NordBio

Innovation in the Nordic bioeconomy

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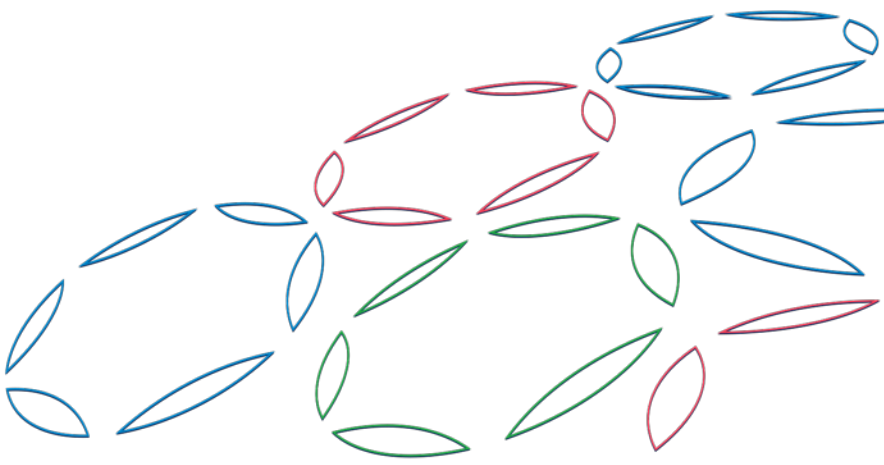

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Report summary

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Titill / Title	**NordBio - Innovation in the Nordic bioeconomy**		
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Ágrip á íslensku:	Meginmarkmið verkefnisins var að hafa bein efnahagsleg áhrif í gegnum nýsköpun og verðmætasköpun í norræna lífhagkerfinu og styrkja þannig svæðisbundinn hagvöxt. Áhersla var lögð á að framkvæma tilraunaverkefni sem féll undir eitt eða fleiri eftirfarandi svið: vöruþróun, sjálfbær matvælaframleiðsla og aukin framleiðsla lífmassa. Meira en 70 nýsköpunarverkefni voru framkvæmd með smáframleiðendum í vest-norrænu löndunum með áherslu á nýsköpun, aukna sjálfbærni í matvælaframleiðslu og bætta nýtingu lífauðlinda með aukinni virðismyndun úr hliðarstraumum matvælavinnslu. Lífhagkerfishópar um öll norðurlöndin voru myndaðir til að deila þekkingu og vinna að sameiginlegum markmiðum; tenging háskóla, rannsóknarstofnanna og iðnaðar saman til áframhaldandi þróunar og uppbyggingar innan lífhagkerfisins.		
Lykilorð á íslensku:	*Lífhagkerfi, nýsköpun, matvæli, vöruþróun, netverk, lífauðlindir*		
Summary in English:	The overall objective of the project was to have direct economic impact through innovation and value creation in the Nordic bioeconomy and thereby strengthen regional and economic growth. Focus was put on executing pilot projects covering one or more category: product development, sustainable food production and increased production of biomass. Over 70 innovation projects where carried out with local producers in the west Nordic region focusing on innovation, increased sustainability of food production and utilizing better bioresources by creating new value from side streams of food processing. Bioeconomy consortiums throughout the Nordic countries were founded to share knowledge and work on common goals connecting academia, research and industry together for further development and implementation of the bioeconomy.		
English keywords:	*Bioeconomy, innovation, food, product development, consortium, bioresources, NordBio*		

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1 Objective

The overall objective of the project was to have direct economic impact through innovation and value creation in the Nordic bioeconomy and thereby strengthen regional and economic growth. Focus was put on executing pilot projects covering one or more category: product development, sustainable food production and increased production of biomass.

Different approaches to innovation were applied in the project. Project development projects were carried out using local resources, bioeconomy consortiums were founded and cooperation established on identifiying innovation oppurtunities within the bioeconomy.

2 Product development projects

Number of product development projects were carried out with local producers in the west Nordic region (Faroe Islands, Greenland, Iceland), focusing on innovation and increased sustainability of food production, utilizing better bio-resources and creating new value from side streams of food processing. In those projects the approach was minimal administration, maximum contribution to the execution of projects. Application process was simple and open to the public. The projects were selected on predefined criteria and support was given in the form of „innovation vouches“ administrated by the specialist assisting each entrepreneur. Project partners in the development projects Matis ltd. (Iceland), Inuili culinary school (Greenland) and Inova (Faroe islands).

The first phase of the product development projects took place in 2014. Application for support for innovation projects were advertised to the public in Iceland, Greenland and Faroe Islands. 78 applications were turned in in the three countries, 30 projects were selected for support, resulting with 26 projects finalised. Products from this firsh phase of the project were presented and tasted at the *Nordtic* conference in Selfoss Iceland (June 25th 2014).

The second phase of product development projects started in 2015 and was finalised in 2016. Application for support for innovation projects were again advertised to the public in Iceland,

Greenland and Faroe Islands. This time 74 applications were turned in in the three countries, 45 projects selected for support, resulting with 26 projects being finalised with products.

Products from the second phase along with several products from the first phase were presented and tasted at the NordBio final conference in Reykjavík 5-6 október 2016, *Minding the future. Bioeconomy in a changing Nordic reality*. Posters were made for all the products, available for further marketing of the products (see Appendix). In total, 152 application were turned in, of which 75 were selected for participation. 52 projects were finalised with products.

This method of using „innovation vouches“ proved well, resulting in the majority of the funding going directly into solving issues in the projects themselves.

3 Bioeconomy consortiums

Bioeconomy consortiums throughout the Nordic countries were founded to share knowledge and work on common goals connecting academia, research and industry together for further development and implementation of the bioeconomy. The project was planned in collaboration with Nord Regio on the basis of their prior in-depth regional study of the Nordic bioeconomy in 2014. A network was established with key players from Forsså region in Finland and Örnsköldsvik region in Sweden for planning innovative research in support of bio-industries in these regions and subsequent strengthening of the regional bioeconomy, specifically targeting Nordic and European H2020 funds for collaborative projects in the field of biorefineries. Participating countries are Sweden: SP-Processum & Lund University; Norway: SINTEF Materials and Iceland MATIS. Denmark: DTU, the Center of Biosustainabililty. Finland: Häme University of Applied Sciences, Forsså and Natural Resources Institute Finland Forsså.

Three main subjects were selected:

- The Wood biorefinery with the goal of (1) increasing fermentability of wood hydrolysates; (2) production of high added value chemicals from wood (enzymatic, chemical, microbial) and (3) production of feed for aquaculture from wood using microbes.
- Agricultural side stream and rest raw materials as feedstock biomass for biorefineries. with two main goals: (1) production of added value products from agricultural waste and (2) identify products, thresholds, challenges and subsequently innovative bioconversion tools and processes.
- Feed production with two main goals: (1) convert organic "waste" into valuable products and (2) producing protein rich feed for salmonids developed from waste from agriculture and fish processing with black soldier fly.

Activities in the period include:

- Network meetings for strategy planning and subject developments were held in Reykjavík, Forsså, Trondheim and Örnsköldsvik

A test project for utilizing side streams from wood biorefineries for production of single cell protein enriched in biocolorants (carotenoids) for fish feed using a novel thermophilic bacterium was carried out by, MATIS, Lund university, SP-Processum and Domsjö in Örnsköldsvik. The project was reported in Processums, newsletter 15 december 2016 (Processums bioreaktor användes i försök att producera karotenoider).

- Two Finnish projects involving research groups in Forsså were started in the period with MATIS as a foreign partner: 'Value added compounds from food industry by-products' and 'Utilization of algal components and biomass as food, feed and fuel'.
- Two Nordic project applications Wood4Chem and 'Advancing bioeconomy by practical application of research results in education and enterprises' and two EU-H2020 applications, Thermorefine and Microbricks, to the European Union have been submitted by the consortia in the period.

4 Cooperation on identifying innovation oppurtunities

Cooperation with the Icelandic environmental agency was established on forming and initiating the West Nordic waste project. The aim was of using the results of the project to identify innovation opportunities to take further. This cooperation has resulted in a project supported by the Nordic Council of Ministers, Working group for Sustainable Consumption and Production (HKP), focusing on utilisation of side streams from the fishing industry in Iceland, Greenland and Faroe Islands.

Cooperation with the "Biorefinery testcenter opportunity mapping" project was as well established. The project was led by Dr. Lene Lange with the aim of identifying possible innovation projects in the field of biorefineries.

5 Conclusion

It is evident from the responses the project received and number of applications and incoming requests regarding support after the project ended that there is significant need for innovation support in the bioeconomy. Further conclusion is that a simple approach "innovation vouchers" can be an effective way to stimulate innovation, transfer of knowledge and technology increasing value from bioresources, especially side streams from traditional production. On the other hand when it comes to highly scientific research projects within the bioeconomy, more network building and preparation and careful selection of projects to take forward is needed and support in that initial stage leading up to international research projects is important.

6 Documents of the project

Nordtic Conference Report. Sigrún Elsa Smáradóttir og Þóra Valsdóttir. Skýrsla Matís 36-14. Desember 2014. http://www.matis.is/media/nordtic/36-14-Nordtic-Conference.pdf

Innovation in the bioeconomy. Poster presented at NordBio final conference in Reykjavík 5-6 október 2016, Minding the future. Bioeconomy in a changing Nordic reality.

Creating new value in food production. Fact sheet presented at NordBio final conference the NordBio final in Reykjavík 5-6 október 2016, Minding the future. Bioeconomy in a changing Nordic reality. http://nordbio.org/wp-content/uploads/2014/08/MATIS.pdf

Project development projects 2014-2016. Posters presenting product development projects. See appendix.

Appendix

Project development projects 2014-2016. Posters presenting product development projects

Arctic seaweed

The product is dried wild harvested seaweed from the west coast of Greenland. The aim is to harvest, dry, and sell the product for human consumption within Greenland and abroad. The project focused on establishing certified drying and packaging processes as well as compositional testing.

Seaweed grows in great numbers along the west coast of Greenland. Until now, this resource has been underutilized.

In Western countries, there is a growing interest in seaweed and seaweed products. Research shows that seaweeds may have significant health benefits, making them interesting and functional on their own or as an addition to food. Greenland seaweed has been commercially available to a limited extent, so there is potential for growth. The project is expected to create 2-3 seasonal jobs in the beginning.

Arctic Ocean seaweed is a small and newly established Greenlandic company. The ambition is to develop new products in Greenland for the local market and for the growing tourism in the country.

Further information:
Jørgen Mathiassen
jmathias@greennet.gl

Processing of meat from Atlantic rock crab

The product is crab meat, cooked and frozen. The product is used for crab salad, crab cakes or burgers. In the project, method was set up for processing of meat from shoulders and legs of Atlantic rock crab. Next step is to produce finger food by cutting the crab claws, "cocktail claws".

Despite being common on the west coast of Iceland, exploitation of crabs has been limited. In order to make it economically feasible, maximum utilisation of the catch is needed. The project contributes to better use of this bioresource as well as enhancing the knowledge on crab processing which has been limited in Iceland.

The product is sold to restaurants as well as used at Arctic Seafood new sales stand at Reykjavik harbour, Walk the Plank. The product has got excellent reception from chefs and consumers. Currently, there is no similar product available on the market from Icelandic crabs.

Arctic Seafood Ltd. in cooperation with Whole Seafood deals in fresh and value added seafood products. Arctic Seafood aims at sustainable utilisation of new and unexploited natural resources by producing sustainable quality products that fulfil market demands. Products include Atlantic mackerel, rock crab, mussels, clams and byproducts from traditional Icelandic ground fish such as cod and haddock.

Further information:
www.arc.is
arc@simnet.is

BE juicy

BE juicy is a juice powder made from green apples, kale and fresh mint. It is completely organic and without all additives. Blended in water it gives you a fresh, nutritional drink in few seconds. It can also be added to other drinks or sprinkled over yogurt and desserts.

One of the main priorities in the development of this product was the ecological benefit. BE Juicy is a locally grown/produced eco-friendly product. We are minimizing waste by using discoloured and bruised vegetables and fruits and adding value to the production for vegetable and fruit farmers.

All the juice products that prevail on the market have short shelf-life and have to be consumed within few days. BE Juicy is sold as powder to be applied to water at the chosen time of consumption. It is a fast, good nutrition that suits the modern life very well.

Sólheimar í Grímsnesi is the key collaborator in this project. They are an eco-village producing organic vegetables and fruits and many other products. They will harvest the raw materials and maybe take over the production in the future. Now the powder is produced at Matis.

Further information:
bre15@hi.is

Blueberrymarinated and smoked meat

The meat is salted and dried for a few hours. In the meanwhile, blueberry syrup is prepared and it is made of handpicked, Icelandic blueberries. The meat is marinated in the syrup before going to the smokehouse. After few hours of marinating, the meat is smoked for about 2-3 days, depending on weather conditions. The smoke is produced with the old traditional smoking method in Iceland, using manure and birch trees.

After this process, the meat is ready to enjoy. It has a rich smoked taste which harmonies very well with the sweet outer cover of the blueberry syrup. It´s a treat on its own, or as a tasteful and nice looking starter, decorated with fresh fruits, salad and edible flowers!

At Bjarteyjarsandur, farmers work in the spirit of the ecological and sustainable way of life. They show nature full respect and try to minimize the impacts on the surrounding environment. Farmers inform their guests and customers about different values of the area they live in.

The product is sold directly to consumers from the farm. The farm is located in Hvalfjördur, a beautiful and mountainous fjord north of Reykjavík. The farm is recognised by many Icelanders and is also located near one of Iceland´s natural gems, Glymur waterfall – the highest waterfall in Iceland.

Guðmundur and Arnheiður, farmers at Bjarteyjarsandur farm run a family friendly sheep farm, producing lamb meat and wool from the Icelandic sheep. The farm has been in Guðmundur´s family since 1887. Since 2012 meat processing unit has been operated at the farm and the meat sold directly to consumers.

Further information:
www.bjarteyjarsandur.is

KEX Beer vinegar

Vinegar from beer

The focus was to successfully produce and introduce an Icelandic speciality vinegar into the marketplace. The production by fermentation has been successful. The product has been used at the KEX Hostel restaurant, DILL Restaurant, and the pizzeria at Hverfisgata 12.

Beer, in significant quantities, is discarded in pubs and restaurants because it is out-of-date and has lost its characteristic flavor. Fermentation of beer into vinegar is a method to decrease food waste.

All vinegar used in Iceland has been imported. The demand for speciality vinegar is increasing; therefore, there should be opportunities for speciality domestic products.

Ólafur Ágústsson runs the KEX Hostel which includes a gastro pub. The vinegar is produced at the KEX Hostel facilities in Reykjavík.

Further information:
oligusta@kexhostel.is
www.kexhostel.is

Breki dried fish flakes

The product is a dried fish in new packaging, marketed and adjusted to the snack market as a thin health snack coming in a variety of flavors. The project focused on the optimization of the drying process and quality of the product.

A considerable portion of fish off-cuts are processed into fish blocks which are then used for making fish sticks, fish balls etc.

By processing the off-cuts into a health snack, a higher value can be obtained from this bio-resource. New processing methods reduce the drying time significantly, cutting down the production costs.

Dried fish is a popular traditional product in Iceland but has little international presence. By adjusting its appearance, texture and flavor to the international snack market, this protein rich healthy product is believed to have great potential internationally as an in-between meal.

Breki is a new company, established by Þórdís Jóhannsdóttir Wathne and Kristinn Jón Ólafsson. They have both worked on various innovation projects in the past.

Further information:
spunadis@gmail.com

Seaweed Barley Pasta

Seaweed Barley Pasta is a health food made from local Icelandic raw materials for consumers that want an exciting food based experience.

Made from Icelandic barley and seaweed the pasta combines qualities of land and sea in a healthy new product.

The raw materials used in the product are locally produced and from underutilized resources, like barley which has mainly been used for animal feed in Iceland. The ideology behind the product is to contribute to the sustainability of local Icelandic food products and to increase domestic production.

The target market for the product is an expanding health food market. While the image of processed wheat based pasta generally has taken a dive in recent years this product aims to image a more healthy pasta made from local Icelandic barley and seaweed.

The product is developed and produced in Himinbjörg in Reykjavík.

The product is developed in collaboration with local raw material producers making it unique.

Further information:
saemundur@matis.is

The Country Snack

„The Country Snack“ as we call it, is a beef jerky marinated and dried, ready to eat as a snack or when in need of an energy boost. In the project the marination and the drying was optimised.

The cattle on the farm Garður are mainly grass fed but twice a week they have all they can eat access to the barley mask that comes from the brewery close to us.

No antibiotics or hormones are used in raising our cattle. With this product we look to creating higher value for our meat and adding another product to what we have to offer.

The product will be sold directly to consumers, both to our coffee-house visitors and also online. The farm is located close to the largest populated town in North Iceland, Akureyri. Our coffeehouse at the farm, is a new attraction in this area with ten thousand visitors last year. These two things, selling the meet straight from the farm and the coffeehouse, work very well together and we have had growing numbers of foreign people visiting us calling for a souvenir from the farm.

Garður farm is run by two brothers, Aðalsteinn and Garðar and their familys. Aðalstein's three sons all work on the farm and the oldest son Einar is the owner of the coffeehouse and the meat processing unit that has been operating at the farm since 2011. The farm produces milk from 110 milking cows and these cows provide us with about 70 bulls every year that are raised for meat production. All of our livestock are from the Icelandic breed.

Further information:
www.nautakjot.is

NK
NAUTAKJOT.IS

Cream Treats

with Faroese Angelica and Rhubarb

This project centered on developing chocolate treats that introduce Faroese flavours.

Each cream treat consists of a marzipan foundation and a creamy marshmallow foam coated in thick artisanal chocolate. The marsh-mallow foam is whipped with either angelica or rhubarb extracts to give the treat a Faroese taste.
As an added "surprise" of angelica or rhubarb ganache awaits at the center of the treat.

These herbal flavored chocolate coated cream treats were developed by chocolatier Kirstin Hammer, who together with the famous Faroese tv-chef Gutti Winther, found inspiration in the classic Danish "flødebolle"-concept.

Kirstin Hammer owns Gómagott, a faroese chocolaterie which opened in 2015. In October 2016 Gómagott further expanded with a shop and a café. The Angelica and Rhubarb Cream Treats will be on sale at these locations during their respective seasons.

Further information:
gomagott.fo

Dry Oyster Mushrooms

The project has developed a successful procedure to dry oyster mushrooms for the retail market. The fresh oyster mushrooms are surplus from a mushroom production and have until now been discarded. Drying conditions, temporary storage of fresh produce and acceptance criteria for the final product were defined.

Essentially the production of dried oyster mushrooms utilises low value by-product such as barley straw to produce fresh oyster mushrooms and ultimately dried mushrooms.

Furthermore the project has helped reduce, if not eliminated waste of fresh product.

The product adds to the otherwise poor variety of domestically produced dried mushrooms. The launch of this product secures the foundation for employment of more workers and further opens the possibility of more spin-off products within the production of exotic mushrooms.

A pilot production for the fresh produce and the dried oyster mushrooms has been established just outside of the capital. If the production proves commercially viable the production is likely to be relocated to the rural agricultural parts of Iceland, albeit within relatively short distance from the main markets.

The mushrooms can be bougt at
Bananar ehf. s. 525 0120
Súðavogi 2e, Reykjavík

Further information:
Sælkerasveppir ehf. Hafnarfirði
Tel + 354 564 6100

Artisan dairy products

The products are skyr, skyr-whey, ice cream and fresh cheese produced with love and care from milk produced at Efstidalur II farm. In the project, product quality was optimised and packaging developed for retail sale.

At Efstidalur, emphasis is put on producing quality products from own raw material and cooperation with neighbouring farmers that supply local ingredients, such as strawberries, for their ice cream.

Processing own milk into higher value products supports the farmers aim on running viable business, and creating full time job for all family members.

Consumers seek honest, back to basics food, including artisan production. The products are sold at the farm's restaurant and store. Supply of artisan dairy products in Iceland is limited, and non-existing in the region where Efstidalur II is located, giving the farm unique position.

The owners of Efstidalur II are husband and wife Snæbjörn and Björg. The same family has lived on the farm since 1850.

Our main occupation is cattle farming, tourism and horse breeding. In 2013 restaurant was opened at the farm and processing facility for dairy production set up.

Further information:
www.efstidalur.is
info@efstidalur.is

Fish Chips

The fish chips are made from fermented fish held together by different grains. The fish chips thus gets a unique Faroese flavor, which derives from the Nordic fish and weather.

The main focus of this project is to develop packaging for the fragile chips, which will be done in co-operation with the Technological Institute in Denmark.

The fermented fish is a high-quality and traditional product of the Faroe Islands, but it isn't exported in substantial quantities.

Leif Sørensen sees an opportunity to make this product marketable in an international setting.

The goal is to produce 40.000 packages a year, which means that it is necessary to cater to the international market.

The producer is Leif Sørensen, a trained chef, who has been in charge of two restaurants on the Faroe Islands, Gourmet and KOKS. He also has a background in biology.

The production will be set up on the Faroe Islands.

Further information:
leifso@mail.fo

Fish bouillon

Umami flavor from Iceland

Umami flavor from Iceland is a powder composed of peptides made from fish backbones (Ocean Perch). It is a powder with a pleasant odor and umami fish taste. It can be used in food preparations, typically consisting of bones and meat from fish, salt and sugar. It can be used as a base for cooking soups, gravies, and sauces or with other seasonings as a garnish. The prototype was developed for optimization and scale-up.

The main ingredients of Umami flavor from Iceland are fish cut offs, by-products from the fish processing industry. The processing of fish by-products brings opportunity for value add products and decreases fish waste.

The product is an innovative umami flavoring, with no added chemicals such as MSG or food additives. Compared to the production of other umami flavors, natural ingredients are used and there is an easily accessible supply of sustainable raw material. Production of this natural umami flavor from fish frames also increases the percentage yield for certain fish-species. The flavor does not present any food additive concerns and is eco-friendly.

Additionally, the product has a high nutritional value with a complementary amino acid profile. These features could give the product a market advantage, demanding a higher price relative to other umami flavorings currently on the market.

The product is a prototype developed by five university students: Jónbjörn Finnbogason, Ólafur Tryggvi Pálsson, Snorri Karl Birgisson, Stefán Þór Eysteinsson and Yuetuan Zhang.

Further information:
gudjont@hi.is

Fiskverkun Kalla Sveins

Fiskverkun Kalla Sveins is SME in Borgarfjordur eystri, community of 134 inhabitants on the east coast of Iceland.

The company is named after its owner Karls Sveinsson – Fish Processing of Kalli Sveinn´s and was founded in 1986. Karl has operated small boat since 1977 and currently operates two boats along with the fish processing. During the high season 20 people work in the fish processing, during winter the staff is between 12 and 14.

The fish processing is the biggest company in the village. It takes active part in the local food in east Iceland initiative. Since 2009 the business has evolved as the owner took over the local café, Álfacafe, or Elves Café, that is located in the next building to the fish processing.

With the tourism connection Fiskverkun Kalla Sveins have put more emphasises on product development, looking for opportunities in secondary food processing in addition to the primary fish processing previously predominant in the business operations. Since the embark of fish and tourism connection the tourist season has added six more active weeks of tourism in Borgarfjordur eystri.

The products that Fiskverkun Kalla Sveins has been working on are new to their product line, offered to their clients, which are most restaurants and hotels in eastern and northern part of Iceland.

The product is a food ingredient based on cod caught by small boats, vital for the local community, and salted in the small village.

The product was created to strengthen even further the connection between fisheries and tourism. The ongoing work is on definition and stabilization of shelf life of the product without additives that serves partly as a food souvenir like Brandade Pancake, Brandade Sticks and Brandade Balls by development with fusionkitchen approach to a traditional dish.

Further information:
fks@simnet.is

Fjara – the seaweed mayonnaise

Fjara, seaweed mayonnaise is made from red seaweed, dulse. The binding power of alginates found in the seaweed renders eggs unnecessary and enables us to produce this remarkably aromatic mayonnaise. Combined with it's exceptional nutritional value with regards to antioxidants and minerals, Fjara is a reduced fat mayonnaise with less than 46% fat.

Fjara contains dulse, red seaweed that has been consumed in Iceland from its settlement. The utilisation dwindled in last century, leaving this resource mostly unutilised. Limited development has been in processing and production of products containing dulse. Fjara shows an example on the potential this healthy, resource has.

Fjara targets people that are health conscious, environmentally concerned and those interested in trying novel foods. The Asian market is of great interest to us as we feel our product combines the best from the west and the east, mayonnaise and seaweed, for which there is a strong tradition of consumption in Asian countries.

Eat Purple was founded by two food science students, Christopher Melin and Páll Arnar Hauksson, whose collaboration resulted in a victory in the EcoTrophelia Iceland 2014 competition. Fjara is manufactured at Matís headquarters in Reykjavík.

Further information:
p@p.is

Trít – game delicacy

Two products were developed from goose by-products as well as two accompaniments: Gæsaconfit (goose confit), Gæsalifrarmús (goose liver paté), Rauðlaukssulta (red onion chutney) and Trítsósa (mustard sauce). The project focused on setting up processes for official certification of Trít production.

A considerable amount of raw material is discarded from goose sport hunting in Iceland (e.g. goose legs and liver). With increases in goose hunting popularity, it is expected that there will be a greater generation of raw material waste. This excellent, high quality raw material has now been transformed into a food delicacy.

Products from goose are popular in many countries, however, they are not commonly consumed in Iceland. Trít products are delicate in flavour and are sold as high value products. These Trít products have been on the market since December 2015 and have been well received.

Trít is the founder of Chef Guðný Pálsdóttir. The company was originally established to sell gift baskets containing quality artisan food. Now, Trít has introduced a line of products from game.

Further information:
www.trit.is
trit@trit.is

Cured Monkfish

Monkfish is an underutilized species that is currently not used in processed products. The idea was to make a processed product, similar to cured salmon, but with a different flavor and color. Icelandic wild herbs and berries as well as Iceland moss, bilberries and angelica were used as curing agents. Salt, sugar, and dill seed were also used in the curing formula. A prototype was developed for optimization and scale-up.

Monkfish caught in Icelandic waters is mainly exported abroad in unprocessed form. The project demonstrates technique for further local processing and value creation.

The uniqueness of the product is attributed to the ingredients, cured Icelandic monkfish and herbs. White, lean fish has been sold as cold-cuts to a limited extent. This new product adds variety to what is currently available on the market and it can serve as a special local product for the curious traveler.

The product is a prototype developed by three university students: Hildur Inga Sveinsdóttir, Inga Rósa Ingvadóttir, and Sóley Ósk Einarsdóttir.

Further information:
gudjont@hi.is

Þurrsteiktar

GUL RÓFU FLÖGUR

Turnip chips

Kryddaðar með chili og hvítlauk

Development of snack from Icelandic turnips

The product is turnip chips, oven baked and spiced with garlic, chili and Icelandic sea salt. The turnip chips are ideal snack by the TV, in the car or when reading a book. It is excellent as in-between meal being healthy and wonderfully tasty. In the project, the processing method was optimised.

Turnips are oranges of the north, excellent source of vitamin C and minerals. Despite its qualities and low cost, few applications have been for further processing into higher value products. Small turnips, that don't fit for the retail market, are used in the production of the cips, contributing to better use of this bioresource.

Turnip chips are believed to have high marketing potential as consumers increasingly look for honest and healthy snack alternatives. The turnip chips will be on the market in the autumn when the first harvest of turnips from the farm will see the light of day, thus becoming the first Icelandic turnip snack.

Pomp og prakt Ltd. is owned by Svavar and Berlgind at Karlsstadir in Berufjordur, East Iceland. Last year, Svavar and Berglind put their first produt on market, Bulsur, Icelandic vegetable sausages, Bulsur, first of its kind in Iceland, where an instant success.

Further information at www.bulsur.is or bulsur@bulsur.is

Hot-smoked Arctic Char

The hot smoked Arctic Char is a popular item served in Skagafjordur restaurants and is now available in consumer packaging. The project focused on optimising processing, shelf life and packaging design. The product is available in two varieties, spiced with angelica or with wild herbs.

The Arctic Char has been predominantly sold as raw material abroad for further processing and value creation. The entire process occurs locally with this new product, starting from the raw material to producing the finished product. The Arctic Char and herbs are locally sourced, contributing to increased utilisation of local resources. By supporting existing jobs, the production of the hot smoked Artic Char is contributing to sustainability of the region.

The availability of hot smoked Arctic Char has been limited in stores, both locally and nationally. Just as it is popular on the restaurant menu, the product has been exceptionally well received since its launch. Locals as well as tourists have praised the opportunity to buy this locally produced product.

Kokkhús Icelandic Cuisine is located at Hólar in Hjaltadalur, North Iceland. Kokkhús focuses on providing Icelandic quality products and professionalism.

Our Arctic Char origin lies within Iceland's nature. It's unique taste from adding Icelandic herbs and hot-smoking it with beech, lends the Arctic Char with an even and mild smoky flavour.

Further information:
www.kokkhus.is
thorhildur@holar.is

Hot smoked artisan sausages

The project focused on the techniques behind the processing of hot smoking and producing sausages. and smoking. Two types of ready-to-eat smoked sausages, ready to eat, were developed in the project and are now being sold at Bjarteyjarsandur restaurant.

At Bjarteyjarsandur farm, the farmers work in the spirit of the conservation ecological and sustainability. le way of life. They show nature full respect and try to minimize negative the impacts on their surrounding environment.

To better utilize The project was initiated by their wish to using by-products and create value add products from their meat processing, the farmers began processing their mince. unit, mince, at the same time as creating value from it. The meat is unique, from free-range pigs from roaming on large areas around the farm serve as the source of this unique meat.

Bjarteyjarsandur restaurant has a local focus, striving to serve as much local produce as possible. The smoked sausages are a new item on the menu, with, popular amongst the young and old.

Guðmundur and Arnheiður, farmers at Bjarteyjarsandur, run a family friendly sheep farm, producing lamb meat and wool from the Icelandic sheep. The farm has been in Guðmundur´s family since 1887. Since 2012, the farm-located meat processing unit has been operatinged at the farm and the meat is sold directly to consumers via their restaurant or store.

Further information:
www.bjarteyjarsandur.is
arnheidur@bjarteyjarsandur.is

Handmade Greenlandic herbal soap

Herbal Soap made of imported oils and local herbs:

- Angelica
- Labrador Tea
- Seaweed
- Arctic Thyme
- Juniper Branches

No additives

The product contains branches and other non-solvable items. This project shall give a method to extract the good contents in the Greenlandic herbs to be used in manufacturing of the soap and furthermore determine which chemicals are in the herbs.

The product is using local plants in manufacturing of soaps, that will expand the knowledge of local plants (herbs) and their effect on the human organism.

Furthermore it inspire to make local dried herbs for use in the Greenlandic kitchen.

It keeps the old knowledge about the good effects of the herbs in people minds.

The local made soap will be used in warity of markets:

- Home market for soap without additives (maybe for people with skin problems).

- Tourists that visit Greenland

- Hotels in Greenland

The product is made in Narsaq in South Greenland.

The company has only the owner as an employee. She makes the soap in her kitchen using low tech equipment.

Further information/order:
www.inuityoung.gl

From wood to food

Industrial residual streams

Wood

Single cell protein

Food

Cultivated fish

Icelandic Charr from Swedish wood

Single cell protein consist of fast growing microorganisms. It can be produced from residual process streams from the biorefinery industry. A potential new co-product for the biorefinery industry. Rapid protein production (from kg to tons in 24h).

Environmental benefits! No fish depletion, no deforestation of rain forests, less transports. The residual streams from the cellulose biorefinary are spent sulfite liquor (SSL), SSL-permeate, SSL-ethanol stillage, fiber sludge, hemicellulose hydrolysate.

The demand for fish is estimated to increase with 300% within 40 years. Fish production through aquaculture is projected to double within the next decades and so is the demand for protein for feed. Fishmeal available for aquaculture is now falling short of demand. This shortage must be met by alternative and sustainable protein sources.

Náttúra fiskirækt ehf. has a land-based closed system. The Arctic Charr is reared in a blend of the pure freshwater and lava filtered seawater from our own boreholes providing optimal conditions for health and growth. All our energy needs are met with renewable energy resources.

Further information:
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bjorn.alriksson@processum.se

ÍSKORN for new markets

Five cereal products are now available under the ÍSKORN label:

- Pearled barley
- Barley flour
- Rye flour
- Wheat, wholemeal
- Wheat

Pearled barley is used for food preparations and the flour is used for baking at home or bakeries. Facilities for cereal processing have been established and food labels, including nutritional declaration, have been designed.

Barley is a significant cereal crop, as it is harvested in great quantities in the region. Barley has been predominantly used for dairy cow or pig feed. By using a part of the harvest for food, value is optimized and less currency is used for the import of cereals.

Interest in barley is increasing, especially since the European acceptance of health claims for this cereal. Barley can be used together with wheat for most bakery products. Some products, e.g. biscuits, can be prepared solely from barley as the cereal ingredient. There is great opportunity for Icelandic barley in the food industry and increases in usage are expected.

The ÍSKORN products are produced at the dairy farm Birtingaholt 4 in South Iceland with considerable cereal production. Fjóla Ingveldur Kjartansdóttir is responsible for the cereal processing. She started the cereal processing in 2010 and is now expanding the production to be able to sell products at the Reykjavík market.

Further information:
fjola@foldvegur.is

Íslandus Crispbread

The crispbread is a healthy snack alternative containing seeds and Icelandic moss, mixed with nutritious whey, a by-product of the Icelandic "skyr". The main focus of the project was to finalise the recipe and design the packaging.

The production focuses on sustainable use of Icelandic natural resources and prevents disposal of whey. When discarded, whey can cause eutrophication in waters, triggering major environmental problems. The idea behind the production is in accordance with the Íslandus no-waste philosophy. Extract of Icelandic moss is used for the Íslandus health drink and the rest of the moss extract is used in the crispbread for flavour. To reduce environmental impact, the crisp bread is produced using only renewable resources and local ingredients.

Íslandus crispbread has been on the market since the summer of 2016. It is high in quality energy with no added sugar or additives. The crispbread is a great in-between-meal snack on its own or in combination with cheese and hummus. Íslandus crispbread is a novel food product that appeals to a growing number of people interested in the sustainable, healthy, local food experience and is a great food souvenir for foreign visitors.

Kruss ehf. was launched in 2013 and has since then produced Íslandus health drink, consisting of whey, hand-picked berries and wild herbs. The company is located in Reykjavík.

Further information:
www.islanduskruss.is
info@islanduskruss.is

Íslandus

· FROZEN WILD NATURE ·

Whey Popsicle

Whey Popsicle is a modern twist of a traditional Icelandic recipe, based on cultural heritage and traditional cuisine. It contains wild hand picked berries and herbs from the Icelandic inlands, mixed with nutritious whey, a by-product of the Icelandic "skyr".

Íslandus is a healthy choice for children and adults.

The production of Íslandus focuses on sustainable use of Icelandic nature and prevents disposal of whey. Because whey is high in organic content, it can cause eutrophication in waters when discarded, causing major environmental problems. The production uses only renewable energy resources and local ingredients to reduce environmental impact.

Íslandus Whey Popsicle is a novel product that appeals to an expanding number of people interested in native food experience and healthy treats. It is a great food souvenir for foreign tourist visiting and experiencing the wonder of the Icelandic nature.

Kruss ehf. was launched in 2013 and produces Íslandus Góður and Íslandus Þyrstur health drinks. The company is located in Reykjavík and owned by three women, all sharing the passion for efficient and sustainable use of natural resources and unused by-products.

Further information:
www.islanduskruss.is
info@islanduskruss.is

Icelandic rabbit meat

Analysis of Icelandic rabbit meat for direct sale to consumers

The project focused on analysing different parts of the animal for nutritional value as well as obtaining certification for the processing and sale of fresh rabbit meat.

By processing the meat for direct sale to consumers, Kanina ehf. aims to provide high quality product with little raw material waste. The company aims to fully utilise all by-products and has already tested the skins with promising results.

Rabbit meat is new type of product on the Icelandic retail market. This tender, lowfat meat, is a delicacy in many countries. Currently, Kanina ehf. is the only company breeding rabbits for human consumption in Iceland. The meat has been very well received since its market launch.

Kanína ehf. is the company of Birgit Kositzke, located at Hvammstangi, North Iceland. She is a pioneer in rabbit breeding in Iceland.
The company was established in 2011 with the aim of producing and selling rabbit meat. The company has a special focus on animal welfare.

Further information:
www.kanina.is
info@kanina.is

Jerky of Greenlandic meat

Jerky made of Greenlandic mammals (reindeer, seal and whale).

The project has given a recipe to a soft product, that can be kept at room temperature.

Room temperature is a demand from the stores in Greenland, so they don't have to use their limited cool/freeze capacity.

The product is easier to transport from production to shops, and the customers can use it on trips in the nature.

Better sustainable use of the wildlife (land and sea mammals) in Greenland.

The project is helping to a wider use of local wildlife and at the same time add value to the resource.

Increased use of own resources a decrease imported products.

Better possibilities for hunters to keep an income and thereby keep knowledge of traditional foods.

Role model for other small productions for example sheep-holders use of nature beside sheep.

The jerky product is only aimed at the home market.

There is a long tradition in Greenland for dried products of both meat and fish.

In recent years a lot of imported products are slowly pressing the traditional products out among the young.

A spiced jerky could replace potato chips as a healthy alternative.

The Jerky is produced in Narsaq in South Greenland.

Products are produced in a small factory by local business men in their spare time.

Further information:
Email jfk@greennet.gl
Mobil nr +299 270905

Herbal mustard

Herbal mustard is a variant of Sælkerasinnep Svövu (Svava's gourmet mustard), a mustard made from Swedish mustard seeds and Icelandic beer. Icelandic herbs and other flavour sources were tested in the mustard and included dulse, angelica, arctic thyme, bilberry, cumin, and aquavit. The optimal flavour combinations were arctic thyme/bilberry and aquavit/cumin. Processing, nutritional value analysis, and shelf life testing were completed.

Herbal mustard showcases how underutilised Icelandic herbs can be applied in new products. The ideology behind the product is to contribute to the sustainability of local Icelandic food products and to increase domestic production.

The tradition for pungent and sweet mustard is not as strong in Iceland as is in other Nordic and European countries. However, many Icelandic consumers are introduced to the product by living in or visiting those countries. Since its launch, Sælkerasinnep Svövu has received excellent feedback, fulfilling a gap in the market.

By adding to the product line, the company strengthens its competitiveness in the market.

Sólakur was founded by entrepreneur Svava Hrönn Guðmundsdóttir, a pharmacologist that has made mustard for her family and friends for more than 20 years. Solakur was established in 2014, the same year its first product was launched, Sælkerasinnep Svövu. The production takes place at Matis Innovation Centre, Reykjavík.

Further information:
sinnep@sinnep.is
tel: + 354 895 0035
www.sinnep.is
www.facebook.com/Saelkerasinnep

Kelp tea

Sugar kelp, blueberries, and lemon are the main ingredients in this tea. The sugar kelp and the blueberries provide antioxidative activity and the sugar kelp is rich in vitamin B and minerals. The product is intended for health conscious young adults, 16-26 years of age. The prototype was developed for optimization and scale-up.

Various types of seaweed, such as kelp, grow in great numbers along the coastline of Iceland and are mostly unutilized. The project demonstrates a way to utilize and create value from this excellent bio resource.

Tea has gained more popularity in Iceland in the last ten years, especially with the younger generation. At the same time, seaweed is gaining more interest among consumers as an exotic ingredient rich in minerals. The prototype product fits well into these trends.

The product is a prototype developed by five university students:

Lilja María Stefánsdóttir,
María Halldórsdóttir,
Melkorka Ægisdóttir,
Svandís Þóra Sæmundsdóttir and
Sylvía Kolbrá Hákonardóttir

Further information:
gudjont@hi.is

Soups in consumer packaging

The project focused on developing and standardising processes for production of soups to be sold frozen in consumer packaging. Two types of soups were developed, a traditional meat soup and yellow bean soup.

Vallarbú produces and grows most of the raw materials including meats, vegetables, and herbs to make the soups. The whole process from raw material to finished product is thus local. The soup sells well locally, contributing to the sustainability of the region.

A growing number of consumers consider the sustainability of foods they consume, both at and away from home. As the demand for locally produced food is increasing, the number of tourists is growing in Þingeyjarsýsla. There is therefore great potential for Vallarkot products.

Vallakot farm produces a variety of products from fresh and/or frozen meat, arctic char and rainbow trout as well as jams, spices, mushrooms, and preserved vegetables. The products are sold at farmers' markets and directly to consumers.

Further information:
www.vallakot.is
vallakot@simnet.is

Lamb cold cuts for sandwich

The product is cold cuts made from lamb flanks. The project focused on the processing technique for making cold cuts and quality measurements. The project was a success and the product is now on the market, mainly being sold to hotels and restaurants in the Borgarfell area.

Lamb flanks are byproducts from the meat processing at Borgarfell.

The product contributes to better utilisation of the raw material and maximises value of meat byproduct.

The project was initiated by a hotel request for locally produced cold cuts. The product has been a success and is now served at several hotels and restaurants in the area.

Borgarfell is a family run sheep farm in Skaftártunga that processes their own local meat from lamb and mutton. The production can be bought directly from the farm.

Further information:
www.facebook.com/borgarfell/
borgarfell@simnet.is

Oyster mushroom pesto

The product is a pesto made from oyster mushrooms. The project focused on developing processes for production of oyster mushroom pesto.

The fresh oyster mushrooms used in the pesto are left-overs from mushroom production. Cut offs and discoloured mushrooms are used as well, reducing further raw material that would otherwise be discarded. By-product utilization occurs from growth of the mushrooms, using low value barley straw as a cultivation medium, to production of the actual pesto.

The product is new on the market, offering a new mushroom based product. The launch of this product secures the foundation for employment of more workers and further opens the possibility for more spinoff products in the exotic mushroom market.

Sælkerasveppir produces oyster mushrooms for the Icelandic market.

The aim of the company is to offer fresh, higher quality, price competitive product relative to what has been available. Local raw material is used for the cultivation of the mushrooms, supporting the local economy. The company is located in Hafnarfjörður, south-west Iceland.

Further information:
www.sveppur.is
ragnar@saelkerasveppir.is

Langoustine pate

The main ingredient in the pate is meat/mince from langoustine claws which is flavorful and colorful and gives a specific taste and color to the product. The main goal of the project is to increase value of underutilized raw materials. The product prototype was developed for optimization and scale-up.

The main ingredients in Langoustine pate are meat from langoustine claws and cod belly flaps, both underutilized products.
Until recently, the claws have been sent to the landfill. With new techniques, the meat can now be separated from the claws that were previously too small for processing.

Utilizing meat from the langoustine claws directly reduces organic waste. Cod belly flaps have been mainly exported due to low demand within the country. Utilizing the cod belly flaps locally creates value added product and reduces the transportation and pollution that would otherwise accompany export of the byproduct.

There is currently no other langoustine pate on the Icelandic market. The mince is relatively inexpensive and imparts a strong langoustine flavor, an excellent ingredient for the production of langoustine derived products. The product could serve as an excellent addition at the Christmas table or can serve as an interesting local product offering for the tourist.

The product is a prototype developed by seven university students: Gunnar Ásgeirsson, Inga Ósk Jónsdóttir, Margrét Eva Ásgeirsdóttir, Sigfús Örn Sigurðsson, Snæfríður Arnardóttir, Stefanía Jónsdóttir and Þórhildur Sigurðardóttir.

Langoustine pate was the winner of Ecotrophelia Iceland 2015.

Further information:
gudjont@hi.is

Marina Mayo

Mayonnaise is one of the most popular condiments in the world. Known for its rich and creamy texture, it is often flavoured with all sorts of spices and sauces, used as dip, or simply used on its own to give a sandwich that finishing touch.

Though it is calorie rich, its simple ingredients are not unhealthy. However, there is room for improvement when it comes to the nutritional value of mayonnaise, which is where Marinox, the producer, comes in.

Marinox new product, Marina Mayo, is mayonnaise enriched with Omega 3 fish oil, algae extract and fish protein hydrolysate. The numerous beneficial qualities of Omega 3 fatty acids are renowned, but the general public may not be familiar with the many benefits of consuming algae extract.

Analytical in vitro research confirms MarinoxTM algae extract:

- Has very high levels of bioactive substances
- Has outstanding antioxidant activity
- Has high anti-inflammation activity
- Has anti-diabetic activity
- Kills cancer cells

Additionally, numerous researchers have shown that peptides processed from fish proteins have many health benefits. Including, but not limited to, reduction of blood pressure and stabilizing postprandial blood glucose responses.

Incorporating these healthy ingredients into mayonnaise - which can then be used to create different types of flavoured sauces, e.g. curry sauce and wasabi sauce - allows consumers to easily add important fatty acids to their diet, and benefit from the healthy effects of algae extract.

Marinox was founded in 2011 and is based in Reykjavik, the capital of Iceland. At Marinox we build on years of extensive research on bioactives in marine macro algae.

Our vision is to create value from underutilized natural resources, to apply scientific and technical excellence to developing marine algae bioactives and new applications for them – in a socially and environmentally responsible way for the benefit of current and future generations.

Further information:
rosa@marinox.is
marinox@marinox.is

Marinox Ltd
Vinlandsleið 14, 113 Reykjavík
Tel. +354 450-0100

Food souvenir from sheep meat

The product is a cured, dried, sheep fillet. The project focused on the technique behind producing cured and dried sheep meat as well as the general Seglbúðir meat processing work flow.

The farmers at Seglbúðir aim to fully utilize their meat to produce high end products, creating more revenue for the operation of the farm.

With the rise of tourism in Iceland, the market for locally produced food products has grown. Tourists look for something special, with a story, and often like to bring a piece of their experience back home with them. Dried sheep fillet from Seglbúðir is tasty, locally handcrafted, and is convenient to take home.

At Seglbúðir farm, the small-scale slaughterhouse has been operating since 2014.

The slaughterhouse opens up the possibility for less transport of animals as the nearest slaughterhouse is over 200 km away.
In connection with the slaughterhouse, a meat processing unit has been set up, creating opportunities for further processing and value creation. All processing occurs on this farm.

Further information:
www.seglbudir.com
info@seglbudir.com

Feedstock with future

Molta in Eyjafjörður in Northen Iceland has the role of receiving organic waste and turning it into compost. The project was to find ways to market the compost for consumers in appropriate packings and declarations of contents and use.

The compost is used by local farmers and gardeners but without much profitability for the company as the price for the compost is low and some restrictions are on using the compost the year round because of residues from slaughterhouses used in the compost.

Good compost is without smell or heat, darkbrown, pH is around 7,0 and with C/N ratio less than 35. The compost from Molta is sold in buckets and/or in truck loads depending on what the customers want. The compost is sold in two categories; the usual compost which can be used in gardens for vegetables and other plants for human consumption and the stronger compost which can only be used for trees or in fields where animals do not graze the first year.

Two other participants in this project, the municipality of Tálknafjörður and the farm at Seglbúðir also had the same vision to make value of an unused feedstock and in the project the rules and regulations were clarified for them to follow

Further information:
olof@molta.is
www.molta.is

Breakfast sausages

The product is fresh breakfast sausage made from minced lamb meat. The project focused on the processing technique for making fresh sausage as well as quality measurements. The project was a success and the product is now on the market, mainly being sold to hotels and restaurants in the Borgarfell area.

Minced lamb meat is a by-product from meat processing at Borgarfell. The breakfast sausage product contributes to improved utilisation of raw materials and maximises product value from lamb meat.

A request from a hotel to produce fresh, locally produced breakfast sausages prompted the project. The product has been a great success and is now being served at several hotels and restaurants in the Borgarfell area.

Borgarfell is a family run sheep farm in Skaftártunga that processes their own local meat from lamb and mutton. The processed meat can be bought directly from the farm.

Further information:
www.facebook.com/borgarfell/
borgarfell@simnet.is

Precooked Barbeque Beef Ribs

The barbeque ribs are precooked and marinated, ready within 20 minutes on the grill or in the oven. Delicious and handy anytime you want give you self a treat. The ribs are sold both fresh and frozen. In the project, processing was optimised and packaging developed.

The cattle at the farm are solely raised on hey and mixed grain feed, free of antibiotics. Usually the meat from the ribs is used for mince. By further processing the ribs, higher value is created, strengthening the operational capacity of the farm.

The product is sold directly to consumers from the farm. The farm is located close to large and popular vacation area which creates a great opportunity for marketing the product. Currently, no other similar product is on the market.

Unnsteinn and Valdís at Langholtskot farm in Hrunamannahreppur, South Iceland, breed and raise cattle from Galloway, Aberdeen Angus and Icelandic breeds. Since 2010 meat processing unit has been operated at the farm and the meat sold directly to consumers. Products include steaks, mince, burgers, goulash and gravad meat.

Further information:
www.kjotfrakoti.is
lkot@simnet.is

Graved beef

The project focused on developing and standardising processes for production of graved beef from top round. The product is now on the market.

Vallarbú strives to maximise the value of their raw material, processing their beef into high end, ready-to-eat product. This is a valuable step in supporting sustainability.

A growing number of consumers consider the sustainability of their food, consumed at and away from home. At the same time, as the demand for locally produced food is increasing, the number of tourist is growing in Þingeyjarsýsla. There is therefore great potential for Vallarkot products.

Vallakot farm produces a variety of products from fresh and/or frozen meat, arctic char and rainbow trout as well as jams, spices, mushrooms and preserved vegetables. The products are sold at farmers´ markets and directly to consumers.

Further information:
www.vallakot.is
vallakot@simnet.is

NETTLE LIFE

Three products are available under the NETTLE LIFE brand name:

- Nettle leafs, crushed; for tea
- Nettle and mint leafs, for tea
- Nettle powder, for boost drinks etc.

The harvesting and drying methods were completed and a quality manual was prepared. Nutrients were analysed for nutrient declaration and microbes for food safety.

Nettles are seldom found as a part of the Icelandic vegetation. However, at the farm Kálfanes, nettle has grown wild for centuries. This is the resource for production of NETTLE LIFE. Nettles are traditionally used for food, e.g. for tea. Nettle products are now imported to Iceland. The NETTLE LIFE products will replace imports and make use of domestic resources.

Ragnheiður Harpa Guðmundsdóttir is the initiator and producer of NETTLE LIFE products. She lives at the farm Kálfanes in Northwest Iceland. Her company Kálfanes ehf has received a certificate for production of dried plants for food use from the food inspection authorities in the region.
The products are now sold in speciality food markets in Reykjavík.

Contact information:
ragnharpa@gmail.com

Icelandic Beef Pastrami

The Pastrami is made of fat marbling beef brisket, marinated in brine with some Icelandic herbs as thyme, birch and angelica, for 5 days. Then the muscle is seasoned with variety of spices. At last the product is full cooked. This product fits best as toppings on bread, thin sliced with mustard and pickled cucumber.

The cattle on the farm are free range and mainly grass fed, but in wintertime they also get some barley with hey from the summer before. The fields are partially fertilized with manure from the cows. The pastrami is first in a range of new product line that aims to higher value creation of their meat and creating year round jobs for the family.

The cattle farm "Leirulækur" in West Iceland sells its products under the brand "Mýranaut", directly to consumer.

The farmers, Sigurbjörn and Guðrún, run a family farm with 90 free range cows, that get additional feed during winter when snow covers the ground. The breed is mixed of Aberdeen Angus, Galloway and Limousine, and also Icelandic cows. The calf will be with the cows the first 9 months.

Further information:
www.myranaut.is
myranaut@myranaut.is
Tel +354-868-7204

Pearl barley – cool grain for fine cooking

Móðir Jörð introduces Pearl barley as a "cool grain for fine cooking". Pearl barley is a new product in our existing barley line. The product line will include the plain pearl barley and two types of barleyotto which will include the vegetables and spices necessary to cook a quick but healthy meal in a simple way with Icelandic flavours.

Barley is one of the oldest cultivated cereal in Europe and well known for its nutritional qualities such as high fiber content.

Móðir Jörð has promoted barley as a healthy food product, for more than 20 years and various products have been developed based on the concept of wholegrain.

Iceland is the most northern country in the world where people cultivate grain which explains the "coolness" of the product. We build on this in the marketing of the product and use packaging as an opportunity to educate the consumer about things we care about, such as its place of origin (Vallanes) and how we grow and produce our food in respect of the environment (organic).

Móðir Jörð products originate from the organic farm Vallanes in East Iceland. The brand is recognised for organic Icelandic products based on barley and vegetables grown in Iceland. Móðir Jörð is striving to promote healthy lifestyles and organic farming and food production in Iceland and beyond.

Further information:
www.vallanes.is

photos @Maja Biilmann Trolle

Reklinger
Greenlandic delicacy

Reklinger is a naturally freeze dried product of sliced Greenland Halibut.

The project should provide a method to make a product as close to the naturally product as possible using technology.

To get added value to a limited resource and provide all year jobs and possibilities for the hunter/ fisher to earn a living all year.

It's a traditional high value product produced for the home market.

It is widely used in connection with several specials days.
National Day, childrens birthdays and so on.

The manufacturer is
Rodebay Fish Aps

The product is produced in a small settlement in the northern part of the Greenlandic West coast

Further information:
www.rodebayfish.com

Rhubarb Juice

The product is a rhubarb juice, made solely from locally grown rhubarb and organic cane sugar. The production process is focused on protecting the natural taste and good qualities of the rhubarb.

The rhubarb juice is bottled and labeled with a description of the contents and the origin of the product.

This project is focused on creating educational opportunities for small-scale agricultural producers in cooperation with the Environmental Agency of the Faroe Islands. Furthermore the durability of the product will be tested in cooperation with the Food and Veterinary Agency of the Faroe Islands.

Jobs are scarce in the village of Húsar on the isolated island of Kalsoy, especially for women.

Húsar provides a rich setting for producing herbs and vegetables, specifically rhubarb, which historically has been an important source of food.

Johanna Maria sees an opportunity in producing a high-quality rhubarb juice from the local resources.

The intended market for the rhubarb juice is tourists, but the youth on the Faroe Islands have also discovered the qualities of the refreshing juice.

The sale of rhubarb juice and other products made from rhubarb is a substantial contribution to the local economy.

The producer is Johanna Maria Isaksen, 27, who lives in the village of Húsar. Her expertise builds on the participation of her mother and grandmothers cultivation of rhubarb products for many years.

The juice is produced in the local kitchen, which has been equipped and approved for that purpose. Sustainability and product development are an integral part of the production process.

Further information:
johanna_m_isaksen@hotmail.com

Rhubarb and Meadowsweet syrup

"Use this flavored simple syrup to spruce up everything from cocktails and iced tea to fruit salad or plain yogurt"

Rhubarb syrup
Produced from rhubarb grown in Húsum, a small village on the remote Faroese island of Kalsoy, this artisinal syrup contains only locally grown rhubarbs and organic cane sugar. The production is kept close to it´s roots by simply reducing the syrup until it thickens and deepens in flavor before packaging for sale in small glass containers.

This product is part of the "Food as Souvenirs" initiative organized by the Outer Island Association of the Faroe Islands to promote the small communities on the most remote of the Faroe Islands.

Meadowsweet syrup
Meadowsweet (*Filipendula ulmaria (L.) Maxim.*) is a common herb on the Faroe Islands, where it grows naturally in the pastures and mountain ranges. The herb has a sweet fragrance and contains beneficial oils in its leaves and flowers that give this syrup it´s unique character.
To produce the syrup, the herb is first dried after which the leaves and flowers are boiled. The resulting liquid is strained and reduced with organic cane sugar until the right viscousity is obtained. The syrup has a sweet taste of caramel, and is well suited for ice cream, desserts, and coffee.

This product is part of the "Food as Souvenirs" initiative organized by the Outer Island Association of the Faroe Islands to promote the small communities on the most remote of the Faroe Islands.

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Herring from Ósnes

Ósnes has been making herring-products for the last 3 years. The herring we use in our products is all provided by Loðnuvinnslan hf. Fáskrúðsfirði and is freshly cought by Hoffell SU-80 outside the east coast of Iceland. We marinate/ pickle the herring by an old family recipe and have mostly been selling to hotels and restaurants.

We wanted to expand our business by making our products available in grocery stores and needed to make packaging in consumer size, suitable for that marked.

We are knowledgeable of the fact that by using a product caught close to the place we manufacture the product, we are using fresher raw materials, enhancing the quality of the product with less waste.

We have been selling to hotels and restaurants so far but now we embark on the local consumer market.

Ósnes ehf. is a small family owned company that was established in 1996.

We are located in the east fjords of Iceland in the small fishing town Djúpivogur.

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Silver Smelt

Silver Smelt is very inexpensive in the Faroe Islands. Today it is mostly minced and exported at low price. This project aims to develop prepared products of this versatile resource. Adding a specific Faroese flavor, the silver smelt has been crusted with dried fish and garnished with an angelica mayonnaise.

Not much is known about culinary properties of Silver Smelt, and thus most of this project has centered on determining these. The durability of the product will be tested in cooperation with the Food and Veterinary Agency of the Faroe Islands.

The Faroese economy heavily depends upon the export of fish, and we would like to optimize the products in an innovative manner. We focus on promoting a cheap and relatively unknown fish species to ease the pressure on the more expensive and threatened fish stocks.

The New Nordic Cuisine movement has highlighted the fantastic natural resources of the Faroe Islands. We would like to make them more accessible and marketable and promote the specific Faroese flavor. The home market is a good test-market, but we aim for an international market.

The producer, Gutti Winther, 34, is a chef, educated from The Paul in Denmark and a member of the New Nordic Cuisine Initiative.

Gutti is also the owner and host of the Faroese culinary television program "Spískamarið".

Faroese raw materials, flavor and knowledge combined on the Faroe Islands.

The project was initiated by a researcher, a primary producer and two chefs, a perfect constellation for innovation. The process has been incredibly enlightening, and we are excited to see where it leads us.

For the time being: Bon Appétit.

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Peninsula mushrooms

Peninsula mushrooms
- *Leccinum rotundifoliae*

The product is dried *Leccinum rotundifoliae*, retailed in consumer packaging. The project focused on setting up certified processes for drying and packaging of wild mushrooms as well design of the packaging.

Quality *Leccinum rotundifoliae* grows in great numbers on the Melrakkasléttа peninsula. Until now, this is an underutilized Icelandic resource. The mushroom is handpicked, creating seasonal work for 2-3 persons.

Leccinum rotundifoliae is an edible mushroom, popular amongst chefs and gourmets. Icelandic *L. rotundifoliae* has, until now, not been available commercially.

Arctic Angling is located in Raufarhöfn in the northeast of Iceland. The packaged peninsula mushrooms serve as Arctic Angling´s product debut into the market place. Additionally, the company operates brown trout and arctic char fishing tours with an experienced fishing guide on lakes, creeks and rivers of the peninsula Melrakkasléttа and the peninsula Langanes in the far northeast of Iceland. These are unique areas that are somewhat off the beaten track and seldomly visited by tourists in Iceland.

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Wholesome berry products

The Strandaber line of wild berry products originates from Strandasýsla county in North-West Iceland. The berries are either cold-pressed or pressed after heating to produce bilberry juice (BLÁMI).

The remainder (MASSI) is used for production of other foods (e.g. boosts) or sweetened and dried for snacks. The fresh products are preserved by freezing. No preservatives and artificial sweeteners and colours are used.

Strandasýsla county is known for its wild berries. The county is sparsely populated and only a small fraction of the berries is picked and used for food. The Strandaber products are made from berries which are hand-picked in the wild so the vegetation is not spoiled. The land should be a sustainable resource of wild berries.

The wild berries of Iceland have a strong health image and people have used them for centuries. Now, antioxidants (polyphenols) and antioxidant activity in Icelandic bilberries have been measured. Both the polyphenols and the activity were higher than in imported blueberries. The wholesomeness is the driving force for marketing of Strandaber berry products. They will be marketed in health markets and sold as local products to tourists.

Signý Ólafsdóttir is the initiator of Strandaber products. She grew up at the farm Sandnes in Strandasýsla county where bilberries can be picked in wide open spaces. The berries were used for traditional sweetened juice and jam which were used through the winter months. After working in the fish industry and the banking sector, Signý decided to develop the traditional berry products for the health conscious people.

Further information:
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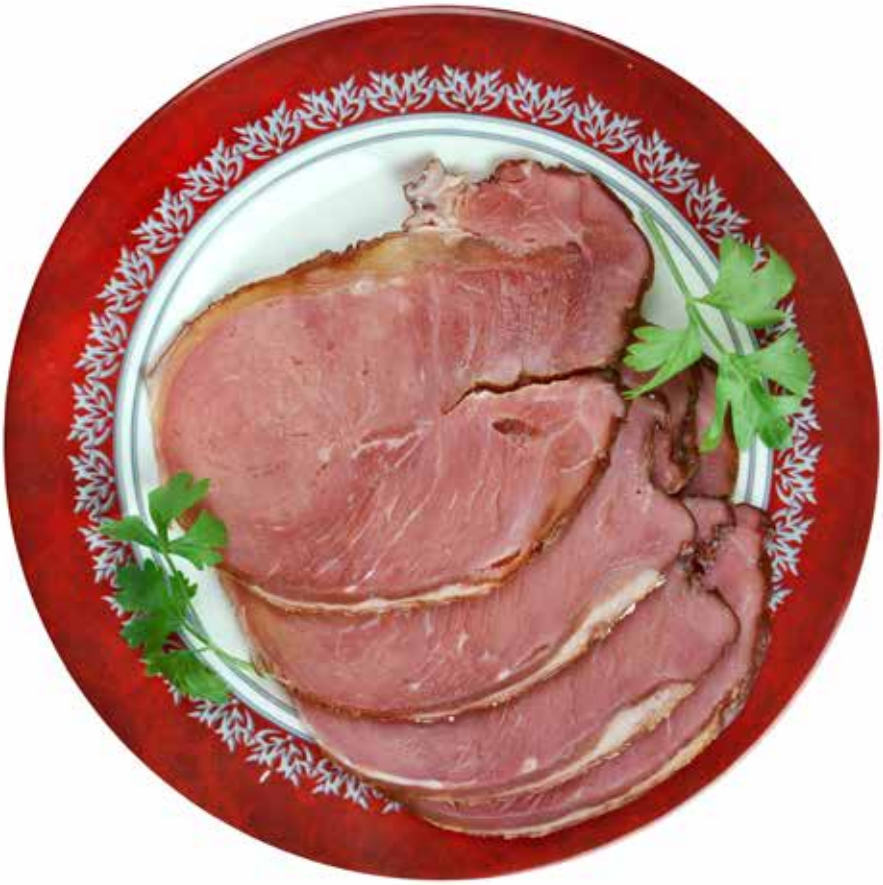

Determination of PAH in Smoked Food

The aim of the project was to investigate Polycyclic Aromatic Hydrocarbons (PAH) concentration in food products smoked with different smoking methods in Iceland. The work was devided into three main tasks:

- Modify the Matís in-house analytical method for the determination of PAHs in smoked food products to achieve a more robust and efficient process, which is both resource and time saving, by implementing a one-step accelerated solvent extraction (ASE) procedure.
- Analyse four marker PAH compounds in smoked meat samples obtained from different Icelandic meat producers and compare the ∑PAH4 levels in the meat when different smoking methods have been applied.
- Advice the producers about possible changes in the production to ensure food safety by reducing the PAH contamination below the maximum limits according to Regulation (EC) No 835/2011.

The main results were:

- The concentrations of benzo[a] pyrene (BaP) and ∑PAH4 per slice of smoked lamb meat were in all cases below the maximum levels of 2 µg/kg BaP and 12 µg/kg ∑PAH4, set in the Commission Regulation (EU) 835/2011. This indicates that consumption of this food product poses an acceptable risk of exposure to PAHs for the consumers.
- In case the concentration of PAH4 compounds in the smoked product are close to or exceed the EU maximum limits, the risk of exposure to PAHs for the consumer can be lowered by cutting off the surface of the product before consumption.
- The composition of the smoking fuel seems to be the main source for PAH contamination in smoked lamb meat.
- Using gauze during the smoking process seems to be an effective way to lower the PAH contamination in the product for most of the smoking methods investigated.
- In terms of PAH contamination of the smoked meat there were no noteworthy differences between industrial and local smokehouses.

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Bioeconomy consortiums – biorefineries

Bioeconomy consortiums throughout the Nordic countries were founded to share knowledge and work on common goals connecting academia, research and industry together for further development and implementation of the bioeconomy. The project was planned in collaboration with Nord Regio on the basis of their prior in-depth regional study of the Nordic bioeconomy in 2014.

A network has been established with key players from Forsså region in Finland and Örnsköldsvik for planning innovative research in support of bio-industries in these regions and subsequent strengthening of the regional bioeconomy, specifically targeting Nordic and European H2020 funds for collaborative projects in the field of biorefineries. Participating countries are Sweden: SP-Processum & Lund University; Norway: SINTEF Materials and Iceland MATIS. Denmark: DTU, the Center of Biosustainability. Finland: Häme University of Applied Sciences, Forssa and Natural Resources Institute Finland Forssa.

A test project has been initiated for utilizing side streams from wood biorefineries for production of single cell protein enriched in biocolorants for fish feed using a novel thermophilic bacterium was carried out by, MATIS, Lund university, SP-Processum and Domsjö in Örnsköldsvik.

Two Finnish projects involving research groups in Forssa have been started with MATIS as a foreign partner: 'Value added compounds from food industry by-products' and 'Utilization of algal components and biomass as food, feed and fuel'.

Two Nordic project applications Wood4Chem and 'Advancing bioeconomy by practical application of research results in education and enterprises' and two EU-H2020 applications, Thermorefine and Microbricks, to the European Union have been submitted by the consortia.

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Bio·Bú

Lífrænar mjólkurvörur

Organic skyr

Aurora's aim is to combine old Icelandic traditional methods in dairy processing with a new ideology in food manufacturing that focuses on the simplicity of keeping all ingredients as close to their natural state as possible, as well as being locally grown and pure. The cows from the Neðri-Háls farm are exclusively grass fed.

Aurora Organic Skyr is a non fat dairy product that is similar to yogurt. It is flavoured with locally grown flower honey and wild blueberries. Added to the mix is kelp powder that has flavour enhancing effects as well as adding texture and nutrients.

The product was developed with the key factors biological diversity, purity, health and environment in mind. During the development the life cycle assessment (LCA) methodology served as a guideline to ensure success in implementing the ideology behind the product.

There is an incredibly wide selection of yogurts available on the European market today. Consumers make their decisions based on segments that include regular, active health, diet, plain, kids', budget and organic, only to name a few. Aurora Skyr could easily occupy a niche in this market and fall under the active health and diet categories as well as the organic one. Skyr has the nutritional benefits of being very low in fat and high in protein and the Aurora Skyr has been enhanced with active ingredients from the kelp.

BioBú is the first organic dairy company in Iceland (BioBú ehf.) establish 2002 and first product (three flavours of yogurt) was put on the market third of June 2003. Biobú specialises in producing organic milk products. The dairy is in Reykjavik, grown from 100m^2 to 650m^2 the year 2013.

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Chondroitin from cartilage

Cartilage saccharides - chondroitin sulphate

The project results indicate that processing of the chondroitin sulphate from shark cartilage is a simple procedure and may be profitable. Chondroitin sulphate shows considerable bioactivity, and is commonly used in nutritional products mainly against joint pains, both for humans and pets.

Shark is mainly by-catch and the cartilage is discarded today. In this project we set up a production line to isolate chondroitin sulfate from the cartilage.

Chondroitin sulphate supplements are thought to help slow or prevent the degeneration of joint cartilage. Unlike many medications available to treat arthritis pain and inflammation, chondroitin sulphate supplements have very few side effects.

Holtsbud 8 has specialized in production of fermented shark meat and is among the largest suppliers of that product. The company intends to diversify their product line and fully use the raw material into valuable products

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