

# GYPSUM INITIATIVE 2020-2021

PROJECT ACTIVITIES, RESULTS AND RECOMMENDATIONS



HELSINGIN YLIOPISTO  
HELSINGFORS UNIVERSITET  
UNIVERSITY OF HELSINKI



Ministry for Foreign  
Affairs of Finland



Ympäristöministeriö  
Miljöministeriet  
Ministry of the Environment

## OBJECTIVE

To reduce phosphorus loading from agriculture to the Baltic Sea by promoting the introduction of gypsum treatment in the coastal states of the Baltic Sea

## Means to achieve the goal

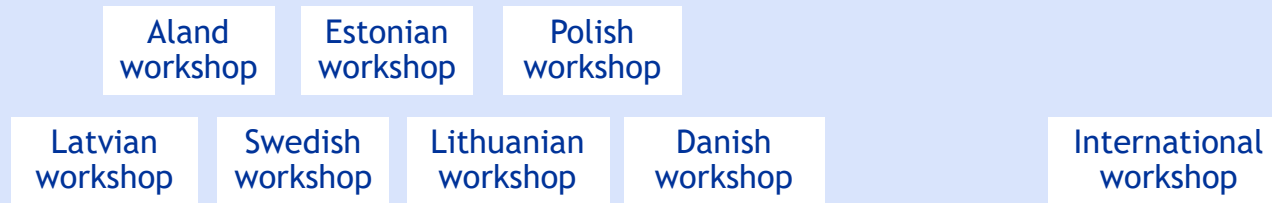
1. Dissemination of information on the feasibility and necessity of gypsum treatment in the Baltic Sea region
2. Producing information on the applicability of gypsum treatment in the Baltic Sea countries
3. Establishing a cooperation network of those interested in gypsum
4. Promoting the implementation of gypsum pilots
5. Promoting the preparations for a wider use of gypsum



# ACTIVITIES

## Events

### PROJECT EVENTS



**100**  
experts  
reached

1/2020 - - - - - 6/2020 - - - - - 1/2021 - - - - - 6/2021 - - - - - 12/2021



**130**  
experts  
reached

### PARTICIPATION IN INTERNATIONAL SEMINARS

# ACTIVITIES

## Cooperation network to promote gypsum treatment

### Piloting

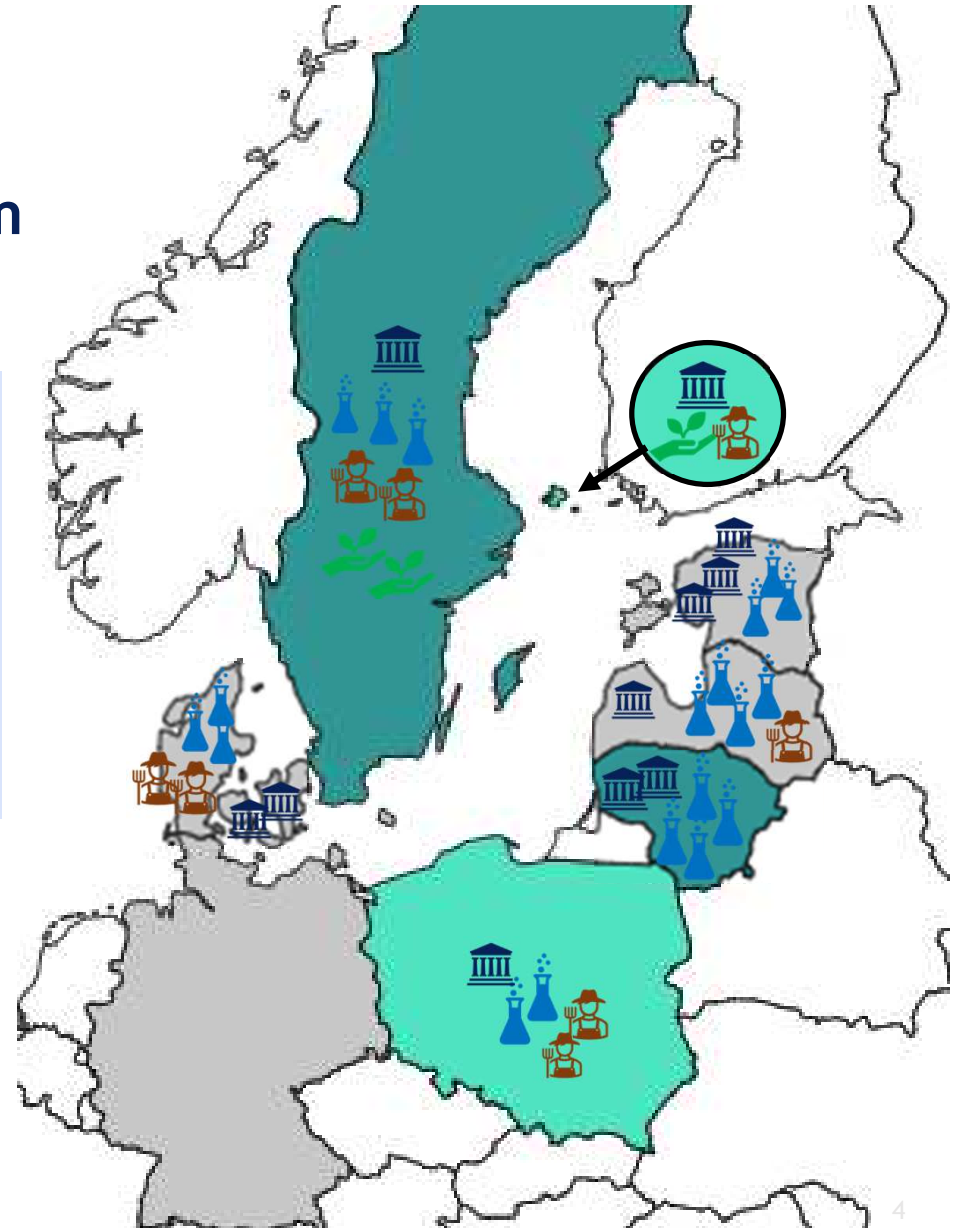
- Gypsum experiments
- Planned experiments

### Topics discussed

- Gypsum-related research needs
- Interest in laboratory experiments
- Feasibility of gypsum treatment
  - Farmers' attitudes
  - Potential area for gypsum application
  - Sources of gypsum, logistics

### Stakeholders reached in workshops

-  Authorities
-  Research institutions
-  Farmers' / advisory organisations
-  NGOs



# ACTIVITIES

## Communication materials



A brochure in English and in Swedish

**GYPSUM**  
AN EFFECTIVE WATER PROTECTION MEASURE FOR AGRICULTURE

Gypsum treatment can significantly decrease phosphorus losses from agricultural soils

Phosphorus discharges cause eutrophication and excessive algal growth in waters. Dissolved and surface runoff detach soil particles and transport phosphorus-containing soil into watercourses. This can be seen as turbid water. Along with soil particles, dissolved phosphorus leaks from fields to watercourses. Together, the phosphorus discharges cause eutrophication and excessive algal growth. Phosphorus dissolved in water is readily available to algae. On the contrary, only part of the phosphorus attached to soil particles becomes available to algae and in this sense the soil-bound phosphorus is directly less harmful to water quality, in anoxic conditions prevailing in bottom sediments, the potent release from soil particles into the water.

**Gypsum spreading increases retention and reduces leak**  
Gypsum is calcium sulfate dihydrate which can be spread on the soil surface. It dissolves and increases ionic strength for both soil and thus reduces phosphorus leaching. It is not necessary to apply the effect is found to remain at least 30% longer in the soil.

**GIPSS MINSKAR FOSFORUTSKÖLJNINGEN**  
Forskningsbevis på att gips är en effektiv vattenkylsaddgård

**1. Jordomsättningar i regnsmältningar i laboratorieförhållanden**  
Olika jordomsättningar som innehåller gipsförstärkt jord är samlade in för regnsmältningar i laboratorieförhållanden. Gipsen i jordomsättningen samlas in i 15 och 2,5 liter efter gipsbehandlingen.

**2. Nämnden på experimentet (93 ha)**  
År 2008 gipsbehandlades ett jordbruksområde på 93 hektar i ett 240 hektar stort avrinningsområde i södra Finland. Avrinningsområdet behandlades med gips under vintern och sommaren och mätningar genomfördes under 2,5 år efter gipsbehandlingen.

**3. Storskaligt pilotprojekt längs än Saarepää (1 550 ha)**  
År 2015 samlades gips på ett jordbruksområde på 1 550 hektar i sydvästra Finland. De övre delarna av en gipsad åker är kartstämplat som ett gipsbehandlingsområde. Avrinningsområdet övervakades med hjälp av satellitdata och mätningar genomfördes under 2,5 år efter gipsbehandlingen.

**4. Gipsbehandling längs Vanda å (1 500 ha)**  
Under projektet gipsbehandlades ca 1 500 hektar i södra Finland under 2018-2020.

A website in English and in Swedish

## Gypsum Initiative

John Nurminen Säätiö | Tuusula Seurakunta | Gypsum Initiative

The project aims to disseminate information to the countries surrounding the Baltic Sea about treating agricultural fields with gypsum as a means of efficient water protection, and to investigate whether this method is applicable in the different countries. The project is led by the

## Gypsum Initiative

John Nurminen Säätiö | Tuusula Seurakunta | Gypsum Initiative

Projektets mål är att effektivt sprida information om gipsbehandlingen av åkrar, vilken visat sig vara en effektiv vattenskyddsmetod i Östersjöområdet och klargöra metodens lämplighet i olika länder. Miljöministeriet finansierar projektet med utrikesministeriets anslag för samarbetet kring Östersjön, Barents och Arktis.



A video on gypsum in English

## RESULTS

# The most promising countries and key organisations for promoting gypsum treatment

### Poland

- Institute of Technology and Life Sciences
- The Institute of Soil Science and Plant Cultivation
- Kujawsko-Pomorski Agricultural Advisory Centre
- Agricultural support centre KOWR
- Rural area network KSOW
- Agency for Restructuring and Modernisation of Agriculture ARMiR

### Lithuania

- Lithuanian Research Centre for Agriculture and Forestry
- Vytautas Magnus University
- Klaipeda University
- Lithuanian Agriculture Advisory Service
- Baltic Environmental Forum

### Sweden

- RISE
- SLU
- Hav och Vatten
- Greppa Näringen

### Denmark

- Aarhus University
- SEGES

Interest and expertise in gypsum treatment

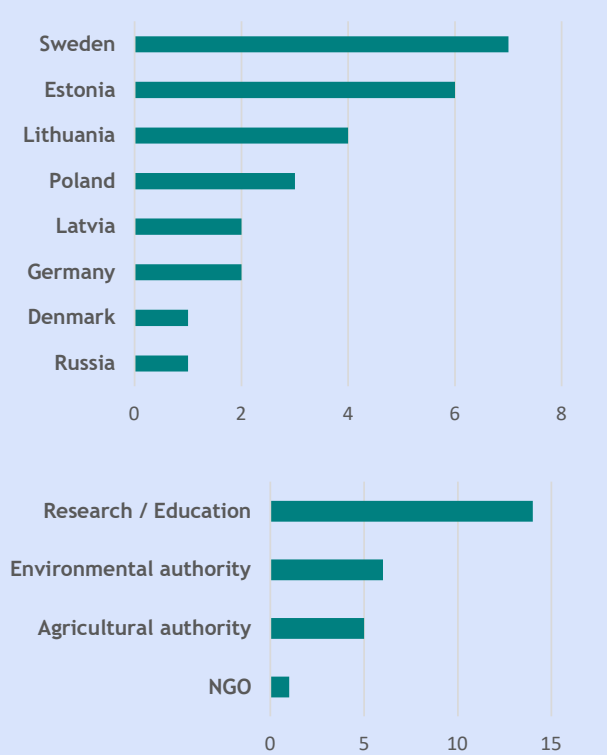
Includes BSR countries with the largest arable land area and phosphorus surplus

# RESULTS

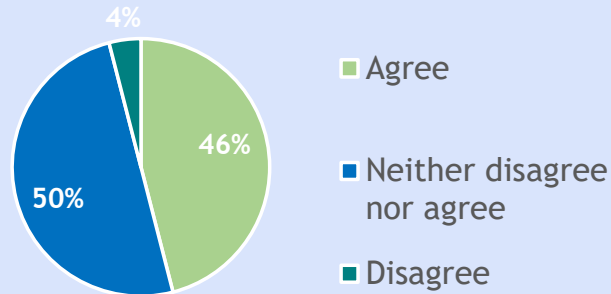
## Stakeholder survey 10/2021

### Respondents

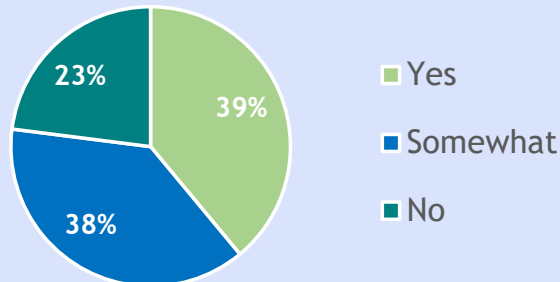
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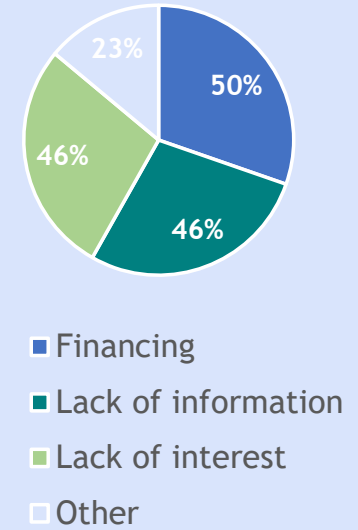
### Gypsum functions as a water protection measure



### I know where to find information on the gypsum method



### The most relevant barriers for the use of the gypsum method



### Other barriers

- Availability of gypsum material
- Applicability of gypsum to different soils
- Possible negative side-effects
- Uncertainty about long-term effects

## RESULTS

### Country-specific needs for research

	Estonia	Latvia	Lithuania	Poland	Sweden	Denmark
The use of gypsum together with manure or mineral fertilizers	X	X	X			
The use of gypsum together with agricultural lime			X	X	*	
The applicability of gypsum to other than clay soils	X	X	X	X		X
The risk of gypsum spreading for groundwater areas	X					
The comparison of carbon footprints of soil improvers					X	

Identified general research need

Development of methods for mapping soils that react to gypsum

\*Identification of suitable sites for gypsum and structure lime



## RECOMMENDATIONS

### How to proceed the promotion of the gypsum method

#### Research organisations

1. Continuation of cooperation with researchers in Poland, Lithuania, Sweden and Denmark
2. Development of methods for mapping soils that react to gypsum
3. Producing information on identified research needs

#### Authorities

1. Encouraging the Baltic environmental authorities to assess the phosphorus loads from agriculture
2. Discussion with the Swedish environmental authorities on the carbon footprints of soil improvers

#### HELCOM & EU

1. Communication of the effects of gypsum in order to dispel suspicions about harmful side effects
2. Promotion of gypsum treatment in the palette of measures for the Water Framework Directive and the BSAP
3. Publication of guidance on the use of the gypsum method as a HELCOM document

# *Gypsum Initiative*

The project “Gypsum Initiative” disseminated information to the countries surrounding the Baltic Sea about treating agricultural fields with gypsum as a means of efficient water protection.

The project was implemented in 2020-21 by John Nurminen Foundation, the Finnish Environment Institute and the University of Helsinki and funded by the Finnish Ministry of the Environment from the funds allocated by the Finnish Ministry for Foreign Affairs for Cooperation in the Baltic Sea, Barents and Arctic Regions.

More information <https://johnnurmisenfaatit.fi/en/projects/#finished-projects>



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