SW-GROW Teams Meeting 25 May 2022

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Present

Andrew Mackenzie	Lews Castle College
Dr Alasdair Macleod	Lews Castle College, Stornoway
Dr Jonas Steenholdt Sørensen	Arktisk Teknologi Center, Greenland
Prof Lisbeth Truelstrup Hansen	Arktisk Teknologi Center, Greenland
Jon MacLeod	An Lanntair
Prof Francesco Gentili	Swedish University of Agricultural Sciences
Dr Calle Niemi	Swedish University of Agricultural Sciences
Dr Roy Bartle	Lews Castle College
Dr Masami Inaba	NUI Galway
Dr Ronan Sulpice	NUI Galway
Prof Rúnar Unnþórsson	University of Iceland
Fionnán Ó hÓgáin	Údarás na Gaeltachta, Na Forbacha, Co. na Gaillimhe
Aisling Nic Aoidh	Údarás na Gaeltachta, Na Forbacha, Co. na Gaillimhe

Apologies

Dr Angus Murray	Lews Castle College
Dr Agnes Mols Mortensen	TARI – Faroe seaweed

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Minute

	ITEM	Comment	Decision	Task	Who?	By date
1	**Approval of minute of SW-GROW Galway Meeting 7-8 April 2022 (revised)**	The minute was approved.	No matters arising.	Send to Angus for uploading to website	Andrew	Done
2	**Matters arising from Galway Meeting 7-8 April 2022 – progress with assigned actions.**	No samples have yet been received.	It was agreed that Roy would send samples to DTU when available.	Send samples of seaweed to DTU	Roy	
	Branding	Regarding branding-feedback has been received from Rúnar but it would be good to have more feedback on logo proposed. No feedback had been received on what the logo was meant to represent.		Circulate a note to all the partners asking them to give their views on the representation of proposed logo.	Jon	

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	ITEM	Comment	Decision	Task	Who?	By date
		No progress	Progress needed	Launch the SW-GROW brand to SMEs and ask for feedback that they will comply with the criteria for use and start using the product for their seaweed.	Jon	
		No progress	Progress needed	Issue a press release to publicise the brand and logo to relevant industry publications.	Jon	
		No progress	Progress needed	Develop a road map for continued R&D on developing the brand identity so that there is legacy from the SW-GROW project.	Jon	
		No progress, but it was emphasised by Partners that the brand needs to have a foundation in sustainability environmental credentials (Protected designation of origin (PDO)) or PDI.	Progress needed	Emphasise to potential users that by adopting the brand they will be supported to move towards renewable energy [and sustainable] targets and may be able to seek support from other agencies in that particular country for doing this.	Jon	

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		Following discussion, it was agreed that we know that the brand is seaweed from the Northern Peripheral Area with clean and cold waters using as little energy as possible. The characterisation and DNA testing are backup systems to protect the branding - but the branding itself is merely stating that it is quality seaweed from the NPA area and is sustainably produced and environmentally processed.				
		It was agreed that, at this late stage, a simple "flyer" should be developed that can be translated into other languages and distributed to SMEs to see if they would like to sign up to the concept.	Develop a simple "flyer"	Develop a simple "flyer"	Andrew	Done
	Website	A professional web designer was approached and an indication of cost received-that was prohibitive. Contact also made with colleagues in the UHI that seems to be a more realistic cost. Discussions continue and a costed proposal is expected in due course.		Investigate practicality and cost of using a professional web designer to improve the quality of the SW-GROW web sites.	Andrew	Done

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		This has been discussed with potential website developers within the UHI.		Discuss with the developer if they could include "stories" and / or "profiles" of Partners.	Andrew	Once the development is underway
		This can be done once the development is underway.		Include names, qualifications and photos of "the team" in the web site.	Andrew	Once the development is underway

	Item	Information
3	Progress with work package deliverables for Period 5 and 6	**Lews Castle College** **Andrew Mackenzie**: **Work package Management**. Writing reports, preparing for meetings, drafting minutes, and circulating.. Participated in the recent NPA seminar in Copenhagen on 19 May to promote new projects on use of H_2 in agriculture and developing a software solution to help householders to choose the optimal mix of renewable energy technologies. Unfortunately, it was discovered that because of the hard Brexit participation would not be possible except for some small openings as an Associate Partner - but no salaries could be paid - just travel expenses so this would be very challenging. It is hoped that in future years Scotland will manage to develop a special relationship with the NPA to allow full participation. **Dr Angus Murray** Gathering seaweed Running seaweed drying experiments with tumble drier Assisting with drying rig operation, **Dr Roy Bartle** Work has continued over the past month in convective seaweed drying of A. esculenta. A secondary thermal safety trip switch has been procured to permit unattended overnight operation of the rig, enabling the long duration experiments associated with low temperature and air velocity conditions. Numerical work optimising drying energy systems, and on energy recirculation continues. **Dr Alasdair Macleod**

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		Working with two of the research students on software and gathering data which will feed into the model that can be used by SMEs to choose suitable Renewable Energy options for their particular processes.
	Update on progress with work packages	**Swedish University of Agricultural Sciences** **Work packages T2.6.1 and T2.6.2** Recently submitted a paper on protein analysis that involved other partners in supplying information. The plan for finalising the carbohydrates analysis continues but more work is needed to finalise the colorimetric and the ash content studies. A presentation was given on the content of the offering to the journal on the rapid, accurate spectral determination of seaweed protein contents. This paper explained the use of spectroscopic analysis to determine the protein content of seaweed. The biochemical characterisation has been completed to include the protein contents-total amino acid quantification and also the nitrogen: protein ratios. From approximately 50 samples it has been possible to determine the amino acid contents for a range of seaweed types-Alaria esculenta , Saccharina latissima, Palmaria palmata , etc and to use the data to predict the proteins using infrared spectra - Fourier transform infrared (FTIR) and near infrared (NIR). The benefit of this approach is that there is no pre-processing (besides drying and grinding), no chemicals, very quick and straightforward.
	Update on progress with work packages	**An Lanntair** **Work Package T2.6 Characterisation** **T2.2 Development of Brand identity** See above.
	Update on progress with work packages	**Arktisk Teknologi Center, Greenland** **WP 1. Quality Improvement** **T1.1.1** Just completed a bachelor of engineering project looking at seaweed drying and survival of a pathogenic bacillus - and it turned out that this particular microorganism could not grow in Alaria esculenta. There were indications of inhibition so this might have important occasions for food safety prospects; but this obviously needs further investigation. Also working on a “shelf-life” article involving Saccharina latissima from Denmark looking at different quality aspects - biochemical, sensory, physical and microbiology and has been accepted in the paper Frontiers in Food

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		Science and Technology special issue "Algae as Food and Ingredient: From Production to Consumer Acceptance". as an abstract and then has to be peer reviewed. It is hoped to be finished by June 2022.. The article title is: *Post-harvest Quality Changes and Shelf-life Determination for Washed or Blanched Sugar Kelp (Saccharina latissima).* The Abstract is: *Sugar kelp (Saccharina latissima) is a native European brown macroalga with the potential to become a vital part of the green transition of the food industry. Knowledge of the shelf-life of kelp is essential to designing the food supply chain and ensuring high sensory quality for the consumers. However, information is currently lacking on how different post-harvest treatments affect the shelf-life of kelp. Kelp associates such as manufacturers, authorities and consumers need to understand the kelp and the quality limits. The objective of this study was to establish the shelf-life of refrigerated sugar kelp exposed to five post-harvest treatments and analyze their effect on the quality of the kelp. The treatments included washing in seawater, washing in potable water, blanching for 2 minutes in seawater, as well in potable water and untreated control. Based on sensory analysis, the refrigerated (+2.8 °C) shelf-lives for all treatments were 7-9 days. The end of the sensory shelf-life correlated with >7 log(CFU g-1) aerobic viable counts determined on Marine agar and dominance of putative specific spoilage organisms from the Pseudoalteromonadaceae and Psychromonadaceae families. Untreated and washed sugar kelp continued to respire and consume carbohydrates up to five days post-harvest but maintained the original fresh texture profile as well as mannitol, free amino acids, and citric acid within the shelf-life. However, storage time decreased vitamin C and free amino acids in the sugar kelp. Both blanching treatments changed texture and color and reduced iodine and vitamin C content while retaining components such as fucoxanthin, chlorophyll a and β-carotene. The type of water used for washing or blanching did not affect the shelf-life or microbial quality of the kelp. The NaCl content of the kelp was significantly impacted by the NaCl concentration in the water used for post-harvest treatment. Therefore the choice of water will control the NaCl concentration of the treated sugar kelp. In conclusion, sugar kelp is a highly perishable food product, with a sensory and microbial shelf-life of 7-9 days during refrigerated storage at +2.8 °C.* The Greenland conference dates (16 & 17 August) have been finalised in Nuuk when the local Authorities, the local research Institute on national resources. This will be a major opportunity for us to interact with SMEs and other stakeholders in Greenland to promote seaweed as a resource for human consumption and other uses. Still need to finalise the drying study and began last year with ongoing analysis being conducted together with collaborators in Norway as well as in Greenland and Denmark.

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		Also participated in the recent NPA seminar in Copenhagen to promote a new project to do with marine resources and hoped that some members of the SW-GROW partnership might be able to be involved with an application sometime in the latter part of 2022. **ACTION: Send out an email to the SW-GROW consortium seeking expressions of interest in participating in a new NPA project- Lisbeth**
	Update on progress with work packages	**TARI** **Work package T1.1:** Through May German student has been doing an internship and has have initiated experiments with Palmaria palmata cultivation. Another student has completed her Master's thesis and some of her results will feed into the reporting of the deliverables on cultivation and quality.
	Update on progress with work packages	**Údarás na Gaeltachta** • Conducting energy audits for two SME's involved in the pilot project • May newsletter published and circulated on social media • Shared drying infrastructure between two SME's has begun • Conducting promotional videos for associate partners • EMS period 5 has been certified by the FLC
	Update on progress with work packages	**NUI Galway** **Work package T2.2** For constructing reference genomes of Palmaria, a colleague at NUI Galway has been identified who had male gametophytes. Trying to grow them to sufficient biomass to isolate DNA. For metabarcoding, protocols have been obtained using Oxford Nanopore, and additional universal primers for green algae designed, which worked on Ulva species. Happy to receive samples of seaweed species of any kinds, commercial or not, e.g., green algae other than Ulva, from our partners. They are to be used to refine the protocols, i.e., test universality of the primers / construct mock communities. The paper on Alaria which had been submitted to Algal Research is still in review.
	Update on progress with work packages	**University of Iceland** Trying to determine the properties of the pellets that have been dried and obtaining equipment that can measure small forces and small numbers. Almost ready to start testing using standard methods for compression testing to

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		see how improvements can be made to the strength of the pellets. On successful testing there will be a plan to gasify the rest of the pellets with an anticipated conclusion by June / July.
4.	**Finances for P6**	Previously all partners confirmed that they would be able to completely spend their budget up to the end of September 2022 - as a result of this meeting they updated their commitment with one exception for NUI Galway where there were some difficulties with financial reporting. In due course, NUI Galway will provide an update to the project.
5.	**Branding and Marketing update – feedback from SMEs**	See above.
6.	**Progress with Period 3/4 reports.**	Partners were encouraged to ensure that their Partner reports were completed and sent to their FLC for certification.
7.	**Update on progress with Pilots**	**Hatchery pilot:** The water mill has been shipped from Italy and will soon be in the Faroe Islands. **Drying pilot (Lews Castle College)** See above. **Shared infrastructure** Shared drying infrastructure between two SME's has begun
8.	**Deliverables for Final report.**	It was emphasised that all partners needed to deliver on any "deliverables" that they were responsible for by, at least, the end of September 2022.
9.	**Progress with engaging Associate Partners / SMEs**	In progress.
10.	**Final conference proposed dates**	Based on the conversation in Galway everyone present agreed that September was the only time they could make the conference because of various commitments, academic holidays and school holidays etc. The venue proposed has given us Thursday 8th - 10th of September so any two days within that would be acceptable.

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		An alternative venue of the Town Hall in Stornoway was suggested since it would be much more central than an out- of- town venue. **ACTION: Determine the feasibility of using Stornoway Town Hall for the above dates- including cost of hire and external catering costs. (Jon)**
11.	**Any other business**.	**Urgently** ensure that everything can be signed off by the FLC for this final meeting.

Next meeting: **Teams – 29 June 2022**

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