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IMPACTS OF AGRO-ENVIRONMENTAL POLICY ON THE NUTRIENT USE EFFICIENCY OF ESTONIAN FARMS

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**MAAMAJANDUSE
INFOKESKUS**

INTRODUCTION

- ✓ **The objective of the study is to assess the impact of the Rural Development Plan agri-environmental measures on the nutrient use efficiency of Estonian farms based on the FADN data for year 2015.**
- ✓ **At the moment, there is no legal obligation for farmers to calculate nutrient balances in Estonia.**
- ✓ **Registration of input of fertilizers (both manure and mineral fertilizers) is mandatory on field level in the field record book.**
- ✓ **Holdings over 300 livestock unit with liquid manure are obliged to prepare three year fertilization plans.**

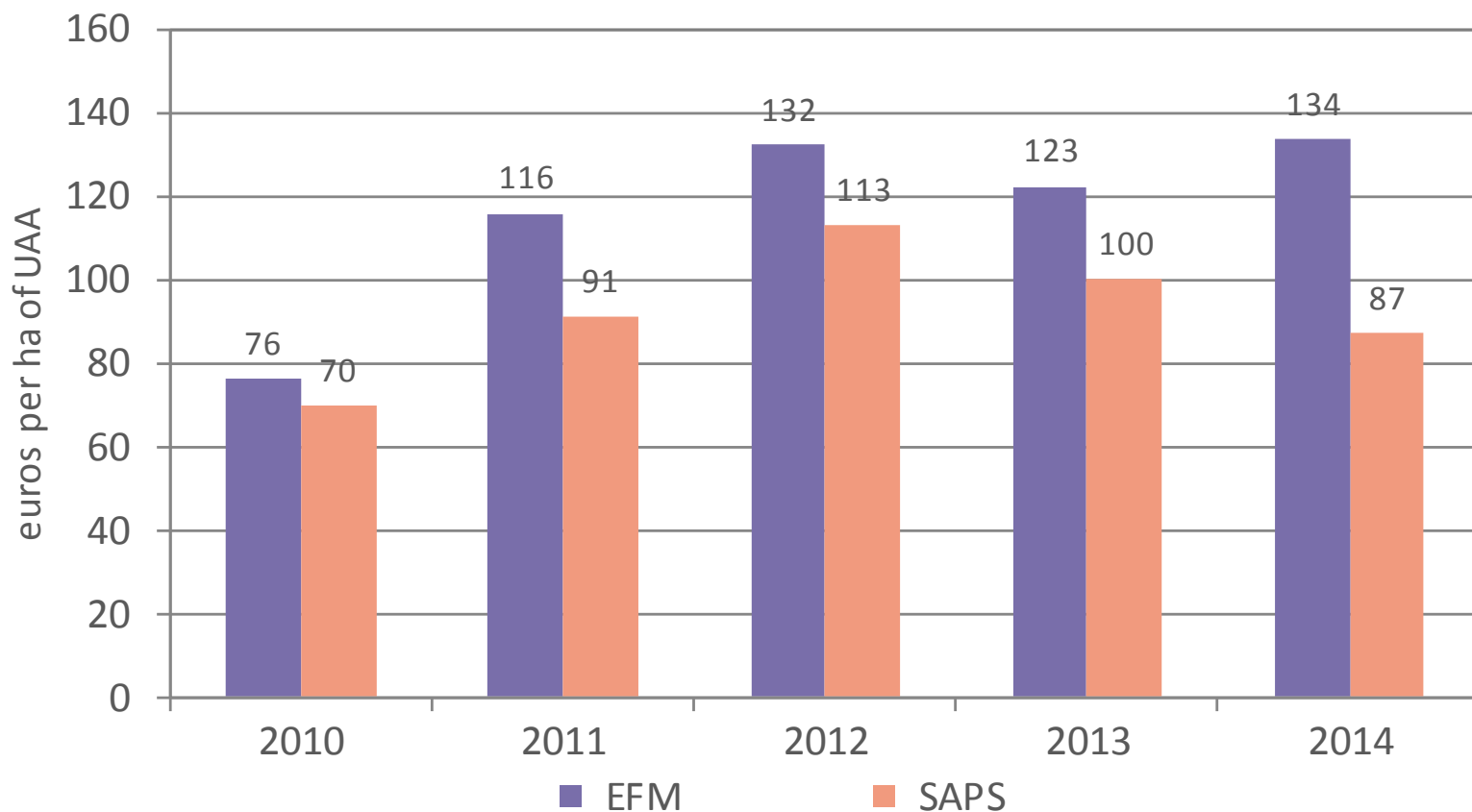
IMPORTANCE OF NUTRIENT BALANCE

As the economic conditions improve, the negative impact on the environment increases. For example, the use of plant protection products and mineral fertilizers is growing, and this may bring about water pollution and decrease in biological diversity, unless modern environmentally friendly technologies are used.

The decrease of soil organic matter and nutrients, caused by the lack of classical crop rotation, nutrient balance data and fertilization plans

Much attention should be given to the maintenance of the soil organic matter content, in order to avoid the exhaustion of soil. With underfertilization (impoverishment of soils) more organic matter will be taken out from field while growing of crops than being applied to.

MINERAL FERTILISERS CONSUMPTION IN HOLDINGS OF FIELD CROPS TYPE OF FARMING



EFM – Environmentally friendly management farms

SAPS – Single area payment scheme farms

Source: Own calculation based on FADN data

LEGAL BACKGROUND

The main legal act in Estonia which implements the Nitrates Directive is Water Act, which sets down rules concerning the use of fertilizers and requirement for nutrient bookkeeping in the field record book.

The Estonian Rural Development Plan (RDP) provides that soil and manure sampling at least once within the 5-year commitment period is compulsory for all producers.

Being aware of analyse results, it is possible to reduce underfertilization (impoverishment of soils) and overfertilization and environmental pollution caused by overfertilization. Therefore, rising of farmers' awareness regarding the following of the results of soil analyses in the agricultural practices is the key factor.

ENVIRONMENTALLY FRIENDLY MANAGEMENT

Farmers, who applying for the environmentally friendly management scheme under the Rural Development Plan, should make a fertilization plan, in which will include information about the planned fertilization in each year of commitment.

Requirements for environmentally friendly management concerning the use of fertilizers

- ✓ maximum amounts of usage for manure nitrogen (170 kg/N/ha) and phosphorus (25 kg/P/ha)
- ✓ within nitrate-vulnerable area 170 kg/N/ha manure & mineral totally

Farmer must record in the field book

- ✓ date; work type; area(ha); type and name of fertilizer; amount and unit of fertilizer; nutrients N kg/ha; P kg/ha; K kg/ha)

AGRI-ENVIRONMENTAL PAYMENTS

The following agri-environment support (AES) measures are being implemented under Axis II of the Estonian RDP 2007-2013 (10 measures):

- ✓ support for less-favoured areas (2.1)
- ✓ Natura 2000 support for agricultural land (2.2)
- ✓ support for environmentally friendly management (2.3.1)
- ✓ support for organic production (2.3.2)
- ✓ support for keeping animals of local endangered breeds (2.3.3)
- ✓ support for growing plants of local varieties (2.3.4)
- ✓ support for the maintenance of semi-natural habitats (2.3.5)
- ✓ support for grazing animals (2.4)
- ✓ support for the establishment and restoration of stonewalls (2.5.1)
- ✓ Natura 2000 support for private forest land (2.7)

NUTRIENT BALANCE CALCULATION

- ✓ Balances are calculated for Nitrogen (N), Phosphorus (P) and Potassium (K) using the Farm Gate Balance methodology
- ✓ Nutrient balances equal: bought or brought NPK minus sold or removed NPK
- ✓ Nutrient balances provide information about environmental pressures. A nutrient deficit (negative value) indicates declining soil fertility. A nutrient surplus (positive data) indicates a risk of polluting soil, water and air.
- ✓ Input: mineral fertilisers, animal feeding stuffs (compound feed, coarse fodder), livestock, manure, biological nitrogen fixation by leguminous crops, atmospheric deposition of nitrogen, other inputs (seeds and planting material).
- ✓ Output: crop and livestock production, animals, manure, animal feeding stuffs.

DATA SOURCES

Rural Economy Research Centre (RERC)

- ✓ Farm Accountancy Data Network (FADN) data

Agricultural Registers and Information Board (ARIB)

- ✓ Register of agricultural supports
- ✓ Register of agricultural animals
- ✓ Field Register

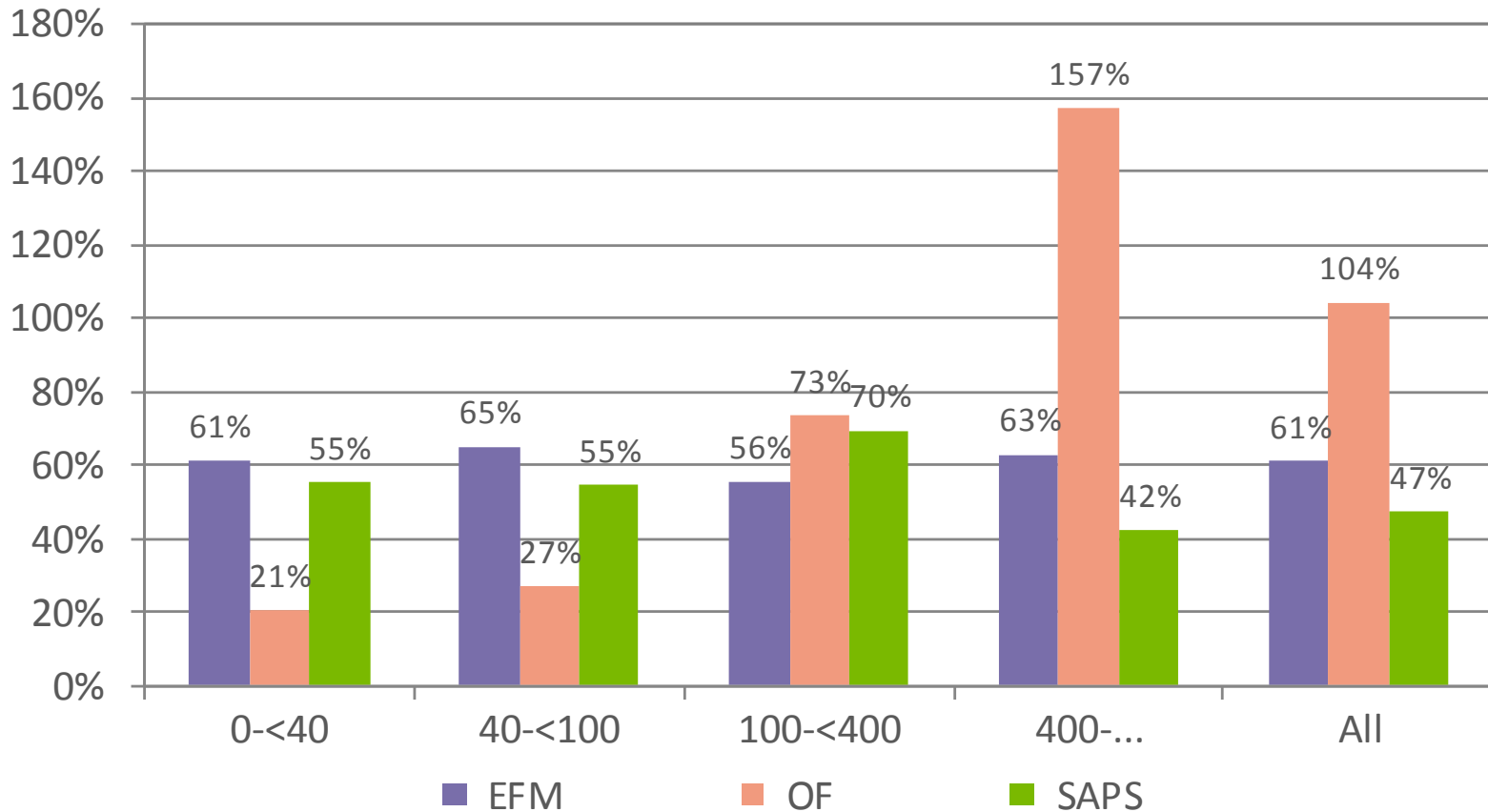
Agricultural Board (AB)

- ✓ Register of organic farming

Gross margin calculations

Expert estimations

FARM GATE NITROGEN USE EFFICIENCY OF SPECIALIZED CROP FARMS, 2015



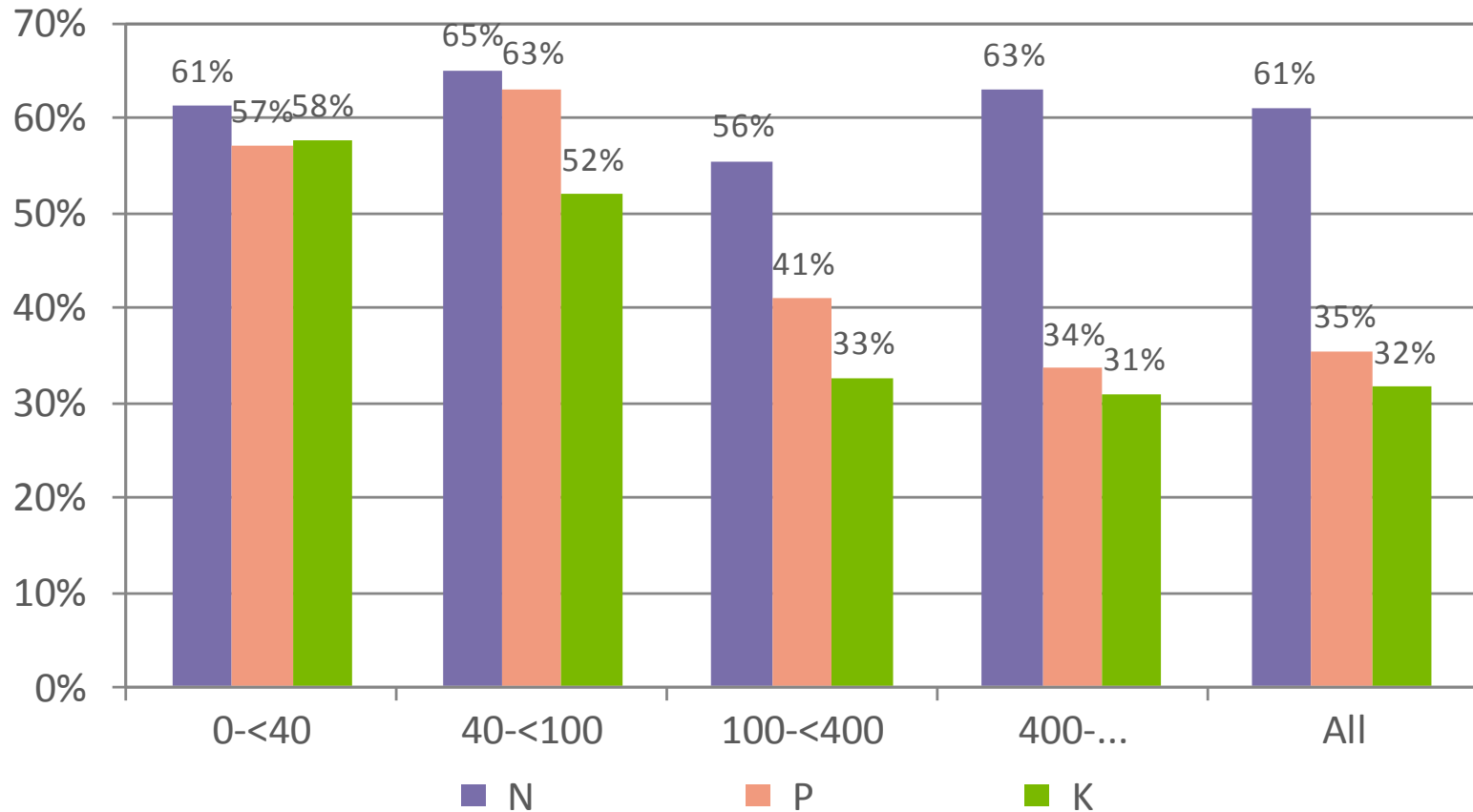
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Source: Own calculation based on FADN data

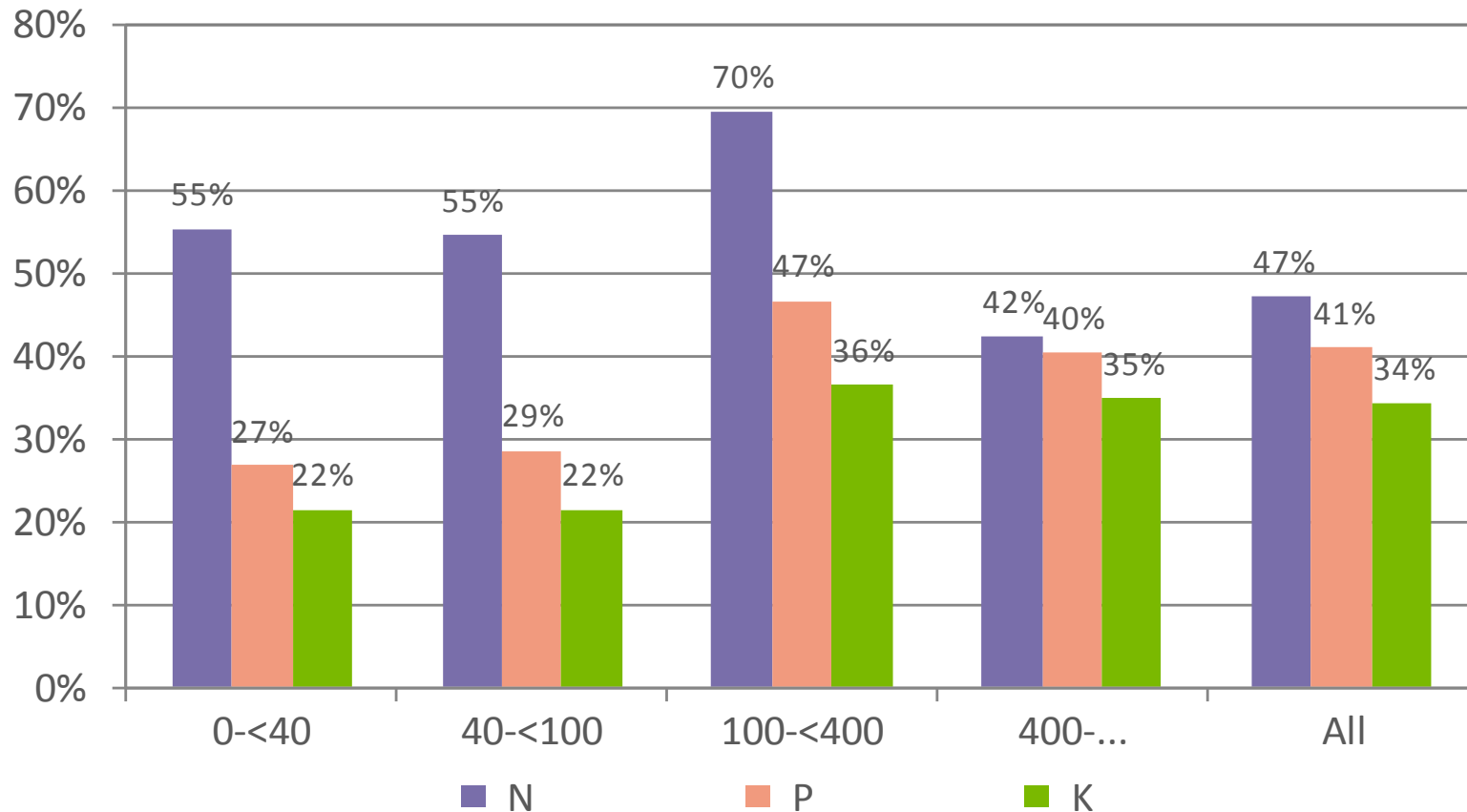
FARM GATE NUTRIENT USE EFFICIENCY OF SPECIALIZED CROP EFM FARMS, 2015



EFM – Environmentally friendly management farms

Source: Own calculation based on FADN data

FARM GATE NUTRIENT USE EFFICIENCY OF SPECIALIZED CROP SAPS FARMS, 2015



SAPS – Single area payment scheme farms
 Source: Own calculation based on FADN data

FARM GATE NUTRIENT BALANCE OF SPECIALIZED CROP ORGANIC FARMS, 2015



Source: Own calculation based on FADN data

MAIN PROBLEMS

- ✓ **Insufficient data coverage regarding the share of different species of legumes for correct application of N fixation coefficients, which have great impact for specific agricultural systems e.g. for organic farming**
- ✓ **Insufficient data coverage regarding the proportion of legumes in the biomass of the collected and sold grass fodder (e.g. hay, silage)**
- ✓ **Quantities of purchased concentrated feedstuffs and coarse fodder as well as the composition of the different kinds of feed**
- ✓ **Amounts and type of manure supplied from other farms and the amounts transported to other farms**