Manure Standards

Manure management practices in Estonia

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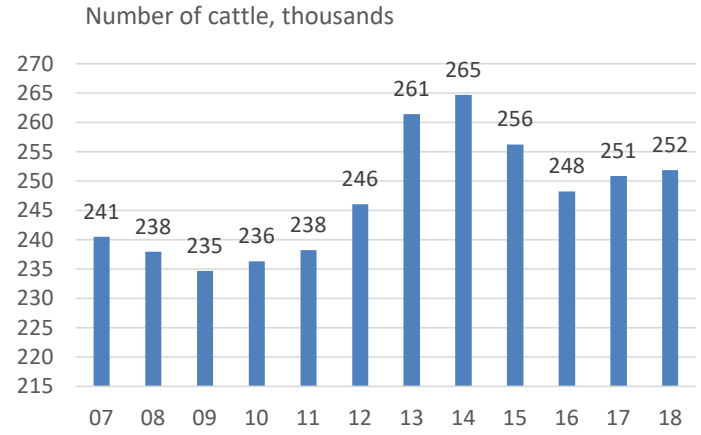
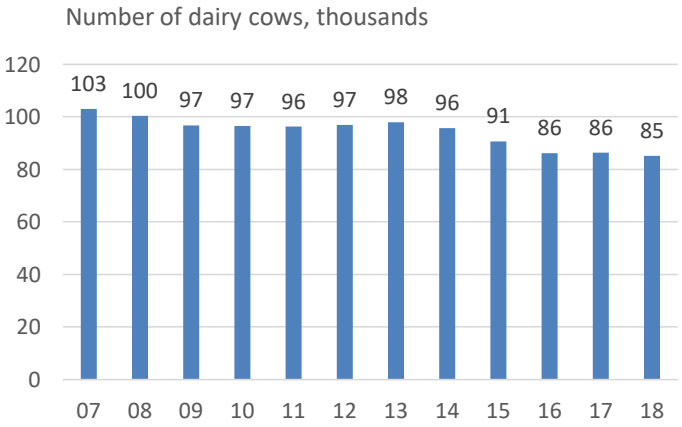
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

Number of cattle and milk production in Estonia

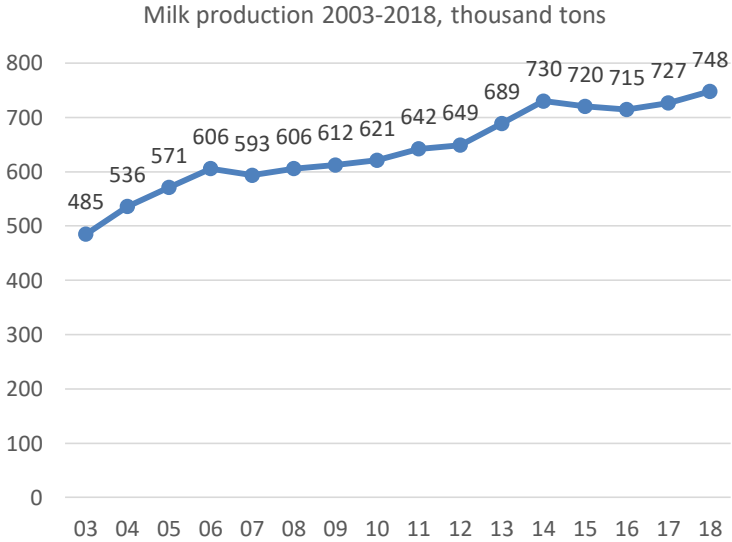
Data: Estonian Statistics, 25.11.2019



- Change of cattle number change 2007-2018: +5%

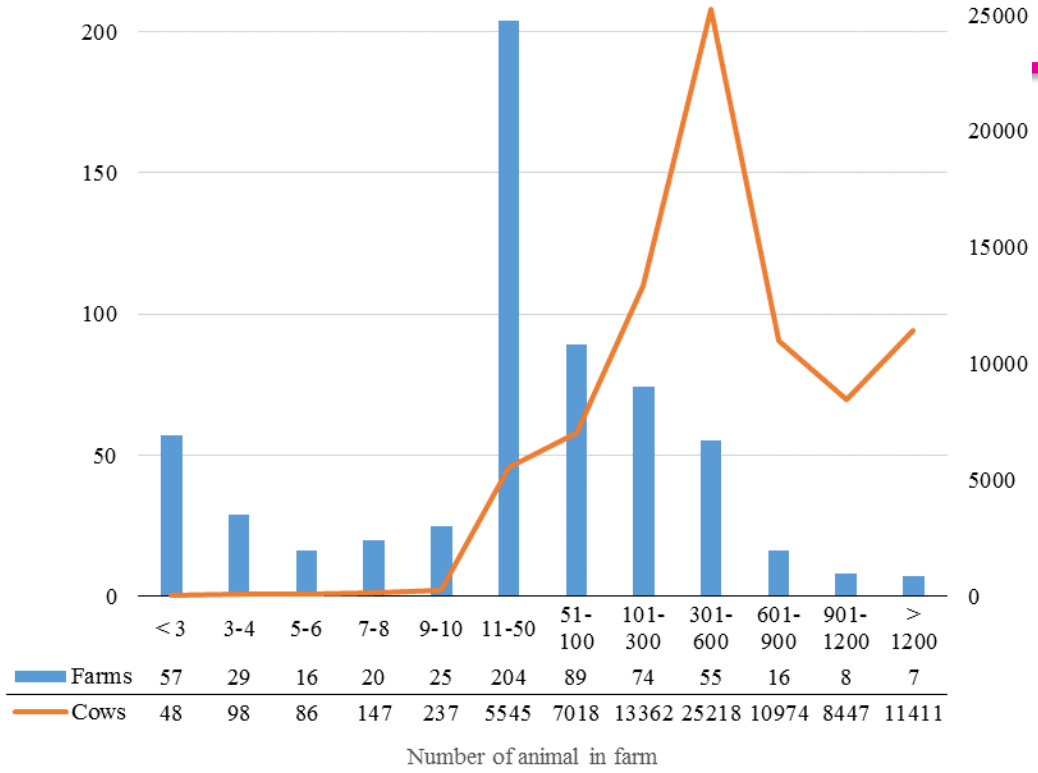


- Change of number of dairy cows 2007-2018: -18%



Change of milk production :

- 2003-2018: +54%
- 2007-2018: +26%

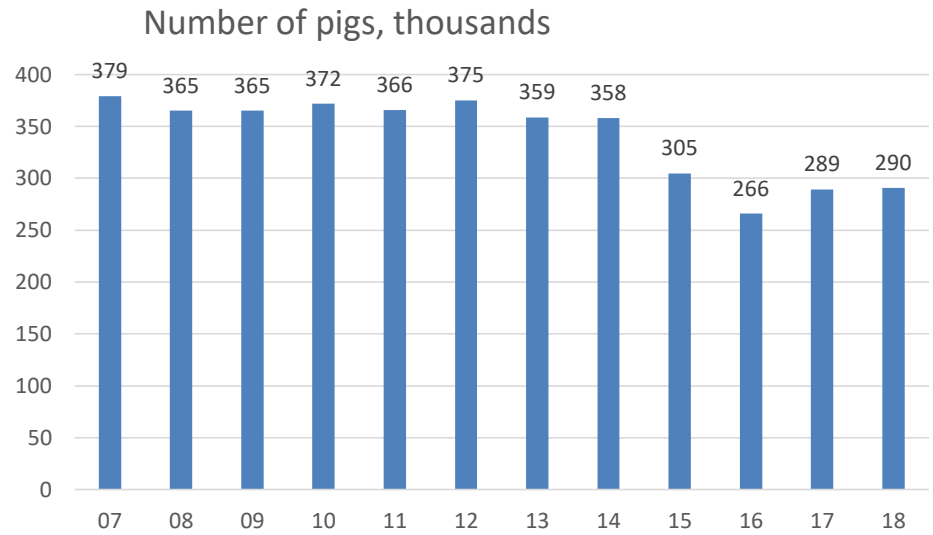


Number dairy farms and cows in farms

Figure 2.6. Number of farms and number of dairy cows by size of herd. Estonian Livestock Performance Recording Ltd. on 02.04.2017. (ELPR)

Number of pigs in Estonia, 2007-2018

Data: Estonian Statistics, 25.11.2019



- 2007-2018: -23%
- 90 % of pigs in farms with over 2000 animal (2017)

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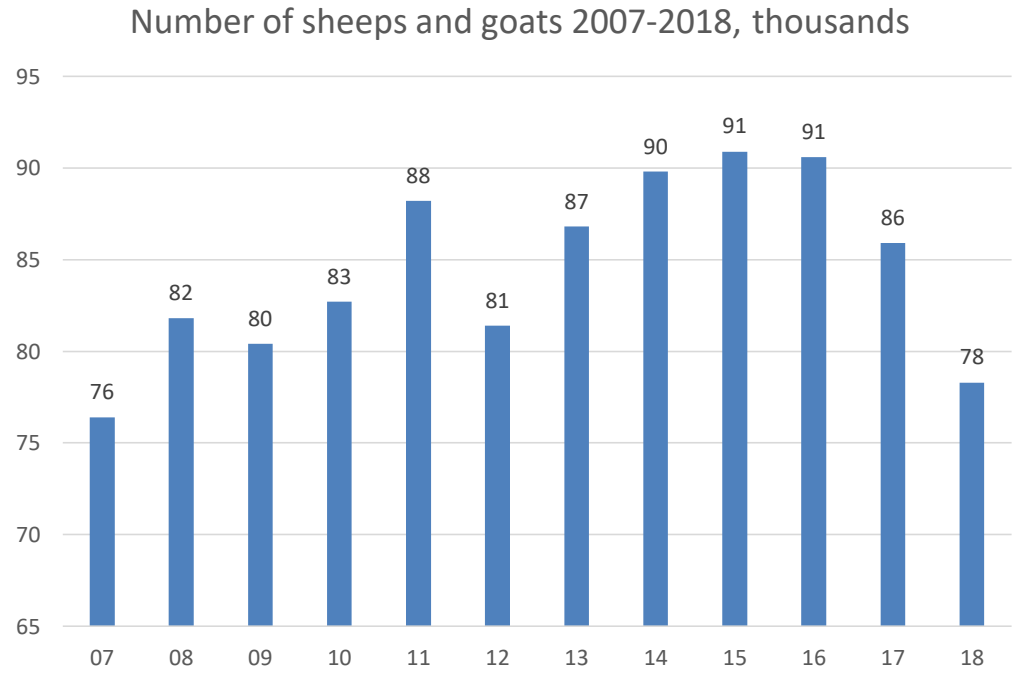
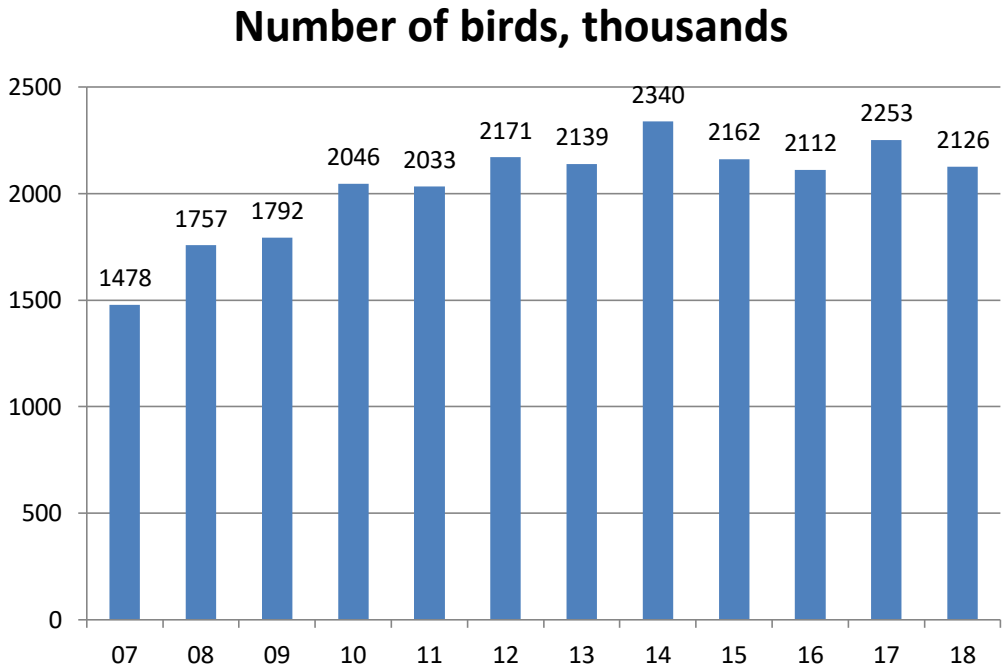


Data: Estonian Statistics, 25.11.2019



- 2007-2018: +44%

Data: Estonian Statistics, 25.11.2019

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Manure type

The type of manure is determined according to the percentage of DM in the manure:

1) liquid manure < 8%;
2) semi-liquid manure 8.0–19.9% ;
3) solid manure 20.0–25 %;
4) deep litter manure >25%.

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Manure amount

Manure Standards

Data are about Estonian pig and cattle farms in group „Intensive rearing of cattle and pigs according the Industrial Emissions Directive (IED)“.

The minimum number of animals on IED farms is:
1) 2000 fattening pig places (weight over 30 kg) or 750 sow places;
2) 400 dairy cows or 533 nurse cows or 800 young cattle;
3) 40 000 birds.

50% of the cattle in IED farms.
90% of pigs in IED farms.
We have no data about manure amounts from non-IED farms.

Data source: IED permission documents (Environmental Board, 2017).

Manure production in Estonian pig and cattle IED farms. IED permission documents (Environmental Board, 2017).

Animal Type	Liquid manure, Mt	Solid manure, Mt
Cattle	1,74	0,38
Pigs	0,43	0,04
Total	2,17	0,42
Share from total	84%	16%

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Housing

Picture: Kalvi Tamm

In IED farms dairy cows are
- 70% in loose housing (increasing)
- 30% in stanchion tied housing (decreasing)

In most of diary cow farms are used
scrapers , cross channels and pumps to remove manure from stables to storages.

- 70% of Estonian pigs were kept on partially or completely slatted floor,
- 13 % were housed on straw beds and the
- rest of the pigs were supposedly on some other type of bedding.

The pig slurry is removed by systems containing channels, valves and pumps.

Data source: IED permission documents (Environmental Board, 2017).

Slurry storages

Storage capacity for minimum 8 months for all type of manures.
Or contract with some other storage holder.

- Lagoons and round storages for slurry.
- Lagoons have plastic bottoms on sand layer
- Round storages mostly from concrete, but some with steel walls.
- Slurry storage should be covered – most have natural crust.

In 2017 were in pig and cattle IED farms
- 66 lagoons
- 67 round concrete tanks
- 8 round steel tanks
- 1 under floor

Picture: Kalvi Tamm

Solid manure storages

Solid manure is stored
- on concrete plate,
- as deep bedding in barns or
- in manure stacks on fields.

Heeping on the field.
On land under cultivation, it is permitted to keep only **solid manure and deep litter manure** in stacks for up to **two months** before spreading, if it does not exceed the quantity of use of one vegetation perio

It is permitted to keep **deep litter manure** in stacks for up to **eight months**, if its quantity does not exceed the quantity of use of one vegetation periood.

The storage of solid and deep litter manure in stacks is **prohibited from 1 November to 31 December.**

Picture: Kalvi Tamm

Slurry processing

Manure Standards

Mixing of slurry before spreading
- propeller and pump mixer

Separating - increasing interest in cattle farms
- movable N and S in liquid fraction, P in solid fraction
- less mixing
- less ammonia loss on field - more in uncovered storage
- smaller need for acid
- solid fraction is used also as green bedding (12 h) or dryed

Drying in some farms
- separated solid fraction dryed in trummel (65-70 degrees) and used as bedding material

Acidifying – increasing interest
- in-storage acidification
- cheap S-fertiliser
- acid from Belarus

Picture: Baltic Slurry Acidification leaflet

Manure spreading

Form all slurry in Estonian IED farms was spread in 2017 by:

- broadcast spreaders 5%
- band spreaders (trail hoses) 35%
- injection or incorporation spreaders 60%

Solid manure is spread by

- broadcast spreaders

Picture: LMR, 2016

Slurry spreading

Broadcast spreading

- fast and cheap
- high N loss and odour problems
- low spreading unformity
- not BAT

Picture. Peeter Viil

Band spreading with trail hoses

- fast
- less N loss and odour problems
- good spreading uniformity
- BAT

Picture. Raivo Vettik

Slurry spreading

Injection spreading

- more expencive and slower
- low N loss and odour problems
- good spreading uniformity
- for grassland and top-dressing
- additional points by investement support

Incorporation spreading

- recoursse consuming
- minor N loss and odour problems
- good spreading unformity
- 2 in 1 – spreading + tillage
- mixture after harvest: chopped straw + soil + slurry + + voluntary seeds + weed seeds
- additional points by investement support

Picture: Kalvi Tamm

Picture: Kalvi Tamm

Slurry transportation to the field

- 20 – 30 m^3 tank trucks to transport the slurry to the field
- Mobile 40 m^3 buffer storages on the field
- No any umbilical system

- Many farms use spreading service.
- 60% from IED farms use spreading service.
- Service can include mixing and transportation.
- Mostly injection or incorporation spreading.

Picture: Kalvi Tamm

Legislation highlights

170 kg N max
25 kg P max (5 year average)

During 48 h incorparation (24 h 2021) (actually do it asap)

Not allowed

• slurry broadcast spreading	20. September - 20 March
• slurry other type of spreading	1. November - 20 March
• solid or deep litter manure	1. December - 20 March

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Thank You!

Project web page: https://www.luke.fi/en/projects/manure-standards/

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