Blue-Green Bio Lab projekts un bio-industriālās sadarbības koncepcija

Apvienotā klimata, enerģētikas un vides koordinācijas darba grupas sanāksme

2023. gada 24. novembrī
Evija Ērkšķe

ZEMGALES PLĀNOŠANAS REĢIONS

Projekts «*Zilās-zaļās bioindustriālās sadarbības Baltijas jūras reģionā*»

INTERREG Baltijas jūras reģiona programma 2021.-2027.gadam

Projekta mērķis: noteikt **dabā balstītus un tirgū virzītus risinājumus** jautājumiem, kas saistīti ar barības vielu izskalošanos ūdeņos.

Projekts paredz, ka ekonomiski izdevīgu biorisinājumu ieviešana nodrošinās ilgtermiņa izmaksu efektivitāti un paātrinās vides un klimatisko mērķu sasniegšanu.

Projekta budžets – 499 399.60 €
ZPR budžets – **46 366.60 €**

Projekta ieviešana – **10.2022. – 03.2024.** (1,5 gads)

6 partneri (Dānija, Zviedrija, Latvija)
Vadošais partneris – Skīves pašvaldība (Dānija)
Projekta partneri Latvijā – **ZPR, Latvijas Hidroekoloģijas institūts**

Projekta pamatojums

Aramzemes apsaimniekošanu Baltijas jūras reģionā (BJR) raksturo pārmērīga barības vielu, pesticīdu un citu piedevu izmantošana, kas pasliktina augsnes kvalitāti un bioloģisko daudzveidību, kā arī rada būtiskas SEG emisijas lauksaimniecībā.

ES vides un klimata mērķi saistībā ar šīm problēmām nozīmē, ka lauksaimnieki saskaras ar ražošanas ierobežojumiem, kas var apdraudēt viņu iztiku un ienākumu bāzi visai lauku sabiedrībai.

Izaicinājumi:

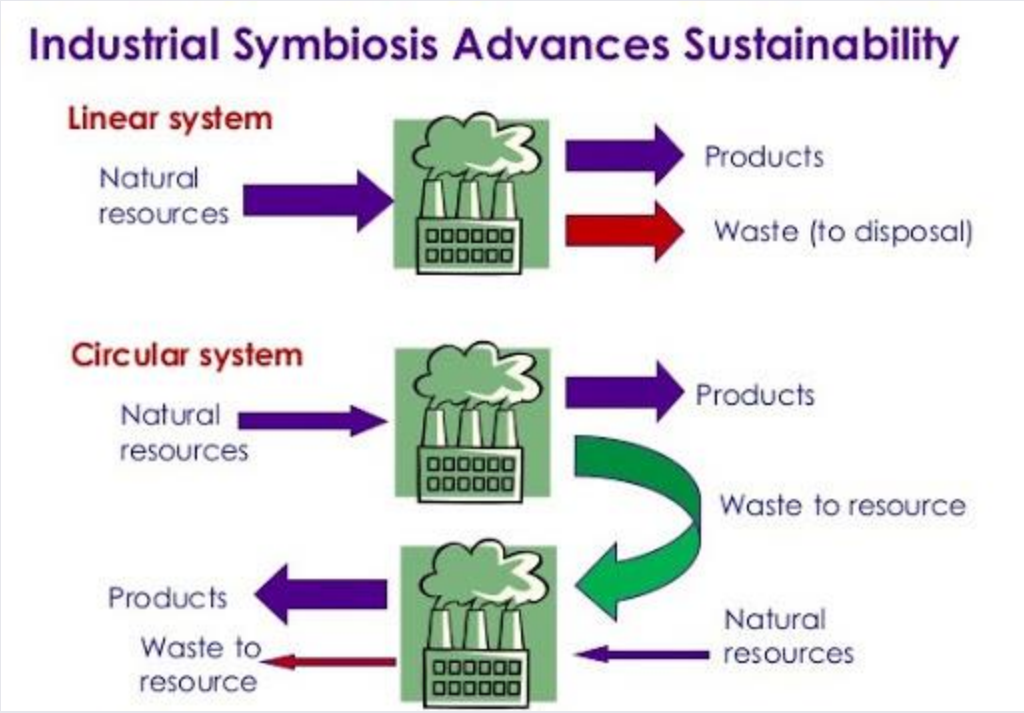
- barības vielu notece Baltijas jūrā;
- siltumnīcefekta gāzu emisijas;
- Eiropas pašapgāde ar pārtiku un enerģiju.

Reģionā ir steidzami:

- jāveicina cirkulāra pieeja lauksaimniecībā;
- jāierobežo barības vielu izskalošanās un to slodzes Baltijas jūrā un iekšējos ūdeņos.

Bio-industriālās sadarbības koncepcija

- Kopīgiem spēkiem lauksaimniecības nozare un industrija var piedāvāt risinājumus, savienojot industriālās simbiozes, kas balstītas un pilnīgu vietējas zaļās biomasas izmantošanu, kas ievākta vai izaudzēta ar mērķi veidot labvēlīgus ekosistēmu pakalpojumus.
- Tādējādi pati zaļās biomasas augšana/ ražošana, kas nonāk rūpnieciskajā simbiozē, uzlabo oglekļa saistīšanu, samazina slāpekļa nogulsnes atmosfērā un ūdenī.
- Bio-industriālajās simbiozēs katrs uzņēmums ražo bio-produktus un pārnes atlikumus kā resursus uz nākamajiem uzņēmumiem šajā ķēdē. Tādējādi 1 biomasa veido vairākas patēriņa preces un uzlabo vietējo vidi.



Projekta rezultāti

- **Ilustrētas faktu lapas**, kurās aprakstīts katrs DBR risinājums saistībā ar mērķtiecīgu ekosistēmu pakalpojumu sniegšanu.
- **Politikas īss apraksts**, kurā **sniegti padomi** par to, kur un kā apsvērt izmaiņas administratīvajā praksē saistībā ar DBR un vērtību ķēdēm.
- **Tiešsaistes brošūra** ar projekta rezultātiem un katra risinājuma pielietošanas perspektīvām citās projekta vietās.
- Zemgales plānošanas reģiona gadījumā veikts **pētījums**, izmantojot visas projektā esošās metodes un pieejas, kurā tiktu analizēta **saimnieciskā** (lauku un rūpniecības) **darbība** saistībā ar upju un ezeru aizaugšanu ar niedrēm un meldriem un šīs ūdenī augošās **biomasas izmantošanu**.
- https://interreg-baltic.eu/project/blue-green-bio-lab/

Biomass Types
Policy Brief

Common reed as a potential biomass for symbiosis

This brief is a part of the Blue Green Bio Lab Tool Kit, that represents the findings in the Blue Green Bio Lab project. The project targets the urgent challenges of reducing nutrients to waters of the Baltic Sea Region, limiting greenhouse gas emissions and enhancing European self-supply with food, feed, and energy. Together, aquaculture, agriculture and industry can provide solutions to these challenges through industrial symbiosis based on the sustainable exploitation of local blue and green biomasses initially grown and/or harvested with the objective to produce positive ecosystem services. The Blue Green Bio Lab project is co-financed by Inter-Reg Baltic Sea Region with partners in Denmark, Latvia and Sweden.

Anda Ikauniece, Ph.D., Latvian Institute of Aquatic Ecology, Agency of Daugavpils University.

Description of common reed

The common reed (Phragmites australis) is a cosmopolitan, highly productive grass inhabiting the banks of rivers, lakes, ponds, marshes and also brackish waters like Baltic Sea (Picture 1). It is often the dominating species in the ecosystem it inhabits. Being so widely spread it has a capacity to adapt to various environmental conditions and thus can benefit from the changing climate. In Europe its height is about 2-3,5 m. The reed survives in temperatures from -14 to 27,5°C, while the optimal temperature is around 20°C. Temperature fluctuations induce increased shoot growth, however elevated CO2 levels do not have any specific impacts on shoots but rather below ground where more carbon is stored.

Picture 1. Common reed at the coast of a lake.

The natural salinity range for the reed is between 0 to 18 PSU, but it can change in prevailing local conditions. Reeds, originating from freshwater marshes or coasts, will decline in biomass and survival rate in saline conditions. In high nutrient concentrations the stems of reed may become weaker and more susceptible to mechanical damage, but there is also evidence that no negative effects are observed, and increased growth is recorded. In cases of flood conditions reed cannot withstand permanent flooding and especially juvenile stems have low flooding tolerance. The dynamics of floods determine the occurrence and growth of reed in lakes.

Reeds are considered an option for coastal protection from waves and surge damage during storms, increasing the efficiency of heavy metal removal from wastewater and as a phytoremediator to reduce high concentrations of phosphorus. The reed can remove also other pollutants and various nitrogen compounds from water environment successfully. Reed growth of one hectare can contain 10 kg of phosphorus, 100 kg of nitrogen, and a couple of tonnes of carbon.

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- Climate and environmental goals in the Baltic Sea Region
- Climate and environmental goals for Skive Municipality and Zemgale Planning Region
- Options of biomass use for achieving the climate and environmental goals

Biomass Types
Policy Brief

Grass as a potential biomass for symbiosis

This brief is a part of the Blue Green Bio Lab Tool Kit, that represents the findings in the Blue Green Bio Lab project. The project targets the urgent challenges of reducing nutrients to waters of the Baltic Sea Region, limiting greenhouse gas emissions, and enhancing European self-supply with food, feed, and energy. Together, aquaculture, agriculture and industry can provide solutions to these challenges through industrial symbiosis based on the sustainable exploitation of local blue and green biomasses initially grown and/or harvested with the objective to produce positive ecosystem services. The Blue Green Bio Lab project is co-financed by Inter-Reg Baltic Sea Region with partners in Denmark, Latvia, and Sweden.

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Description of grass composition

The species composition of grass is highly diverse and varies depending on the geographic location and environmental conditions. Grasslands are found in a wide range of habitats like meadows, pastures, heaths, and other open areas (Picture 1). The most common grass species in Europe include ryegrass (Lolium perenne), fescue (Festuca spp.), bentgrass (Agrostis spp.), meadow grass (Poa pratensis), timothy grass (Phleum pratense), and cocksfoot (Dactylis glomerata).

Picture 1. Grass in the meadow.

The ecology of grass species is characterized by seasonal growth patterns, with most growth occurring in the spring and summer and a period of dormancy or reduced growth in the winter. Additionally, grass species have adapted to grazing by regrowth and survival after grazing. Grasses are also tolerant of nutrient-poor soils where species have evolved mechanisms for efficient nutrient uptake and use, such as deep roots, mycorrhizal associations, and nutrient recycling. It is also common for grass species to thrive in disturbed habitats such as road verges, abandoned fields, and railway tracks. These species often have high seed production and dispersal rates, rapid growth, and a short life cycle.

Grass species provide a range of ecosystem services - soil conservation, carbon sequestration, biodiversity conservation, and livestock feed. Grass has been a significant component of European agriculture for centuries, and it continues to play a crucial role in the region's food production and rural economy. Recently grass has also become an important source of protein, increasingly being used as a feedstock for protein extraction. The extracted protein can be used for example as a source of protein for animal feed and as a base material to produce other protein products. Furthermore, the remaining pulp after protein extraction can also be used as feed for cows.

Several grass species have an increased ability to remove pollutants and contaminants from soil through

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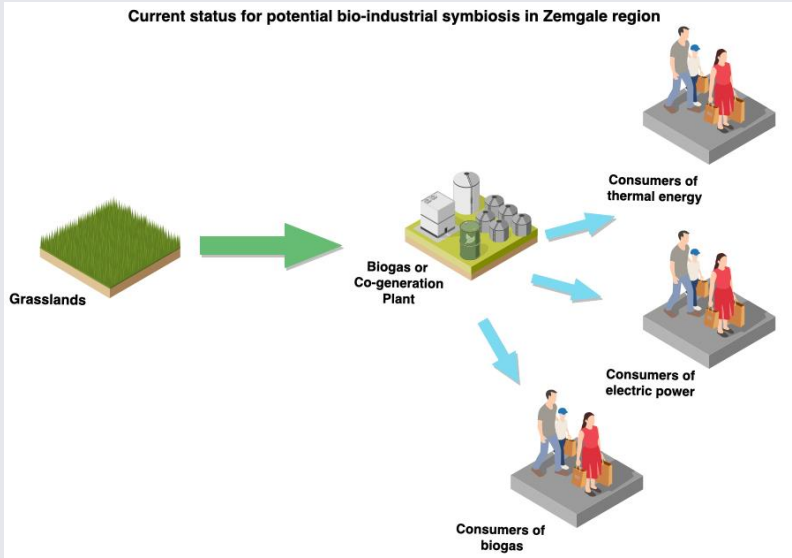
ZEMGALES PLĀNOŠANAS REĢIONS

3D rīks

3D bioloģisko vērtību ķēžu rīks, ieskaitot masas, ķīmisko un ekonomisko plūsmu kvantitatīvos rādītājus starp katru ķēdes posmu no lauka līdz ūdenim (upei vai ezeram) un (ideālā gadījumā) atpakaļ uz lauku.



Tiks izveidots ar mērķi:

- noteikt vietējo resursu plūsmas un vērtību ķēdes;
- veicināt partnerību veidošanos;
- būt kā starpnieks labvēlīgas politikas videi.

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