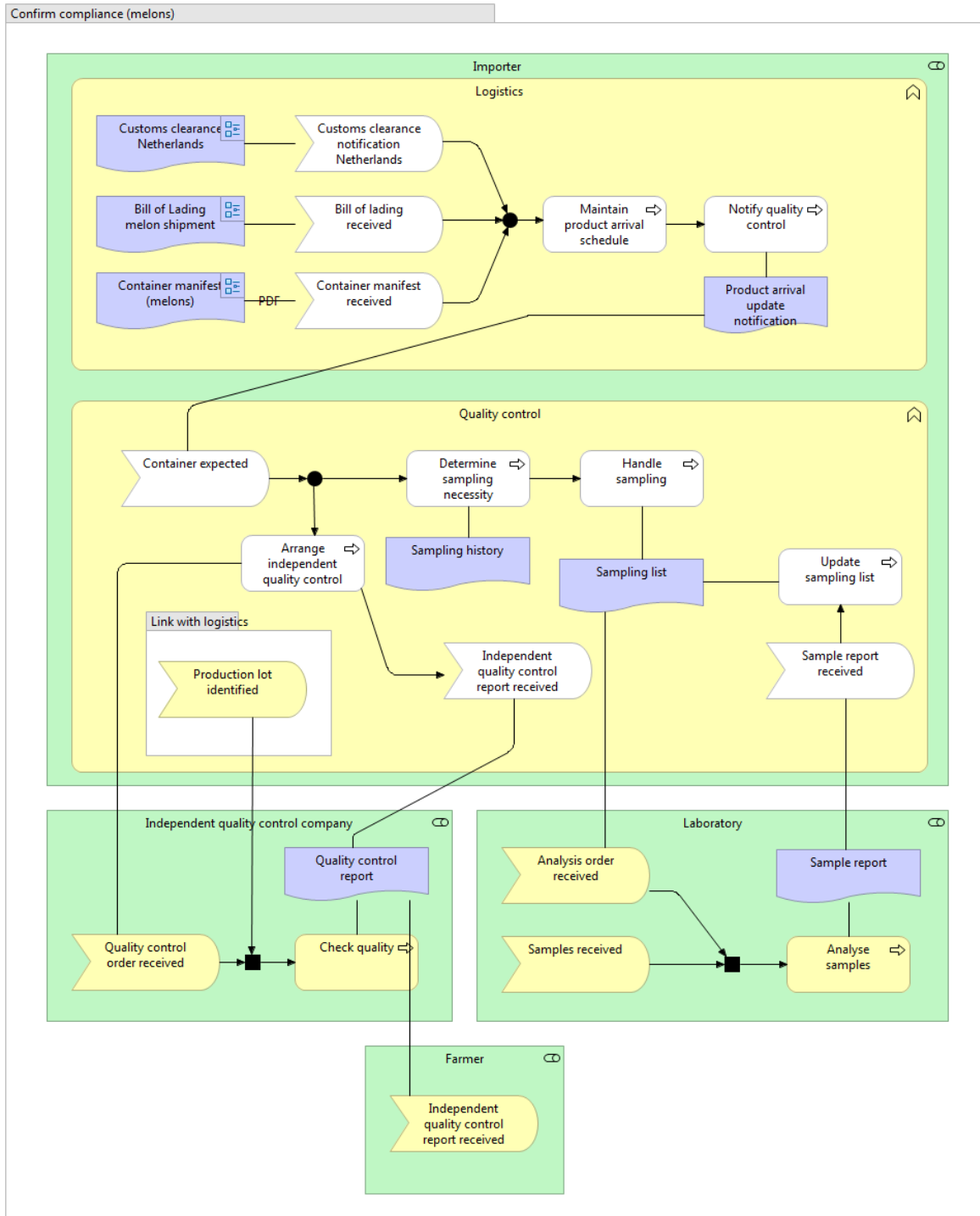
Based on the sales order, pallets are collected and transported to the outbound dock where they are picked up by the transporter. The buyer is often a retailer or another fruit trader that supplies specialised fruit and vegetable shops. After arrival in the shop the melons are stocked on the shelf. Melons are sold from the box and are not repacked in the distribution centre of the retailer. Figure 3.5 presents an overview of the entire logistic process.



**Figure 3.5** Retail delivery

### 3.3.4 Quality control

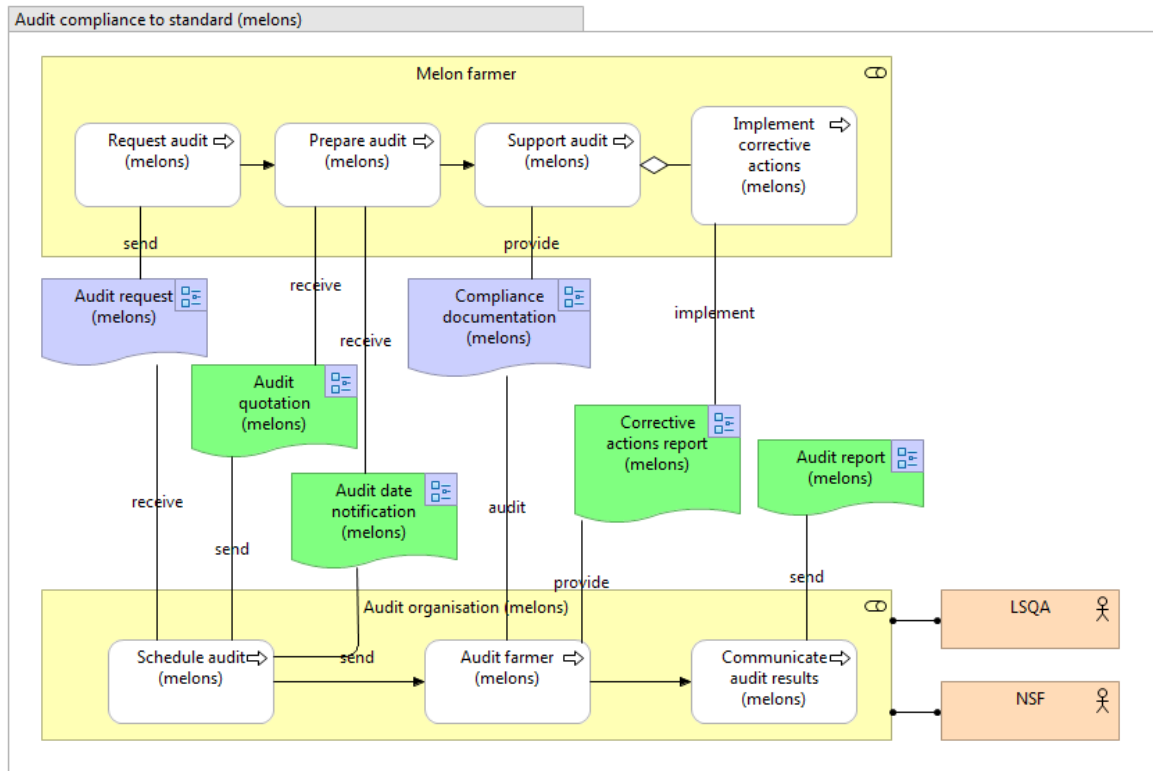
The quality department at the importer takes frequent samples to determine the Maximum Residue Level (MRL) of the produce. They take at least one sample per plot per season. The quality control department checks at arrival of the container if the pallets need an MRL check. They use the plot numbers for this. The analyses are carried out by an independent laboratory by which the labelled samples are collected. The laboratory communicates the analysis results back by email in the form of a PDF file. From this file the quality control department takes the analysis results and types them in an Excel file ('update sampling list'). Figure 3.6 presents an overview of the entire logistic process.



**Figure 3.6** Confirm compliance

### 3.3.5 Audit compliance

Figure 3.7 the audit compliance process of the melons before arriving in the Netherlands is presented. Appendix 2 gives a detailed overview of the different types of information that are involved in each and every step of the compliance process. It also gives detailed examples of the information shared between the actors in the value chain and the type of information that is required for auditing.



**Figure 3.7** Audit compliance

### 3.4 Key compliance issues

Several key compliance issues are listed below:

- Farmers have hardly integrated modern FMIS, which makes the level of ICT adaption among Costa Rican melons producers low. Farmers do use MS Office packages.
- Validity of the certificates is not up to date, which makes it difficult for traders to judge if the suppliers comply. Yearly updates are now often done manually and this is time consuming.
- General up-to-date information of the supplier is not easily available for buyers, examples given:
  - Size
  - Crops
  - Map
- Insight into actual and planned farm practices is not available for the buyer
  - Planned and actual use of crop protection products (including the stock)
  - Fertiliser use
- Monitoring of farmers to reduce the potential risks for the buyers. It is difficult to anticipate on shipments from suppliers that have deviated from the norms in the past. E.g. to take additional controls or samples on residues to ensure compliance with the retailer requirements.
- Timely matching of farm practices (e.g. use of certain pesticides and compliance with certain standards/protocols) with specific customer requirement. If a shipment of melons does not match the requirements of a certain retailer, an alternative market destination can be designated well in advance.
- Farmers indicated that they have no problems in sharing the compliance data. However the data should be restricted according to the desired privacy settings of the farmer. Grape traders indicate that insight into compliance data of farmers is desirable.

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# 4 Case study II: grapes from South Africa

## 4.1 Introduction

The two major grape growing areas in South Africa are the Orange River Valley in the Northern Cape and the Hex River Valley in the Western Cape. The total area of grape production is 1,850,000 tonnes per annum. The majority is used for wine production and about 15% are estimated to be used as table grapes. We estimated a total of 300 companies involved in the production of fresh table grapes. The export of fresh grapes represented a value of about EUR375m. The total exported volume was about 298,424 tonnes in 2014. The main export destinations are the Netherlands and the UK (79%). Main certification schemes for the table grape sector are GLOBALG.A.P. and a variety of different social standards.

### 4.1.1 Agriculture

The total number of farmers in South Africa decreased over the last decade. Agriculture contributes around 9% of formal employment, which is relatively low compared to other parts of Africa. Circa 1.15m individuals are employed in agriculture. The importance of agriculture as source of employment has reduced the last decade.

Compared to other African countries, South Africa's agricultural sector is not dominated by subsistence communal farming, with most farms being large commercial, enterprises. The commercial sector contributes 95% of the total produce while the emerging sector contributes only 5%. The country is almost self-reliant and exports massive amounts of agricultural produce.

### 4.1.2 Production of grapes

The two major grape growing areas in South Africa are the Orange River Valley in the Northern Cape and the Hex River Valley in the Western Cape. The Orange River Valley is known for its green seedless varieties as the weather conditions make for a better size and taste. The Hex River Valley conditions are more favourable for the coloured varieties as its weather conditions make for deep colour and large, regular-sized berries. The production areas offer unique climatic differences and this enables the country to produce its grapes to the international market from October through to May.

The total number of grape producers is not clear. However, the Fresh Produce Exporters' Forum (FPEF) is a voluntary, non-profit organisation with more than 120 members, accounting for about 90% of fresh fruit exported from South Africa. Based on their members list we estimate that a total of 65 companies involved in the export of fresh table grapes.

The total area of grape production is 1,850,000 tonnes (Table 4.1). The majority is used for wine production and about 15% are estimated to be used for table grapes. Table grape production has remained relatively stable over the past ten years. That has been primarily due to stable conditions in South Africa's main producing areas, especially in the Berg and Hex River valleys. There are no specific data available on the production and export of organic grapes.

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Table 4.1

*Area and production volume of grapes in South Africa (including grapes for wine production)*

		2011	2012	2013	
Grapes	Area harvested	Ha	115,000	124,000	125,000
	Production	Tonnes	1,683,927	1,839,030	1,850,000

Source: FAOStat

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### 4.1.3 ICT adoption

There is no information available on the ICT adoption level among South African fruit producers. However, a study has been done on the level of ICT among deciduous fruit producers by Louw and Prez the ministry of trade and industry policies (2002). Although being an outdated study, it looks like South African fruit producers rate themselves as late adopters of the ICT resulting in a limited ICT adoption at producer level. However the current status is not clear and no recent information is available on this.

### 4.1.4 Certification

The main identified certification schemes are the following:

- GLOBALG.A.P
- Organic certificate
- SIZA (Global Social Compliance Programme)
- ETI
- BSCI
- Fairtrade
- BRC
- Buyer protocols.

#### *GLOBALG.A.P.*

In South Africa a total of 330 table grape producers are GLOBALG.A.P. certified. Not all of these producers export themselves. Many of the producers export via dedicated exporters.

#### *Organic certificate*

Ecocert certifies all organic production in the South Africa. Ecocert offers the certification of activities according to (EC) Regulations 834/2007, 889/2008 and 1235/2008 relative to organic farming in the European Union. These regulations cover:

- Processed and unprocessed plant products, farm animals and their products intended for human consumption
- Other unprocessed plant products
- Processed and unprocessed plants and nutritional supplements intended for cattle or aquaculture.

As a result, producers of organic grapes are also required to get certified by Ecocert to export to the EU. For this farmers are entitled to provide fertiliser and spray records, including pre-harvest residue analysis. All documents are shared with the importers by mail and the audit company. In South Africa only a few exporters are certified.

#### *Sustainably Imitative of South Africa*

The Fruit South Africa ethical trade programme has now been formalised as the Sustainability Initiative of South Africa (SIZA). SIZA is a not-for-profit, membership-based organisation, open to producers, exporters, importers, retailers and stakeholders across the supply chain. The SIZA programme is a membership-based and non-profit initiative. All membership fees are used to sustain the programme, and support ongoing improvement of working conditions on farms through identifying needs and building local capacity to respond with appropriate interventions. SIZA focuses on development and building capacity and uses the audit as an indicator of need. The SIZA programme aims to provide growers with the tools to be self-regulated.

Membership of SIZA is open to all stakeholders along the supply chain. As a not-for-profit initiative, all membership fees are used to sustain the programme and are reinvested in development projects in the industry.

SIZA supports the adoption of the Global Social Compliance Programme (GSCP) reference tools as the platform for its own audit scheme. The GSCP is supported by various international retailers, including Tesco, Walmart, M&S, Ahold, Migros, COOP Switzerland, ICA, Delhaize, Carrefour and South African retailer, Pick n Pay, with the aim of harmonising ethical requirements and avoiding duplication of

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audits while ensuring global standards are adhered to. The GSCP has created a set of open-source reference tools to achieve convergence around an ethical code.

#### *Ethical Trade Initiative*

The ETI Base Code is founded on the conventions of the International Labour Organisation (ILO) and is an internationally recognised code of labour practice. According to the [www.eti.org](http://www.eti.org) website, 'ethical trade is about having confidence that the products and services have not been made at the expense of workers in global supply chains enjoying their rights. It encompasses a breadth of international labour rights such as working hours, health and safety, freedom of association and wages'.

The ETI Base Code is a generic code of labour practice and is internationally recognised as a model code. All ETI member companies and many other retailers and brands have adopted the Base Code and have committed to making sure their suppliers work towards it over time. Companies either adopt it word for word, or incorporate it into their own company codes. ETI is mainly adopted by UK based companies.

As part of their commitment to ethical trade, buying companies need to find out what working conditions like in their supply chains, so they can identify any potential issues that need resolving. ETI member companies inspect significant numbers of their suppliers against the ETI Base Code every year. ETI does not carry out audits against the ETI Base Code themselves. Many private certification and auditing companies have experience of carrying out audits against the Base Code. Below are some of the companies listed on the website of ETI:

- Partner Africa (not-for-profit)
- Bureau Veritas
- Impactt
- Intertek
- Pricewaterhouse Coopers
- SGS
- Verité (not-for-profit).

#### *Business Social Compliance Initiative*

The Business Social Compliance Initiative (BSCI) code of conduct is a business-driven initiative supporting retailers, importers and brands to improve working conditions in supplying factories and farms worldwide. The BSCI is also based on ILO labour standards and supports the continuous improvement of the social performance of suppliers. It is annually audited by third party auditors like SGS. Only a small number of farmers are adherent to this code of conduct, these are mainly exporting farms. BSCI is mainly adopted by EU mainland based companies.

#### *Fairtrade*

Fair trade is an approach to conventional trade based on a partnership between producers and traders, businesses and consumers. Fairtrade is the world's largest and most recognised fair trade system.

There are distinct sets of Fairtrade Standards, which acknowledge different types of producers. One set of standards applies to smallholders that are working together in cooperatives or other organisations with a democratic structure. The other set applies to workers, whose employers pay decent wages, guarantee the right to join trade unions, ensure health and safety standards and provide adequate housing where relevant. Fairtrade Standards also cover terms of trade. Most products have a set Fairtrade Minimum Price, which is the minimum that must be paid to the producers. In addition producers are said to get an additional sum, the Fairtrade Premium, to invest in their communities or businesses.

#### *British Retail Certification*

The British Retail Certification (BRC) Food Safety Standard is a leading global brand recognised by thousands of customers worldwide. The BRC Food Safety Standard can be used by any food processing operation where open food is handled, processed or packed. The Standard is divided into seven sections (<http://www.brcglobalstandards.com/>):



- *Senior Management Commitment and Continual Improvement*  
For a food safety system to be effective it is essential the senior management team is fully committed to its application and development.
- *The Food Safety Plan (HACCP)*  
The basis for the Food Safety System is a Hazard Analysis and Critical Control Point (HACCP) programme based on the requirements of the Codex Alimentarius system.
- *Food Safety and Quality Management System*  
Sets out requirements for the management of food safety and quality, building upon the principles of ISO 9000. This includes requirements for product specifications, supplier approval, traceability, and the management of incidents and product recalls.
- *Site Standards*  
Sets out expectations for the production environment including the layout and maintenance of the buildings and equipment, cleaning, pest control, waste management and foreign body controls.
- *Product Control*  
Includes the requirements for product design and development stage including allergen management, product and ingredient provenance, product packaging and product inspection and testing.
- *Process Control*  
Includes the establishment and maintenance of safe process controls, weight and volume control and equipment calibration, and ensures the documented HACCP plan is put into practice.
- *Personnel*  
Sets out the standards needed for staff training, protective clothing and personal hygiene.

#### *Buyer protocols*

In addition, there are various protocols developed by retailers that are not incorporated in a certification scheme, but are independent checklists. This is often based on certificates such as GLOBALG.A.P. but contain additional questions.

#### 4.1.5 Export of grapes

Circa 50% of the USD1.7bn worth of exported fruit to Europe is designated for the Netherlands. The import for fruits in Europe is concentrated in Rotterdam and the surrounding area. The Rotterdam port area has an efficient transfer and distribution centre with various fresh storage centres, fruit export/import companies, port facilities and logistic service companies.

According to the South African Yearbook (2011), the Netherlands is an important trade and investment partner of South Africa, and a major provider of tourism. South Africa has close political relations with the Netherlands, and engages in substantial cooperation partnerships, contributing significantly to South Africa's national priorities. The Dutch Government has consistently supported South Africa in terms of bilateral and multilateral relations. A large number of bilateral agreements have been signed and high-level bilateral ministerial meetings are held frequently, to discuss bilateral relations, economic development and areas of cooperation.

The export of fresh grapes represented a value of about EUR375m. The total exported volume was about 298,424 tonnes in 2014. The main export destinations are the Netherlands and the UK (79%).

**Table 4.2**

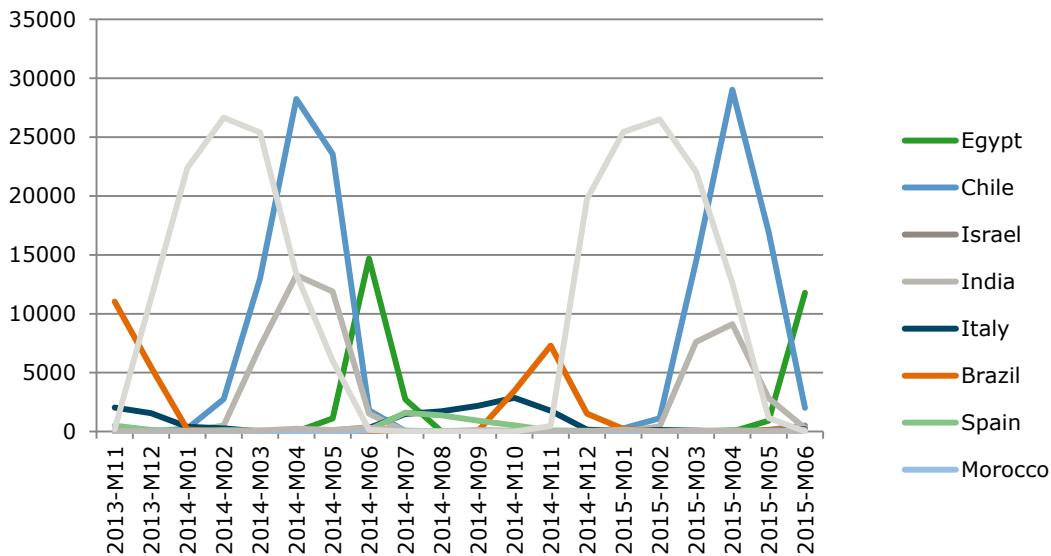
*Value of exported fresh and dried grapes from South Africa*

			2011	2012	2013	2014
HS080610	Fresh	Value in millions of EUR	309.0	336.9	332.0	374.7
		Volume in tonnes	253,140	267,503	283,239	298,424
HS080620	Dried	Value in millions of EUR	29.0	52.3	58.9	62.2
		Volume in tonnes	16,950	24,923	32,194	35,041

Source: UNComtrade

#### 4.1.6 Import in the Netherlands

The South African grape season runs from December to May. During the other months of the year the EU sources melons from Chile (European summer), Egypt (Autumn). The figure below gives the Dutch import seasonality of grapes per month (HS080610).



**Figure 4.1** Dutch import of melons per month in tonnes  
Source: UNComtrade

#### 4.1.7 Transport and packaging

The transport of grapes falls into two categories, namely ocean cargo and air cargo. Ocean cargo takes much longer (two weeks) to reach the desired location but costs considerably less. The choice of transportation method depends, for most parts, on the fragility of the produce and how long it can remain fresh. With the advent of technology and container improvements, the feasibility, cost and attractiveness of sea transport have improved considerably over the years. Although the number and the frequency of maritime routes have increased, the majority of the grapes is exported by air to maintain an acceptable degree of freshness.

Packaging also plays an important role in ensuring safe and efficient transport of a product and conforming to handling requirements, uniformity, recyclable material specifications, phytosanitary requirements, proper storage needs and even attractiveness for marketing purposes.

The business panel of any box (including printed box labels) used for packaging should comply with the requirements as established by the EU or any other regulations that are specified by a target market. Producers are advised to present their designs to the Perishable Products Export Control Board (PPECB) before they can order any cartons from a manufacturer. The following is normally required:

- Class I or II
- Fruit type
- Carton depth
- Country of origin: 'Produce of South Africa'
- Complete address of exporter or producer
- Name of variety
- Content of box
- PUC or PHC code: Registered producer – or Pack House Code
- Date code
- Certification number: GLOBALG.A.P.

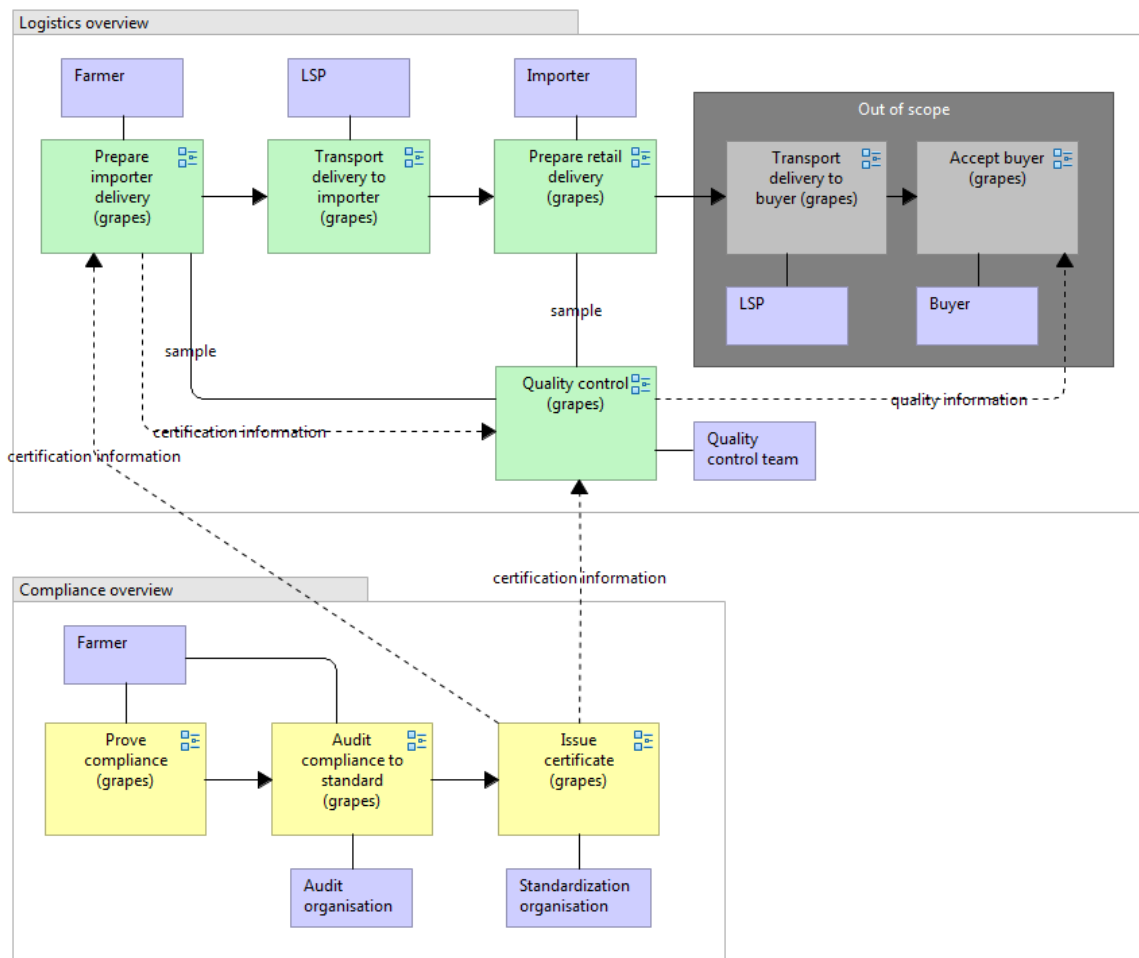
## 4.2 The grape case study

Figure 4.2 gives a schematic overview of the different steps in the grape value chain from farm to retail. The grape case study shows many similarities with the melon case study due to its international character.

The logistic overview start at the farmer where are prepared for transportation. Then the grapes are handed over to the logistic service provider (LSP) who transports the grapes from the exporter in South Africa to the importer in Europe. After that the importer accepts the grape shipment. At the farm and at the importer the compliance of the grapes to the agreed certification standards is audited by an independent auditor and checked by the importer by checking samples of the product. Results are shared on request by the customer. After acceptance of the shipment by the importer the grapes are transported and accepted by the retailer, but these processes are considered out of scope for this project.

Prior to the logistic processes, production takes place at the farmer. During production the farmer ensures compliance of his production is in line with certification standards. These standards are set by the standardisation organisations (such as GLOBALG.A.P.) and audited by independent auditors (such as KIWA BCS Öko Garantie GmbH for the Organic and GLOBALG.A.P. certificate and SGS for ETI). If the farmer complies to the standard according to the auditor, the standardisation organisation issues the certificate.

Further on in this section we will elaborate on the separate steps.



**Figure 4.2** Logistics overview of the chain

## 4.2.1 Importer delivery

Figure 4.3 describes the preparations of an import delivery from the exporter in South Africa to the LSP.

### Boxes

After harvest the grapes are packed in boxes. The GLOBALG.A.P. number (GGN) is printed on the boxes and also carries the name of the producer. Other information on the box are the size of the fruits and the approximate weight of the box. Every box receives a stamp that holds a traceability code that refers to the harvested plot and the date of harvest.

The certification standards do not require the exporters to use a GGN identification number. In most cases, farmers in South Africa use their own traceability code that they stamp on the boxes.

### Pallets

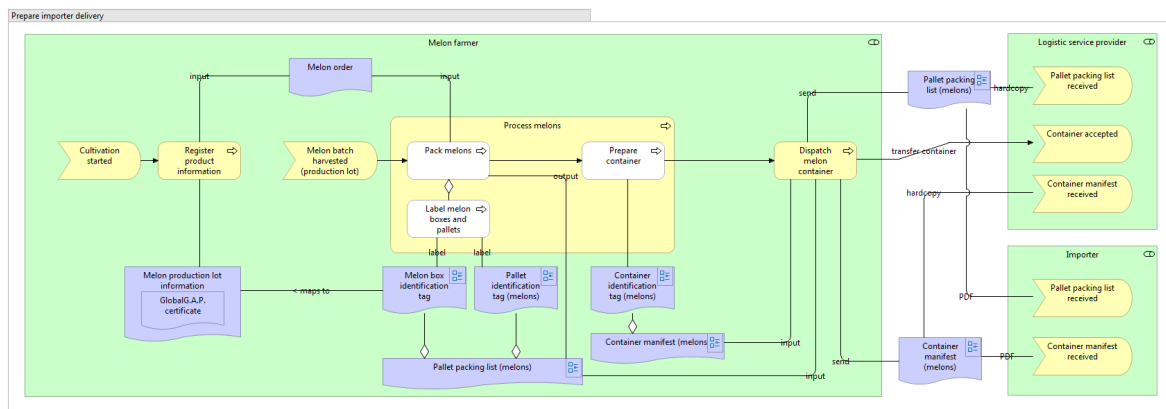
The boxes are placed on a pallet. Every pallet has a fixed number of boxes. Every pallet receives a pallet number. On each pallet exporters allocate a barcode that corresponds with this number and the number is added to the container manifest.

### Containers

The pallets are placed in a container suitable for air transportation. The container manifest accompanies the air shipment and is sent by email to the importer as a PDF file. This contains all pallet numbers and for each pallet it contains also the product type, box type (wood or cardboard), information of the label, number of boxes on each pallet, traceability code of the boxes and the different sizes in each box.

The container is collected by the local LSP to the nearby port. The local LSP often works for the handling agent in Europe, which is hired by the importing company. They arrange the transportation. This includes booking the container on a vessel and taking care of the import and export procedures. These procedures are not discussed in this report since this is out of the scope of the project.

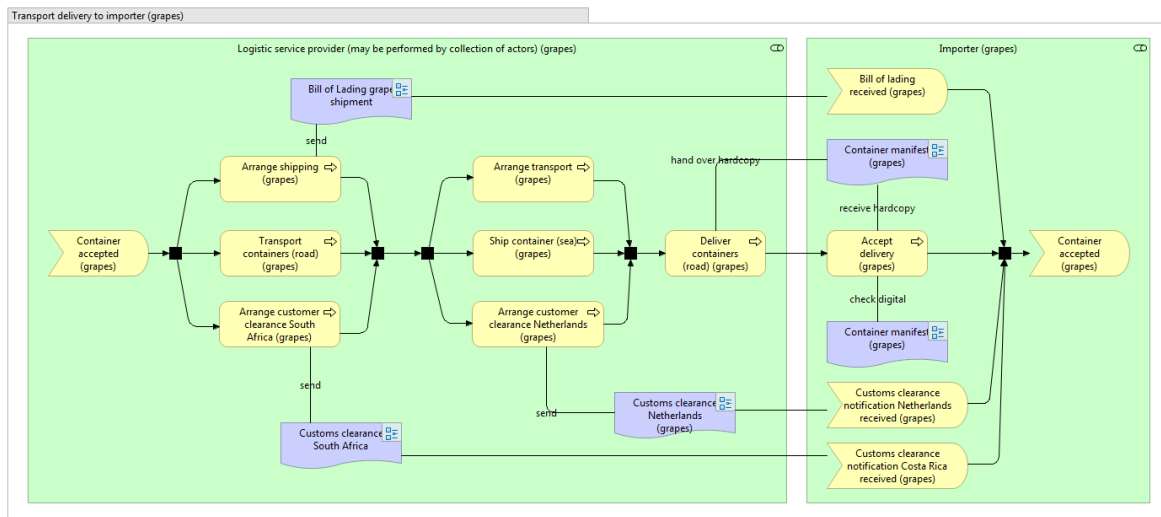
The grapes are trucked to Cape Town. From there on, the grapes are transported by ship to Europe. Shipping takes about 3 weeks.



**Figure 4.3** Prepare import delivery

## 4.2.2 Transport delivery

On arrival in the port of destination, the grapes are transported to the warehouse of the importer. When the produce arrives in the warehouse of the trader, the trader allocates a shipment reference which is linked to the data presented by the farmer. From there on, the shipment is prepared for transportation to the final destination and the reference is provided to the buyer, often on the invoice. Figure 4.4 presents an overview of the entire transportation process.

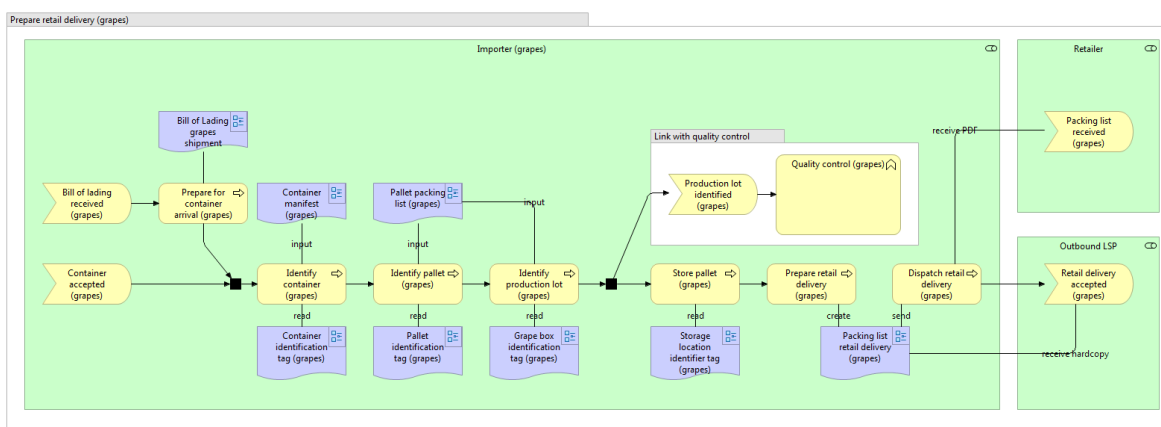


**Figure 4.4** Transport delivery

### 4.2.3 Retail delivery

Based on the information in the Bill of Lading, the importer prepares an efficient handling of the produce on arrival. When the container arrives, the importer identifies the container by the container identification tag and checks with the container manifest. The pallets are collected at the inbound dock. Here an independent quality inspection takes place (see Section 4.3.4 for more information). The container is unpacked and the pallets receive a pallet label with barcode. If this label is detached from the pallet, it is considered lost. If necessary, a sample is taken from the delivery for further laboratory analysis. This is carried only once per season per plot. The pallets are stored in the warehouse. In the warehouse the forklift driver places the pallet on the warehouse shelf. He then links the pallet to the shelf using a barcode scanner.

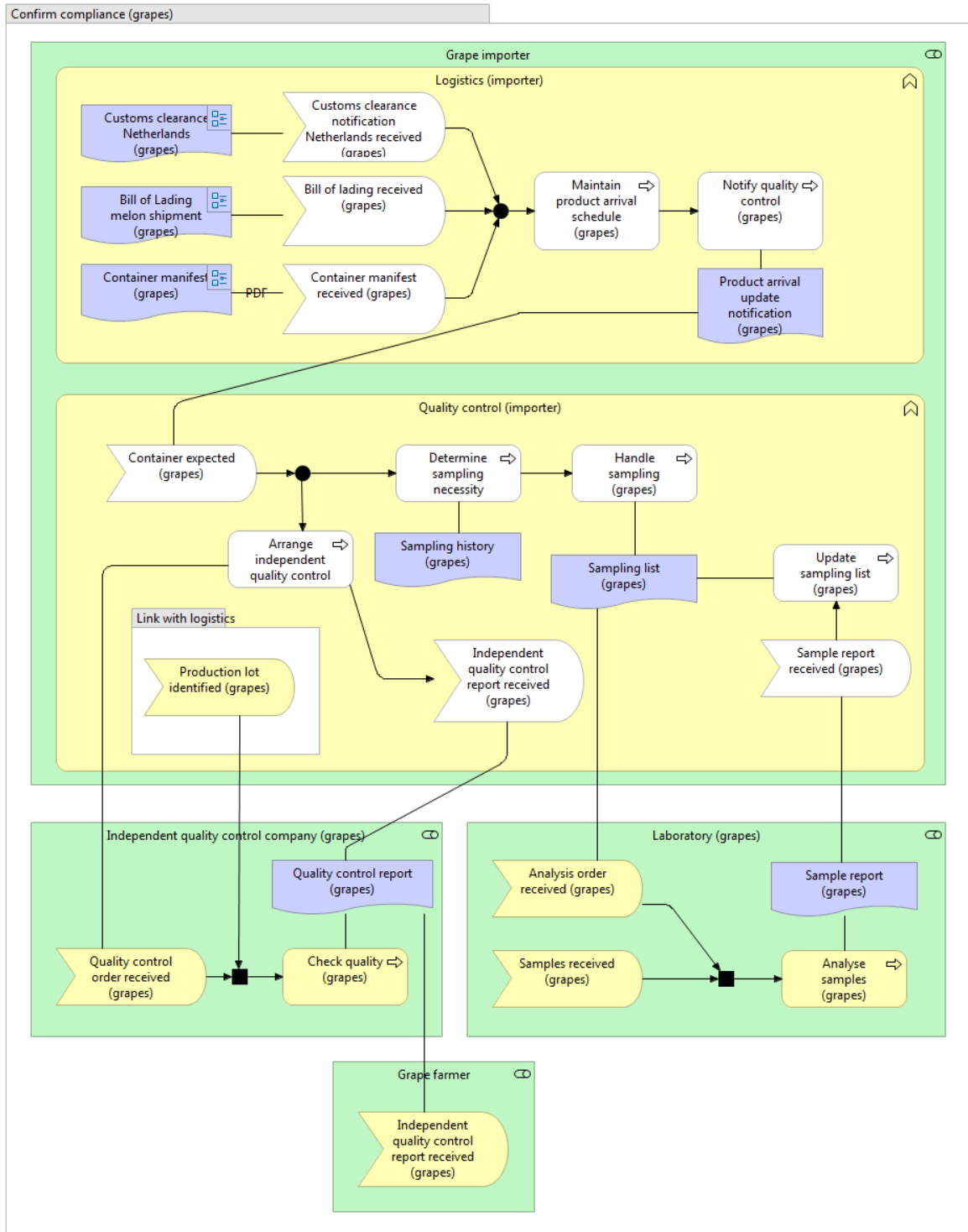
Based on the sales order, pallets are collected and transported to the outbound dock where they are picked up by the transporter. The buyer is often a retailer or a another fruit trader that supplies specialised fruit and vegetable shops. After arrival in the shop the grapes are stocked on the shelf. Grapes are sold from the box and are not repacked in the distribution centre of the retailer.



**Figure 4.5** Retail delivery

#### 4.2.4 Quality control

The quality department at the importer takes frequent samples to determine the MRL at the produce. They take at least 1 sample per plot per season. The quality control department checks on arrival of the container if the pallets need an MRL check. They use the plot numbers for this. The analyses are carried out by an independent laboratory that collects the labelled samples. The laboratory communicates the analysis results back by email in the form of a PDF file. From this file the quality control department takes the analysis results and enters them in an Excel file ('update sampling list').

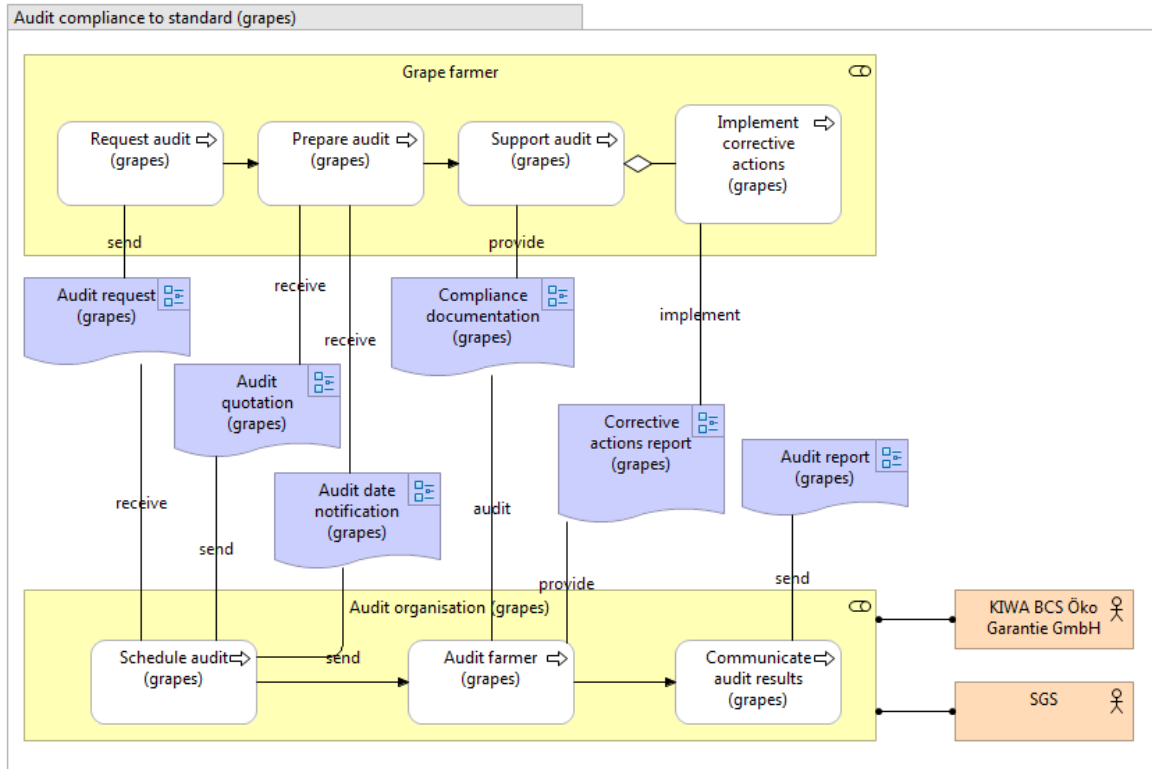


**Figure 4.6** Quality control

## 4.2.5 Compliance

In Figure 4.7 the audit compliance process of the melons before arriving in the Netherlands is presented. Appendix 3 gives a detailed overview of the different types of information that are involved in each and every step of the compliance process.

Farmers indicated that they have no problems in sharing the data. However, the data should be restricted according to the desired privacy settings of the farmer. Grape traders indicate that insight into compliance data of farmers is desirable.



**Figure 4.7** Compliance

## 4.3 Key compliance issues

- High cost structure to comply with the current schemes.
- Growth registration information is very important for the organic table production, however this information is not easy to share.
- Slow information flow between buyer and producer.
- Often the information provided by the exporter is not complete.
- The interviewed exporter argues that they can share info regarding varieties and certification which is relevant to exports.

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# 5 Case study III: fresh table potatoes in the Netherlands

## 5.1 Introduction

The potatoes sector in the Netherlands is a significant contributor to the foreign export earning of horticultural produce. The export value for fresh ware potatoes is EUR489m.

## 5.2 The potato sector

### 5.2.1 Production of potatoes in the Netherlands

The total area of potatoes is 156,252 hectares (Table 5.1), cultivated by 9,300 companies. Potatoes are cultivated for three main purposes: ware potatoes (fresh table potatoes and processing potatoes), seed potatoes and starch potatoes.

- Ware potatoes are produced in the Netherlands on 74,000 hectares and this is almost half of the total area of potatoes production. Total production is about 3.8m tonnes. Ware potatoes are produced by 6,780 companies. This group includes fresh table potatoes and potatoes for the processing industry. Fresh table potatoes are served as a component of a meal. Processing potatoes are used to make fries or chips. Compliance with certification requirement is especially challenging in the fresh table potato sector.
- Seed potatoes are grown to be seeded next year by, most of the times, other potato growers. These potatoes are the starting materials for other farmers. A large amount of the seed potatoes grown in the Netherlands are exported.
- Starch potatoes are grown for the processing industry. Starch from these potatoes is used amongst other as food additives, in the pharmaceutical industry and for industrial application such as the making of paper.

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Table 5.1

*Area (ha) of potatoes in the Netherlands*

	2011	2012	2013	2014
Potato, total	159,686	149,932	155,822	156,252
Ware potatoes, total	72,607	67,452	71,569	74,068
Seed potatoes, total	37,911	39,159	40,223	39,874
Starch potatoes	49,168	43,321	44,032	42,310

Source: CBS Statline

### 5.2.2 ICT adoption

According to a study by Janssens *et al.* (2013) arable farmers, including potato farmers, in the Netherlands are using FMIS. They primarily use their FMIS for registering crop data to give these to external parties in connection with food safety requirements. This study shows that use of an FMIS is common among farmers. However, a small share of the farmers do not use an FMIS. Some reasons for not using an FMIS is that they find it too complicated and expensive or they do not have a computer.

Growers who do use an FMIS primarily use it for recording data and exchanging data with their buyers. These systems provide functionality to register all operations carried out in the field. These registrations describe the exact application of inputs (e.g. fertiliser, crop protection products, seeds)



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and all observations regarding the development of the crops. Some of these recordings are exchanged with their buyers to assure product compliance. Still, they do not have a system that can support them in certification compliance. The FMISs are used to only a limited degree for analysing or improving internal business operations or for exchanging data with external instruments. Those who use a software system are also satisfied about the exchange of data between their FMIS and external parties. Growers are faithful to their FMIS, and they rarely switch to another brand of FMIS. In the Netherlands there are several providers of FMIS. The main providers are Agrovision, Crop-R/Dacom, AppsforAgri and IsaGri.

From the conducted research, nearly all respondents without an FMIS do register crop data, although they do not use a computer for this, despite the fact that approximately half of these respondents do own a computer. It appears that there is a specific demand for methods and tools which contribute to product quality. To achieve this, more support is necessary in terms of steering cultivation than in terms of registration after the fact. Respondents were very satisfied with current software and technology which can be used to improve business operations. It appears that MISs are used to improve internal business operations, but the idea of registering crop data for purposes of comparing them with other growers (benchmark measurements) is not seen in and of itself as a reason to register crop data. The demands/wishes in terms of the functionalities which FMIS should offer also focus on the ability to improve internal business operations on the basis of self-registered data.

The responding farmers had a positive attitude towards investing in tools for precision farming: the acquisition of various GPS tools, for instance, is seen as a good investment. But before making investments in this, the respondents want to see precision farming and the related tools becoming easier and simpler to use (plug and play). Data exchange between the tools on the field and computer software (FMIS) needs to be simpler as well. The growers who were surveyed the most, and particularly growers without MIS, are not trendsetters when it comes to modern methods of communication (smartphones, tablets, etc.).

In addition various other studies (Buys 2014, Prosu 2014, Agridirect 2013, CRM Partners 2014) showed that the ICT adaption level of Dutch farmers is high. Many farmers use the internet to search for farm information, many use email (65%), farmers use apps (45%) and farmers are using tablets and smartphones (38%).

### 5.2.3 Certification

The main certificate used by the potato farmers in the Netherlands is GLOBALG.A.P. In 2015 about 1900 farmers registered via the GLOBALG.A.P. database for the product potatoes. This mainly comprises ware potatoes. Based on the total number of ware potato producers in the Netherlands, it represents a market share of 25-30%.

In addition a study by AgriPlace (Buys, 2014) estimate that 79% of the arable farmers were certified for GLOBALG.A.P. Other important voluntary schemes were GLOBALG.A.P. GRASP, EU BIO Certificate, Milieukeur and in some cases Skal and Field to Fork, all with a market share of 5-6%.

### 5.2.4 Potato trade

The export of potatoes (including seed potatoes) represented a combined value of about EUR678m (Table 5.2). The export value for fresh ware potatoes is EUR489m. The main export destinations for fresh potatoes are Algeria and Belgium (for re-export from the port of Antwerp). For seed potatoes the value is EUR189m. Main destinations are Belgium (for re-export from the port of Antwerp), Germany and Senegal.

Table 5.2

Export of potatoes from the Netherlands

Product code	Product label	2011	2012	2013	2014
HS0701	Potatoes total, fresh or chilled in millions of EUR	761.0	590.2	791.4	678.0
	In tonnes	2,089,212	1,853,784	2,064,354	2,090,318
HS070190	Potatoes, fresh or chilled nes in millions of EUR	428.2	386.8	443.9	488.7
	In tonnes	897,668	884,205	956,666	1,039,935
'070110	Potatoes seed, fresh or chilled in millions of EUR	332.7	203.4	347.5	189.3
	In tonnes	1,191,544	969,579	1,107,688	1,050,383

Source: UNComtrade

### 5.3 The fresh table potato case study

In the potato case study processes regarding compliance are modelled. Figure 5.1 gives a schematic overview of the different steps in the potato value chain from farm to retail and its relation to compliance. In this section we will further elaborate on every step.

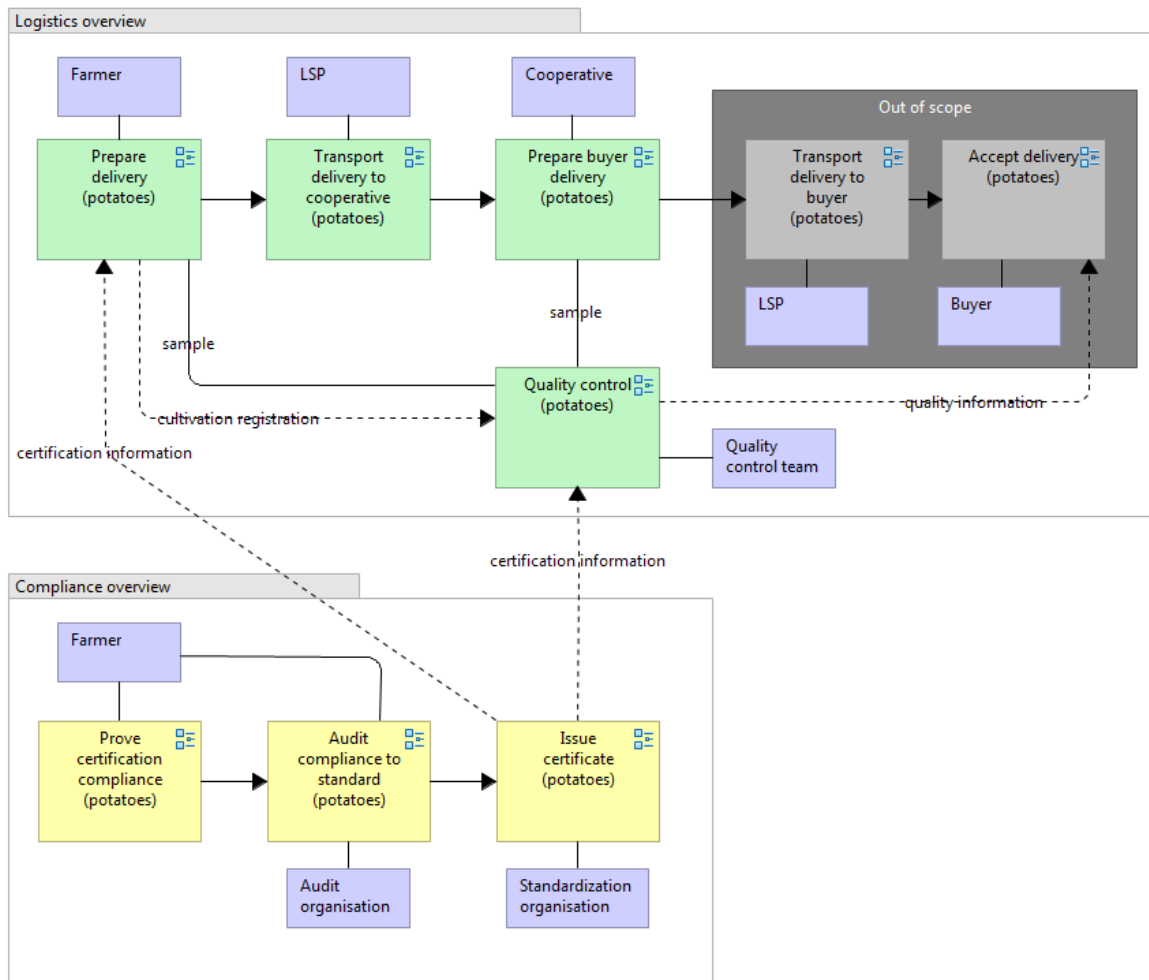
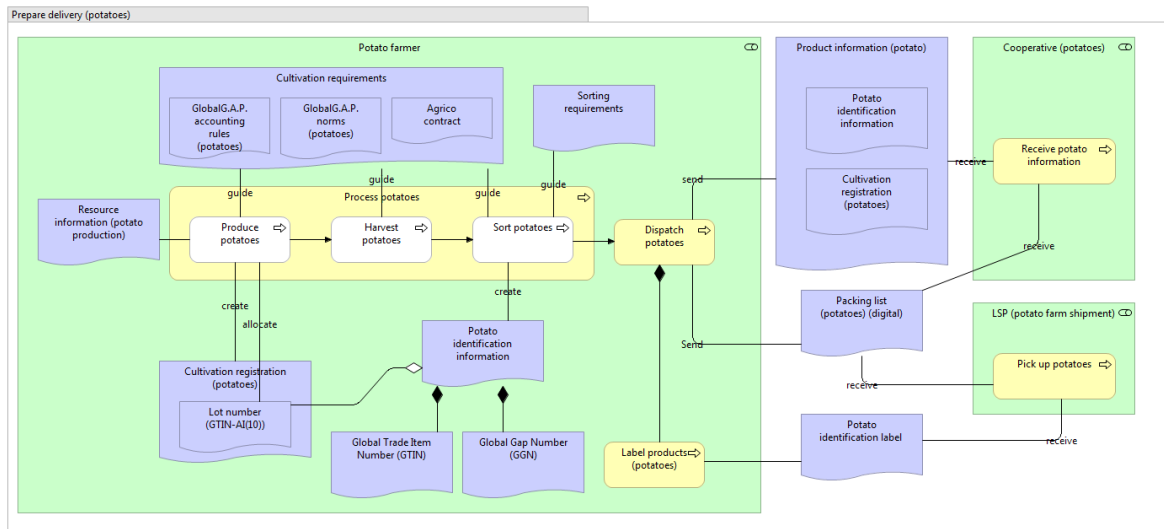


Figure 5.1 Overview of the potato logistic processes related to product and certification compliance

### 5.3.1 Prepare delivery

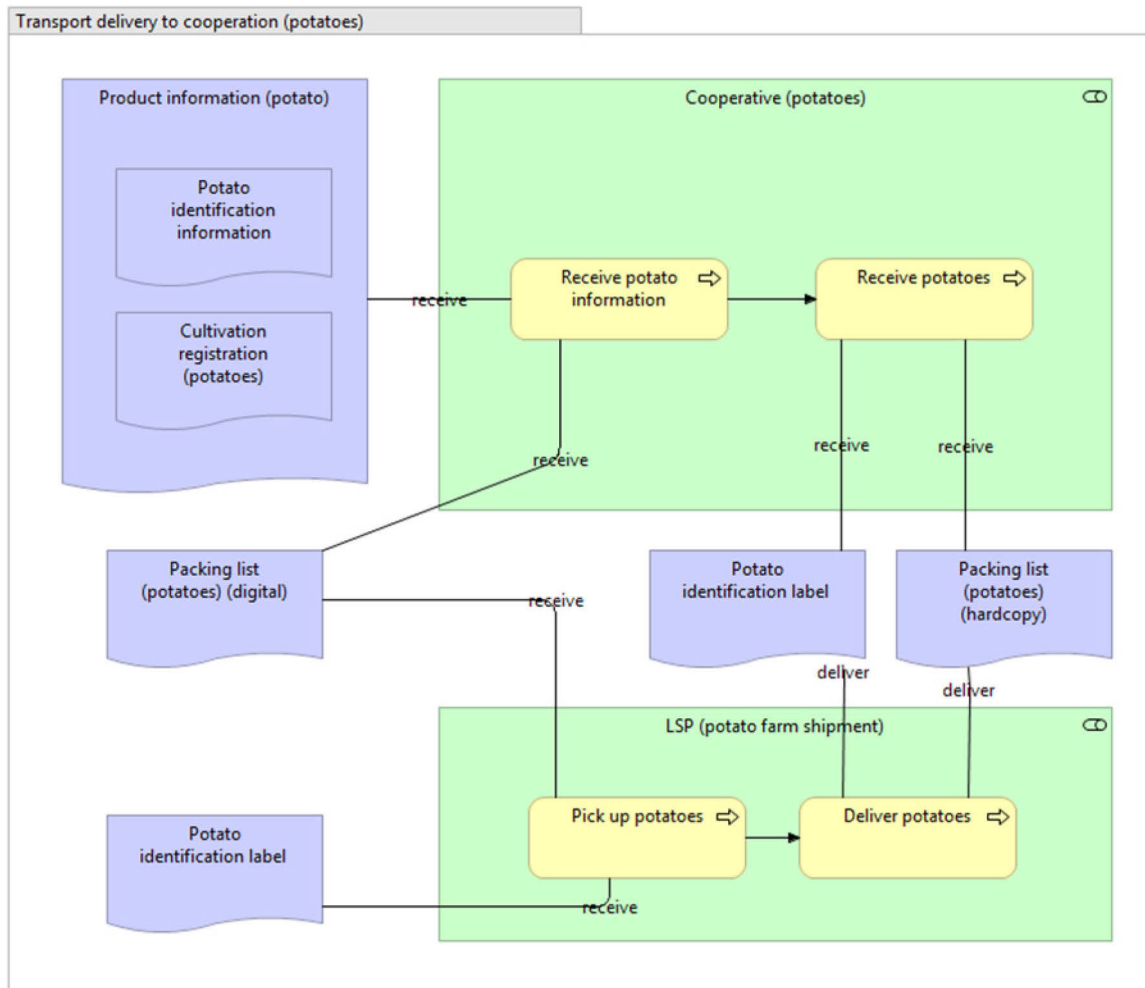
In Figure 5.2 processes and information objects are modelled that describe the delivery of potatoes to a cooperative, using a logistic service provider. The farmer produces, harvest and sort these potatoes taking requirements of the conventional GLOBALG.A.P. fruit and vegetable standard and the Agrico contract into account. To comply to these requirements the farmer provides cultivation registration information, using resource information. This cultivation registration is linked to this specific batch of potatoes based on a lot number that provides potato identification information (based on a GTIN and GNN). This potato cultivation registration and identification information is sent to the cooperative as product information. Other documents that guide the physical delivery of the potatoes to the cooperative are a packing list and potato identification labels.



**Figure 5.2** Prepare delivery processes of potato farmers

### 5.3.2 Transport delivery to cooperation

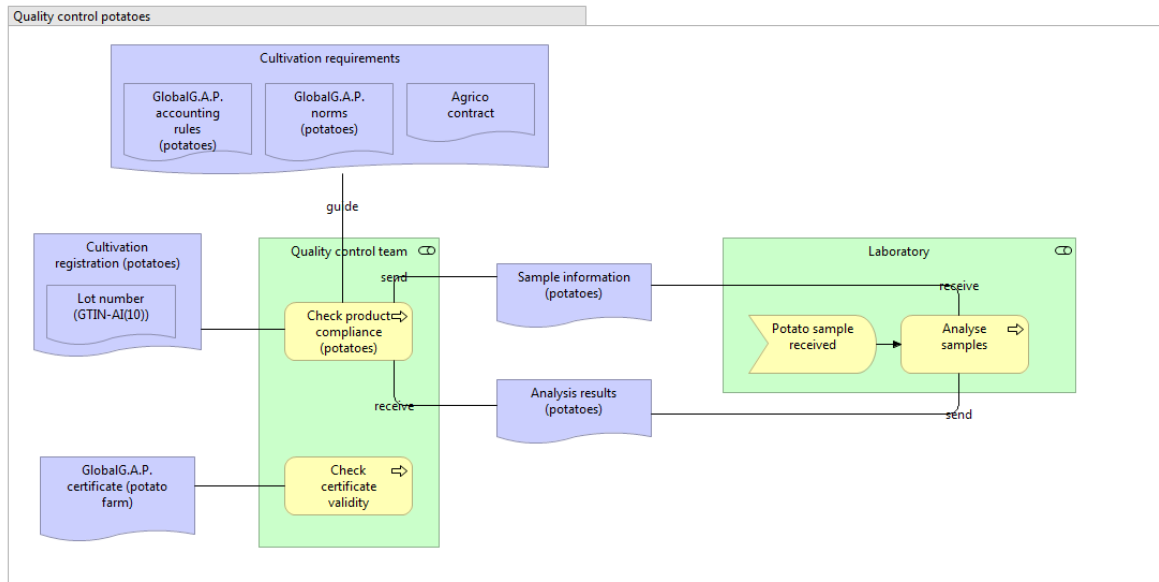
Potatoes sent to a cooperative are collected by logistic service provider with large trucks, see Figure 5.3. These logistic service providers pick up the potatoes with a truck and deliver these to the cooperative. This physical flow of potatoes is guided with a packing list and a potato identification label to be able to link the potatoes with the product information. This product information is sent in parallel from the farmer to the cooperative. The cooperative then processes these potatoes and prepares the delivery of the potatoes to the client.



**Figure 5.3** Transport delivery to cooperation

### 5.3.3 Quality control

The quality department at the cooperative checks the validity of the GLOBALG.A.P. certificate of the potato farmer using a database of GLOBALG.A.P. Furthermore, samples are taken to determine the MRLs at the potatoes. The quality control department checks at arrival if the delivery needs a check, see Figure 5.4.



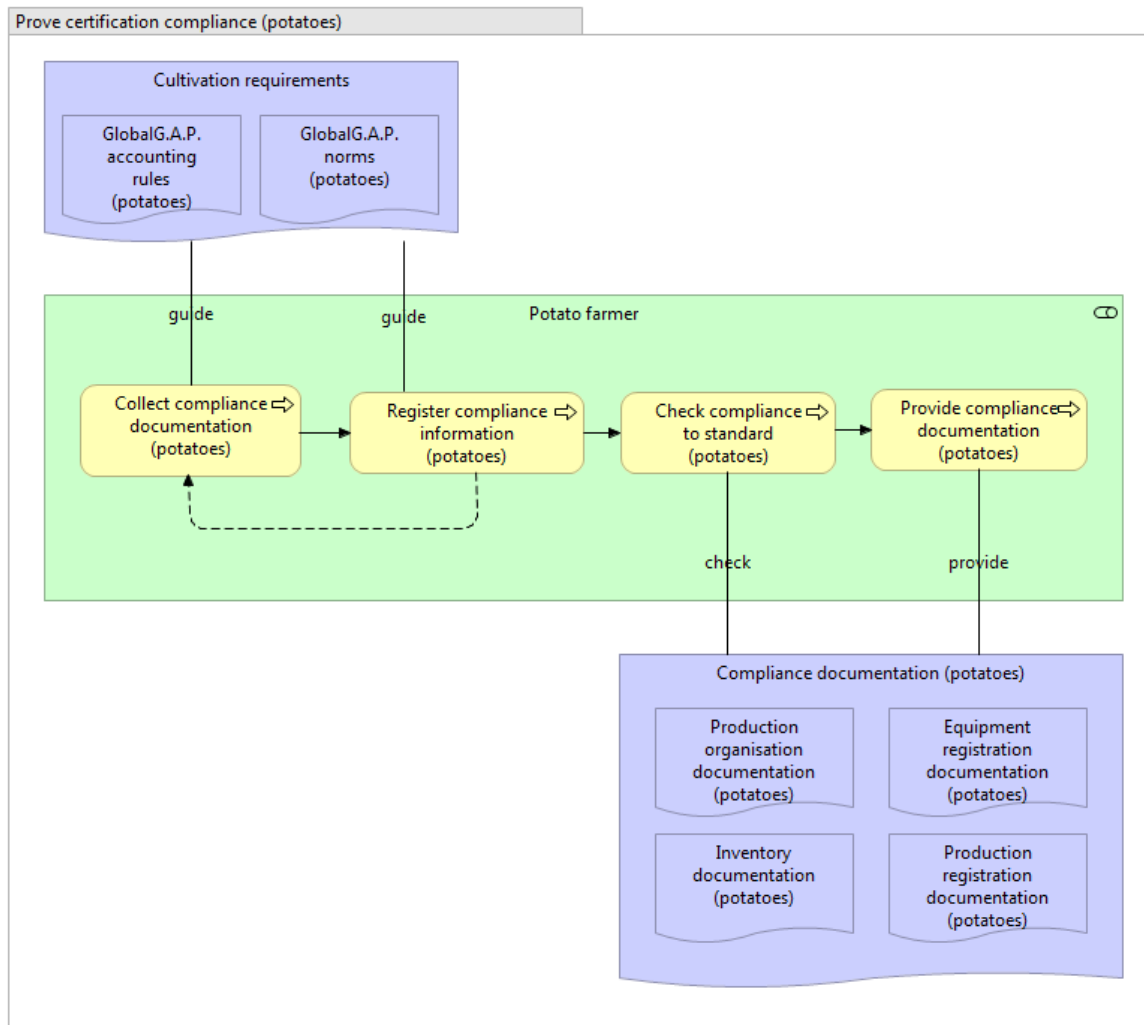
**Figure 5.4** Quality control of potatoes

### 5.3.4 Compliance

Next to the logistic processes, farmers need to acquire or sustain a certification and additional compliance requirements. The GLOBALG.A.P. certificate is required to sell potatoes to the cooperative. Therefore, the farmer needs to prove that his processes are compliant with the GLOBALG.A.P. standard. These processes are described in Figure 5.5. First, to prove his compliance the farmer collects compliance documentation. Second, the farmer registers compliance information that can be added to the compliance documentation. Third, the farmer checks his compliance documentation and enable that this documentation can be provided to an auditor.

Additional compliance requirements are agreed in the contract. Often the farmer needs to comply with a survey issued by the retailer. If the potatoes are sourced by various retailers, the farmer needs to fill out a variety of different forms that all cover comparable topics.

Farmers indicated that they have no problems in sharing the data. However, the data should be restricted according to the desired privacy settings of the farmer. Traders indicate that insight into compliance data of farmers is desirable.



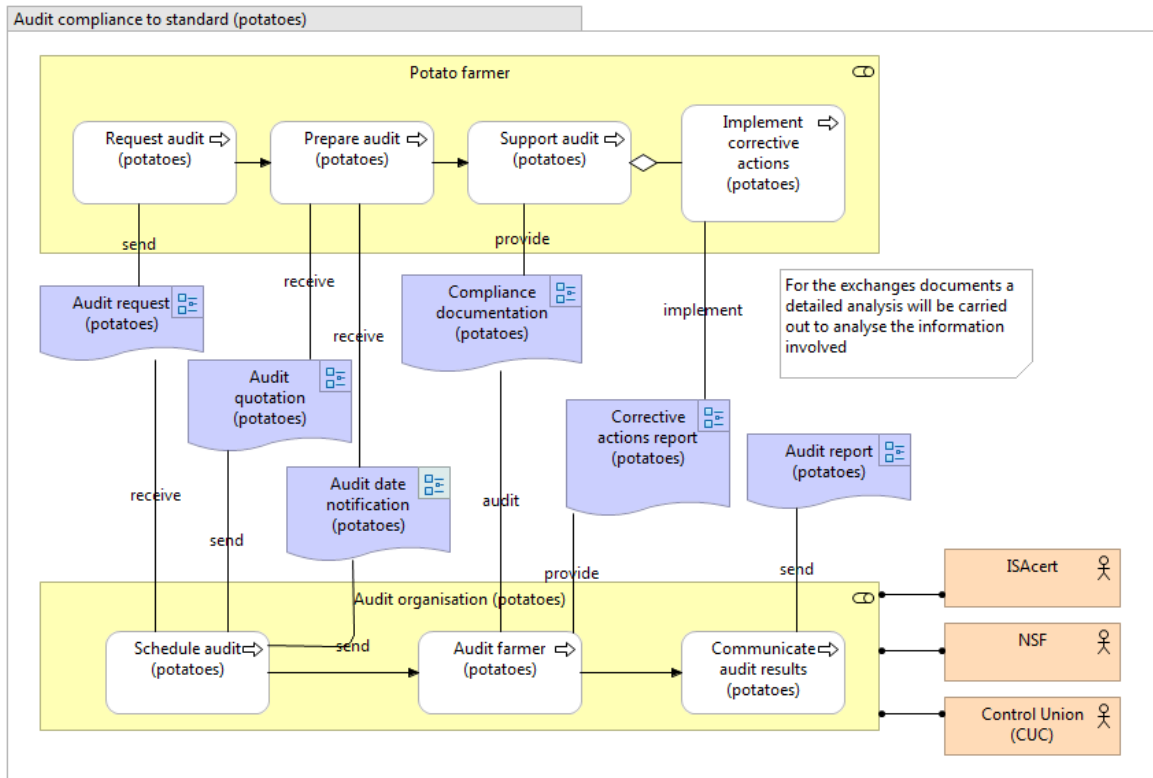
**Figure 5.5** Prove certification compliance processes and information objects

### 5.3.5 Audit compliance to standard

The process 'Audit compliance to standard' is about formally checking the compliance documentation of the potato farmer with the norms and standards of GLOBALG.A.P. by an audit organisation (e.g. Vincotte ISAcert, SGS, EKAS, MPS, NSF, CUC). The details of the process are presented in Figure 5.6. This process depicts a farmer taking initiative to plan an audit for the first time. After a first audit the audit organisation normally takes initiative to schedule an audit that follow up the previous one.

For a first audit the process starts with a 'Request audit' process that is sent to the audit organisation. Then an audit is scheduled and an 'audit quotation' is sent to the farmer. On the audit date the farmer is audited, during which it is checked if the farmer compliance documentation complies with the standard. Based on this audit a corrective report can be written. After this step the audit report is communicated with the farmer. Based on this corrective actions report, the farmer is able to implement these. After the corrective actions are implemented the farmer can be audited additionally. The outcome of the process is an audit report that the audit organisation provides to the certificate-issuing organisation.

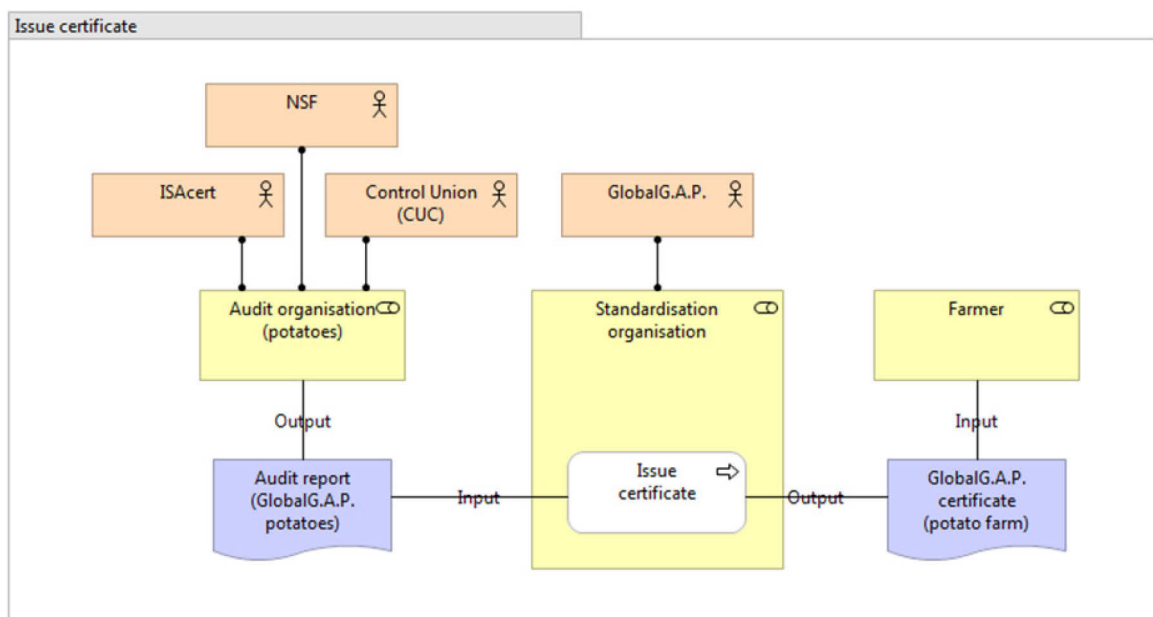
The study by Buys (2014) indicates that on average, farmers with a GLOBALG.A.P. certificate spend 3 hours a year on the external audit and about 2 days a year on preparation time. However, these numbers can vary. In the first year of certification, farmers spend more time on preparation. It then takes about 1.5 to 2 days to complete the administration and an additional 1.5/2 days a year for registrations. A new version of the standard also requires extra work. An internal audit differs from 1.5 up to 3 hours a year. If the farmer is well prepared, with all documents ready, the internal audit will take 1.5 hours.



**Figure 5.6** The auditing processes, documentation and actors

### 5.3.6 Issue certificate

The process 'Issue certificate' is the process in which standard setting organisation issue the certificate to applicants based on the audit report as visualised in Figure 5.7. The standardisation organisation GLOBALG.A.P. issues this certificate. The farmer and the cooperation can access this certificate using an online database. Appendix 4 gives provides more detail about the process of issuing the certificate.



**Figure 5.7** Issue certificate

---

## 5.4 Key compliance issues

- General information of the grower is not always up to date and available for the traders and retailers. Examples are:
  - Size
  - Crops
  - Map of arable land
- Insight into actual and planned farm practices (real time) should be available on request for traders.
  - Planned and actual pesticide use (+stock)
  - Fertiliser use
- Client (retail) questionnaires are time consuming and should be digitalised.
- Monitoring of farmers to reduced potential risks is missing
  - It is difficult to anticipate on shipments from farmers that have deviated from the norms in the past



## 6 Conclusion

This study gives an overview of the different requirements by industry stakeholders related to the standardisation of data collection. We focused on the requirements requested by farmers and by other parties.

Table 6.1 gives a summary of the main certification schemes and compliance challenges. It provides an overview of the characteristics and compliance issues in the different case studies. It gives an overview of the number cultivated land, the relative sector size in tonnes, the annual exported volume and an indication of the exported volume (%) compared to the domestic production volume. The table provides also an overview of the number of farmers. All data are based on 2013 figures. We have estimated the level of ICT adoption for each sector, ranging from low to high.

**Table 6.1**

*Main characteristics and compliance issues*

	Melons Costa Rica	Table grapes South Africa	Fresh table potatoes the Netherlands
Area	4,627	16,229	74,068*
Sector size (tonnes)	125,598	315,000*	3,871,458
Export (tonnes)	116,040	283,239	1,039,935
Export share vs prod (%)	95	90	25
Number of (exporting) farmers	25**	330	6,780
ICT and FMIS adaption	Low	Average	Average-High
Top voluntary schemes	GLOBALG.A.P., Rainforest Alliance, Tesco Nurture SMETA-ETI	GLOBALG.A.P., SMETA-ETI, organic certificate, SIZA	GLOBALG.A.P.
Number GLOBALG.A.P. firms	19	330	1,906
Key compliance issues	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires	Compliance check, reliability of data, sharable by farmer, cultivation plan, cultivation history, integration of retail different questionnaires.
Key identified principles	Sharing is ok	Sharing is ok	Sharing is ok

Source: FAOSTAT, UNCOMTRADE, GLOBALG.A.P. database, own research

\* Ware potatoes are potatoes grown for human consumption as fresh table potatoes or in a processed form but excludes seed potatoes and starch potatoes

\*\* Estimate

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# References

- Janssens, B., J.W. Kruize, J. van Dijk and R. Robbemonnd (2013) *Bedrijfsmanagement in de akkerbouw; Een inventarisatie van gebruik en wensen*. LEI Wageningen UR 2013-033.
- De Visser, P., and Y. Dijkxhoorn (2012) *Business opportunities for protected horticulture in South Africa; An overview and developments in South African protected horticulture*. Wageningen UR Greenhouse Horticulture.
- Louw, D. and J. du Prez (2002) *Implications of the information revolution for economic development in South Africa Project*. Department of Trade and Industry policy support programme management. South Africa.
- Buijs, L. (2014) *Market Research Report*. AgriPlace. Amsterdam.

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# Appendix 1 Survey

## General information

Name of the farm:

Location:

For how many years are you exporting fruit and vegetables?

Please give an indication of your main products and their volumes?

Products	Area (ha)	Production (tonnes)	Sales (USD/EUR)

What are your main export markets of these main products?

Products	Markets

## Information of interest

Which information do you share with your customers and what kind of documents are requested in terms of information, certification etc. that enables you to supply the EU market?

Product and market	Evidence	Additional compliance evidence

## Documents sharing

What kind of documents do you actual send to your customers?

Do you send documentation in a digital form to your buyers?

What kind of software systems do you use to support registration?

---

**Problems**

What are the current challenges related to the compliance requirements in terms of time, costs, efficiency?

Requirements	Challenge	Time to comply	Estimated costs

**Requirements**

What would be your preferred solution in order to reduce your efforts to comply??

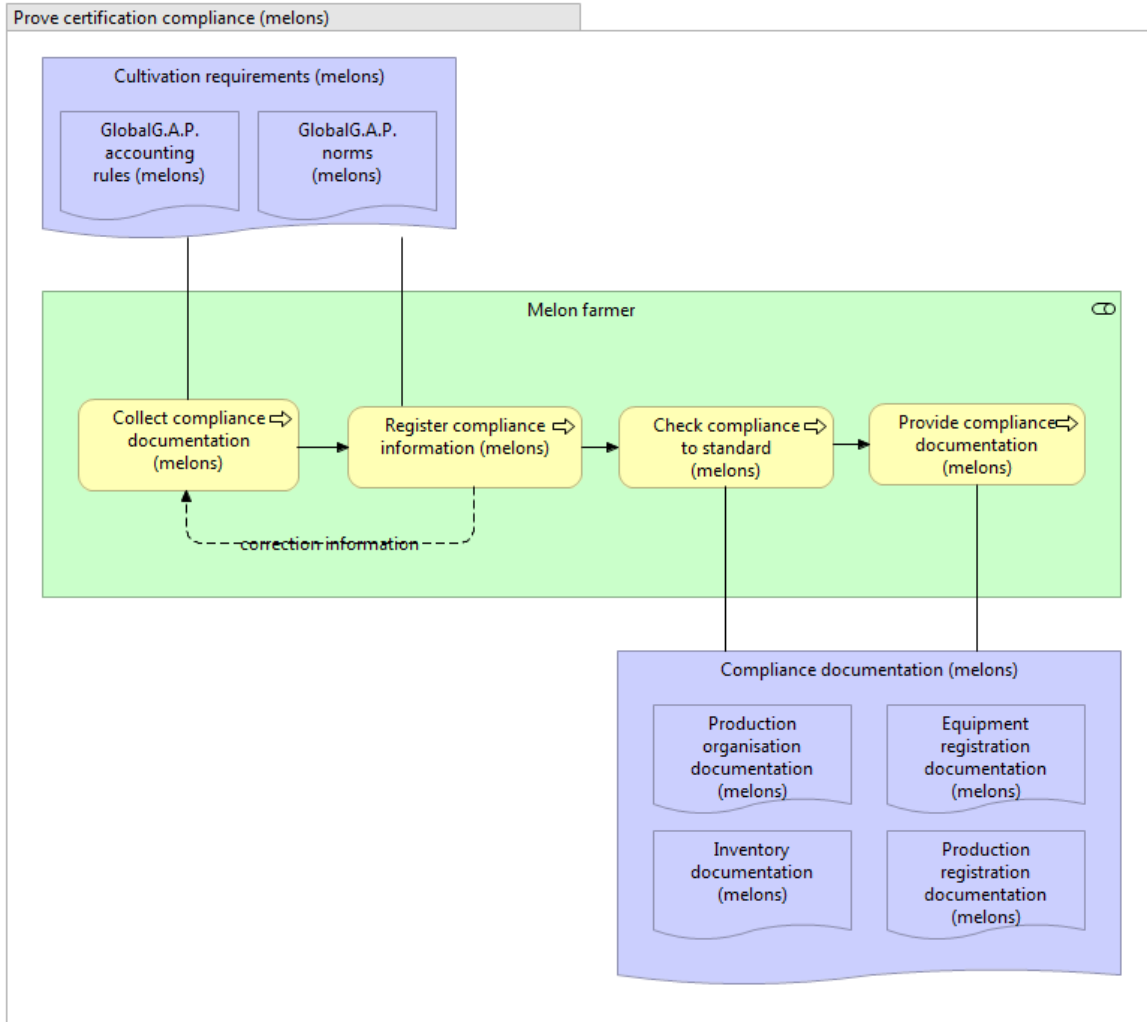
Do you have any wishes related to your proposed solution?

What are your concerns if your data are shared with other farmers or the buyers in the EU?

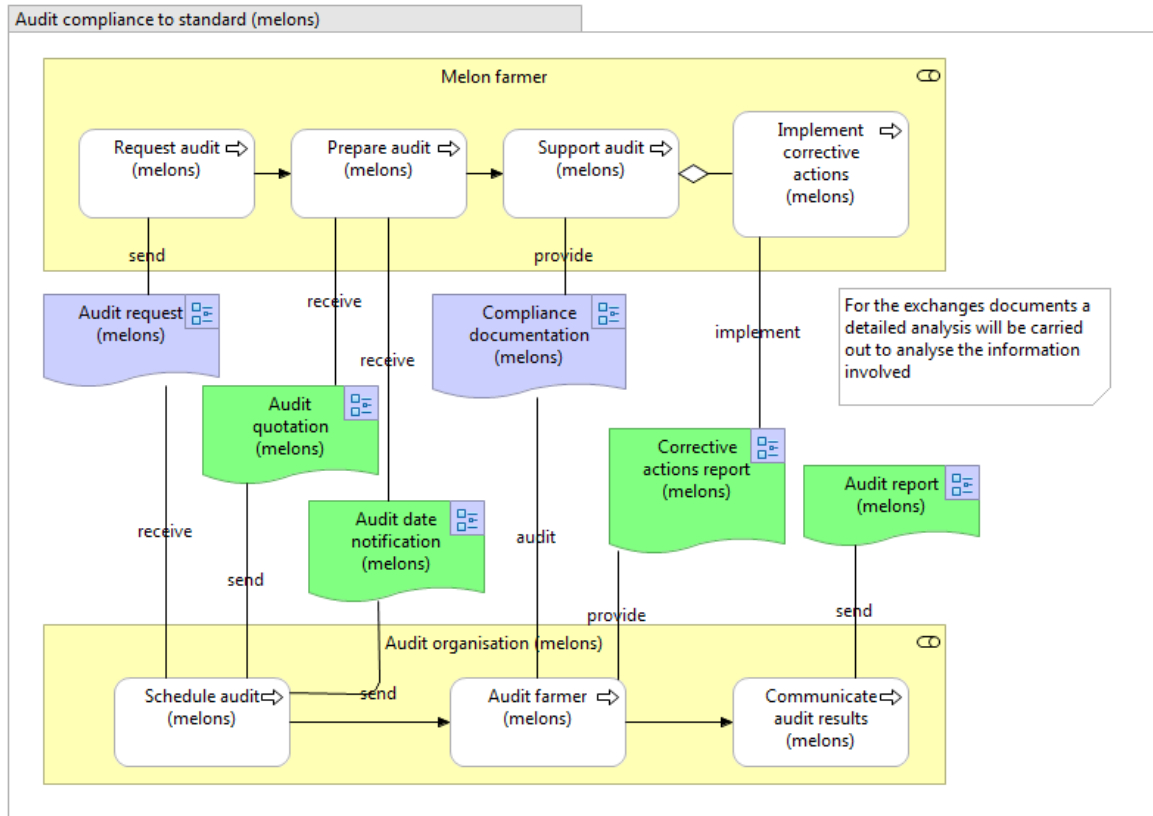
<END>

# Appendix 2 Melons

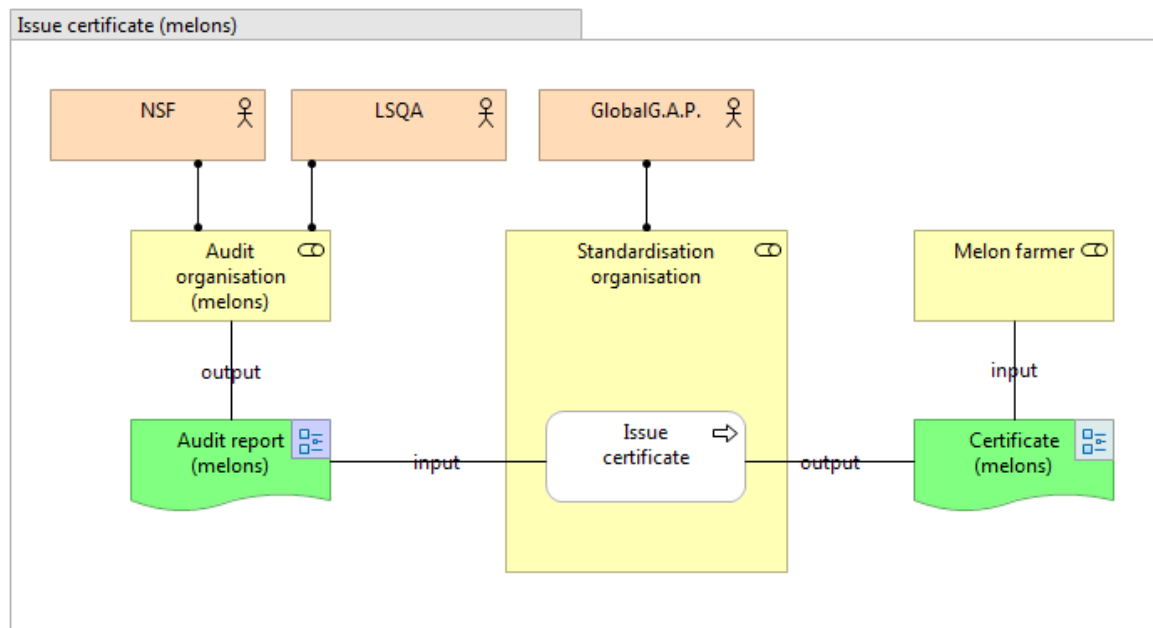
## Compliance documents



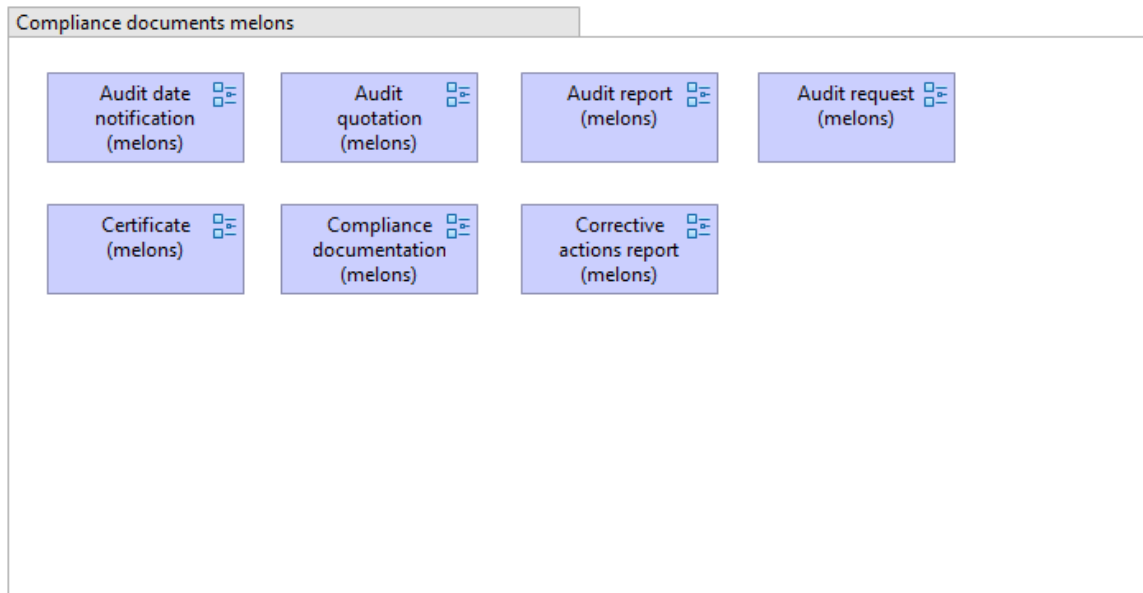
**Figure 1** Prove certification



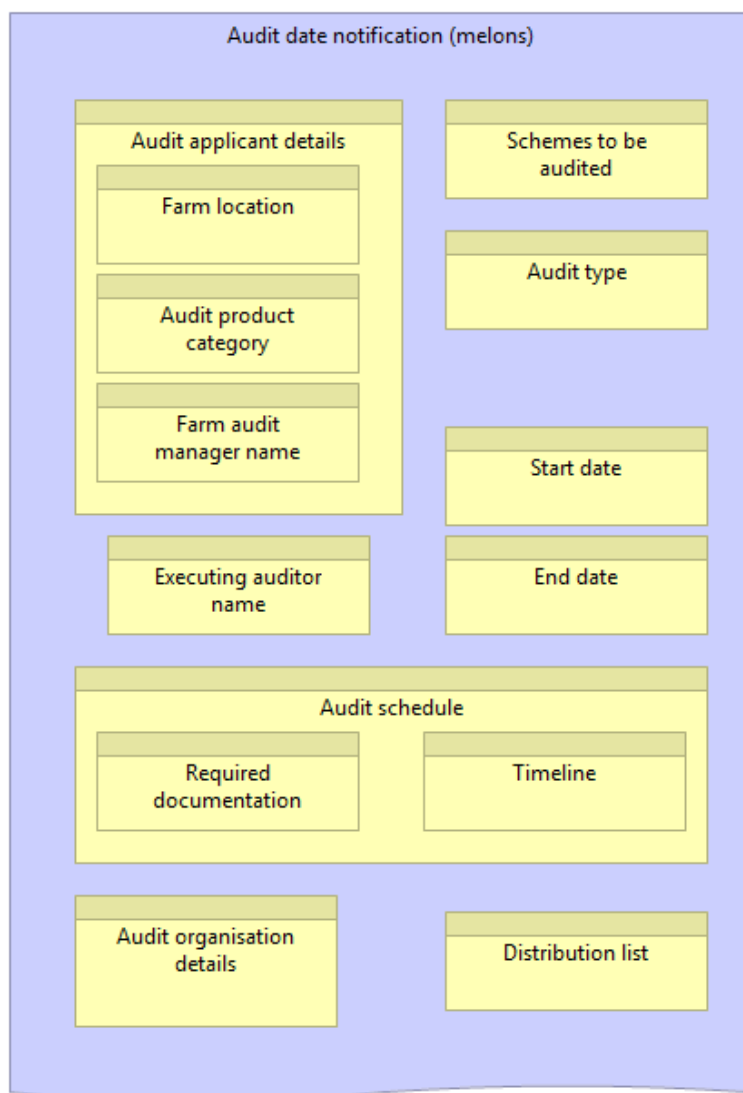
**Figure 2** Audit compliance to the standard



**Figure 3** Issue certificate



**Figure 4** Compliance documents

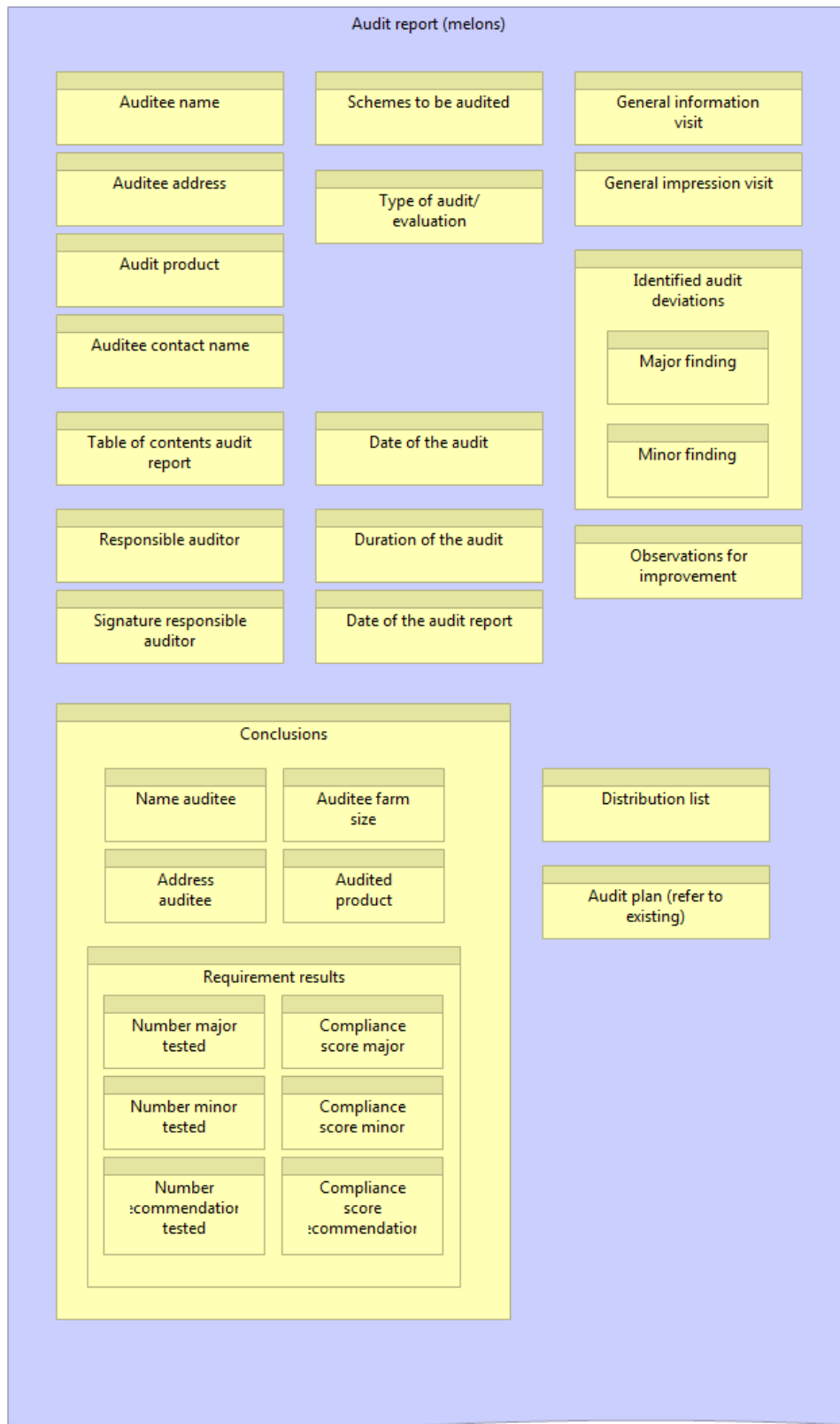


Audit quotation (melons)

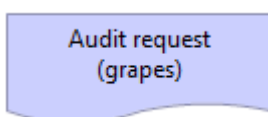
Audit client details	
Audit client name	Audit client phone number
Audit client address	Audit client e-mail address
Audit client address (copy)	Audit quotation date
General farm information	Evaluation frequency description
Audit requests	Description of the results
General information auditing organisation	Description of the audit costs
General certification process information	Payment conditions
Auditor name	Proposal for audit timing and fine
Signature auditor	Signature farmer

**Figure 5** *Audit quotation*

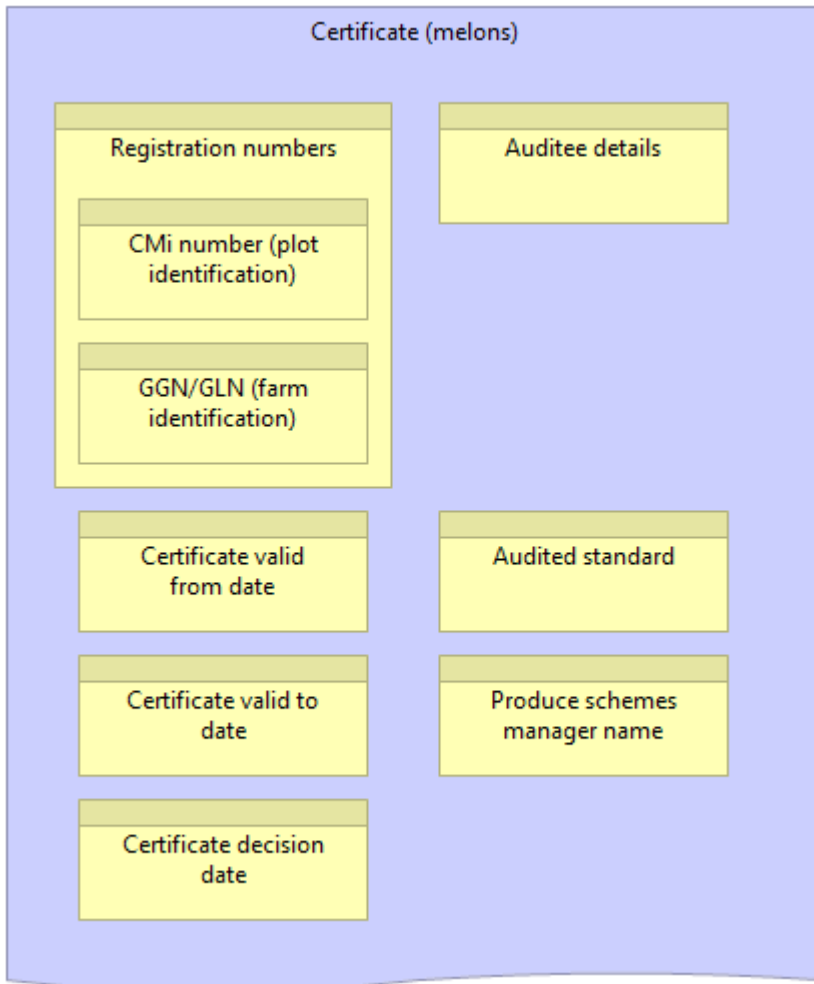




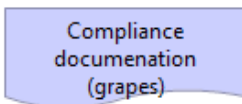
**Figure 6** Audit report



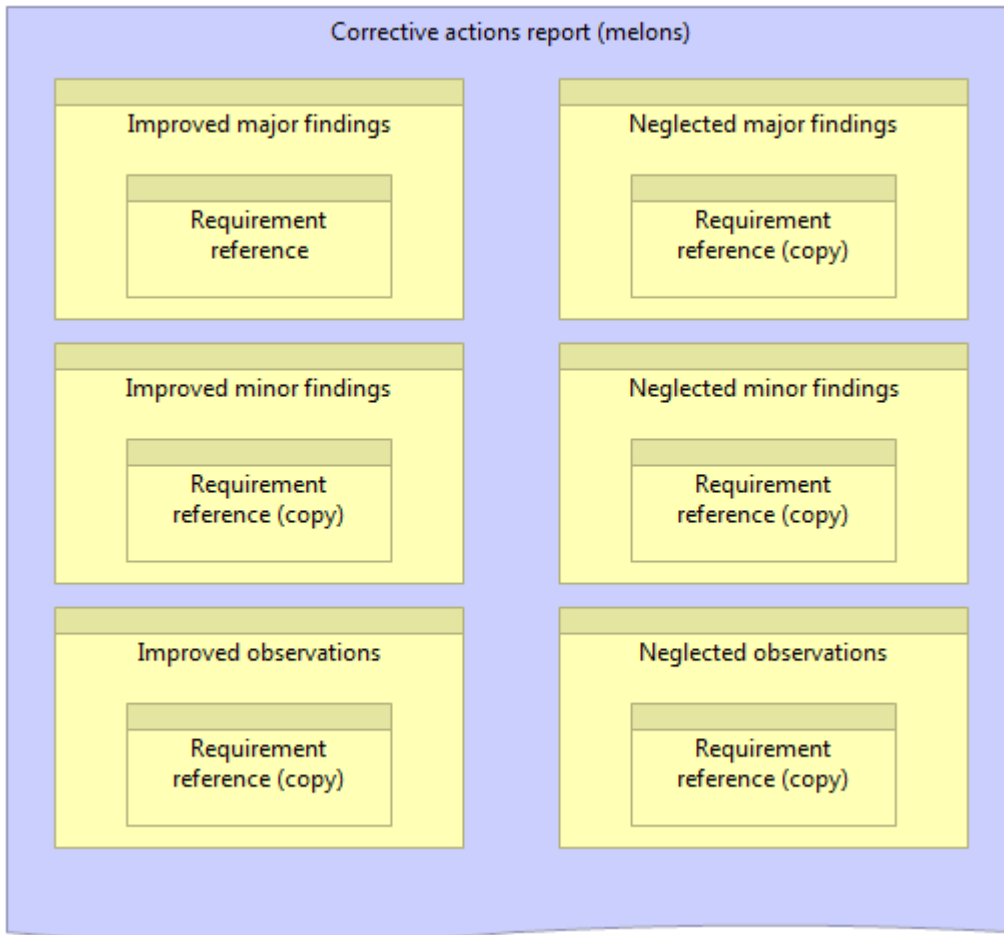
**Figure 7** Audit request



**Figure 8** Certificate

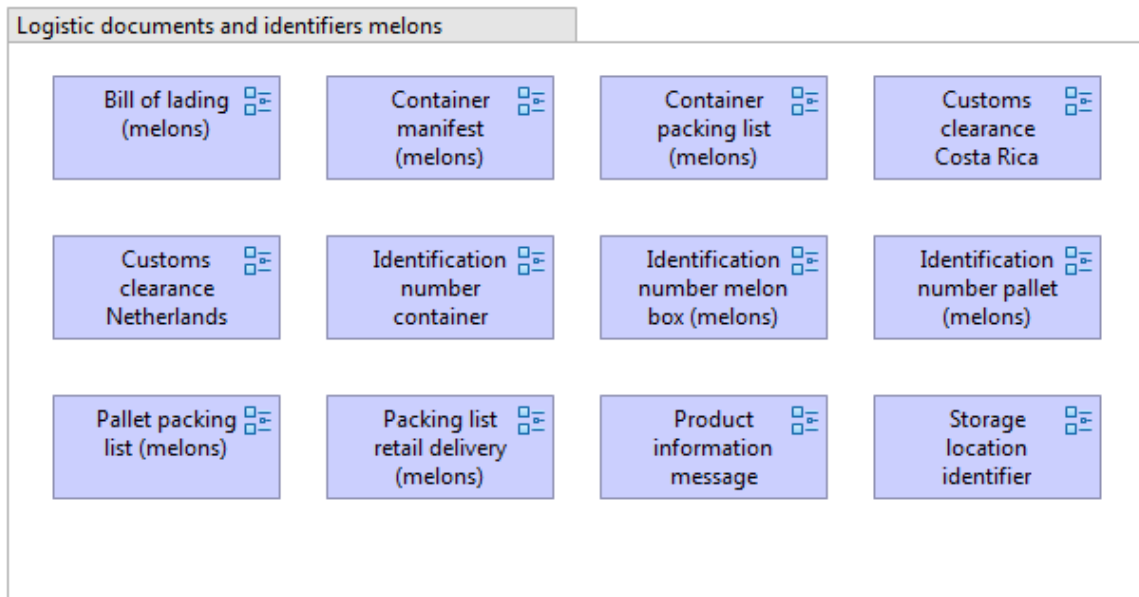


**Figure 9** Compliance documentation

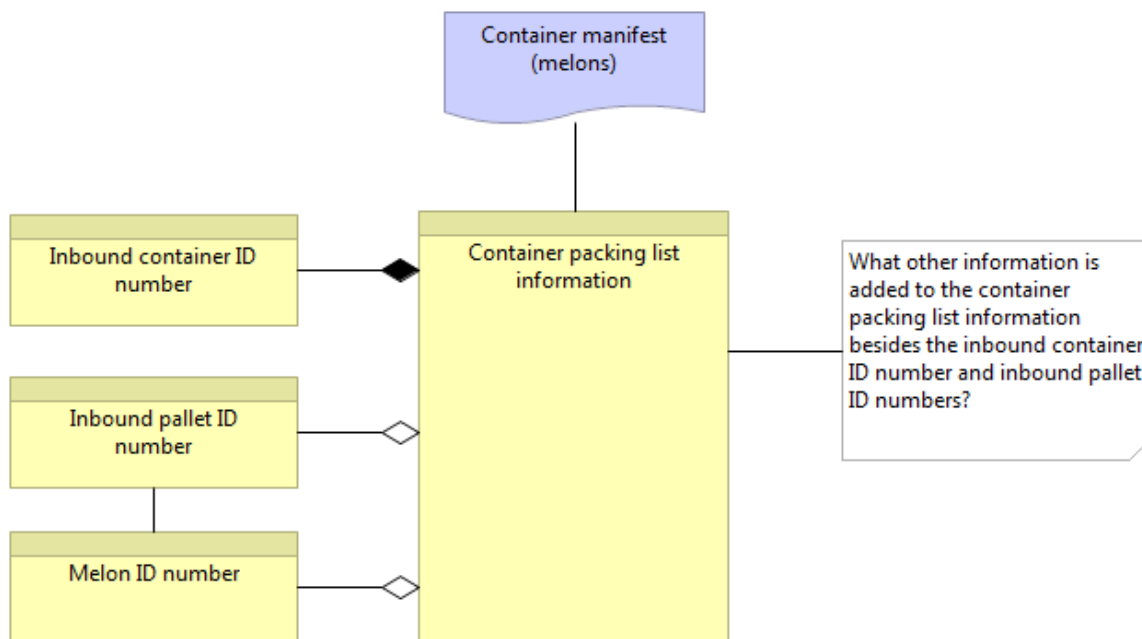


**Figure 10** Corrective action report

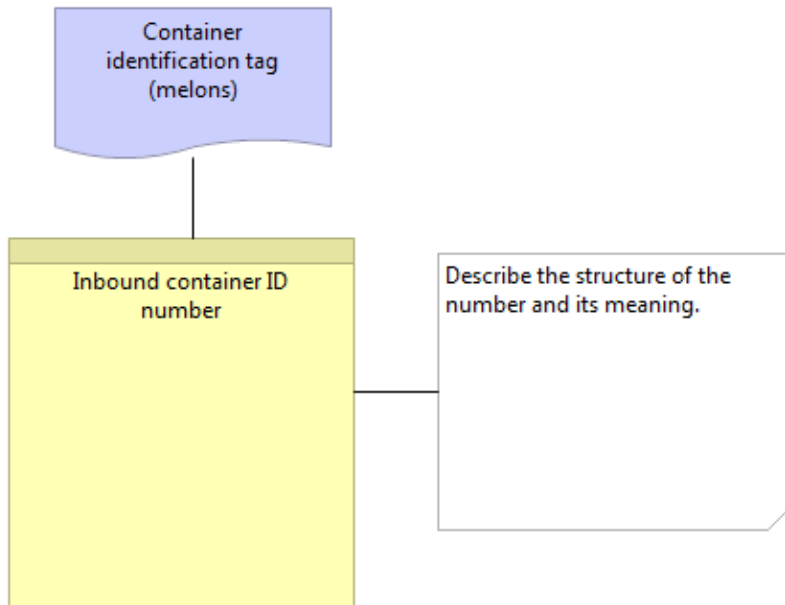
## Logistic documents and identifiers



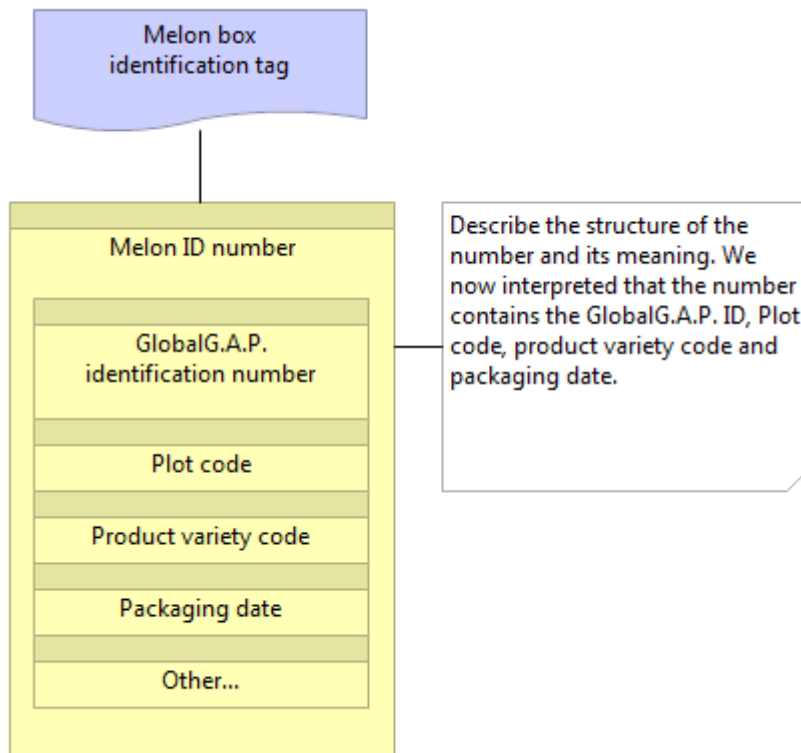
**Figure 11** Overview of the documents required for the logistic proces



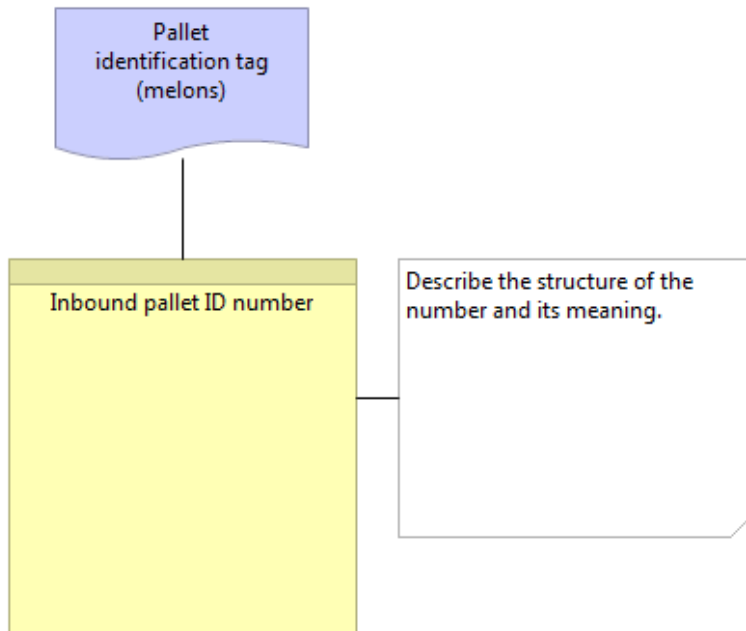
**Figure 12** Information of the on container manifest



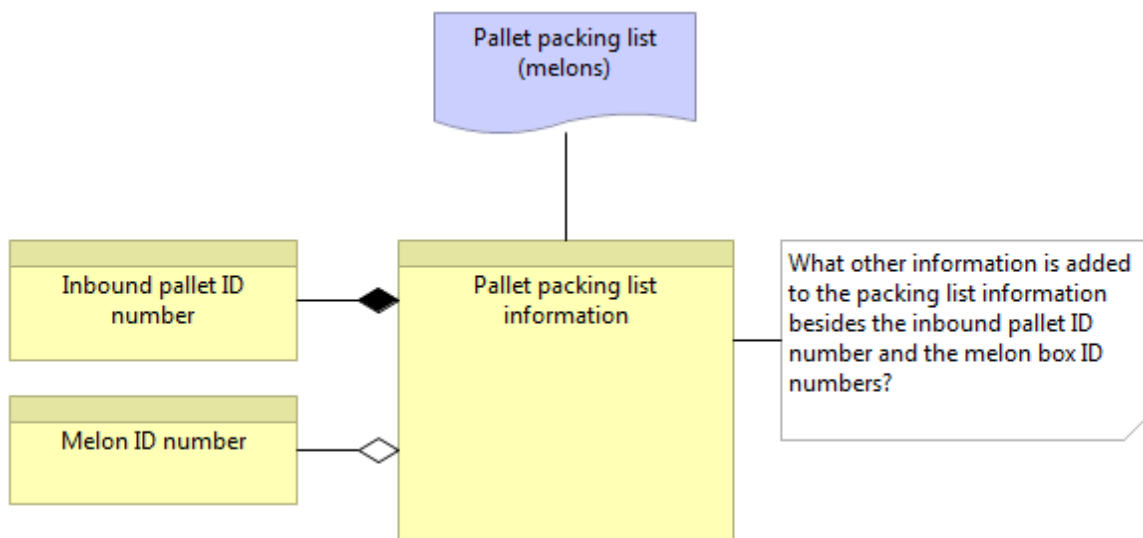
**Figure 13** Container identification tag



**Figure 14** Identification of the melon box



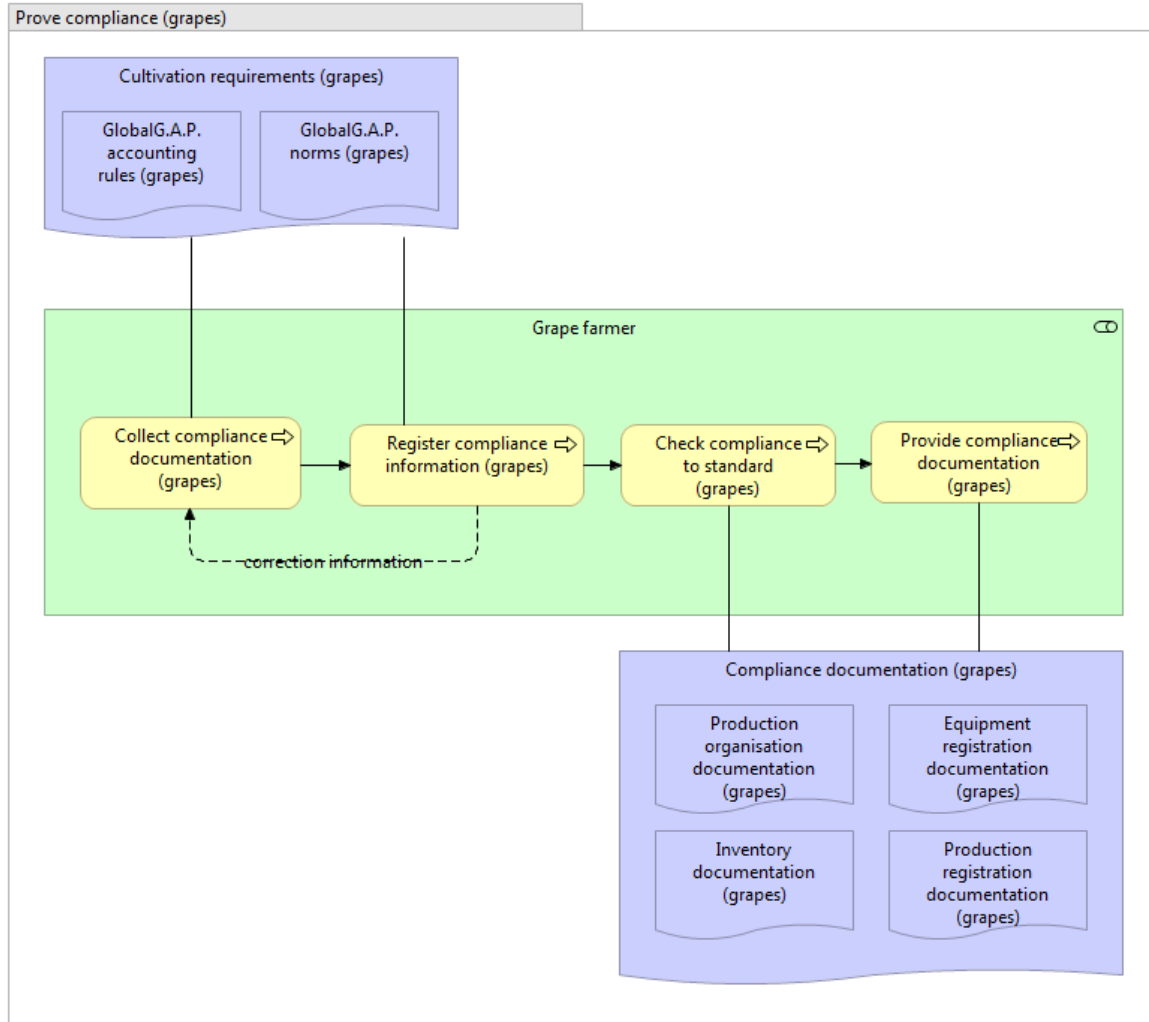
**Figure 15** Identification of the pallet



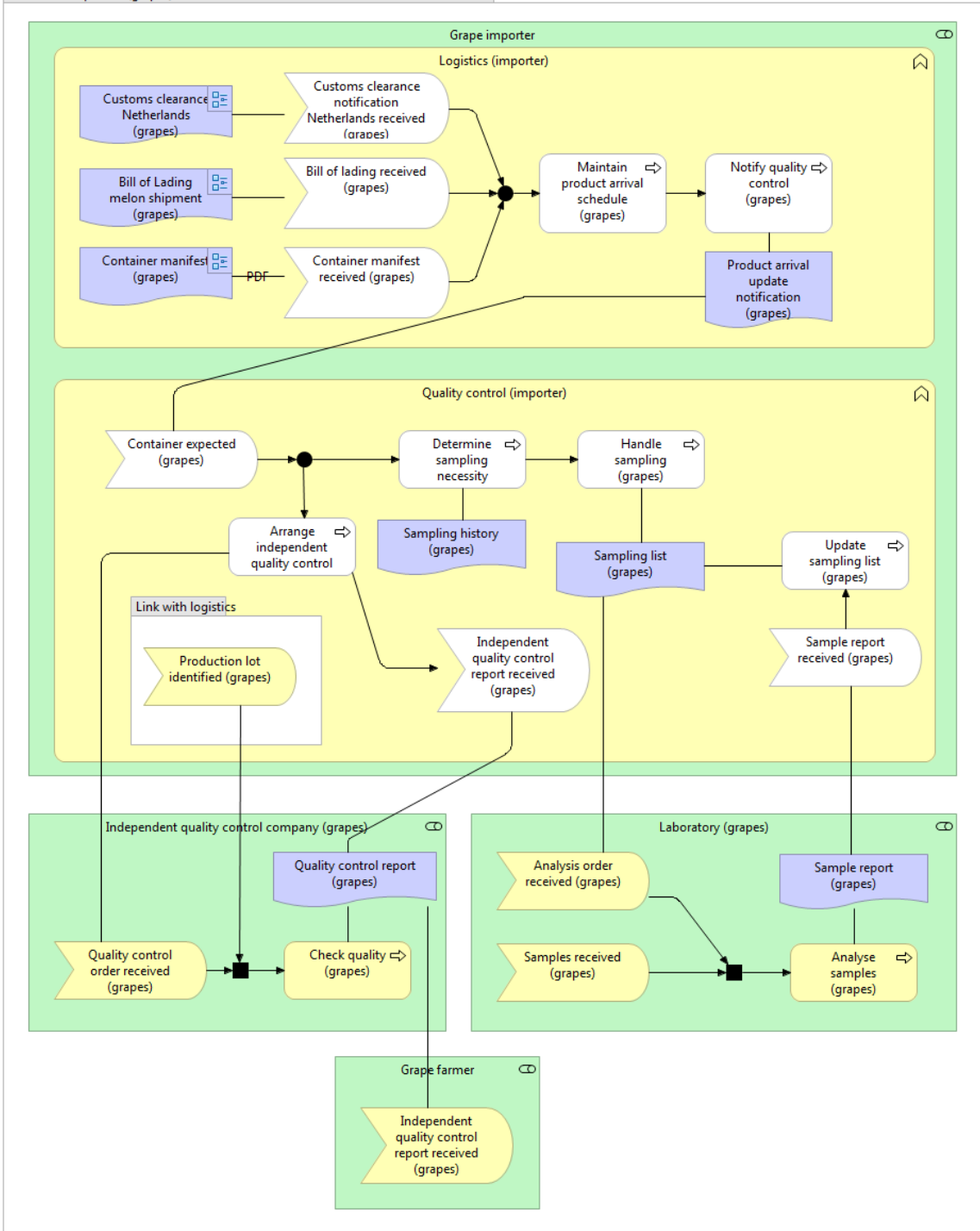
**Figure 16** Pallet packaging list

# Appendix 3 Grapes

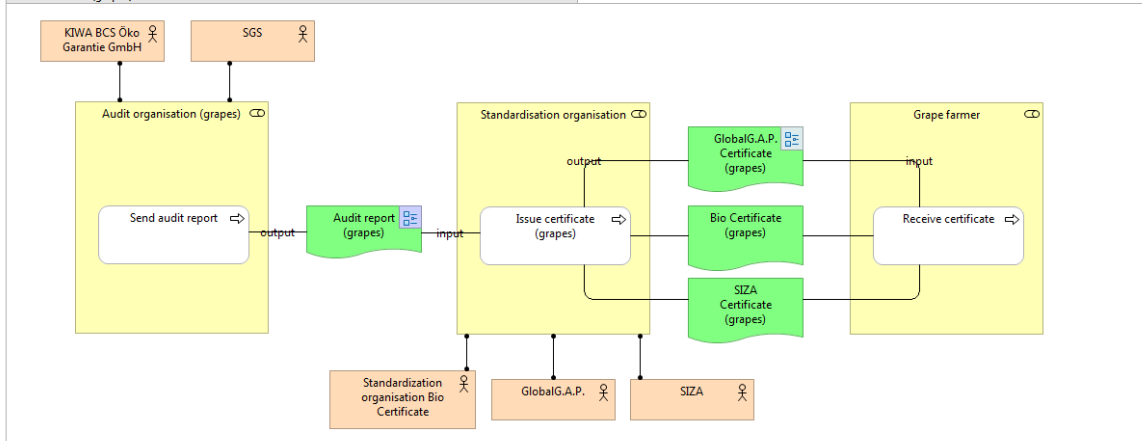
## Compliance documents



Confirm compliance (grapes)

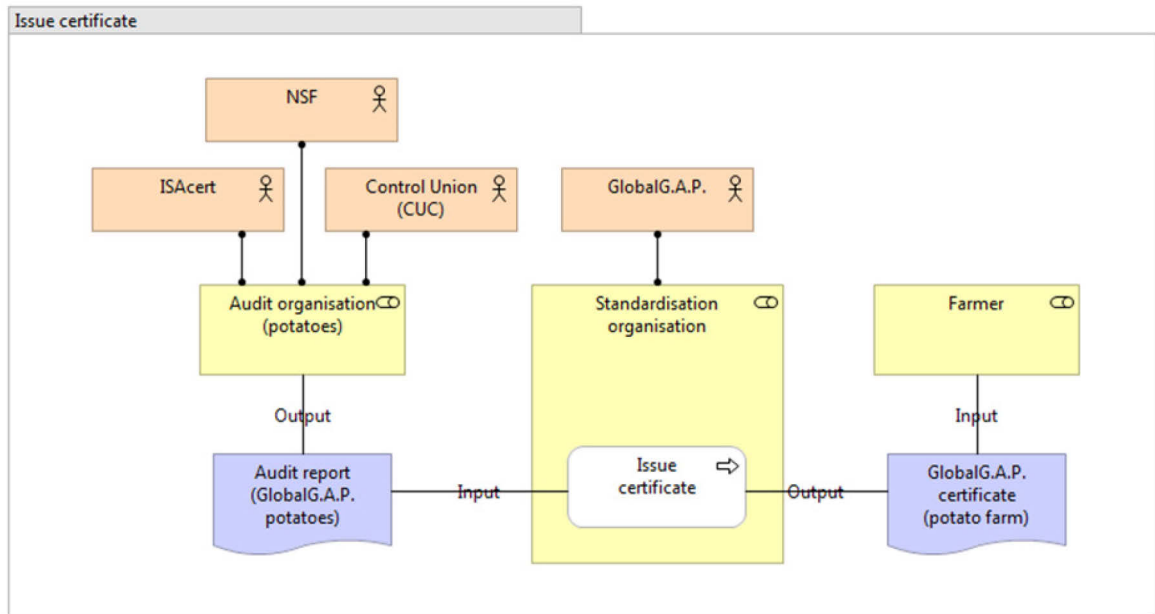
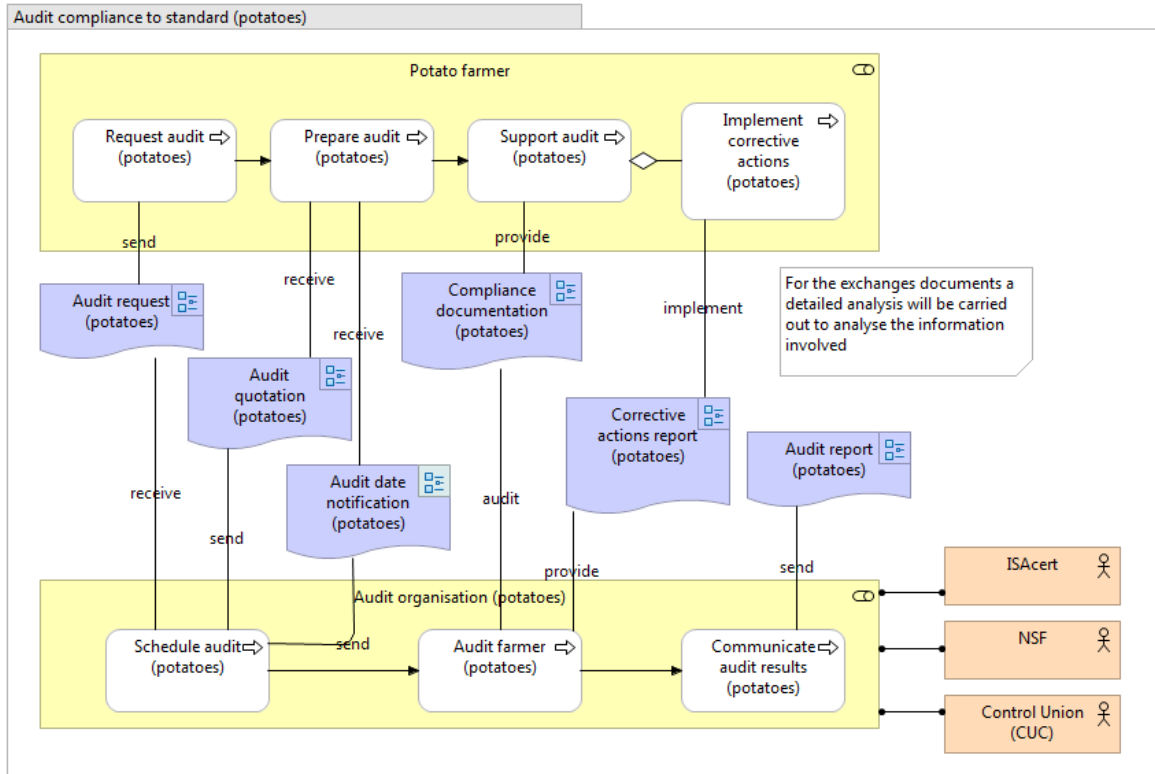


Issue certificate (grapes)





# Appendix 4 Potatoes



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To explore  
the potential  
of nature to  
improve the  
quality of life



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