# CONSUME mapping study for Estonia

Estonian Fund for Nature (ELF)

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Tartu, Estonia

March-June 2017

# Content

# 1. Stakeholder analysis

Major stakeholders brought out in Table 1 are determined according to their representation in bigger shops and supermarkets (visits to supermarkets and shops in March-April 2017). Data table with all registered enterprises/companies is accessible on the internet, address brought out below. Shops visited: Prisma, Rimi, Selver, Konsum, Maksimarket, Maxima, Kaubamaja.

In every sub-chapter, also the companies producing organic products are brought out if possible.

## 1.1. Meat, cheese, eggs (https://jvis.agri.ee/jvis/avalik.html#/toitKaitlemisettevotedparing)

Table 1. Major stakeholders (selection from the database): meat, cheese and egg production.

| MEAT | CHEESE | EGGS |
|---|---|---|
| • AS LINNAMÄE LIHATÖÖSTUS<br>• AS NÕO LIHATÖÖSTUS<br>• AS OG ELEKTRA TOOTMINE<br>• AS OSKAR LT<br>• AS UVIC<br>• ARKE LIHATÖÖSTUS AS<br>• AS HKSCAN ESTONIA<br>• AS RANNAROOTSI LIHATÖÖSTUS<br>• ATRIA EESTI AKTSIASELTS<br>• JÄRVEOTSA VUTIFARM OÜ<br>• KIKAS OÜ<br>• LUHA LIHATÖÖSTUS OÜ (Liivimaa lihasaaduste wabrik)<br>• OÜ A-VORST<br>• OÜ HOGG INVEST<br>• OÜ SAAREMAA LIHATÖÖSTUS<br>• OÜ OTEPÄÄ LIHATÖÖSTUS-EDGAR<br>• TÜ MÄGI-EESTI LAMMAS (lamb)<br>• MATSIMOKA OÜ<br>• MÄRJAMAA LIHATÖÖSTUS OÜ | • AS FARMI PIIMATÖÖSTUS<br>• AS E-PIIM TOOTMINE<br>• AS SAAREMAA PIIMATÖÖSTUS<br>• NOPRI TALUMEIEREI OÜ<br>• OÜ ESTOVER PIIMATÖÖSTUS<br>• OÜ KALAMATSI MEIEREI (goat)<br>• OÜ VIGALA PIIMATÖÖSTUS<br>• PAJUMÄE TALU OÜ (organic)<br>• SAIDAFARM OÜ (organic)<br>• VALIO EESTI AKTSIASELTS | • DAVA FOODS ESTONIA AS<br>• JÄRVEOTSA VUTIFARM OÜ (quail)<br>• KEHTNA MÕISA OSAÜHING<br>• LÕUNA-EESTI TALUMUNA OÜ<br>• OÜ LINNU TALU<br>• VÕNNU MAHETALU OÜ (organic)<br>• OÜ ÄNTU MÕIS (organic) |

## 1.2. Vegetable farmers/producers

http://www.aiandusliit.ee/tegevusvaldkonnad/koogiviljandus

http://www.pma.agri.ee/index.php?id=104&sub=128&sub2=319

- Kadarbiku Köögivili OÜ
- Laheotsa OÜ
- Grüne Fee Eesti AS
- Intsu Talu
- Sagro AS
- Peipsi Aiand OÜ
- Saare-Anni talu
- Talukartul (Co-operative society)
- Osa ja tervik OÜ

Organic vegetables farmers/producers:

- TÜ Lõuna-Eesti toiduvõrgustik (food network)
- Kiltsimäe talu (Mahetalu OÜ pakendab)
- Mahe Kati OÜ
- OÜ Heavili

## 1.3. Feed producers and handlers (http://www.vet.agri.ee/?op=body&id=1250):

- Scandagra Eesti AS
- Oü Pro Grupp Invest
- Anu Ait OÜ
- Oü Agrovarustus
- AS Dessert
- OÜ VESKIMEISTER (mineral feed)
- AS Valjala Söödatehas (mainly for their own use, marginal part for sale),
- OÜ KUREOJA JÕUSÖÖDATEHAS (mainly for their own use, marginal part for sale)
- HKScan Estonia söödatehas (mainly for their own use, marginal part for sale)
- Eastman Specialties OÜ – feed additives
- Interchemie Werken De Adelaar Eesti – feed additives
- Oru Taimeõlitööstuse OÜ
- AS Baltic Agro

Companies managing feed containing animal protein:

- Peri Põllumajanduslik OÜ
- OÜ Aiu Põllumajandus
- Kehtna Mõisa OÜ
- Muuga PM OÜ
- OÜ Kureoja Jõusöödatehas
- AS Balsnack International Holding

Organic feed producers and handlers (data from 15.02.2017):

- Oru Taimeõlitööstuse OÜ
- Scandagra Eesti AS
- AS Baltic Agro
- OÜ Anu Ait
- OÜ Veskimeister
- Scandagra Eesti AS

## 1.4. Farmers unions

- Eesti Põllumajandus-Kaubanduskoda (The Estonian Chamber of Agriculture and Commerce) Members are listed on the webpage: http://epkk.ee/koda/liikmed/
- Eesti Lamba- ja Kitsekasvatajate Liit (Sheep and goat, http://www.lammas.ee/)
- Eesti Maakarja Kasvatajate Selts (Estonian Native Cattle Breed Society, http://www.maakari.ee/)
- Eesti Lihaveisekasvatajate Selts (beef, http://www.lihaveis.ee/pidamine-ja-sootmine)
- Eestimaa Talupidajate Keskliit (Estonian Farmers' Federation, http://etkl.ee/)
- MTÜ Liivimaa Lihaveis (Liivimaa Beef, NGO for organic farmers growing grass-fed beef, http://grassfedbeef.eu/en)
- Mahepõllumajanduse Koostöökogu (Estonian Organic Farming Platform, there are non-producing members: Eesti Mahepõllumajanduse SA, Ökoloogiliste Tehnoloogiate Keskus, Mahekeskus)

Vegetables:

- MTÜ Eesti Kartul (potato)
- Eesti Aiandusliit (horticulture)

## 1.5. Retailers

Market shares of the main retailers are brought out on Fig. 1. Coop Eesti Keskühistu has the leading role, Maxima Eesti and Selver are the following.

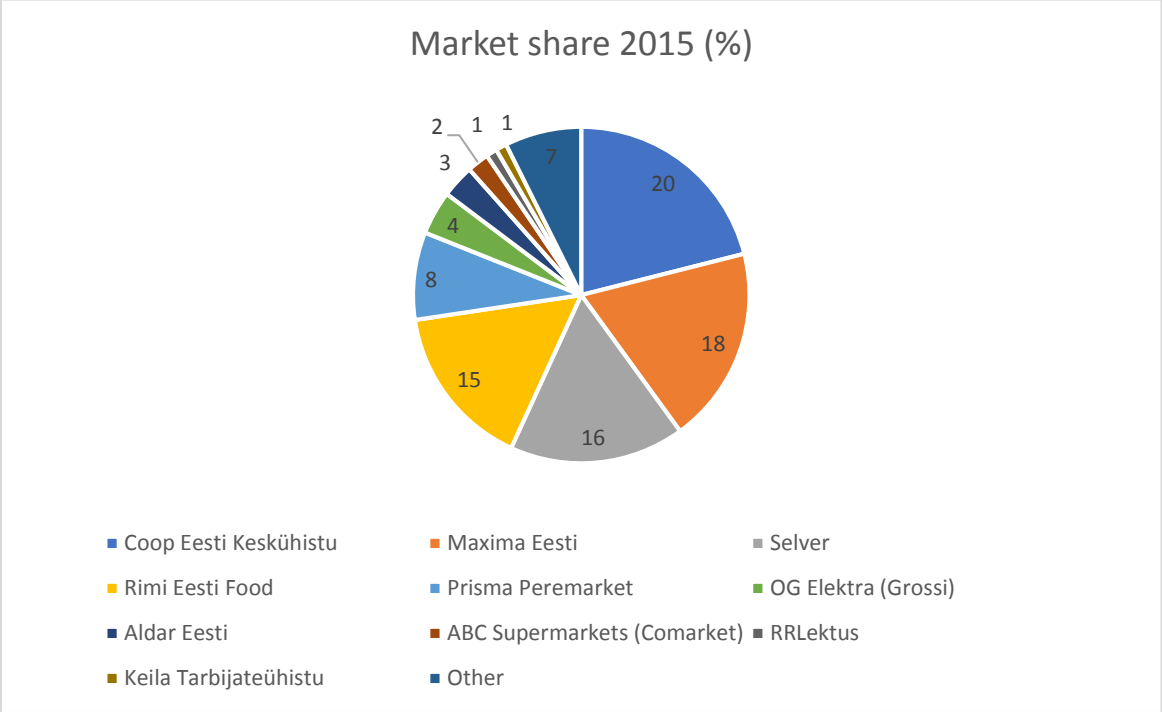



Fig.1. Market shares of bigger supermarkets 2015 (http://www.kaubandus.ee/uudised/2016/07/06/kuidas-laks-jaekettidel-2015-aastal-ja-millised-on-kaesoleva-aasta-eesmargid)

Most important shops selling organic products (incl. meat, cheese, eggs, vegetables) (http://www.maheklubi.ee/tarbijale/mahetoidu_muuk/):

- Biomarket
- Ökosahver
- Valete ökokaubad
- Lõuna-Eesti Taluturg
- Pärnu Taluturg
- Mahemarket
- „Farm feeds“ selling areas in Rimi markets in Tallinn („Talu toidab“ müügialad Rimides)
- Wider selection of organic food is available in Maksimarket, Prisma, Rimi (conclusion made after visits to bigger shops and supermarkets).

## 1.6. Food service (incl. the ones specialized on meat), (Food service - https://jvis.agri.ee/jvis/avalik.html#/toitKaitlemisettevotedparing, Catering portal - http://www.eleven.ee/):

- Baltic Restaurants Estonia AS
- OÜ Pak L&P (DuNord)
- OÜ Adeloone – kohvikute ja bistroode kett “Amps”

- P. DUSSMANN EESTI OSAÜHING
- Osaühing Tüdrukud
- Toidutorn AS
- Aniri OÜ

Restaurants and coffee houses specialized on meat or cheese (Tallinn and Tartu, http://www.eleven.ee/):

- Meat Market Steak and Cocktail
- Restaurant Steakhouse Liivi
- Baby Back Ribs & BBQ
- M.C. Grill
- BRGR GRLL Eesti
- Meat & Wine
- Goodwin the steak house
- Tondi resto grill ja BBQ
- Juusturestoran St. Michael
- Madissoni Grill
- Al Mare Grill
- Estonian Burger Factory
- Dereku Burger
- Lihuniku äri

## 1.7. Public authorities

- Ministry of Justice – prisons
- Army
- City governments (schools, kindergartens)
- Hospitals - https://haiglateliit.ee/liidust/liikmete-nimekiri/
- State gymnasiums (Riigigümnaasiumid):

https://www.riigigymnaasiumid.ee/riigigumnaasiumid/riigigumnaasiumid-20162017/

## 1.8. Main research institutions

- Estonian Institute of Economic Research (Eesti Konjuktuuriinstituut), http://www.ki.ee/en/index.html
- National Institute for Health Development (Tervisearengu Instituut), http://www.tai.ee/en/

- Estonian University of Life Sciences: The Institute of Economics and Social Sciences, The Institute of Veterinary Medicine and Animal Sciences, Institute of Agricultural and Environmental Sciences, https://www.emu.ee/en/
- Tallinn University of Technology, https://www.ttu.ee/en/
- University of Tartu, http://www.ut.ee/en
- Tartu Health Care College (Tartu Tervishoiu Kõrgkool), https://www.nooruse.ee/eng/homepage/
- SEI Tallinn (Stockholm Environment Institute, http://www.seit.ee/, https://www.sei-international.org/)
- Agricultural Research Centre (Põllumajandusuuringute Keskus), http://pmk.agri.ee/
- Estonian Crop Research Institute (Eesti Taimekasvatuse Instituut), http://www.etki.ee/index.php/eng/

## 1.9. Other relevant stakeholders

- Ministry of Rural Affairs (Maaeluministeerium), https://www.agri.ee/en
- Ministry of the Environment (Keskkonnaministeerium), http://www.envir.ee/en
- Ministry of Social Affairs (Sotsiaalministeerium), https://www.sm.ee/en
- Estonian Food Industry Association (Eesti Toiduainetööstuse Liit (Toiduliit)), http://www.toiduliit.ee/
- The Veterinary and Food Board (Veterinaar- ja toiduamet), http://www.vet.agri.ee/?op=body&id=315
- Estonian Traders Association (Eesti Kaupmeeste Liit), http://kaupmeesteliit.ee/
- Association of Estonian meat producer companies (NGO) (Eesti lihatöötlejate assotsiatsioon, MTÜ)
- National Institute for Health Development (Tervisearengu Instituut), http://www.tai.ee/en/
- Aretusühingud (breeding co-operative associations) - http://www.vet.agri.ee/?id=85&op=body
- Eesti Sojaliit, http://www.sojaliit.ee/ (union for soy)

## 1.10. Other relevant NGOs

*List other relevant NGO's. Preferably including environmental, vegan/vegetarian associations, animal welfare & rights organizations, dietary organizations, health (heart disease etc.)*

- Eestimaa Looduse Fond (Estonian Fund for Nature, http://elfond.ee/)
- Pärandkoosluste kaitse ühing (Estonian Seminatural Community Conservation Association, http://www.pky.ee/)
- Eesti Roheline Liikumine (The Estonian Green Movement, http://www.roheline.ee/en/)
- Loomade nimel (animal rights, http://loomadenimel.ee/en/)
- Eestimaa Loomakaitse Liit (animal welfare, http://loomakaitse.eu/)

- Eesti Loomakaitse Selts (animal welfare, http://www.loomakaitse.ee/)
- MTÜ Eesti Vegan Selts (vegan society)
- Dietoloog MTÜ (NGO for food and health topics) - http://www.dietoloog.ee/?page_id=15

# 2. Consumption: What do people eat and why?

## 2.1. Summary

- The consumption of meat has fluctuated since 2002. From 2012 onwards the consumption has increased (In 2016 - 77 kg per person). Estonians prefer pork, less poultry and beef.
- According to the companies processing game meat, Estonians are not very interested in game meat. However, the consumers surveys show that they are more and more keen on it. The variety of game products available in shops has broadened.
- According to Lihafoorum 2013 (http://epkk.ee/wp-content/uploads/2013/11/Lihafoorum-2013.pdf) – although 70% of Estonians say that they eat domestic meat, more than half still consume imported products since it is difficult to distinguish the country of origin of the raw material and also Estonian products which are made of Estonian meat.
- According to the caterers and some shop keepers, the quality of domestic meat is not always the best, which is one reason why imported meat is used.
- Consumers tend to prefer domestic meat, but, it seems that only slightly more than half of all kind of meat consumed is domestic.
- We may expect the increase of consumption of poultry due to the nutritional guidelines recommendations and relevant campaigns, which may support this in the future.

## 2.2. Population of country

According to Statistics Estonia in January 2017 (https://www.stat.ee/news-release-2017-008), the population number of Estonia was 1,317,800.

## 2.3. Overview of the overall consumption of meat

*In addition to the overall consumption, give figures categorized into meat types for the most prominent meat varieties (pork, beef, chicken, etc). Include consumption of wild game and most prominent types of game consumed.*

The data from 2015 refers to increased consumption of meat. The trend began in 2012-2013 (Fig. 2). In 2015, altogether 101,400 tons of meat was consumed which makes 77.1 kg per person in a year (pork 41.8 kg, poultry 24.7 kg, beef 8.1 kg, sheep&goat 0.5 kg, edible subproducts 1.9 kg, other meat 0.1 kg). Increase was detected in all groups of meats except sheep and goat. The meat of sheep and goat is used 0.5 kg per person (Fig. 3).

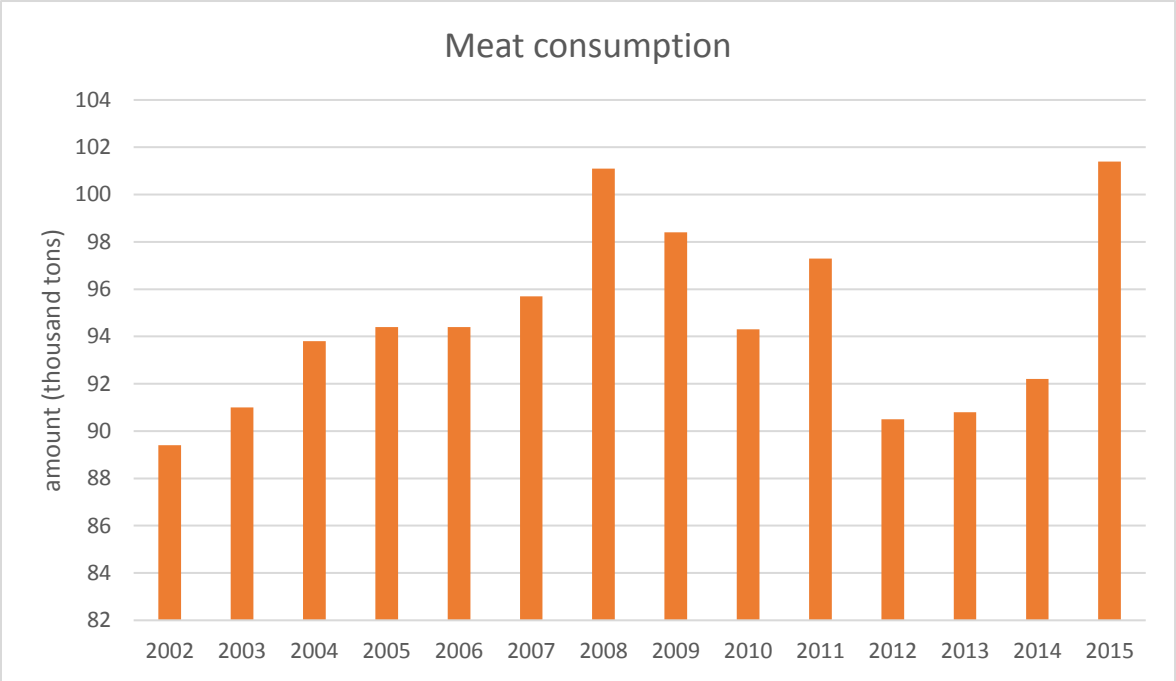



Fig. 2. General consumption of meat 2002 – 2015 (Statistics Estonia, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=PM42&ti=LIHA+RESSURSS+JA+KASUTAMINE&path=../Database/Majandus/13Pellumajandus/06Pellumajandussaaduste_tootmine/04Pellumajandussaaduste_ressurss_ja_kasutamine/&lang=2).

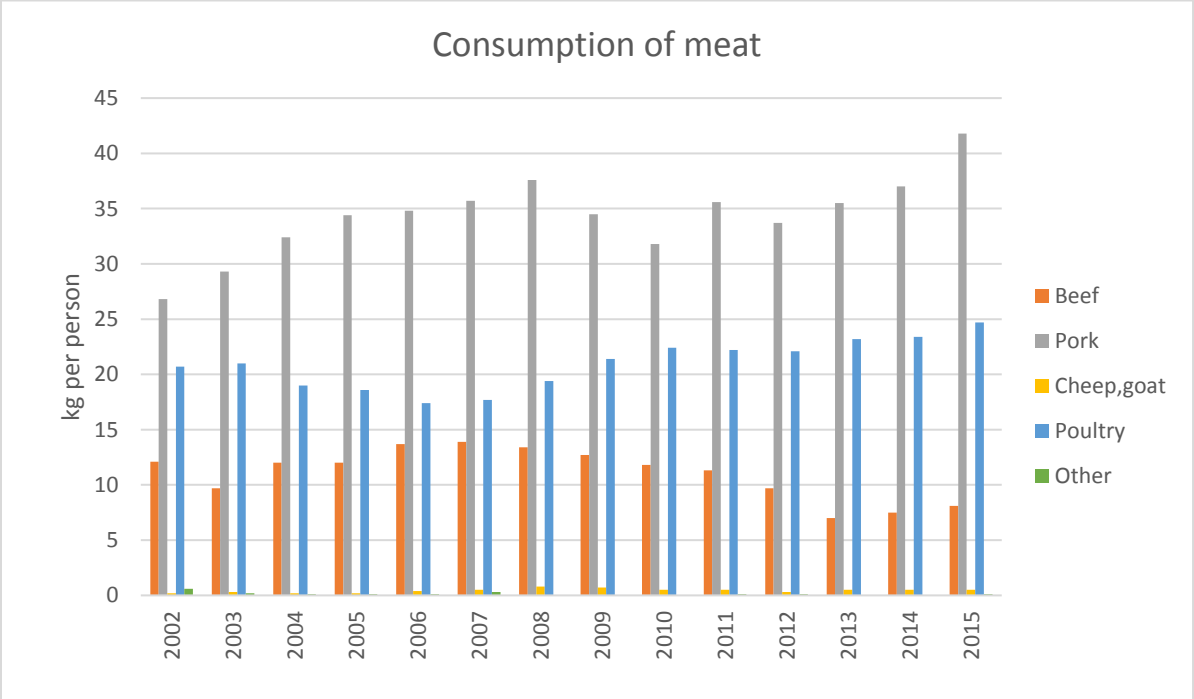



Fig. 3. Consumption of different meat groups (Statistics Estonia, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=PM42&ti=LIHA+RESSURSS+JA+KASUTAMINE&path=../Database/Majandus/13Pellumajandus/06Pellumajandussaaduste_tootmine/04Pellumajandussaaduste_ressurss_ja_kasutamine/&lang=2)

## 2.4. Game meat

There is no exact statistics on consumption of game meat. We can make general calculations to get the potential available amount of game meat. As a raw data, numbers of hunted animals (presented by Environmental Board) can be used (Fig. 4). The drastic increase of the number of hunted wild boar is caused by the intensive hunting due to the African swine fever virus (ASFV).

It is well-known general pattern (consulted with hunters), that hunters consume around 50% of hunted game meat as raw meat and additional 30% goes to producers for making game meat products for hunters own use (Table 2). The rest of 20% goes for buying up and this is used for different meat products. Out of the products, 98% are exported and only 2% is directed to the domestic market. The status of game meat outside the hunter´s family in Estonia is not comparable with Scandinavian countries, where game meat and products are more popular. However, this is not an official statistic but still, it gives a rough estimation of the quantities of game meat consumed in Estonia.

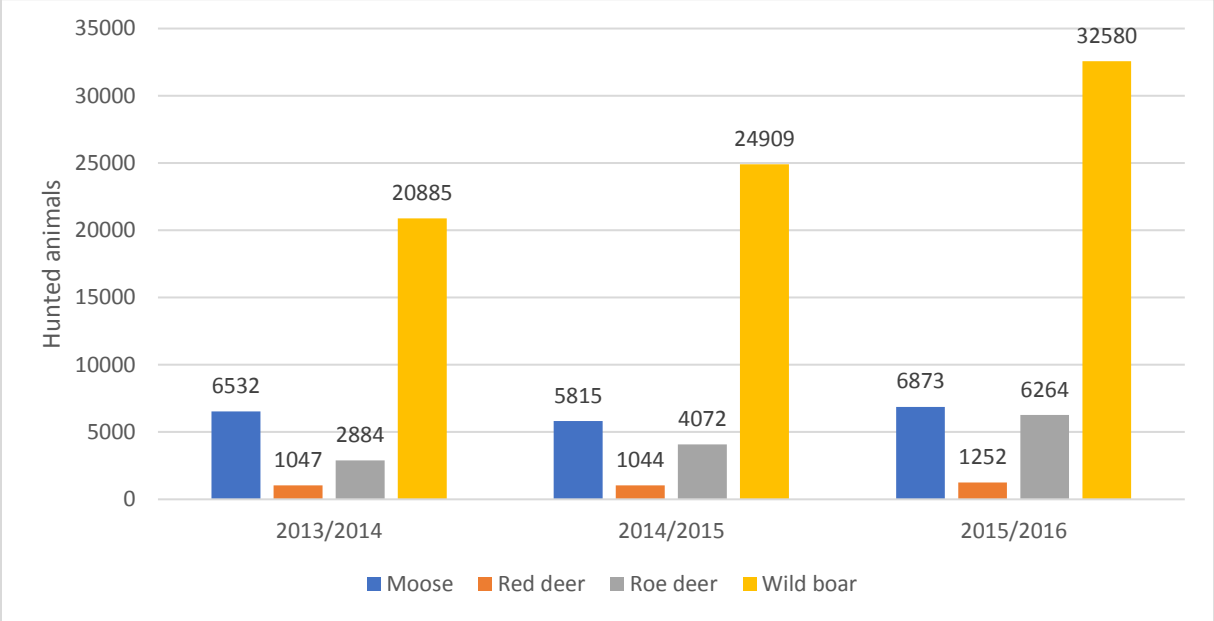



Fig. 4. Hunted animals during three hunting seasons (http://www.ejs.ee/jahiulukite-kuttimine-20152016-jahihooajal/).

Table 2. Amount of game meat available in a year (the number of hunted wild boar refers to 2013/2014, before the distribution of ASFV).

| Species | Meat per animal, kg | Hunted animals | Total meat, kg | ~80% to hunters | ~20% for domestic consumption and export |
|---|---|---|---|---|---|
| Moose | ~125 | 6,850 | 856,250 | 685,000 | 171,250 |
| Wild boar | ~30 | 21,000 | 630,000 | 504,000 | 126,000 |
| Red deer | ~70 | 1,200 | 84,000 | 67,200 | 16,800 |
| Roe deer | ~12 | 6,250 | 75,000 | 60,000 | 15,000 |

## 2.5. Consumption – domestic production vs. imports *(Or what is the ratio between imports/domestic production?)*

It is difficult to separate the share of domestic production from the general consumption. According to Estonian Statistics, import exceeds export numbers, especially regarding pork and poultry (Annex I).

Some results from the study made by Estonian Institute of Economic Research in 2016 (https://www.agri.ee/sites/default/files/public/juurkataloog/UURINGUD/eki_tarbijauuringud/Elanike_toitumisharjumused_ja_ostueelistused0204.pdf) "About the shopping preferences and attitudes of Estonians considering food products":

- Estonians buy meat mainly from larger supermarkets (76%, has increased during recent years). Less is bought from market (15%) and directly from producer (6%). The same pattern is visible also in case of milk and milk products. Therefore, it is very important what kind of meat is available in supermarkets and what information is presented.
- Eggs are more and more purchased from farmers and there is increasing trend to grow chicken at home.
- People are interested in broader variance of game meat, also beef and meat of sheep and goat.
- Fairs and farmer's markets are more familiar to the consumer than food networks "directly from farmer to consumer", but these are also becoming more popular.
- Estonians have changed towards more supportive of domestic poultry. 74% of respondents said that they prefer domestic food. 44% of respondents buy only domestic and 36% mainly domestic poultry. 53% of respondents buy only domestic and 26% mainly domestic pork.

The position of domestic food products in local market was recently assessed by Estonian Institute of Economic Research (September 2016, www.maheklubi.ee/upload/Editor/Turupositsiooni_aruanne.pdf). The share of domestic production and imported products in bigger retailers was assessed. General conclusion made by bigger retailers was that domestic products make up 65% and imported products 35% of the sales. We may assume that this pattern is the same also in meat market.

The share of domestic products was biggest in groups of cooked sausages and wieners (96%). Compared to 2010, the number of domestic products has increased among beef, smoked

sausage and smoked meat. Imported products with the same trend were poultry and smoked meat.
The biggest share of domestic products can be found in Coop (80%), then in Selver (68%), Rimi (57%) and Maxima (53%). The position of Estonian products has improved. Compared to 2010 canned meat, cooked sausage and wieners, smoked sausage, smoked meat were purchased more. The sales of imported beef, pork and poultry increased.

Representation of domestic and imported products in Estonian market in 2016 (% of different products):
Pork – 88% Estonian, 12% imported
Beef – 84% Estonian, 16% imported
Poultry – 52% Estonian, 48% imported

## 2.6. Semi wild meat production or production related to cultural traditions

*(similar for example to saami & reindeer)?*

Traditional semi-wild animal husbandry does not exist but some of the modern beef cattle are very extensive.

## 2.7. How does the national consumption relate to nutritional guidelines?

*Indicate what national nutritional guidelines say regarding meat consumption and how this relates to current consumption.*

In the report from 2006 (http://www.fao.org/3/a-as677o.pdf) there is a recommendation to have 3 to 4 meat-free-days per week. The consumption of meat has increased since 2006 and nutrition experts are concerned about the excessive consumption of meat. Current consumption of meat and food based dietary guidelines are rather different.

The main results and most significant differences compared to the previous report (Food Based Dietary Quidelines 2015, (www.terviseinfo.ee/et/toitumissoovitused, https://intra.tai.ee/images/prints/documents/149019033869_eesti%20toitumis-%20ja%20liikumissoovitused.pdf):

- The amount of meat consumed per person is not healthy.
- The amount of bread, potato, fish, nuts, oils should be increased.
- The share of vegetables and fruits should be increased in everyday meals. Despite the recommendations in the report of 2006, Estonians do not eat enough fruits and vegetables.

- The recommended shares of nutrients have changed: in 2006 - proteins 10 to 15 % of the daily energy, 25 to 30 % fat, and 55 to 60 % of carbohydrates. 2015 – the respective shares were 10-20, 25-35 and 50-60 %.
- In regards of vitamin D, the latest report of 2015 recommends 10 micrograms of vitamin D for adult a day, instead of 7.5, as in report of 2006.

**New food pyramid** (Food Based Dietary Quidelines 2015, p 272):
The groups of foods are not divided into different floors anymore. All five groups are equally important and people should feel free to make replacements between different products. Physical activity and drinking water are also important part of the pyramid (Food Based Dietary Quidelines 2015, p. 273).

**Recommendations regarding meat and meat products:**
The main recommendations brought out in the report of National Institute for Health Development (p 285-286) and Meat in new Food Based Dietary Guidelines, presentation by Tagli Pitsi (Presentation by Tagli Pitsi: http://epkk.ee/wp-content/uploads/2016/01/Liha-uutes-toidusoovitustes_Tagli-Pitsi.pdf):

- poultry should be preferred instead of red meat (2/3 of meat portions should be poultry and 1/3 red meat), plus fish three times a week,
- portions of red meat (incl. pork, beef, sheep, goat meat) should not exceed 500 grams a week (uncooked not more than 700 grams),
- The amount of processed meat products should be minimized because of added nitrites. Children (1-3 years old) should eat not more than 60 grams of mentioned products a week, 4-6-year-old not more than 90 grams and 7-10-year-old not more than 160 g a week,
- Liver and liver products should be in the menu not more than once a week.

There are recommendations to caterers in schools and kindergartens (Recommendations to caterers, 2008: https://intra.tai.ee/images/prints/documents/130165679548_Menyyd_ja_retseptid_lastele_I_osa_est.pdf).
There are two main statements regarding meat products:

- Wieners, cooked sausage, Paris sausage and sauces made of these, may be provided only once a month.
- Meals with liver may be in the menu not more than twice a month (children younger than school age).

## 2.8. Studies on food culture. *Are there national studies on any of the topics below?*

*Do a quick search and list any relevant national studies related to the topic. The list below is not compulsory or comprehensive but meant to give ideas on what to look for.*
*If possible, include a short overview of the results of such studies. If you discover regional (eg. European studies) that may be relevant, feel free to add them.*

- Willingness to change diets and/or willingness to reduce meat consumption

It is easy when it comes with the increased awareness of environmental problems (see below).

- Current/past changes in diets.

In the end of 1990s the main problems with diet were low consumption of vegetables and disproportionate share of fatty food in the menu (Food Based Dietary Quidelines 2015). Potato was more intensively consumed than cereals. Dairy products were more important than meat and meat products. Biggest change in food preparation process is that oil is used more instead of fat. The share of people eating vegetables every day was increased 1.5 times in 2014 compared to 2006.

- Awareness of environmental impacts of food and/or meat consumption. Interest in sustainability aspects.

Estonians tend to prefer more and more local food. Food networks „Directly from producer to consumer“ are becoming more popular. New networks are set up in some places.

There are web pages to encourage people to consume environmentally friendly. For example: http://www.kliimamuutused.ee/mida-mina-saan-teha/toit).

According to the master thesis of Liisi Vassar (Master thesis. 2013. Estonian people's awareness of the environmental impacts of food production. Estonian University of Life Sciences.), majority (87% of the respondents) believes, that food production has important influence on the environment. In their opinion, the environmental issues are the following: chemical use (60% of respondents), use of different resources (38%), use of packing materials and packing waste (35%). Respondents mention different aspects but they are not always able to connect these to a certain environmental impact. It came out from the responses that people think of environmentally friendly products as:

- products with eco/organic label (48% of respondents),
- consider it according to country of producer (18%),
- additives added to the product (16%),
- domestic/local product (14%),
- depends on the amount of package used (12%).

Most of respondents (73%) brought out meat production as the sector influencing the environment the most. There should be more information describing the impact of our choices and actions.

- Drivers affecting changes in dietary patterns:

1. Trends coming from Europe?

There are many trends influencing food production sector. Marketing director of Valio Eesti, Krista Kalbin, said that in 2006 it was very important to have "light" products. Now the attitude has changed and the main words describing the expectations of consumers are: eco, organic, wholegrain, vegan, vegetarian food ja lactose-free.

Owner of a restaurant said that during the last 12 years the share of meat in restaurant food has decreased and plants have leading role (Peeter Jalakas, http://www.aripaev.ee/uudised/2017/03/22/toidutoostuse-narrid). This is contradictory to the general trend about increased meat consumption. It seems that the trends are different comparing restaurants and consumption of meat at homes.

2. Awareness about the intensive meat production (ethical questions) and environmental aspects

As people are more aware of animal welfare and situation in intensive meat production the number of vegetarian and vegan increases. The number increases also among school students (some specialists have emphasized the risks considering the wrong menu). (http://novaator.err.ee/592418/opilaste-hulgas-populaarsust-koguv-taimetoitlus-toob-kaasa-terviseriskid)

3. Health problems

This reason came out from the student survey.

- National favorite dishes

As said on the webpage of "Estonian food", Estonians are meat lovers. Pork roast has been very important. During the summer time, grilled sausages and pork shashlik in vinegar and other tasty marinades are very appreciated. Also Ground Meat Patties are popular. Ham and minced meat are important as well. http://estonianfood.eu/en/content/meat

- General consumer awareness on labels

In 2016, Estonian Institute of Economic Research made a survey about the purchase patterns and preferences of Estonian consumers ("Shopping preferences and attitudes of Estonians

regarding food products", https://www.agri.ee/sites/default/files/content/uuringud/2016/uuring-2016-ostueelistused.pdf, p 45). The main conclusion is that Estonians know better native labels than European ones (one of ten knows European labels). But EU organic logo is rather familiar, 45% of respondents knew it. Approved Estonian Taste is most well-known Estonian quality label, "best product" and "flag label" are next ones.

It appeared from the survey about the product labeling in 2014 (Labeling of food, https://www.slideshare.net/pollumajandusministeerium/toidumrgistuse-uuring-2014) that less than 50% of consumers are looking for the package every time. And from those 56% are looking for the country of origin. The main reason is that they prefer domestic products. The information on the package is clearer compared to 2006.
One third of respondents felt confusion about finding the country of origin. There were minced meat, hams and sausages under questioning and 88% of respondents wish to see the country of origin brought out clearly. Most of the respondents were not aware of the higher price if the country of origin is presented on the package. More than half of respondents are willing to pay more for information.

**News:** Consumers value domestic food, http://maaleht.delfi.ee/news/maaleht/tarbija/uuring-eesti-tarbija-vaartustab-endiselt-toidukauba-kodumaisust?id=77227710

# 3. Import. What is imported and from where?

## 3.1. Summary

- The import of meat and meat products has decreased during recent years (STATISTICAL YEARBOOK OF ESTONIA 2016, https://www.stat.ee/valjaanne-2016_eesti-statistika-aastaraamat-2016, p.254).
- The good availability and rather low price of domestic meat, especially pork, has resulted in diminished import (Eesti lihatöötlemise sektori 2016. aasta 6kuu ülevaade, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/ulevaade-lihatoostus-2016-02_kuus_kuus.pdf p.5).
- Despite the trend of decrease, pork is imported the most (35,9 million euros), poultry (22,5 million euros), then canned meat (13,8 million euros). Main partners are Lithuania (20,8%), Poland (12,6%), Denmark (12,4%) and Finland (12,3%) (Lihafoorum 2016, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Lihafoorum-2016.pdf p. 9, data from Statistics Estonia).
- Due to the ASRV, the increase of import of pork may be visible during coming years. At the moment, Estonian farmers are not able to satisfy the needs of local market.
- One important topic seems to be the quality of meat. I heard several times during the CONSUME mapping work that imported meat has better quality. It is known that for example the quality of lamb meat in Estonia varies significantly.

## 3.2. Data availability – meat and livestock import *Is data on meat or livestock imports readily available? If so, where is it available from?*

Statistics Estonia keeps this data. The database is freely accessible. Data is gathered from 2004. It is possible to find data for general topics (link A: meat, milk etc.), but second link (B) is for more detailed information.

A) http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=VK2&ti=KAUPADE+EKSPORT+JA+IMPORT+KAUBAGRUPI+%28KN+2%2DKOHALINE+KOOD%29+JA+RIIGI+J%C4RGI+%28KUUD%29&path=../Database/Majandus/25Valiskaubandus/03Valiskaubandus_alates_2004/&lang=2

B) http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=VK200&ti=KAUPADE+EKSPORT+JA+IMPORT+KAUBAKOODI+%28KN+4%2DKOHALINE+KOOD%29+JA+RIIGI+J%C4RGI&path=../Database/Majandus/25Valiskaubandus/03Valiskaubandus_alates_2004/&lang=2

## 3.3. Overview of the import

Import of meat and meat products exceeded export in recent years (Fig. 5).

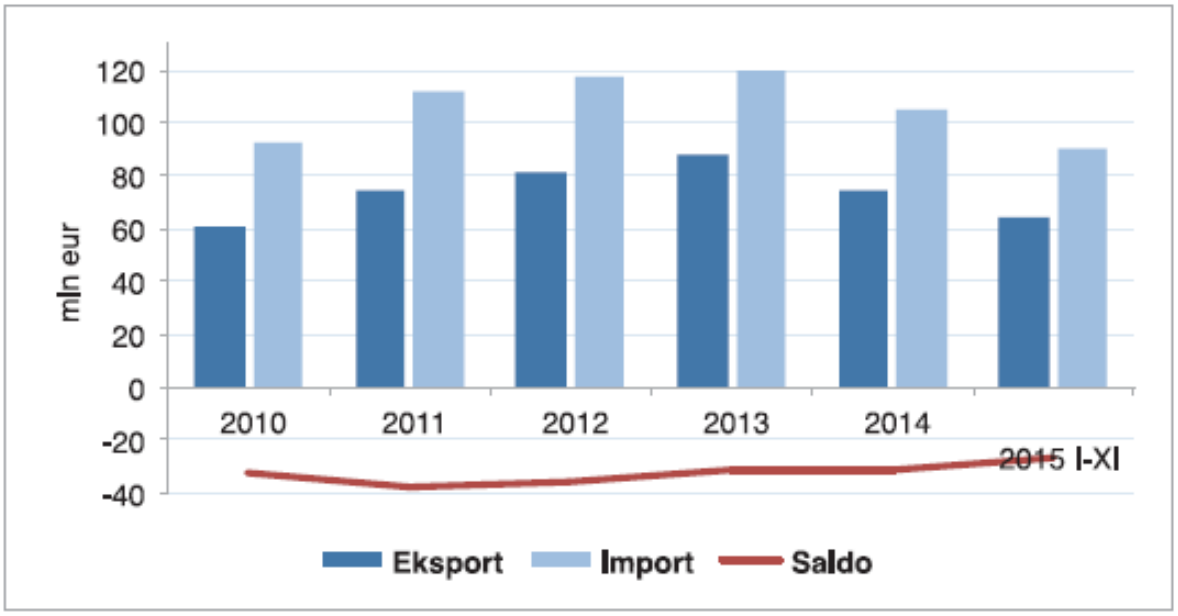



Fig 5. Import, export and trade balance of meat and meat products 2010-2015 (I-XI). (Graph from Lihafoorum 2016, p.11, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Lihafoorum-2016.pdf, data from Statistics Estonia)

The main product imported was pork (total value 35.9 million €), followed by poultry (22.5 million €) and then canned meat (13.8 million €) (Fig. 6. Lihafoorum 2016, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Lihafoorum-2016.pdf).

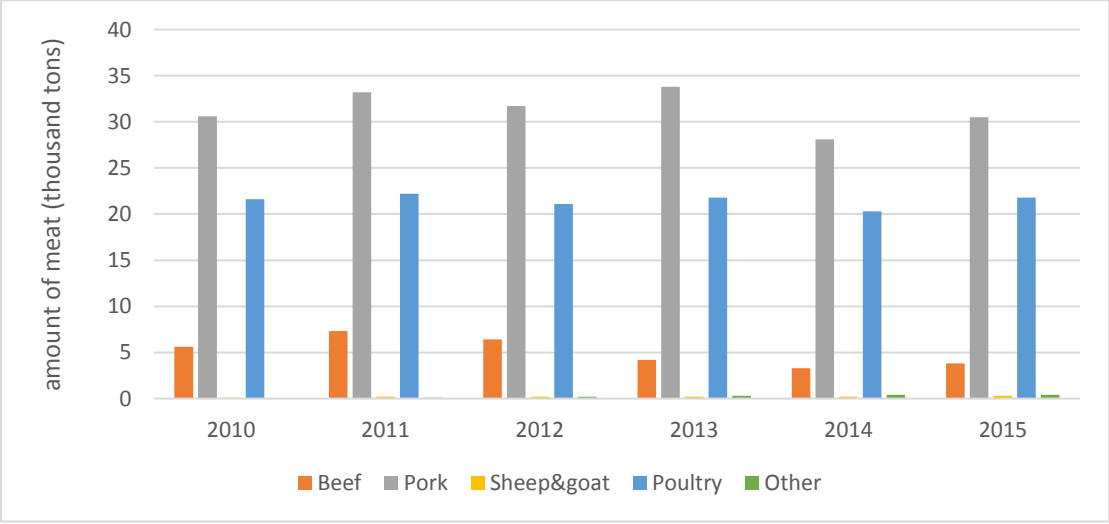



Fig. 6. Import of different type of meat ((Statistics Estonia, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=PM42&ti=LIHA+RESSURSS+JA+KASUTAMINE&path=../Database/Majandus/13Pellumajandus/06Pellumajandussaaduste_tootmine/04Pellumajandussaaduste_ressurss_ja_kasutamine/&lang=2)

**What are the main importing countries?**

*List the main importing countries for each of the main meat types identified in question 7 (pork, beef, chicken etc).*

The main partners are Lithuania, Poland, Denmark and Finland (Lihafoorum 2016, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Lihafoorum-2016.pdf p. 9, data from Statistics Estonia). General overview of importing countries is presented in table 3, some examples of main importing countries are in table 4. More detailed information per meat type is listed in Annex II.

Table 3. Main importing countries of living animals, meat and meat products (kg).

| Living animals 2016 | | Meat and subproducts 2016 | |
|---|---|---|---|
| Finland | 5,984,166 | Poland | 16,794,673 |
| Poland | 529,710 | Lithuania | 15,764,917 |
| Sweden | 244,682 | Denmark | 12,670,717 |
| Denmark | 241,195 | Germany | 12,285,201 |
| Norway | 231,945 | Finland | 12,171,955 |
| Lithuania | 130,887 | Latvia | 9,061,892 |
| Netherlands | 102,262 | Netherlands | 5,430,816 |
| Germany | 56,677 | Belgium | 4,243,394 |
| Belgium | 28,541 | Spain | 3,964,818 |
| Switzerland | 23,460 | Hungary | 2,769,858 |
| Latvia | 23,425 | Ukraine | 1,026,833 |
| Russia | 12,150 | Ireland | 746,061 |
| USA | 4,809 | Italy | 737,039 |
| Czech Republic | 4,689 | Great Britain | 599,571 |
| | | New-Zealand | 461,752 |
| | | Sweden | 316,429 |
| | | Portugal | 228,858 |
| | | Austria | 226,769 |
| | | France | 226,748 |
| | | Romania | 105,938 |
| | | Czech Republic | 96,219 |
| | | Bulgaria | 16,710 |
| | | Norway | 15,491 |
| | | Russia | 9,094 |
| | | Croatia | 7,794 |

Table 4. Main importing countries of meat, cheese and eggs. (First country in a column is the most important).

| Fresh or cooled beef | Freezed beef | Fresh, cooled or freezed pork | Fresh, cooled, freezed sheep or coat meat | Meat of horse, donkey, (fresh, cooled, freezed) | Cheese and cottage cheese | Eggs (with shell), fresh, preserved or cooked |
|---|---|---|---|---|---|---|
| Lithuania | Poland | Germany | Germany | Belgium | Poland | EU |
| Poland | Lithuania | Finland | Netherlands | Spain | Germany | Latvia |
| Netherlands | Finland | Poland | Belgium | Romania | Netherlands | Lithuania |
| Ireland | Latvia | Denmark | New Zealand | Netherlands | Lithuania | Finland |
| Finland | Netherlands | Spain | Spain | | Finland | Poland |
| Latvia | Ireland | Belgium | | | Latvia | Denmark |
| | Denmark | | | | Unknown | |
| | | | | | Italy | |
| | | | | | France | |
| | | | | | Denmark | |

What imported products are available (visits to bigger supermarkets):

Hungary – duck liver pâté, freezed duck, cooled duck, bacon, snack sausages

Latvia – snack sausages, meatballs

Poland – bacon, duck filet, vegetarian sausage, cooled duck

Italy, Spain – dried sausages, ham,

Finland – salami, minced meat (lamb)

Lithuania – cooled chicken, cooled duck, cooled rabbit, sausage

New Zealand – wild game meat

France – freezed turkey, duck pâté, rabbit pâté

Germany – freezed chicken meat

Denmark – chicken buttock

Belgium - duck meat pâté

- Special shop “Hõrk amps” for meat products and cheese from Italy (Kvartal, Tartu).
- Special shop-restaurant for Liivimaa beef (Tartu).
- Special shop for meat-cheese-wine - BLACK ANGUS (Kvartal, Tartu):

  **Beef** – Uruguay, Paraguay, Brazil, Netherlands

  **Lamb** - New-Zealand, Spain

  **Pork** – Estonia, Spain

  **Quail** – Estonia

  **Poultry** – Lithuania, Poland, France

**Crocodile meat** – Africa

**Deer** – New Zealand

# 4. Domestic production. What is produced and how?

## 4.1. Summary

In 2014, the rate of self-supply in meat sector was 90%. There is lack of domestic poultry. We are proud of high share of organic land and -production. The authorities work for the higher productivity in organic farming. Due to health problems and environmental awareness, consumers are more and more interested in organic products.

We still depend very much on imported feed. Soy meal for agricultural animals is imported from Netherlands, Latvia, Denmark, Lithuania, Ukraine, but there is increasing trend to grow soy also in Estonia. The future goal is to produce soy meal from soy grown in Estonia.

Situation in animal welfare is good, law breakings are related more with documentation. There is increasing trend to use antibiotics, however, compared to EU countries we are somewhere in the middle. Ministry has made the decision to decrease the use of antibiotics. Data about the use of chemicals shows increase.

## 4.2. Agriculture share of GDP or some indicator or sector importance

According to the database of Statistics Estonia (Agriculture share of GDP, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=RAA0045&ti=LISANDV%C4%C4RTUS+TEGEVUSALA+%28EMTAK+2008%29+J%C4RGI+%28ESA+2010%29&path=../Database/Majandus/15Rahvamajanduse_arvepidamine/06Sisemajanduse_koguprodukt_%28SKP%29/09Sisemajanduse_koguprodukt_tootmise_meetodil/&lang=2

the share of agriculture, forestry and fishery out of GDP in 2015 was 3,4% (share from added value, in actual price, %). These sectors contributed the most to the increase of GDP while the fastest growth was detected in agriculture **(14,1%)** (Yearbook of Estonian Statistics 2016, p. 25, 185: (https://www.stat.ee/publication-2016_statistical-yearbook-of-estonia-2016)

## 4.3. General numbers of production (Yearbook of Estonian Statistics 2016, p 286, (https://www.stat.ee/publication-2016_statistical-yearbook-of-estonia-2016)

MILK - In 2015 - 783,200 tons – 3% less than in 2014.

596 kg of milk was produced per inhabitant – 17 kg less than in 2014.

MEAT - In 2015 - 83,200 tons - (15% beef) - 4% more than in 2014.

63 kg per inhabitant – 2 kg more than in 2014.

EGG – In 2015 - 204.4 million eggs - 3% more than in 2014.

**Self-supply.** In 2014, we produced 90% of meat needed in Estonia. Beef was produced 121%, pork, lamb and goat meat about 100%, poultry only 63%. In 2015, the situation about pork changed drastically.

The numbers describing the production of different type of meat are presented in Table 5.

Table 5. Meat production according to Statistics Estonia (thousand tons): https://www.stat.ee/34236

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Meat total | 69.4 | 70.5 | 74.6 | 76.0 | 75.4 | 80.6 | 78.4 | 79.8 | 80.7 | 83.2 |
| Beef | 14.8 | 15.4 | 14.3 | 14.2 | 12.9 | 12.2 | 12.3 | 11.5 | 11.9 | 12.6 |
| Pork | 41.6 | 42.9 | 46.2 | 46.1 | 45.8 | 50.2 | 48.8 | 49.5 | 48.7 | 50.1 |
| Lamb and goat | 0.5 | 0.6 | 0.9 | 0.8 | 0.7 | 0.6 | 0.7 | 0.7 | 0.6 | 0.7 |
| Poultry | 12.5 | 11.5 | 13.2 | 14.9 | 16.0 | 17.5 | 16.5 | 18.1 | 19.5 | 19.8 |
| Rabbit and coypu meat | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |

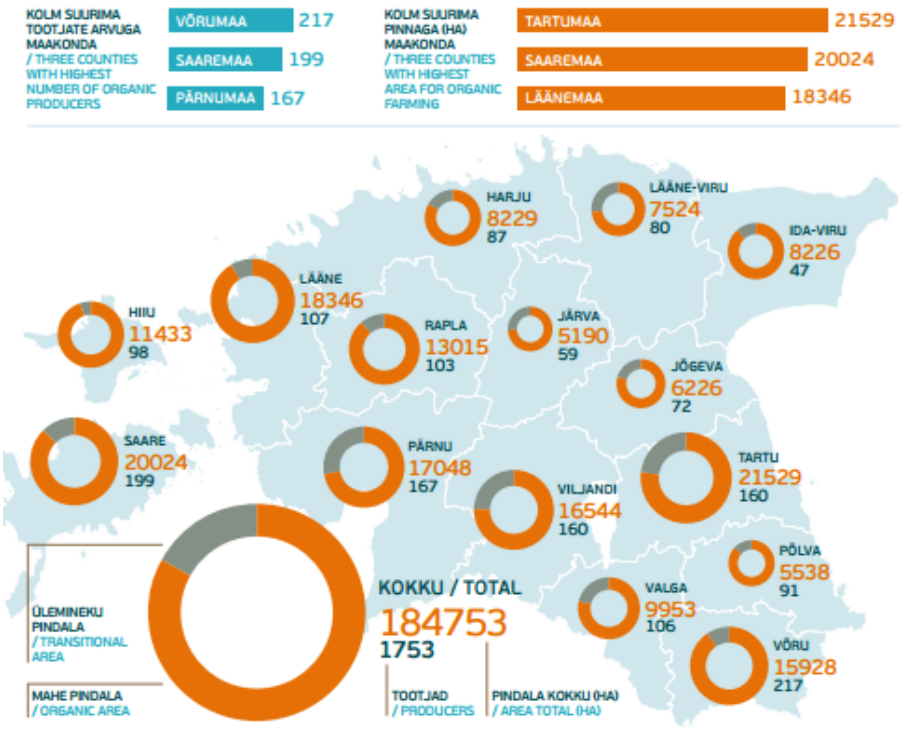
## 4.4. General numbers and details of organic production (according to "ORGANIC FARMING IN ESTONIA 2016", http://www.maheklubi.ee/upload/Editor/mahe_eestis_2016.pdf)

- Estonia has a new map of organic areas in Estonia: https://xgis.maaamet.ee/mahekaart Updated version of the map will be published once a year. Map refers to areas which are supported. But there are also organic farmers who are not applying for the support.
- The area of organic land has reached more than 184,000 ha. It has expanded 2.5 times over the last ten years, representing 18% of the total agricultural area. According to this, Estonia is one of the three leading countries in the EU.
- The land area for organic vegetables in 2016 - 95 ha, which is not enough to meet consumer demand.
- Number of organic farmers and animals are presented in table 6 and on the figure 7.

Table 6. The number of organic animals 2015-2016. Source of the table: ORGANIC FARMING IN ESTONIA 2016, p. 24: (http://www.maheklubi.ee/upload/Editor/mahe_eestis_2016.pdf)

Maheloomade arv 2015–2016. Allikas: mahepõllumajanduse register, kohapealse kontrolli seisuga / Number of organic animals in 2015–2016. Source: The register of organic farming, according to onsite inspection data

| | 2015 KOKKU / TOTAL | 2016 KOKKU / TOTAL | Üleminekuaja läbinud / Converted | Sh / Incl. Üleminekuajal / In conversion |
|---|---|---|---|---|
| Veised / Cattle | 41 744 | 44 675 | 40 922 | 3 753 |
| sh lüpsilehmad / of which milking cows | 1 966 | 1 881 | 1 797 | 84 |
| sh lihaveise ammlehmad / of which suckler cows | 14 271 | 16 045 | 14686 | 1 359 |
| Lambad / Sheep | 54 470 | 51 999 | 48 103 | 3 896 |
| Kitsed / Goats | 1 566 | 1 629 | 1 536 | 93 |
| Hobused / Horses | 2 021 | 1 952 | 1 902 | 50 |
| Sead / Pigs | 818 | 681 | 681 | 0 |
| Kodulinnud / Poultry | 33 799 | 33 992 | 33 192 | 800 |
| sh munakanad / of which laying hens | 23 036 | 19 008 | 18 680 | 328 |
| Küülikud / Rabbits | 2 639 | 2 930 | 2 772 | 158 |
| Mesilased (perede arv) / Bee hives | 1 996 | 2 717 | 2 180 | 537 |




Joonis 2. / Figure 2.

Mahetootmisega tegelevate ettevõtete ja mahepõllumajandusmaa paiknemine Eestis maakonniti 2016. a. Allikas: mahepõllumajanduse register / Location of organic farms and land by counties in Estonia in 2016. Source: The register of organic farming

Fig. 7. Location of organic enterprises and organic land (Source of the graph: ORGANIC FARMING IN ESTONIA 2016, p. 15: (http://www.maheklubi.ee/upload/Editor/mahe_eestis_2016.pdf)

## 4.5. Use of soy in production and ratio of responsible soy

*How much information is available on the use of soy in feed and the use of sustainable soy?*

*- General info on feeding (such as ratio of soy in feed) can be useful*

*- Or finding out how/where this information will be available*

*- If available, give details of soy commitments, use of sustainable soy, RTRS memberships etc*

The information about importing soy products for feeding is contradictory. One fact that seems to be true is that all the soy used in Estonia is GMO.

The following information is passed on by The Veterinary and Food Board. There are nine bigger companies producing feed, using also soy. As said by some specialists this is GMO soy. There is no such information how much soy is used in feed but as said by specialists, we know how much soy (soy meal) is imported from third countries – in 2016 it was 1,388,200 kg from Ukraine and Belarus. We have no information about sustainable soy.

But there's also other statistics about soy. From database of Statistics Estonia we can find general import number per country for soy meal (Table 7).

Table 7. Import of soya meal 2015 and 2016.

| Country | 2015, kg | 2016, kg |
|---|---|---|
| Total | 23,369,182 | 22,879,266 |
| Netherlands | 14,903,015 | 11,209,080 |
| Latvia | 4,888,910 | 5,925,946 |
| Denmark | 0 | 2,301,720 |
| Lithuania | 3,511,720 | 1,880,520 |
| Ukraine | 43,500 | 1,518,000 |
| Poland | 22,000 | 22,000 |
| Belarus | 0 | 22,000 |
| Germany | 37 | 0 |

It is important to emphasize that it will come more popular to grow soy also in Estonia. In 2016, 200 hectares of soy grew in Estonia. We have our own Estonian sort "Laulema" which is rather promising to give good yield. The research is getting on in Estonian Crop Research Institute (http://www.etki.ee/index.php/eng/).

There is an NGO dealing with innovative solutions (MTÜ Eesti Põllukultuuride Innovatsiooniklaster) and they have worked out foil - mulch which can be used in soy production (seeds are sown under this mulch).

Domestic soy production will probably increase and Oru Oil factory has important role in the process. The main aim would be to feed all Estonian agricultural animals with GMO-free Estonian soy.

Additional data from 2006, compiled by Soy Union:
http://www.sojaliit.ee/wp-content/uploads/2010/06/SojaoaTurustusperspektiivideUuring2006.pdf

## 4.6. Animal welfare, use of antibiotics, chemical use

*Where and how much information is available on legislation and especially industry practice on these three topics?*

- *If possible give an overview of the three areas ex. compared to European average*

**News:** The usage of antibiotics in animal husbandry will be more restricted, http://digileht.maaleht.delfi.ee/lisa_maamajandus/loomakasvatus/antibiootikumide-kasutamist-loomakasvatuses-hakatakse-piirama?id=76526552

A) ANIMAL WELFARE:

Authorities:

- Ministry of Rural Affairs
- The Veterinary and Food Board
- The Environmental Inspectorate

NGOs:

- Estonian Society for the Protection of Animals
- Estonian Academic Society for Animal Welfare

Data is available on the web page of Ministry of Rural Affairs:
https://www.agri.ee/et/eesmargid-tegevused/loomade-tervis-heaolu-ja-aretus/loomade-heaolu

There is overview of different legislation, Estonian and EU regulations in different sections: all agricultural animals, chicken, fur animals, sheep and goat, pig, cow and calf.

B) ANTIBIOTICS

Compared to the rest of Europe, Estonia has a position in the middle regarding the sales of antimicrobial agents for food-producing animals (Fig. 8). See Meat Atlas from 2014, p. 27. Data: p.27: EMA, Sales of veterinary antimicrobial agents in 25 EU/EEA countries in 2011, Third ESVAC report, 2013. BVL, Zoonosen-Monitoring, Berichte zur Lebensmittelsicherheit, 2010: http://www.ema.europa.eu/docs/en_GB/document_library/Report/2016/10/WC500214217.pdf

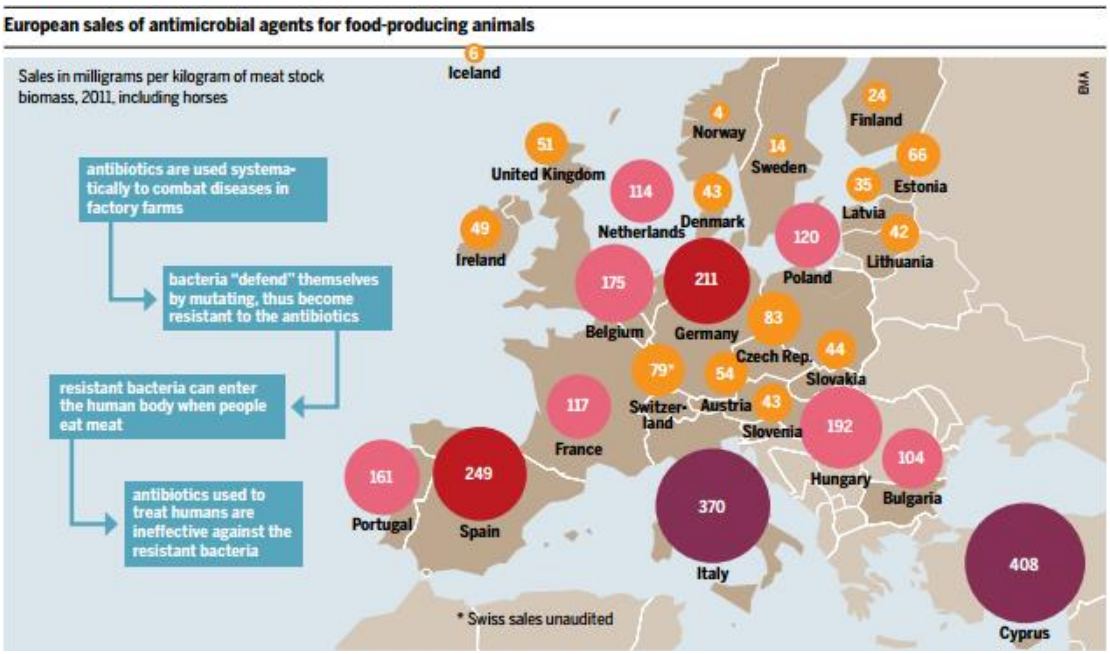



Fig. 8. European sales of antimicrobial agents for food-producing animals.

The data brought out in the report of ESVAC (2014) shows that the sales of veterinary antimicrobial agents (mg/PCU) in Estonia during 2010-2014 has been quite stable (p. 90-91) although there are some exceptions (see Fig. 9).

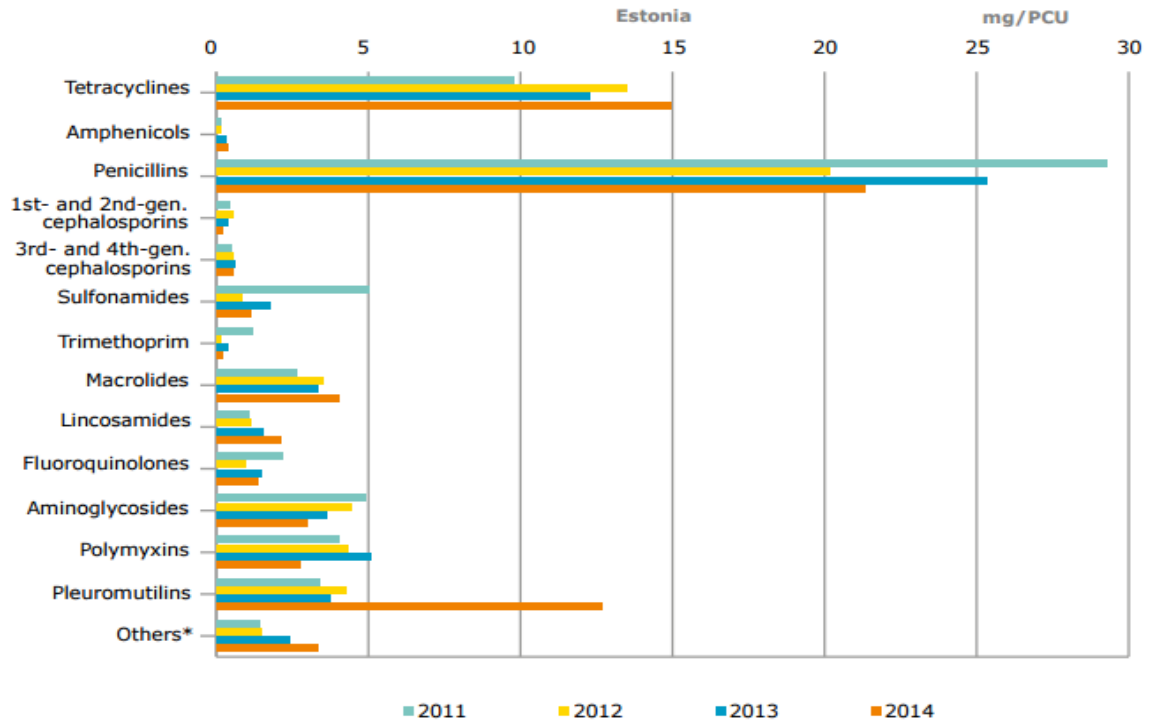



Fig. 9. Sales (mg/PCU) by antimicrobial class in Estonia, from 2011 to2014 (From ESVAC report, p. 90: http://www.ema.europa.eu/docs/en_GB/document_library/Report/2016/10/WC500214217.pdf).

There is a development plan concerning the use of antibiotics: „Mikroobide antibiootikumiresistentsuse vähendamise tegevuskava veterinaarmeditsiini valdkonnas

aastateks 2017-2020“. The goal is to decrease the usage of antibiotics in Estonia 30% by the year 2020 (https://www.agri.ee/et/uudised/riik-asub-piirama-antibiootikumiresistentsuse-levikut-loomakasvatuses).

**Publications and web pages:**

- Main things to remember when choosing food products.
https://maablogi.wordpress.com/page/2/?app-download=windowsphone
- Antimicrobial resistance.
https://www.agri.ee/et/eesmargid-tegevused/toiduohutus/bioloogiline-ohutus/mikroobide-resistentsus
- An informative webpage from Ministry of Rural Affairs:
https://www.agri.ee/et/mida-peaksid-teadma-antibiootikumiresistentsusest-loomakasvatuses
- Antibiotics do not reach the Valio milk available in shops
http://www.pollumajandus.ee/uudised/2014/09/26/valio-poepiima-antibiootikumid-ei-joua-3
- Food pathogens in domestic and imported poultry
http://www.pollumajandus.ee/uudised/2016/03/08/doktoritoo-uuris-toidupatogeenide-levimust-eesti-ja-imporditud-linnulihas
- Antimicrobial resistance is a serious risk for human health
https://maablogi.wordpress.com/2016/11/16/teadlane-antibiootikumiresistentsus-on-tosiseks-ohuks-inimeste-tervisele/
- For the beginner - organic production
http://www.maheklubi.ee/upload/Editor/2016_alustajatele_mahetaust.pdf

C) CHEMICAL USE

- The use of pesticides per hectare is a bit misleading. When calculating this, also organic land is considered (but on this area pesticides are banned).
- Glyphosate-based herbicides are dominating in Estonia. The numbers of sales have increased. http://www.maheklubi.ee/upload/Editor/2016_alustajatele_mahetaust.pdf
- The amount of pesticides used in agricultural holdings has increased. Data from Estonian Statistics 2011-2015 (Fig. 10):
http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=EN2082&ti=USE+OF+PESTICIDES+IN+AGRICULTURAL+HOLDINGS+BY+COUNTY+AND+CROP&path=../I_Databas/Environment/01Agri_environmental_indicators/&lang=1

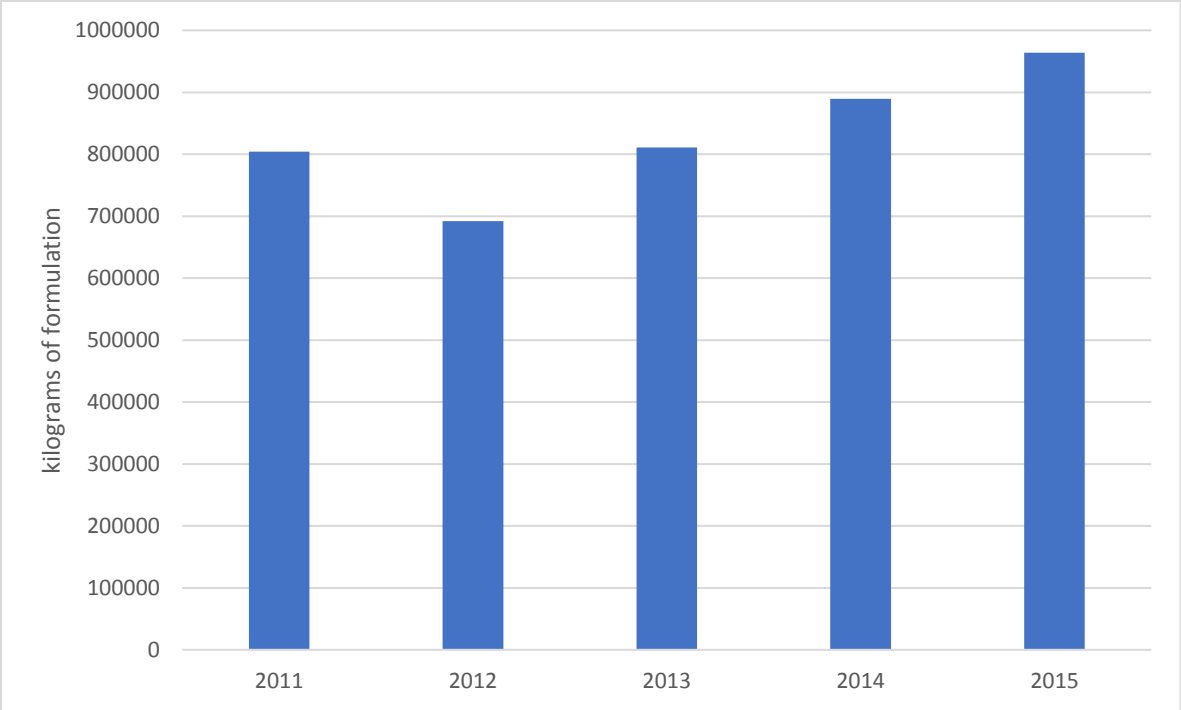



Fig. 10. Use of pesticides in agricultural holdings.

- Information on web page of Ministry of Rural Affairs: https://www.agri.ee/et/eesmargid-tegevused/taimekasvatus/taimekaitse
- Information about nitrate sensitive areas (Ministry of Rural Affairs) http://www.envir.ee/et/nitraaditundlik-ala
- The use of pesticides compared to other European countries: http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

The use of pesticides is not that intensive as in the rest of Europe. Estonia has the place among the last ten countries (in all distinct categories).

## 4.7. Legal framework for domestic production

*The most important legislation related to agriculture and meat production could be listed here. Since most is EU regulation, this will be similar everywhere. But in addition, there may be national legislation on antibiotics, animal welfare and chemical use that would be useful to be aware of. Even if at this stage an analysis of the content (which is probably not familiar to most, at least in terms of antibiotics and animal welfare) is not necessary.*

- Medicinal Products Act – Ravimiseadus ("Ravimite ning ravimsöötade loomahaiguste ennetamiseks ja raviks kasutamise tingimused ja kord")
- Feed Act – Söödaseadus ("Ravimsööda käitlemise nõuded" - Requirements for medicated feed management")
- Veterinary Activities Organisation Act - Veterinaarkorralduse seadus
- Food Act - Toiduseadus
- Infectious Animal Disease Control Act - Loomatauditõrje seadus
- Animal Protection Act - Loomakaitseseadus
- Farm Animals Breeding Act - Põllumajandusloomade aretuse seadus
- Trade in, Import and Export of Animals and Animal Products Act - Loomade ja loomsete saadustega kauplemise ning nende impordi ja ekspordi veterinaarjärelevalve seadus
- Plant Protection Act („Taimekaitsevahendi kasutamise ja hoiukoha täpsemad nõuded“) - taimekaitseseadus
- Organic Farming Act - Mahepõllumajanduse seadus
- Plant Propagation and Plant Variety Rights Act - Taimede paljundamise ja sordikaitse seadus
- Fertilisers Act - Väetiseseadus
- Emergency Act - Hädaolukorra seadus
- Rural Development and Agricultural Market Regulation Act - Maaelu ja põllumajandusturu korraldamise seadus
- The instructions of utilizing very poisonous plant protection products, usage plan and protocol - Nõuded väga mürgise taimekaitsevahendi kasutamisele ning väga mürgise taimekaitsevahendi kasutamise plaanile ja protokollile
- The decree of holding plant protection products - Taimekaitsevahendite registri pidamise põhimäärus

REQUIREMENTS FOR KEEPING ANIMALS:

- Chicken - Nõuded kanade pidamisele ja selleks ettenähtud ruumile või ehitisele »
- Broiler - Nõuded broilerite pidamise, selleks ettenähtud ruumi või ehitise ja broilerite pidamise koolituse kohta »

- Sheep and goat - Nõuded lamba ja kitse pidamise ja selleks ettenähtud ruumi või ehitise kohta »
- Pig - Nõuded sigade pidamisele ja selleks ettenähtud ruumi või ehitise kohta, sigade suhtes rakendada lubatud veterinaarsete menetluste loetelu ja neid läbiviivad isikud ning nõuded nende menetluste teostamisele ja neid menetlusi teostava isiku ettevalmistusele »
- Calf - Nõuded vasikate pidamisele ja selleks ettenähtud ruumile või ehitisele »
- Cattle - Nõuded veise pidamise ja selleks ettenähtud ruumi või ehitise kohta »

## 4.8. Size and location of cattle, sheep, poultry, pig, egg and dairy sectors

*Give general information on the structure of the meat production (number of animals, sizes of farms). Are the farms big or small, concentrated in specific areas? Are there local environmental issues related to this? If possible, be specific and add information such as figures on animals/hectare.*

### 4.8.1. Farm structure

**News:**

- Decrease of the number of agricultural holdings continues, http://maaelu.postimees.ee/4047915/pollumajanduslike-majapidamiste-arv-jatkab-vahenemist
- Agricultural holdings tend to expand, http://maaelu.postimees.ee/4070899/pollumajanduslikud-majapidamised-aina-paisuvad

According to the Farm Structure Survey 2016, the decrease of the number of agricultural holdings has not stopped during the recent years (web page of Statistics Estonia, 27 July 2016, also Fig. 11). At the same time, the farmers are re-organizing their activities due to the restrictions on the size of maintained permanent grassland, crisis in dairy production and African swine fever.

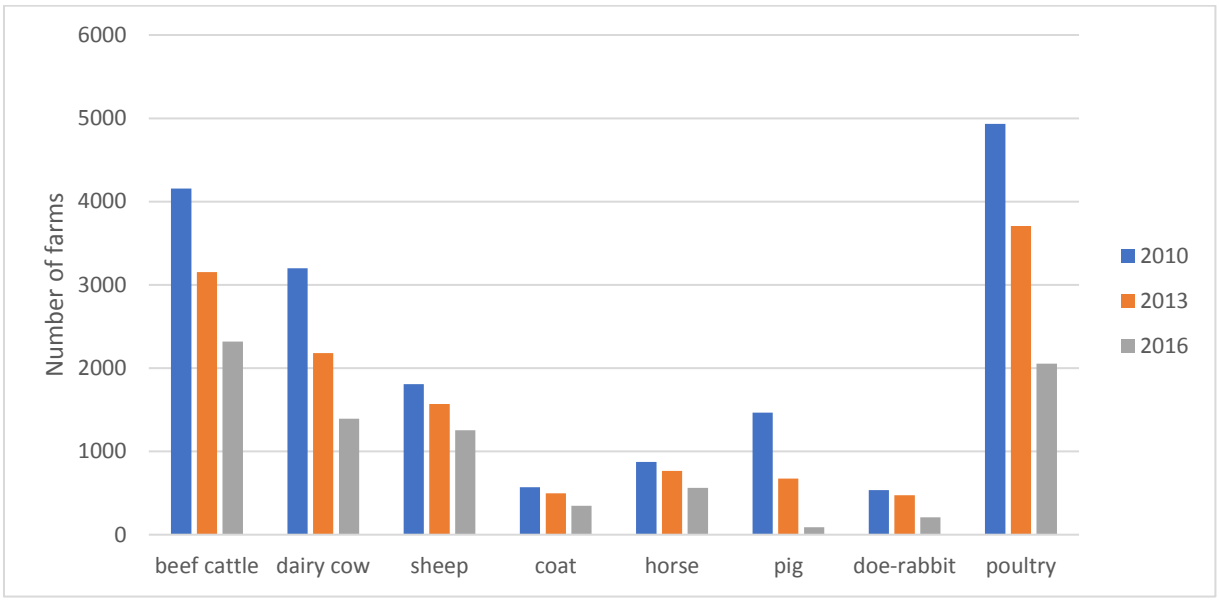



Fig. 11. Agricultural holdings of sole proprietors 2010-2016, Statistics Estonia.

The following numbers presented on figures 12-21 are from Estonian Agricultural Registers and Information Board (ARIB) (data request from 27.03.2017). For every type of animal specific farm, farm size describing classes are created, according to the number of animals. The first graph shows the number of agricultural holdings in the size class, the second one shows the total number of animals in the class. Data is presented for all the Estonian counties.

### 4.8.2. Sheep

Agricultural holdings are divided into 6 groups according to the number of sheep.

| Class | Number of sheep in the holding |
|---|---|
| 1 | 1-20 |
| 2 | 21-50 |
| 3 | 51-100 |
| 4 | 101-500 |
| 5 | 501-1000 |
| 6 | 1000-…… |

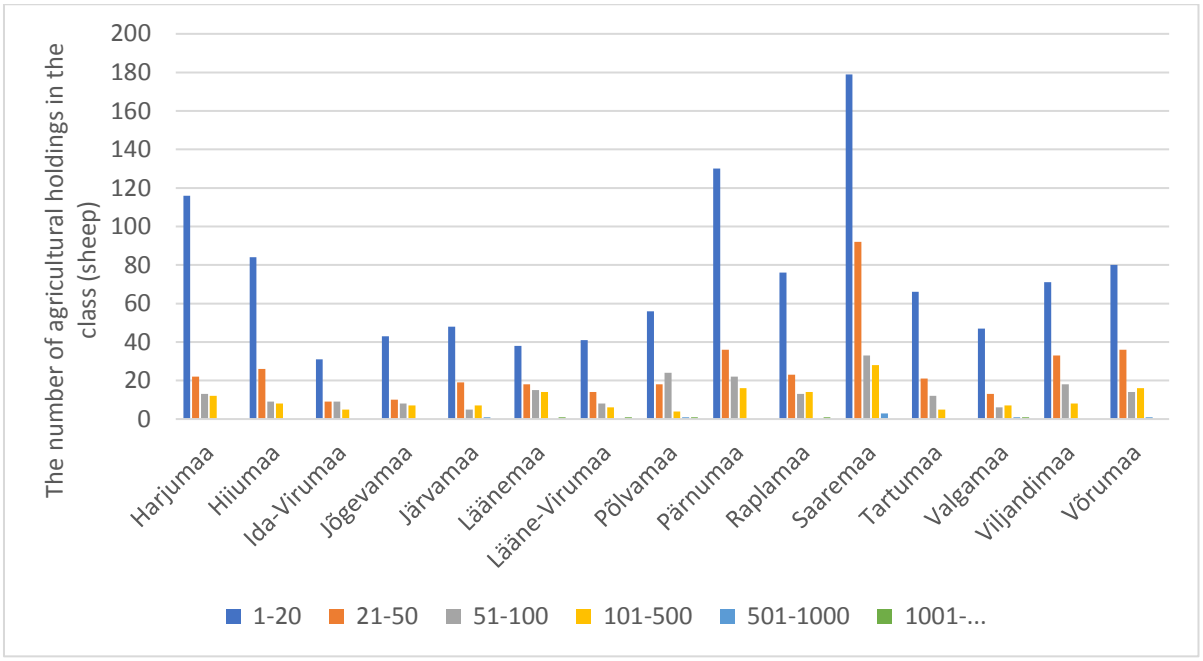



Fig. 12. Distribution of farms according to the number of sheep.

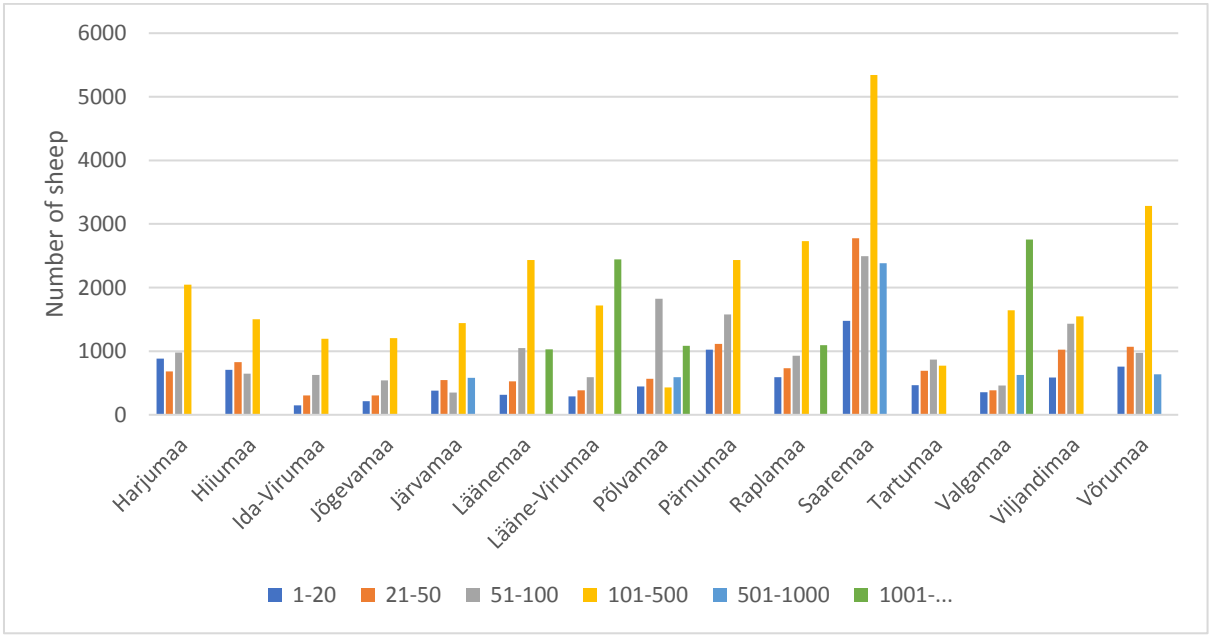



Fig. 13. The total number of sheep in every size class.

### 4.8.3. Goat

| Class | Number of goat in the holding |
|---|---|
| 1 | 1-10 |
| 2 | 11-20 |
| 3 | 21-50 |
| 4 | 51-500 |

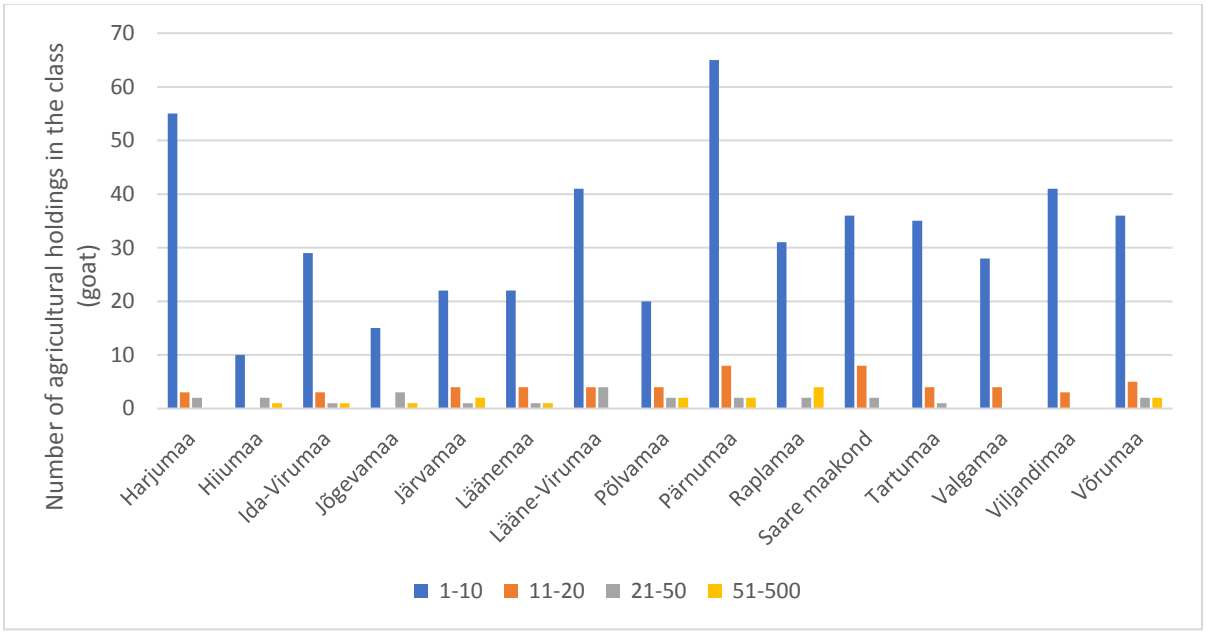



Fig. 14. Distribution of farms according to the number of goat.

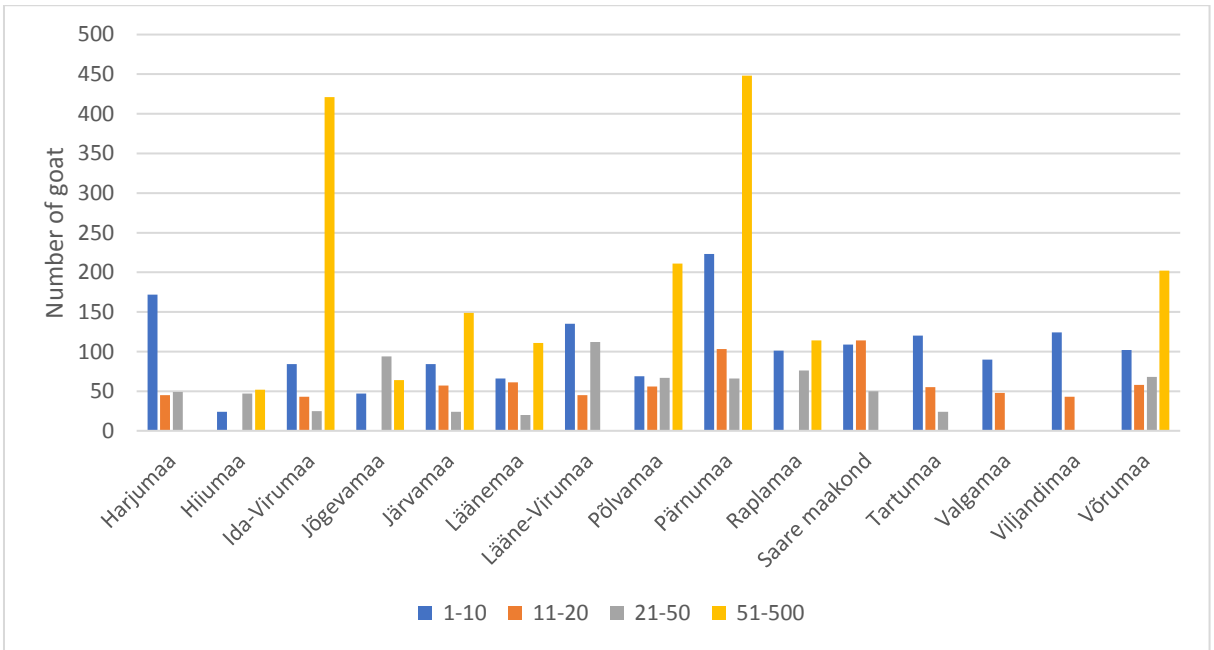



Fig. 15. The total number of goat in every size class.

## 4.8.4. Pig

| Class | Number of pig in the holding |
|---|---|
| 6 | 5001-… |
| 5 | 1001-5000 |
| 4 | 501-1000 |
| 3 | 101-500 |
| 2 | 21-100 |
| 1 | 1-20 |

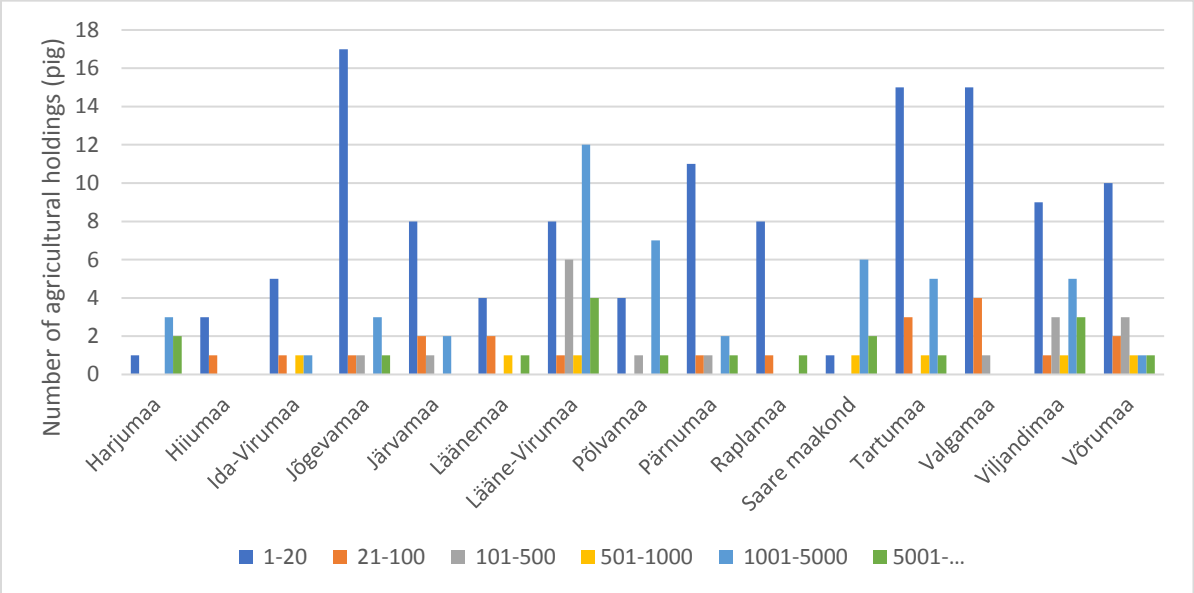



Fig. 16. Distribution of farms according to the number of pig.

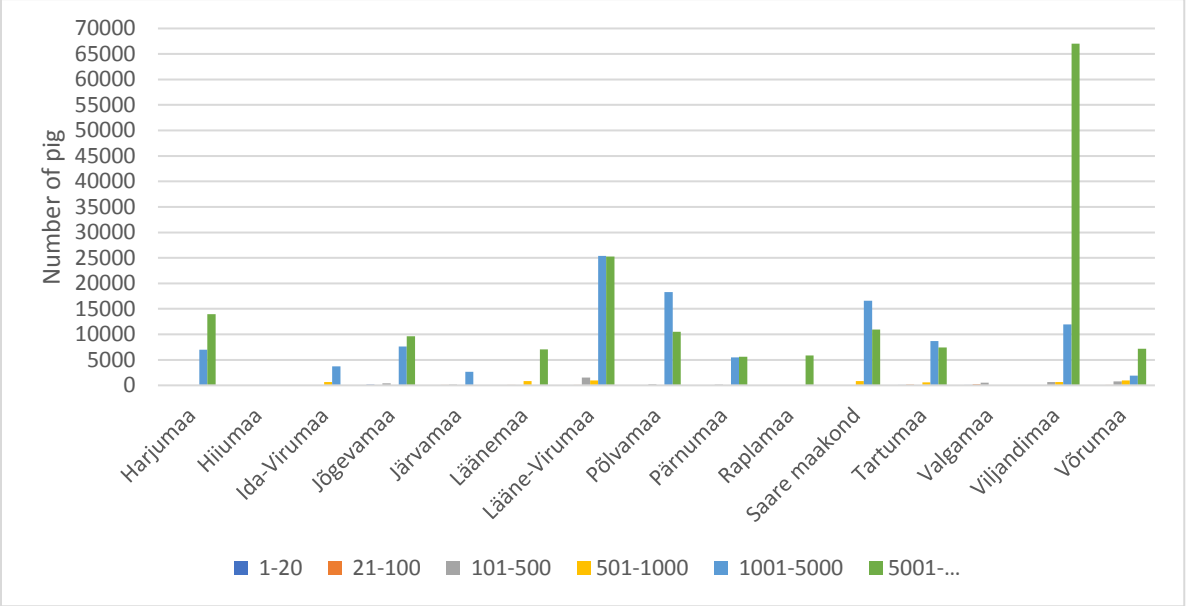



Fig. 17. The total number of pig in every size class.

### 4.8.5. Dairy cow

| class | Number of animals in the class |
|---|---|
| 1 | 1-10 |
| 2 | 11-20 |
| 3 | 21-50 |
| 4 | 51-100 |
| 5 | 101-… |

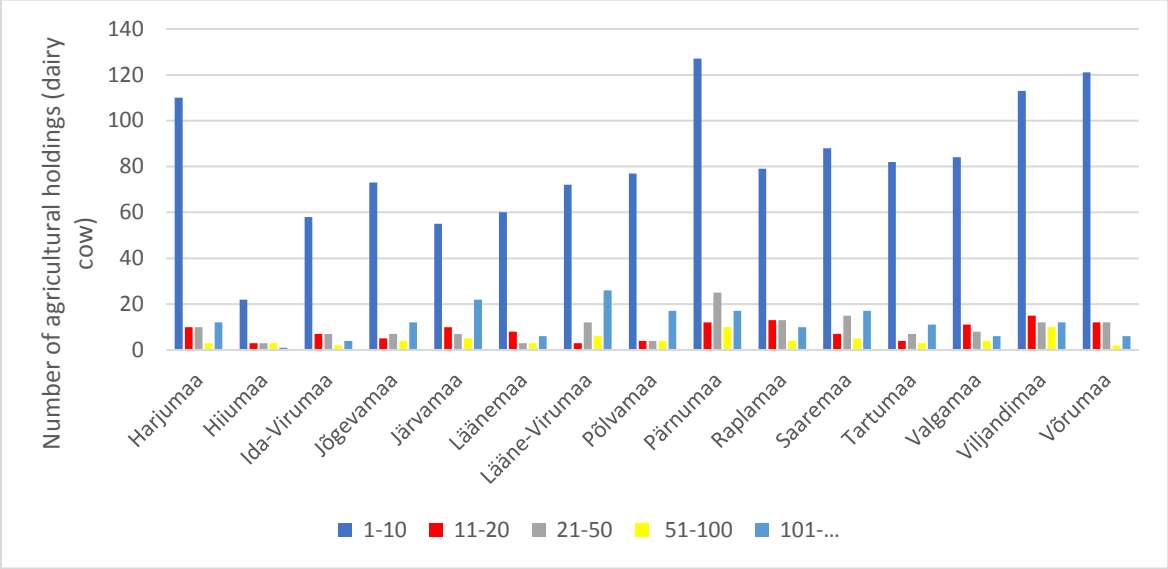



Fig. 18. Distribution of farms according to the number of dairy cows.

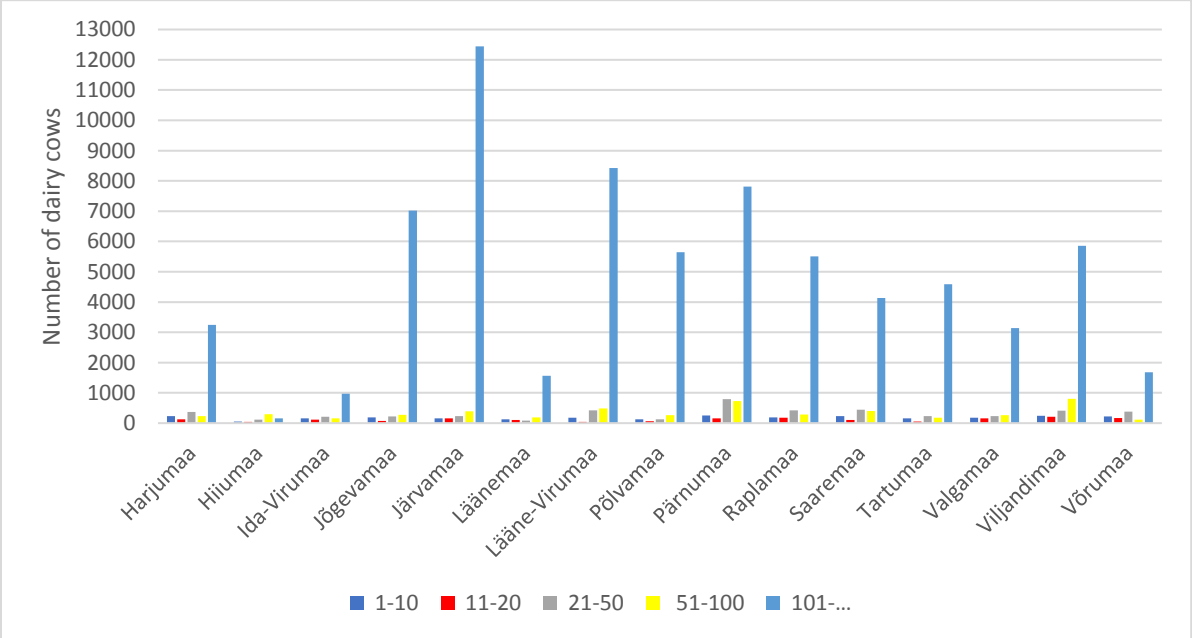



Fig.19. The total number of dairy cows in every size class.

## 4.8.6. Suckler cow

| class | Number of animals in the class |
|---|---|
| 1 | 1-10 |
| 2 | 11-20 |
| 3 | 21-50 |
| 4 | 51-100 |
| 5 | 101-… |

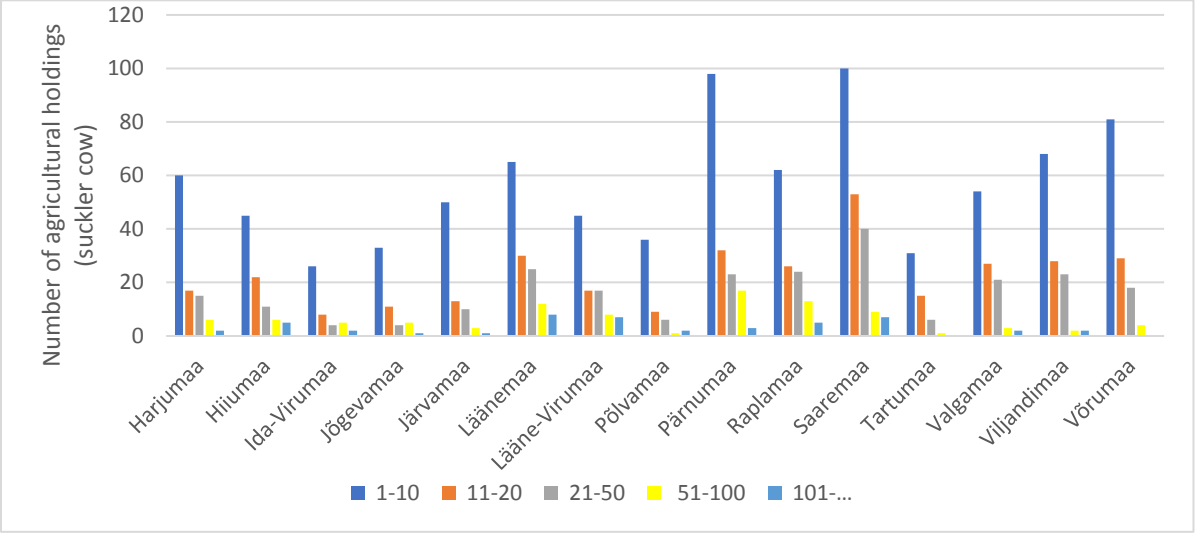



Fig. 20. Distribution of farms according to the number of suckler cows.

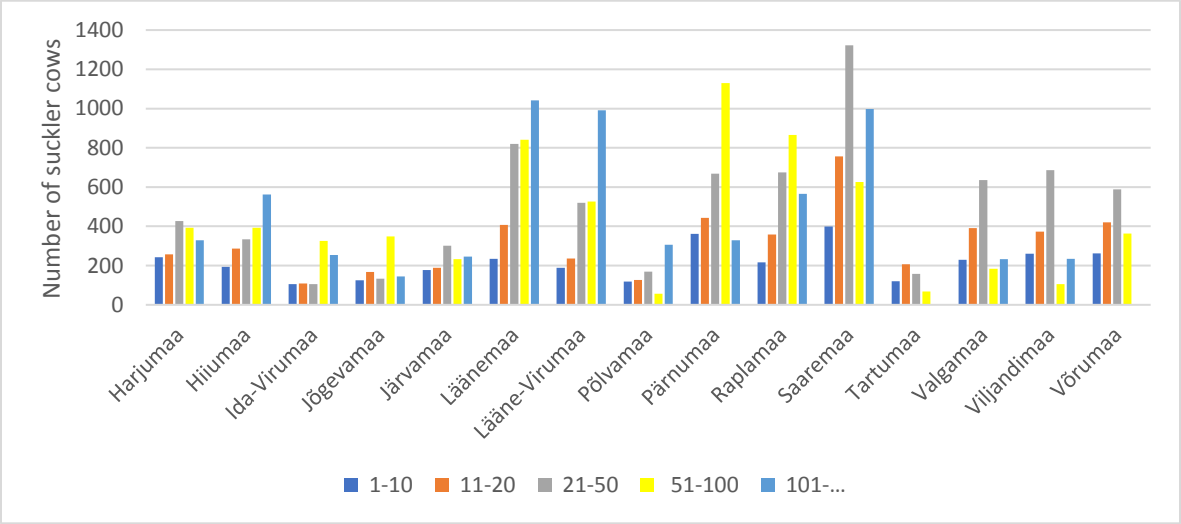



Fig. 21. Distribution of farms according to the number of suckler cows.

## 4.9. Some statistics about livestock

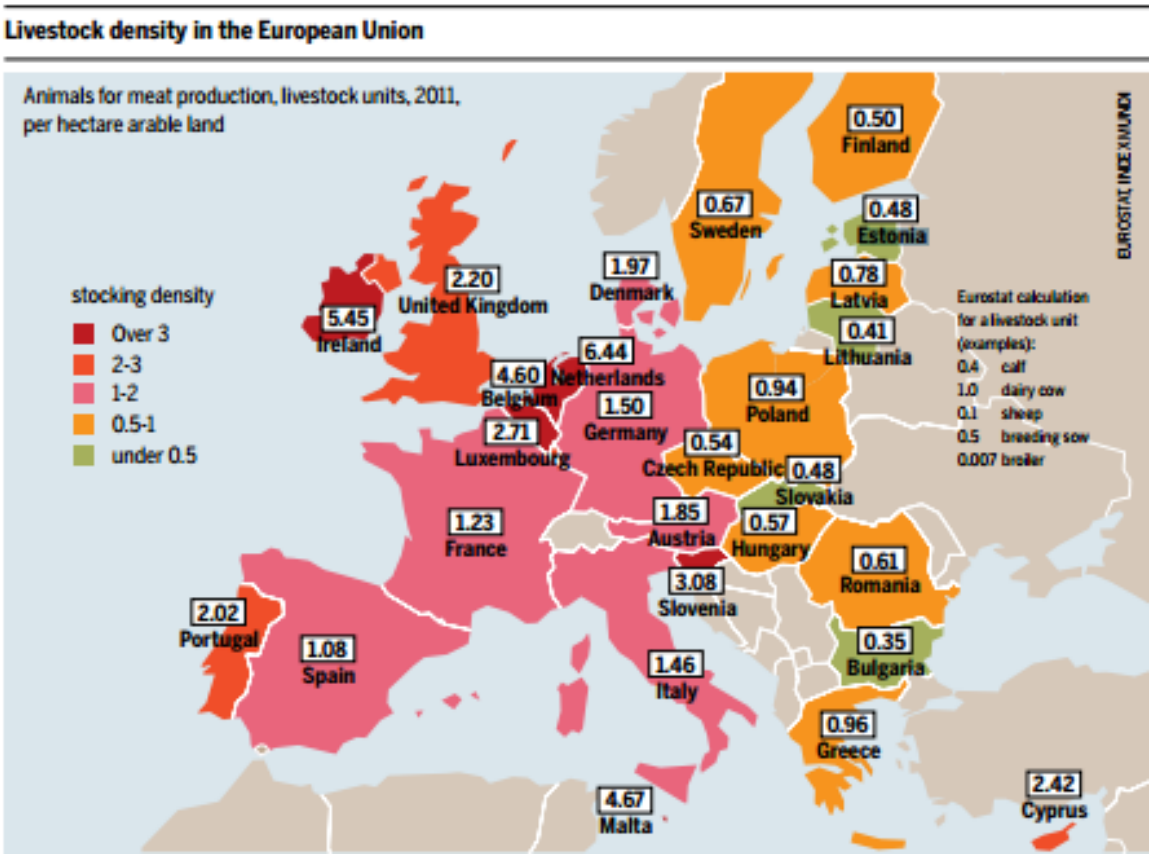



Fig. 22. Livestock density of European countries**. (**Meat Atlas 2014. p 61 (p.61: Eurostat/ Index mundi database. EU, The Common Agricultural Policy explained, 2004, and DairyCo Market Information, Nov. 26, 2013).

Data from Eurostat 2013 (http://ec.europa.eu/eurostat/data/database)

| GEO/INDIC_AGR | Estonia |
|---|---|
| Farms, number | 19,190 |
| Utilised agricultural area, hectares | 957,510 |
| Farm area, hectares | 1,229,420 |
| Farms with livestock, number | 8,380 |
| Farms with livestock, livestock units | 310,110 |
| Standard output, euros | 676317090 |
| Labour force directly employed, annual working unit | 22,060 |
| Farms whose household consumes more than 50% of the final production, number | 6,020 |

## 4.10. Information on game

*If relevant, give information on domestic wild game. Which species are hunted, how much and how well hunting is controlled. Is hunting of endangered animals allowed.*

Big game species in Estonia: moose, red deer, roe deer, wild boar, brown bear, (also wolf, lynx, which are not used in food production). Wild boar is hunted the most (Fig. 23).

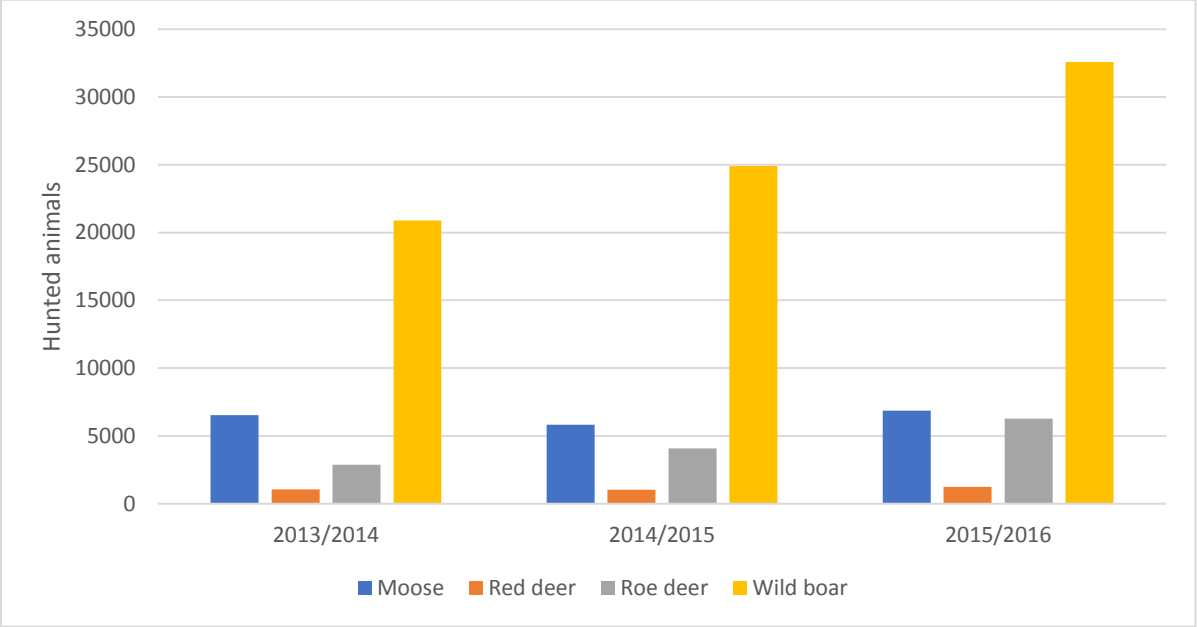



Fig. 23. Hunted animals during three hunting seasons.

Environmental Inspectorate is monitoring hunting. The topic is regulated by the Hunting Act (https://www.riigiteataja.ee/en/eli/ee/Riigikogu/act/501022016007/consolide). Each year the specific number of hunting licenses are given out. The Hunting act brings out big game species and there are no protected species.

# 5. Amount of exports

*If possible and relevant, give information on the major exports.*

## 5.1. Export of meat and meat products

The main export articles have been pork, canned meat, sausages and other meat products.

The main export partners are Latvia, then Finland and Lithuania.

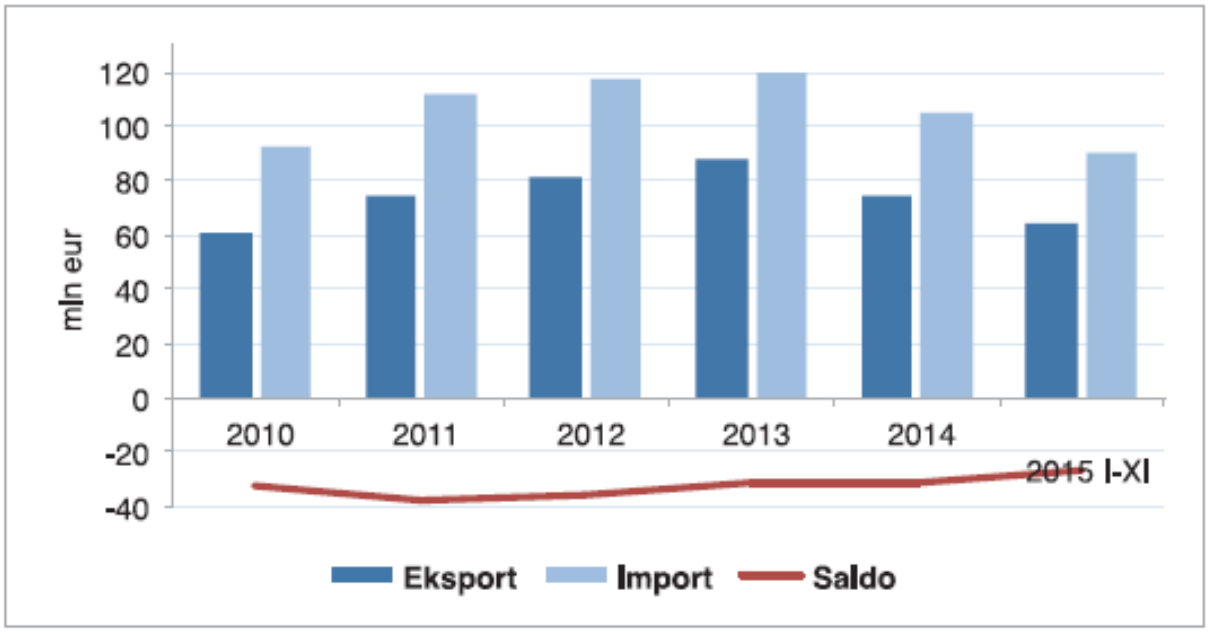



Fig. 24. Export and import of meat and meat products 2010-2015. Data from Statistics Estonia (initial source of the graph – Lihafoorum 2016).

According to the experts of the field, approximately 90% of game meat and products are exported.

## 5.2. Export of living animals

Considerable amount of living animals (mostly beef cattle and sheep) are exported each year. Export numbers for beef cattle: in 2015 – 9423 animals, in 2016 – 10537 animals (http://epkk.ee/wp-content/uploads/2017/12/Tanel-Bulitko-Lihafoorum-elusloomade-eksport.pdf).

# 6. Market/sales. What is sold and where?

## 6.1. Summary

- There is nice variety of domestic production available.
- The origin of the meat should be presented more clearly.
- Although the representation of grass-fed beef has increased significantly among meat products, the share of organic meat and products in bigger shops is marginal.
- Food services and public procurement prefer domestic meat, but in case of poor availability the imported meat is used. The quality of imported meat is sometimes even better (mentioned in regards of lamb and chicken)!
- Domestic meat can be more intensively presented to consumers (especially in restaurants).

## 6.2. Food sector share of GDP

According to the database of Statistics Estonia (GDP and food sector, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=RAA0045&ti=LISANDV%C4%C4RTUS+TEGEVUSALA+%28EMTAK+2008%29+J%C4RGI+%28ESA+2010%29&path=../Database/Majandus/15Rahvamajanduse_arvepidamine/06Sisemajanduse_koguprodukt_%28SKP%29/09Sisemajanduse_koguprodukt_tootmise_meetodil/&lang=2) the share of food production, production of drinks and tobacco-goods in 2015 was 2.1% (the share from added value).

In 2015, the share of total production of meat processing sector made up 19.8% from food industry (+2.7% compared to 2014, Lihafoorum 2016, file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Lihafoorum-2016.pdf).

## 6.3. What information and what products are available to the consumer?

*Information on different labeling schemes etc. What information is available to consumers in shops and in restaurants? List relevant and available production types eg. organic, krav.*

### 6.3.1. Labels that can be found on meat products

We can distinguish two main groups according to the production type: conventional products and organic products. Organic meat products are marked with the special EU organic label and the voluntary label of Estonian organic farming.

EUROPEAN QUALITY LABELS (only on imported products):

- Protected Designation of Origin, PDO

- Protected Geographical Indication, PGI

- Traditional Specialty Guaranteed, TSG

ESTONIAN QUALITY LABELS:

There are some quality labels (https://www.agri.ee/et/eesmargid-tegevused/pollumajandus-ja-toiduturg/kvaliteedimargid) that are nationally assigned to the products:

- Flag label (Lipu märk), products are **produced** in Estonia, following the Estonian traditions and taste preferences of local consumers. Basic materials **may be imported** or from Estonia. Given out by Estonian Food Industry Association. This label causes confusion among consumers, giving misleading hint about the origin of the meat.

- Approved Estonian taste (Tunnustatud Eesti maitse). Basic materials are **100% from Estonia**. The product has successfully passed laboratory and sensory assessment. Only enterprises registered in Estonia may apply for the right to use this label. Given out and controlled by The Estonian Chamber of Agriculture and Commerce.

- Approved taste – (Tunnustatud maitse). High quality, basic materials can be domestic or imported. Officially certified quality sceme. All EU enterprises may apply for the right to use this label. Given out and controlled by The Estonian Chamber of Agriculture and Commerce.


- The best food product of Estonia – (Eesti parim toiduaine). The product is produced in Estonia and has awarded with the price of “the best new product this year”. Given out by Estonian Food Industry Association and Tallinn University of Technology .


- Grown in Estonia – (Eestis kasvatatud). High quality vegetable product. The product must correspond to the highest European standards. The right to use this label is given for one year. Given out by Estonian Horticultural Association (NGO).


- State certified grass-fed beef (Riiklikult tunnustatud rohumaaveise liha). NGO Liivimaa Beef created quality scheme. Quality scheme “grass-fed” promotes the grazing of Angus, Hereford, and Simmental breed cattle in organic-certified farms. More information: http://grassfedbeef.eu/quality-scheme. Controlled by The Veterinary and Food Board.


LABELS AND TRADE MARKS OF PRIVATE COMPANIES:

- Estonian pork – (Eesti siga), shows that the products of the Rakvere Meat Processing Plant have been prepared from good and high-quality meat of Estonian-raised pigs. http://www.rakverelk.ee/eestisiga/eng/. There is no information how the quality is controlled (should be clarified).

- Estonian grass-fed beef, Protected trademark of Arke Meat Processing Plant. It refers to strict demands to applicant to meet the high-quality standard of the beef products. Although the control of the origin of the meat is not that strict as by state certified grass-fed beef. There is no information how the quality is controlled (should be clarified). Trademark is related to the project Baltic Grassland Beef (http://www.balticgrassland.com/bgb/baltic-grassland-beef).


- Beef from Saare county (Saare lihaveis)
- Pork from Saare county (Saare siga)
- The label Fair trade (Aus kaup) shows that the product contains no mechanically de-boned meat mass.


- Trade mark “Estonian beef” (Eesti lihaveis). This trade mark has longer history as rented trade mark, but now it belongs to the Estonian Beef Breeders Association. None of the farms has a right to use it, but it will happen soon. NGO for Estonian beef farmers will have contracts with farms using this mark. There is no information how the quality is controlled (should be clarified).


- There are some more. Information available in English: http://www.toidutee.ee/labels

Public awareness about the labels is brought out above, under “General consumer awareness on labels”.

Most visible is flag label, label “Approved Estonian Taste” is very common. “Estonian beef” can be found sometimes (as a relict from previous contracts). Products with label for protected geographic indication (on imported products), EU organic label, label for Estonian organic farming can be found, but these are products from one-two producers.

Different companies emphasize Estonian origin of the meat (for example: 50% of meat used is Estonian). Some of them try to present the share of meat in the product.

Meat content: 75%

100% domestic meat

### 6.3.2. Products in bigger and special shops

It depends on the supermarket how the information of country of origin is presented. Mostly it can be found on the price sheet, but sometimes it is not exposed and there is just a hint “look at the package”. Regarding Estonian production, the origin may be announced as “Estonia” or just bringing out the company name. For example, the supermarket Konsum points out company name but Prisma emphasize general domestic origin putting there only “Estonia”.

<u>What imported products are available (according to visits to the bigger shops):</u>

Hungary – duck liver pâté, freezed duck, goose and duck buttock, cooled duck, bacon

Latvia – snack sausages, meatballs

Poland – bacon, duck filet, vegetarian sausage, freezed goose and duck fillet

Italy, Spain – dried sausages, ham

Finland – salami, minced meat (lamb)

Lithuania – cooled chicken, cooled duck, cooled rabbit, cooled turkey, meat snacks

New Zealand – wild game meat

France – freezed turkey, cock, chick and maize chicken, duck pâté, rabbit pâté

Germany – freezed chicken meat

Denmark – chicken buttock

Belgium – duck liver pâté

- Special shop “Hõrk amps” for meat products and cheese from Italy (Kvartal, Tartu).

- Special shop-restaurant for Liivimaa beef – “Lihuniku äri” (Tartu). Various products made of grass-fed beef.
- Special shop for meat-cheese-wine – “BLACK ANGUS”:

**Beef** – Uruguay, Paraguay, Brasil, Netherlands

**Lamb** - New-Zealand, Spain

**Pork** – Estonia, Spain

**Quail** – Estonia

**Poultry** – Lithuania, Poland, France

**Crocodile meat** – Africa

**Deer** – New Zealand

### 6.3.3. Natural pasture meat

State certified grass-fed beef (a): http://grassfedbeef.eu/quality-scheme. Quality scheme “grass-fed” promotes the grazing of Angus, Hereford, and Simmental breed cattle in organic-certified farms. Products are under the label „Liivimaa lihaveis“. Today Liivimaa Lihaveis connects around 50 farmers. Arke meat processing plant uses trade mark “Eesti rohumaaveis” (b), establishing also high requirements to the meat (http://www.karni.ee/eesti-rohumaaveis/tutvustus/, http://www.balticgrassland.com/bgb/baltic-grassland-beef). As it is trade mark, the origin of the meat is probably not controlled by the state authority.

a)

b)

### 6.3.4. What types of meat are used in food services and public procurement?

*Give as much information/estimates as possible on the following: How much of the meat used by public procurement and major food service chains is domestic? Which are the main import countries? What types of meat are used? Are nutritional guidelines followed? If so, to what degree? (i.e. amounts of meat in meals).*

We have no such data available, however, we can see some trends changing. For example, the share of vegetarian food in the restaurant menus has increased. In Estonian University of Life Sciences, the catering chain offers every day at least one vegetarian meal. There are new restaurants for vegans. Restaurants and cafés are more and more presenting the origin of the meat and organic products, but there is a long way to go. For example, one of the most famous meat restaurant in Tartu has no hint about the origin of the meat in their menu.

From March 2017, the caterers can use special eco-label, depending on the share of organic basic materials. The label can be used if at least 20% of the products used are organic.


https://www.agri.ee/et/eesmargid-tegevused/mahepollumajandus/margistamine

During the mapping work several attempts were made to contact major food services and public procurement. Unfortunately, only two food services answered our questions about the meat they are using. First food service has universities as clients and offers food also to adults (answers in the first row, table 8).

Table. 8. Overview of the answers about the meat used by major food services.

| Meat type | Domestic meat | Imported | Domestic organic | Imported organic |
|---|---|---|---|---|
| pork | Cooled domestic pork | In case of problems with availability and/or supply we use imported meat from Poland, Germany or Denmark | Do not use, availability is poor. | Do not use. |
| | ~400 kg in a month (from wholesaler) | ? | Do not use, too expensive. | Do not use, too expensive. |
| beef | Cooled domestic beef | In case of problems with availability and/or supply we use imported meat from Poland or Germany | Limited use. | Do not use. |
| | ~100 kg in a month (from wholesaler) | ? | Do not use. | Do not use. |
| sheep/coat | 1 time in a month. | Limited use, from New-Zealand. Better quality. | | |
| | Do not use. | Do not use. | Do not use. | Do not use. |
| chicken | 30% from the total use | 70%, from Lithuania. Better quality! | Do not use. | Do not use. |
| | ~200 kg in a month (from wholesaler) | ? | Do not use. | Do not use. |
| other poultry (turkey, duck) | | turkey from Lithuania, duck - From Poland (1 to 2 times in a month) | Do not use. | Do not use. |
| | ~80 kg in a month (from wholesaler) | ? | Do not use. | Do not use. |
| wild game | Do not use. | Do not use. | Do not use. | Do not use. |
| | Do not use. | Do not use. | Do not use. | Do not use. |
| rabbit | Do not use. | From Poland (1 to 2 times in a month) | Do not use. | Do not use. |
| | Do not use. | Do not use. | Do not use. | Do not use. |

The second respondent is focused more on schools and kindergarten (answers in the second row). Although there is written in their answers that the origin of meat is unknown, it is more complicated. Second respondent orders meat from two Estonian meat processing plants, but

as there is wholesaler in-between, the real origin may be indistinct. Organic meat is too expensive for them.

The most surprising fact coming out from the results is that the quality of Estonian meat is not always the best. And also, that the origin of the meat is sometimes unknown as the meat is bought from the wholesaler. We may assume that the food services are interested in information about the origin of the meat. The awareness of different environmental aspects can be higher and it should be affected somehow.

# 7. Research

*Do a quick search and list any relevant national studies and statistics related to the topic.*
*If possible, include a short overview of the results of such studies. If you discover regional (eg. European studies) that may be relevant, feel free to add them.*

Personal comment: Looks like the climate and eutrophication impacts are not studied very thoroughly. At least it was complicated to find such studies. There are recommendations about planning future research: http://www.klab.ee/kohanemine/wp-content/uploads/sites/4/2016/04/2016-04-25-7-BioClim.pdf

## 7.1. Climate/eutrophication impacts

- Presentation by Tiiu Kull (How climate affects agriculture):

  Main impact to agricultural land and grassland:
  - longer vegetation period, higher production
  - preparation of land and harvesting may begin earlier
  - the humus content of soil changes, this affects the soil fertility.
  - higher temperatures speed the decomposition of organic matter, CO2 emissions from the soil may increase.
  - changes in abundance of species in plant communities and soil environment.

  Recommendations for further research:
  - Impact of climate change on carbon stock (balance) in mainland ecosystems and its change, hydrological regime, nutrient movement, soil fertility, emission of greenhouse gases.
  - Impact of climate change on vegetation types and species composition, functionality of ecosystems and structural changes.
  - Important to continue with ecosystem monitoring.

- Jaagus, Jaak; Mändla, Kaupo (2014). Climate change scenarios for Estonia based on climate models from the IPCC Fourth Assessment Report. Estonian Journal of Earth Sciences, 63 (3), 166−180 www.kirj.ee/public/Estonian_Journal_of_Earth_Sciences/2014/issue_3/earth-2014-3-166-180.pdf

Just an overview of scenarios, main trends about temperature and precipitation. No synthesis regarding agriculture.

- Project: „ACTIVE measures on WETLANDS for decreasing nutrient load in the Baltic Sea"
- Development plan for adjusting to climate change and softening accompanying impacts in agricultural sector 2012-2020. Põllumajandussektoris kliimamuutuste leevendamise ja kliimamuutustega kohanemise tegevuskava 2012 – 2020. https://www.agri.ee/sites/default/files/public/juurkataloog/ARENDUSTEGEVUS/kliimamuutused-tegevuskava-2012-2020.pdf
- Kliimamuutustega kohanemise arengukava aastani 2030. Development plan for adjusting to climate change until 2030. https://www.osale.ee/konsultatsioonid/files/consult/290_Kliimamuutustega%20kohanemise%20arengukava%20aastani%202030.pdf
- PhD Thesis. Impact of slurry fertilization on nutrient leaching and on the abundance of antibiotic resistance genes in agricultural soil. Abstract available on this page: http://dspace.emu.ee/xmlui/handle/10492/3035

Summary: Research showed that N leaching in grassland depends on used fertilizer type and it was lower with mineral fertilizer use compared to cattle slurry. Potassium losses did not depend on used nutrient source, rather it was increased only with unbalanced N: K ratio at fertilization. Leaching of K resembled to the vegetative period and depended apparently on the N: K balance in the soil achieved before the end of vegetative period. Activated carbon incorporation into the soil reduced only NO3--N leaching irrespective of the fertilizer treatment, but increased that of K. Cattle slurry and its digestate were a considerable source of antibiotic resistance genes and their use increased soil blaCTX-M and sul1 concentrations and mineral fertilizer tetA gene abundance.

- Nitrate sensitive area. http://www.envir.ee/et/nitraaditundlik-ala.


- Estonia adapting to climate change 2030: why and how? Kliimamuutustega kohanev Eesti 2030: miks ja kuidas? Presentations: http://www.klab.ee/kohanemine/kohanev-eesti-2030-miks-ja-kuidas/
- FOODWEB Consumer Awareness Study report II. Estonia. Finland. Latvia http://foodweb.ut.ee/s2/111_94_86_FOODWEB_Consumers_Awareness_Study_report_II_Eston.pdf, topic of Baltic Sea from p. 53.

Conclusions:

Adults found it rather difficult to estimate how certain aspects affect the Baltic Sea or its region, and some aspects from the provided list were more difficult to assess than others. Most people left unanswered the effect of establishing wetlands (64% missing), acidification (41% missing), alien species (31% missing), biodiversity loss (30% missing) and eutrophication (29% missing). Of those who answered, they found eutrophication, acidification, littering and industries in the area are affecting the Baltic Sea or its region most negatively, and establishing wetlands or protected areas most positively (see also Table l).

- Vassiljev, A.; Margus, G.; Annus,I.; Stålnacke, P. (2016). Investigation of Possible Nutrient Sources in Estonian Rivers. Procedia Engineering, 162: International Conference on Efficient & Sustainable Water Systems Management toward Worth Living Development, 2nd EWaS 2016. Elsevier, 188−195.10.1016/j.proeng.2016.11.038.

Summary:

Investigations showed that in addition to arable lands, drained peat soils can be a significant source of nitrogen. In fact, our results show that the unit-area loads from drained peat soils may be 1.5 to 2.3 times higher than from arable lands. Additional detailed investigations and

measurements are needed to support these conclusions. Comparison of emission coefficients for the whole Estonia and of the Tallinn catchment area indicated that the coefficients can vary significantly between sources and single years. Therefore, it is suggested that the sources of nitrogen loads should be defined in a catchment area level rather than a country level.

## 7.2. Chemical use in agriculture

- Madsen, H.; Talgre, L.; Eremeev, V.; Luik, A. (2016). Pesticides suppress hydrolytical activity of soil microbes. Metspalu, L.; Jõgar, K.; Veromann, E.; Mänd, M. (Toim.). Eesti Taimekaitse 95 (79−82). Ecoprint AS. file:///C:/Users/acer/Google%20Drive/Meet_survey/uuringud_ylevaated/Taimekaitse_95_sisu_92lk_bleed3.pdf

Summary:

Addition of abundant organic matter to the soil decreases the negative effect of pesticides on soil microorganism.

- Eneli Viik, doktorikraad, 2012, (juh) Anne Luik; Marika Mänd, The impact of spring oilseed rape fertilization and pesticide application on bees (Apoidea) (Väetamise ja pestitsiidide mõju mesilaselaadsetele (Apoidea) suvirapsil), Eesti Maaülikool. https://dspace.emu.ee/xmlui/handle/10492/158

Summary:

The results of the study showed that to secure a higher number of pollinators for achieving higher seed yield and other benefits deriving from cross-pollination spring oilseed rape should receive proper complex fertilization. Applied microfertilizers turned out to be useless in terms of increasing the number of pollinators. In addition, the study tended to confirm that Fastac 50 EC does not show repellency for honey bees in field conditions. Flower density seemed to be the main signal for bees and might override the repellent effect. Even solutions with ten times lower concentrations of Fastac 50 EC than registered field rate in Estonia affected significantly the respiratory patterns of bumble bees and decreased the longevity. The study shows that as in field conditions additional factors may affect the choices of bees, laboratory and semi-field studies often do not reflect the situation in field conditions. The sub-lethal doses of pesticides bees encounter do affect the physiological state of the pollinators, being thus one possible reason for global pollination crisis.

- Nõlvak H.; Truu M., Kanger K.; Tampere M.; Espenberg, M.; Loit E.; Raave H.; Truu J; (2016). Inorganic and organic fertilizers impact the abundance and proportion of antibiotic resistance and integron-integrase genes in agricultural grassland soil. Science of the Total Environment, 562, 678−689, 10.

Full text: dx.doi.org/10.1016/j.scitotenv.2016.04.035

Highlights:

• Cattle slurry and its digestate were considerable ARG sources.
• Fertilization of agricultural grassland soil significantly affected its ARGs content.
• Organic fertilizers enhanced sul1, intI1 and intI2 abundance in grassland soil.
• Cattle slurry digestate amendment significantly enhanced blaCTX-M level in soil.
• Mineral fertilizer usage significantly enhanced tetA abundance in soil.

- Tampere, Mailiis; Kauer, Karin; Keres, Indrek; Loit, Evelin; Selge, Are; Viiralt, Rein; Raave, Henn (2015). The effect of fertilizer and N application rate on nitrogen and potassium leaching in cut grassland. Zedmirbyste-Agriculture, 102 (4), 381−388, http://www.zemdirbyste-agriculture.lt/wp-content/uploads/2015/11/102_4_str48.pdf

Summary:

From our results, it can be concluded that nitrogen leaching is lower with the use of mineral NPK, because it increases the sward yield most efficiently. Potassium leaching in grassland can be reduced when using nitrogen containing fertilizers, as the fertilizer N:K ratio has a great effect on its leaching potential. Fertilizers are not the only N and K leaching source. It can be high also from unfertilized soil at the expense of soil reserves. Injection of slurry at rational amounts can be an effective method for the reduction of nitrogen leaching in grassland.

- Alaru, M.; Talgre, L.; Eremeev, V.; Tein, B.; Luik, A.; Nemvalts, A.; Loit, E. (2014). Crop yields and supply of nitrogen compared in conventional and organic farming systems. Agricultural and Food Science , 23, 317−326. file:///C:/Users/acer/Downloads/Fail_Crop%20yields%20and%20supply%20of%20nitrogen.%202014.pdf

Summary:

The total DM yields from the organic treatments were 25-33% smaller than from the conventional treatments. The ratio of N output/N input was significantly the smallest in the organic treatment with cattle manure, where only 37% of all supplied N was used by plants during the crop cycle period. The organic fertiliser with faster mineralisation rate and splitting the application of organic N during crop cycle period would be more appropriate to supply sufficient quantities of N during rapid plant growth and to obtain higher crop yields in organic farming system.

- Raave, H.; Keres, I.; Kauer, K.; Nõges, M.; Rebane, J.; Tampere, M.; Loit, E. (2014). The impact of activated carbon on NO3--N, NH4+-N, P and K leaching in relation to fertilizer

use. European Journal of Soil Science, 65 (1), 120−127. https://www.etis.ee/File/DownloadPublic/8950b6f4-61ca-47c4-97a6-4ff8d1f384ce?name=Fail_The%20impact%20of%20activated%20carbon%20on%20NO3.pdf&type=application%2Fpdf

Summary:

The ability of light-textured soils to retain nutrients and water is small. In agriculture such soils pose a risk of nutrient leaching when amended with fertilizers. In soil enriched with AC mark K-835, water percolation and NO3 −-N and P leaching were significantly reduced, and K leaching was increased. Ammonium nitrogen leaching was not influenced by the AC amendment. The impact of AC on NO3 −-N and P leaching and water percolation did not change during the two-year period, from which it is concluded that AC mark K-835 prevents the leaching of NO3−-N and P and increases soil water retention ability, and thus it is beneficial for light-textured soils.

- Kasak, Kuno, Piirimäe, Kristjan, Vahtrus, Siim. 2016. Veekaitsemeetmed põllumajanduses. Käsiraamat tootjale. (How to save water in agriculture. Practical guide for producer.)

https://issuu.com/elfond/docs/veekaitsemeetmed_pollumajanduses/72

## 7.3. Biodiversity impact of food/meat production

- Rannap, Riinu; Kaart, Tanel; Pehlak, Hannes; Kana, Silja; Soomets, Elin; Lanno, Kaire (2017). Coastal meadow management for threatened waders has a strong supporting impact on meadow plants and amphibians. Journal for nature conservation, 35, 77−91, 10.1016/j.jnc.2016.12.004. http://www.sciencedirect.com/science/article/pii/S1617138116302680

Summary: Grass-fed beef comes partly also from coastal meadows, therefore this paper is important. Large (≥100 ha) and wide (mean width ≥200 m) meadows with **extensive grazing**, high water-table and no woody vegetation provide favorable breeding conditions for waders of conservation concern, but at the same time also support other Charadriiform birds, larger amphibian populations, and more diverse plant communities.

- Peedel, Diana. 2015. The Influence of Landscape Elements Adjacent to Oilseed Rape Fields on the Abundance of Pollen Beetles. Master thesis. https://dspace.emu.ee/xmlui/handle/10492/2027?show=full

On the same topic: Veromann, Eve. 2016.

http://taim.etki.ee/taim/public/images/Ettekanded/Veromann_Taimekaitse_95_okosysteemi_teenused.pdf

Summary: Based on our results oilseed rape should be grown in landscapes where the proportion of natural areas is high, because the parasitism rate was the highest in these areas.

# 8. Available statistics

Personal comment: The share of land used for agriculture seems to increase. Even areas which have been abandoned 15-20 years are taken into active use. Removing brushwood or young forest seems to be worth. Every hectare counts!

## 8.1. Land use (agricultural land, percentage used for animal products etc.)

It is difficult to bring out the area used for animal production. We can present general land use statistics.

Data from Statistics Estonia, (ha): https://www.stat.ee/34226.

| Land type | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| | Hectares | | | | |
| Arable land | 632,399 | 620,483 | 632,100 | 648,120 | 669,665 |
| Permanent grassland | 162,812 | 191,529 | 218,605 | 197,579 | 192,295 |

Table 9. Data from Estonian Agricultural Registers and Information Board (ARIB) about land use – Declared agricultural land in 2016, controlled area (ha).

| County | Grazed non-agricultural land | Black fallow | Arable crops | Permanent crops | Permanent grassland | Environmentally sensitive permanent grassland | |
|---|---|---|---|---|---|---|---|
| HARJUMAA | 13.5 | 996.8 | 39,191.0 | 115.6 | 30,213.7 | 27.2 | |
| HIIUMAA | 681.0 | 97.6 | 3,253.4 | 170.5 | 9,788.0 | 377.5 | |
| IDA-VIRUMAA | 29.5 | 264.2 | 21,895.3 | 13.2 | 8,580.7 | 46.3 | |
| JÄRVAMAA | | 869.3 | 65,067.9 | 83.9 | 12,614.6 | 7.6 | |
| JÕGEVAMAA | 7.1 | 724.3 | 58,815.5 | 145.9 | 13,611.8 | 69.0 | |
| LÄÄNEMAA | 529.6 | 245.8 | 23,972.7 | 71.6 | 24,881.5 | 243.4 | |
| LÄÄNE-VIRUMAA | 76.1 | 1,042.2 | 86,452.2 | 52.0 | 19,470.1 | 36.9 | |
| PÄRNUMAA | 56.5 | 704.6 | 5,330.7 | 310.9 | 29,602.1 | 84.4 | |
| PÕLVAMAA | 10.8 | 914.5 | 41,710.3 | 128.9 | 6,796.7 | 180.2 | |
| RAPLAMAA | 150.4 | 602.3 | 43,658.3 | 178.8 | 21,594.1 | 37.9 | |
| SAAREMAA | 870.0 | 124.4 | 16,213.4 | 77.0 | 35,995.3 | 61.6 | |
| TARTUMAA | 20.5 | 733.0 | 76,615.8 | 395.6 | 12,947.7 | 331.0 | |
| VALGAMAA | 113.0 | 285.5 | 28,492.0 | 71.6 | 15,161.8 | 11.9 | |
| VILJANDIMAA | 72.1 | 549.9 | 72,046.6 | 488.2 | 17,269.1 | 17.8 | |
| VÕRUMAA | 49.9 | 542.3 | 33,468.1 | 532.8 | 18,407.8 | 66.5 | |
| **Total** | **2,680.0** | **8,696.9** | **664,683.5** | **2,836.2** | **276,934.9** | **1,599.1** | **957,430.6** |

*Comment: The numbers in the table are summed – data (area and land use type) from applications that are not controlled, data (area and land use type) from applications that are controlled.*

## 8.2. Chemical use in agriculture

Statistics Estonia. Distribution of pesticides for 2011, 2012, 2013, 2014, 2015. http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=KK2085&lang=2

## 8.3. Agricultural hot spots

The areas with intensive agriculture are mentioned in context of biodiversity (for example in the report “Estonian Environment 2013”). These are southern part of Lääne-Viru county and Ida-Viru county, northern part of Jõgeva county and Järva county (http://www.keskkonnaagentuur.ee/failid/ky_2013_pt7.pdf). On these areas, nitrate sensitive area (see below) has been determined.


## 8.4. Nutrient loads to the Baltic sea

Estimates of nutrient loads to the Baltic Sea from meat production – there is no such information for Estonia.

# 9. Funding

*Are there any possible funding opportunities for developing meat guides? Local or regional?*

*Add any possible funding opportunities for meat guide development*.

There may be (rather not realistic) possibility to apply for co-financing coming from national budget. This is for market development. But we are rather pessimistic on that. Private financing does not suit for this project as it must be neutral.

# ANNEX I - Meat statistics for Estonia

| | Avćtivity, thousand tons | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|
| Beef | Production* | 12.9 | 12.2 | 12.3 | 11.5 | 11.9 | 12.6 |
| | Import living animals | 0 | 0 | 0 | 0 | 0 | 0 |
| | Export living animals | 0.2 | 1.3 | 1.6 | 3 | 2.1 | 2.1 |
| | Meat import | 5.6 | 7.3 | 6.4 | 4.2 | 3.3 | 3.8 |
| | Meat export | 2.8 | 3.4 | 3.7 | 3.6 | 3.5 | 3.6 |
| | Change of stock | -0.2 | -0.2 | 0.6 | -0.1 | -0.2 | 0 |
| | Total consumption | 15.7 | 15 | 12.8 | 9.2 | 9.8 | 10.7 |
| | Loss | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (animal feed) | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (human) | 15.7 | 15 | 12.8 | 9.2 | 9.8 | 10.7 |
| | Consumption (per person) | 11.8 | 11.3 | 9.7 | 7 | 7.5 | 8.1 |
| Pork | Production* | 45.8 | 50.2 | 48.8 | 49.5 | 48.7 | 50.1 |
| | Import living animals | 0 | 0 | 0 | 0 | 0 | 1.1 |
| | Export living animals | 11.8 | 16 | 10.5 | 11.6 | 7.3 | 6.4 |
| | Meat import | 30.6 | 33.2 | 31.7 | 33.8 | 28.1 | 30.5 |
| | Meat export | 19.4 | 21.9 | 24.1 | 25.2 | 19.7 | 20.4 |
| | Change of stock | 2.8 | -1.9 | 1.2 | -0.4 | 1.1 | -0.1 |
| | Total consumption | 42.4 | 47.4 | 44.7 | 46.9 | 48.7 | 55 |
| | Loss | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| | Consumption (animal feed | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (human) | 42.3 | 47.3 | 44.6 | 46.8 | 48.6 | 54.9 |
| | Consumption (per person) | 31.8 | 35.6 | 33.7 | 35.5 | 37 | 41.8 |
| Sheep & goat | Production* | 0.7 | 0.6 | 0.7 | 0.7 | 0.6 | 0.7 |
| | Import living animals | 0 | 0 | 0 | 0 | 0 | 0 |
| | Export living animals | 0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 |
| | Meat import | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| | Meat export | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| | Change of stock | 0 | 0 | 0.1 | -0.1 | 0 | 0 |
| | Total consumption | 0.7 | 0.6 | 0.4 | 0.7 | 0.6 | 0.7 |
| | Loss | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (animal feed) | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (human) | 0.7 | 0.6 | 0.4 | 0.7 | 0.6 | 0.7 |
| | Consumption (per person) | 0.5 | 0.5 | 0.3 | 0.5 | 0.5 | 0.5 |
| Poultry | Production* | 16 | 17.5 | 16.5 | 18.1 | 19.4 | 19.8 |
| | Import living animals | 0 | 0 | 0 | 0 | 0 | 0 |
| | Export living animals | 0 | 0 | 0 | 0.5 | 0.4 | 0.3 |
| | Meat import | 21.6 | 22.2 | 21.1 | 21.8 | 20.3 | 21.8 |
| | Meat export | 7.1 | 10.9 | 8 | 9 | 8.2 | 8.8 |
| | Change of stock | 0.7 | -0.7 | 0.4 | -0.2 | 0.3 | 0 |
| | Total consumption | 29.8 | 29.5 | 29.2 | 30.6 | 30.8 | 32.5 |
| | Loss | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (animal feed) | 0 | 0 | 0 | 0 | 0 | 0 |
| | Consumption (human) | 29.8 | 29.5 | 29.2 | 30.6 | 30.8 | 32.5 |
| | Consumption (per person) | 22.4 | 22.2 | 22.1 | 23.2 | 23.4 | 24.7 |
| Other | Production* | 0 | 0.1 | 0.1 | 0 | 0 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Import living animals | 0 | 0 | 0 | 0 | 0 | 0 |
| Export living animals | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat import | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.4 |
| Meat export | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.2 |
| Change of stock | 0 | 0 | 0 | 0 | 0 | 0.1 |
| Total consumption | 0 | 0.1 | 0.1 | 0 | 0 | 0.1 |
| Loss | 0 | 0 | 0 | 0 | 0 | 0 |
| Consumption (animal feed) | 0 | 0 | 0 | 0 | 0 | 0 |
| Consumption (human) | 0 | 0.1 | 0.1 | 0 | 0 | 0.1 |
| Consumption (per person) | 0 | 0.1 | 0.1 | 0 | 0 | 0.1 |

## ANNEX II - Import of living animals and meat (kg). Data source: Statistics Estonia.

| 0101 Horses, donkeys, moles and hinny | | | | |
|---|---|---|---|---|
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Germany | 8600 | 3250 | 9100 | 2750 |
| Russia | 4750 | 3100 | 5250 | 3600 |
| Netherlands | 2000 | 1850 | 1000 | 1850 |
| Latvia | 1500 | 500 | 1500 | 500 |
| Norway | 1200 | 0 | 1200 | 0 |
| Lithuania | 500 | 0 | 500 | 0 |
| | | | | |
| 0102 Cows | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Finland | 29300 | 13200 | 29300 | 13200 |
| Poland | 0 | 22594 | 0 | 22594 |
| Denmark | 0 | 21500 | 0 | 21500 |
| Czech Republic | 6000 | 0 | 6000 | 0 |
| Lithuania | 0 | 7200 | 0 | 7200 |
| Netherlands | 0 | 6168 | 0 | 6168 |
| Germany | 4806 | 4400 | 4806 | 4400 |

| | | | | |
|---|---|---|---|---|
| Switzerland | 0 | 4460 | 0 | 4460 |
| | | | | |
| 0103 Pigs | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Finland | 1539192 | 5546388 | 1539192 | 5546388 |
| Norway | 3300 | 6750 | 3300 | 6750 |
| | | | | |
| 0105 Domestic fowls, incl. chicken (Gallus domesticus), ducks, goose, turkey and guinea-hen | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Poland | 55996 | 43355 | 55996 | 43355 |
| Finland | 16988 | 25503 | 16988 | 25503 |
| Denmark | 0 | 9282 | 0 | 9282 |
| Sweden | 3248 | 3208 | 3248 | 3208 |
| | | | | |
| 0201 Fresh or cooled beefVärske või jahutatud veiseliha | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Lithuania | 219629 | 222779 | 232174 | 212921 |
| Poland | 93105 | 153757 | 92930 | 87721 |
| Netherlands | 31416 | 84710 | 25788 | 20272 |
| Ireland | 2688 | 2880 | 2863 | 18033 |
| Finland | 11876 | 17551 | 9808 | 9490 |
| Latvia | 128910 | 130911 | 26019 | 6442 |
| Italy | 6600 | 6817 | 6600 | 4867 |
| Austria | 0 | 1839 | 0 | 1839 |
| New Zealand | 0 | 0 | 5245 | 1766 |
| USA | 0 | 0 | 983 | 1467 |
| Denmark | 1860 | 2129 | 0 | 1022 |
| Hungaria | 0 | 0 | 0 | 404 |

| | | | | |
|---|---|---|---|---|
| Germany | 34004 | 17661 | 3225 | 81 |
| Great Britain | 0 | 7118 | 104 | 20 |
| Belgium | 3158 | 681 | 2550 | 0 |
| | | | | |
| 0202 Freezed beef | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Poland | 311699 | 565905 | 314485 | 613212 |
| Lithuania | 292818 | 488271 | 270564 | 415181 |
| Finland | 101475 | 104793 | 99792 | 97023 |
| Latvia | 373616 | 314982 | 199798 | 89884 |
| Netherlands | 69584 | 99885 | 42701 | 76340 |
| Ireland | 0 | 2688 | 18892 | 63142 |
| Denmark | 32924 | 80613 | 15610 | 14179 |
| Germany | 34603 | 12764 | 6017 | 5591 |
| Belgium | 1947 | 1534 | 7963 | 4870 |
| Italy | 1434 | 2948 | 1612 | 3593 |
| USA | 0 | 0 | 142 | 2792 |
| Spain | 818 | 0 | 10 | 1700 |
| New Zealand | 0 | 0 | 10566 | 1077 |
| Sweden | 0 | 864 | 0 | 864 |
| Great Britain | 0 | 0 | 0 | 47 |
| Hungaria | 641 | 1711 | 0 | 0 |
| | | | | |
| 0203 Fresh, cooled or freezed pork | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Germany | 4971347 | 4959308 | 4551794 | 5195052 |
| Finland | 3843342 | 4270180 | 3729516 | 3211384 |
| Poland | 3431642 | 4288910 | 3160791 | 3108945 |
| Denmark | 4951790 | 4381880 | 2946055 | 2660427 |
| Spain | 900496 | 1374882 | 885224 | 1616928 |
| Belgium | 1909653 | 1395991 | 1891129 | 1441524 |

| | | | | |
|---|---|---|---|---|
| Latvia | 241390 | 405487 | 61881 | 285645 |
| Ireland | 809188 | 266389 | 460892 | 269419 |
| Sweden | 130546 | 150800 | 166122 | 220015 |
| Italy | 46206 | 91741 | 22 | 208513 |
| Lithuania | 187472 | 439022 | 105083 | 203520 |
| Portugal | 19780 | 143643 | 45121 | 168138 |
| Hungaria | 74072 | 226318 | 63489 | 143129 |
| France | 10090 | 65941 | 23941 | 131806 |
| Netherlands | 477118 | 303692 | 304374 | 121203 |
| Great Britain | 205794 | 60569 | 188396 | 70200 |
| Austria | 14136 | 55790 | 0 | 54678 |
| Czech Republic | 0 | 43946 | 0 | 21497 |
| USA | 0 | 0 | 1264 | 1001 |
| New Zealand | 0 | 0 | 0 | 361 |
| | | | | |
| 0204 Fresh, cooled, freezed sheep or coat meat | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Germany | 66248 | 38559 | 46673 | 26643 |
| Netherlands | 60389 | 123326 | 35730 | 68659 |
| Belgium | 46061 | 31482 | 6385 | 3678 |
| New Zealand | 45131 | 90430 | 131064 | 199403 |
| Spain | 10782 | 4774 | 17802 | 7845 |
| Denmark | 5867 | 12469 | 0 | 0 |
| Latvia | 4873 | 3951 | 320 | 382 |
| Lithuania | 963 | 1974 | 0 | 46 |
| Finland | 741 | 4065 | 675 | 3281 |
| Poland | 139 | 5843 | 0 | 1297 |
| Ireland | 0 | 0 | 139 | 4493 |
| Sweden | 0 | 642 | 0 | 0 |
| | | | | |
| 0205 Meat of horse, donkey, mole or hilly (fresh, cooled, freezed) | | | | |
| | Import, sending country | | Import, country of origin | |

| | 2015 | 2016 | 2015 | 2016 |
|---|---|---|---|---|
| Belgium | 178613 | 90177 | 27184 | 15848 |
| Spain | 64029 | 22001 | 134719 | 4951 |
| Romania | 0 | 10000 | 0 | 10000 |
| Netherlands | 3279 | 9917 | 0 | 1402 |
| Finland | 2550 | 4951 | 0 | 0 |
| France | 0 | 0 | 4900 | 0 |
| Sweden | 2021 | 0 | 2021 | 0 |
| Germany | 1515 | 1670 | 1515 | 1670 |
| Latvia | 229 | 9 | 127 | 0 |
| | | | | |
| 0406 Cheese and cottage cheese | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| Poland | 1235097 | 1065386 | 1390644 | 1311023 |
| Germany | 1205490 | 1034962 | 1336399 | 1235899 |
| Netherlands | 1084872 | 1000503 | 1073517 | 1004970 |
| Lithuania | 918203 | 920187 | 832375 | 872745 |
| Finland | 814903 | 857689 | 736837 | 698642 |
| Latvia | 788523 | 907906 | 434289 | 333775 |
| Unknown | 0 | 0 | 148699 | 230860 |
| Italy | 662052 | 507699 | 107044 | 155090 |
| France | 115180 | 108507 | 142409 | 153681 |
| Denmark | 186044 | 189086 | 107409 | 139692 |
| Belgium | 75834 | 114366 | 58528 | 70051 |
| Euroopa Ühendus | 0 | 0 | 73822 | 57469 |
| Great Britain | 7452 | 6634 | 32986 | 33863 |
| Norway | 103979 | 27844 | 104109 | 28024 |
| Ireland | 41517 | 25012 | 41517 | 25909 |
| Japan | 23981 | 0 | 0 | 0 |
| United Arab Emirates | 0 | 10562 | 0 | 0 |
| Spain | 7559 | 9672 | 12401 | 14064 |
| Sweden | 6467 | 8058 | 8654 | 8724 |
| Creece | 3558 | 2717 | 7608 | 6922 |

| | | | | |
|---|---|---|---|---|
| USA | 1 | 0 | 5309 | 5370 |
| Czech Republic | 2412 | 4860 | 2933 | 4901 |
| New Zealand | 0 | 0 | 0 | 4158 |
| Belarus | 0 | 1844 | 0 | 1844 |
| Australia | 0 | 0 | 945 | 0 |
| Austria | 0 | 0 | 868 | 1784 |
| Cyprus | 0 | 0 | 976 | 1267 |
| Romania | 0 | 0 | 0 | 1175 |
| Switzerland | 0 | 0 | 3240 | 1108 |
| Uruguay | 0 | 0 | 0 | 1008 |
| Hungaria | 855 | 788 | 4334 | 788 |
| Bulgaria | 0 | 0 | 53 | 667 |
| Iceland | 0 | 0 | 802 | 368 |
| Vietnam | 0 | 0 | 0 | 180 |
| Russia | 730 | 0 | 0 | 0 |
| | | | | |
| 0407 Eggs (with chell), fresh, preserved or või cooked | | | | |
| | Import, sending country | | Import, country of origin | |
| | 2015 | 2016 | 2015 | 2016 |
| EU | 0 | 0 | 2566724 | 2593157 |
| Latvia | 3350399 | 2529370 | 1108177 | 1383881 |
| Lithuania | 1852550 | 1827222 | 1869928 | 1861055 |
| Finland | 788225 | 571993 | 784980 | 510764 |
| Poland | 408708 | 1628214 | 66262 | 144374 |
| Denmark | 116058 | 220897 | 108108 | 220897 |
| Belgium | 21000 | 0 | 0 | 0 |
| Creece | 0 | 0 | 21000 | 0 |
| Sweden | 0 | 11833 | 0 | 68857 |
| Norway | 0 | 0 | 7950 | 0 |
| Unknown | 0 | 0 | 3811 | 6544 |