



Northern Periphery and Arctic Programme
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SW-Grow Seaweed Industry Survey

The purpose of this survey was to collect responses from the seaweed industry across the NPA region on important information such as species, processing, energy consumption & usage, the importance of traceability and the use of the internet in their business.

38 responses were collected anonymously from the United Kingdom, Ireland, The Faroe Islands, and Iceland. The respondents were composed of Seaweed Farmers, Harvesters and Producers.

Although the response rate was low, this survey provides valuable insight into issues and questions facing the seaweed industry. Key areas in this report are an overview of the seaweed industry, Cultivation, Processing and Market information.

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Overview of the Seaweed Industry

This section focuses on the respondents and their geographical location, type of business and the seaweed they use.

Geographics

Majority of respondents were from Ireland, with the following locations listed; **The Faroe Islands:** Tórshavn. **United Kingdom:** Anstruther, Rathlin Island (Antrim, NI), Wick. **Iceland:** Bíldudalur, Reykhólar. **Ireland:** Clare, Donegal (Kilcar, Gleancolmcille), Cork (Bantry), Kerry (Tralee), Galway (Aran Islands, Ballinasloe, Rossaveal).

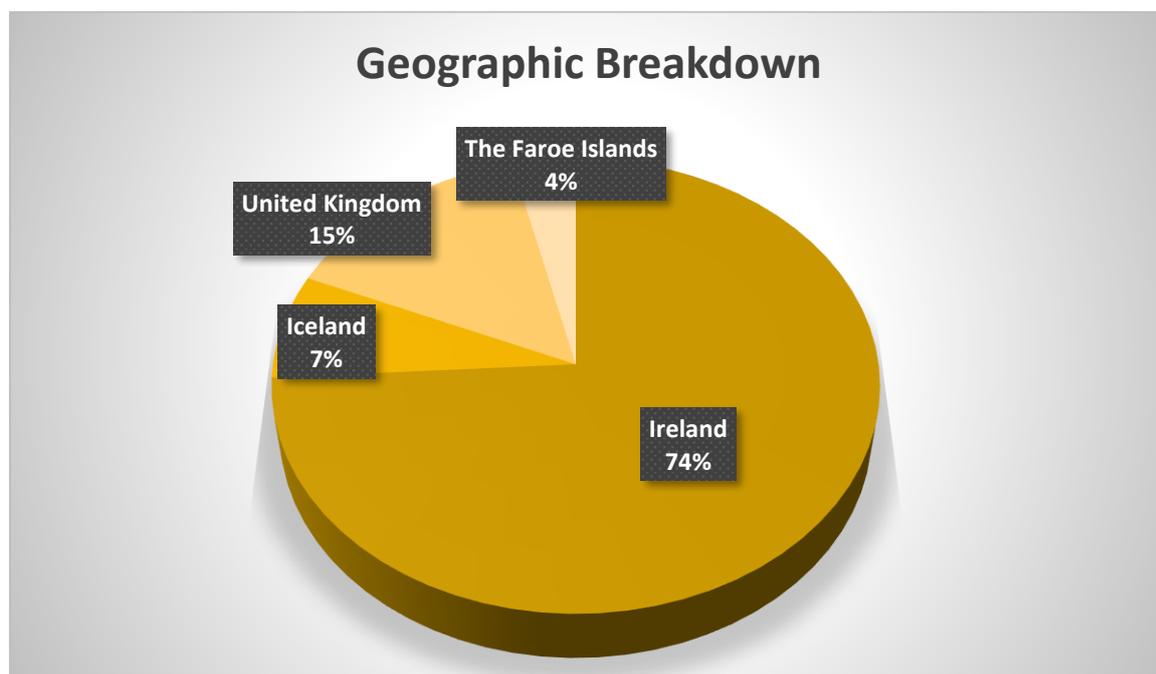


Figure 1 Geographic Breakdown

Industry Application

It is evident the largest area of interest is wild harvesting followed by using seaweed as food/food ingredients. Other areas not mentioned within the forum that respondents detailed were:

- Seaweed shelters for cleaner fish in salmon aquaculture,
- liquid from seaweed,
- Cosmetics,
- Education & Knowledge Transfer,
- supplements.

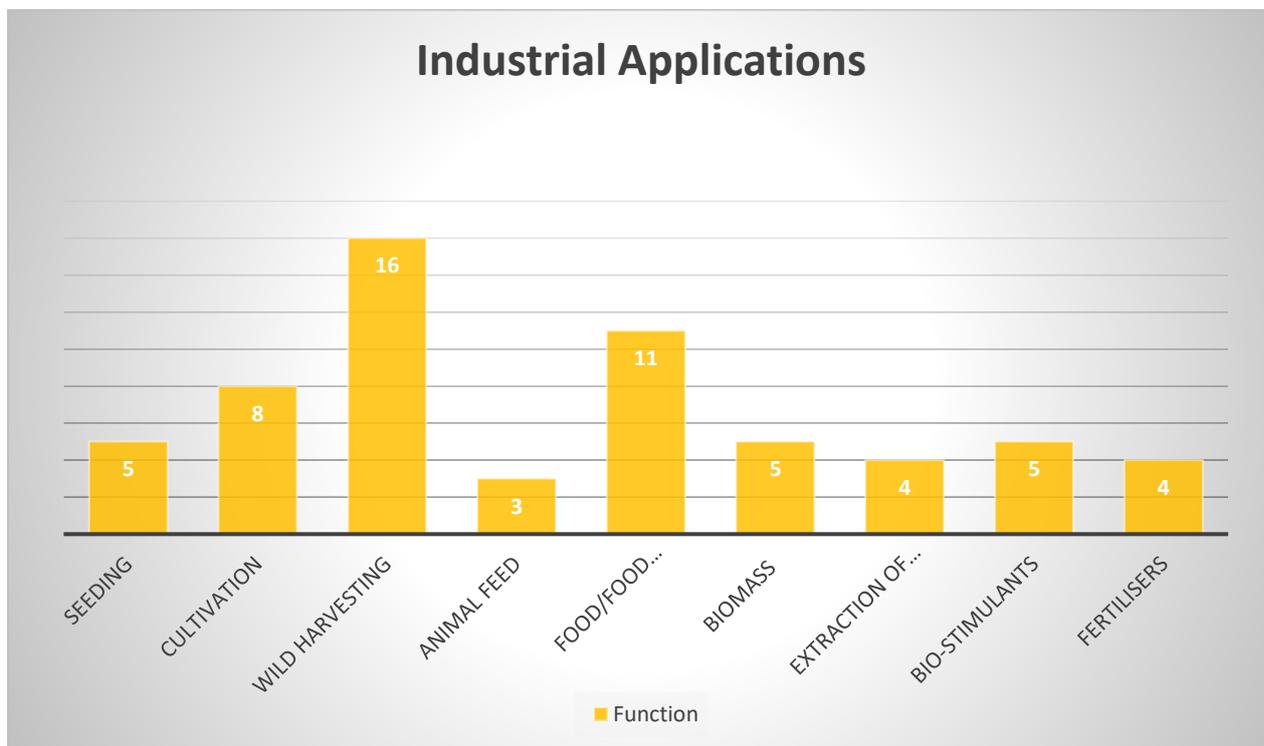


Figure 2 Industrial Application

Seaweed Species

When examining seaweed species that respondents are interested in, the most popular is *Laminaria digitata* at 65% of respondents saying they use it, followed by *Ascophyllum nodosum*. Other seaweeds not mentioned in the above list are *Vertebrata lanosa*, *Osmunda pinnatifida*, Fresh water algae, *Osmundea pinnatifida*, and *Samphire*.

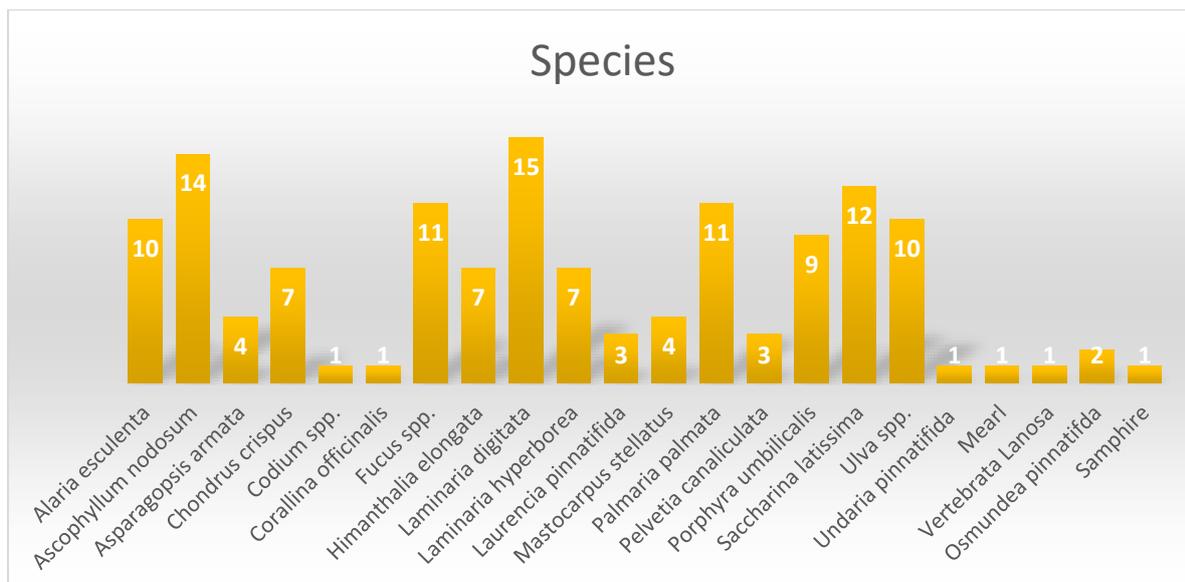


Figure 3 Species

Cultivated Seaweed

This section examines the farming of seaweed in this cohort, in relation seeded lines, harvesting, on land vs at sea farms. Although wild harvest seaweed is more predominant in this cohort, at 65%, 20% do solely utilize cultivated seaweed and a further 15% use a mixture of both cultivated and wild harvest. It is evident that wild harvesting is the most popular source of seaweed within this cohort.

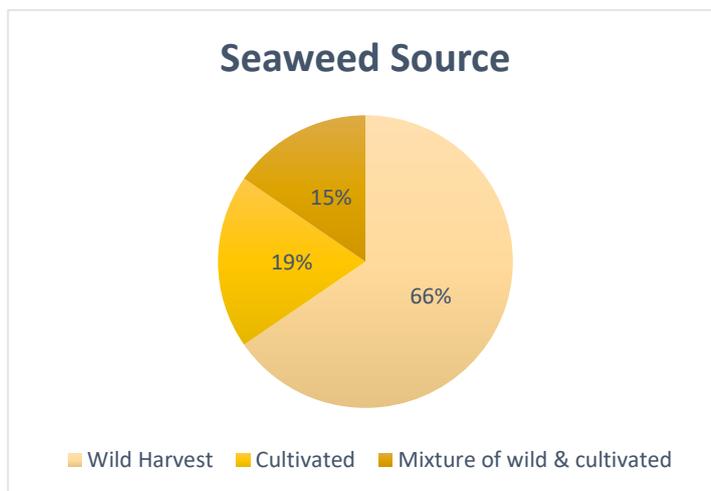


Figure 4 Seaweed Source

Seeded Lines

In relation to the use of seeded lines, 57% of respondents have their own hatchery and 42% purchase directly from a hatchery.

In relation to seaweed farms, 75% of respondents have their seaweed site at sea, and 25% have their site on land in tanks.

When examining the cohort of individuals that use cultivated seaweed, it is evident that majority deploy their seeded lines in the month of October, followed by November and December.

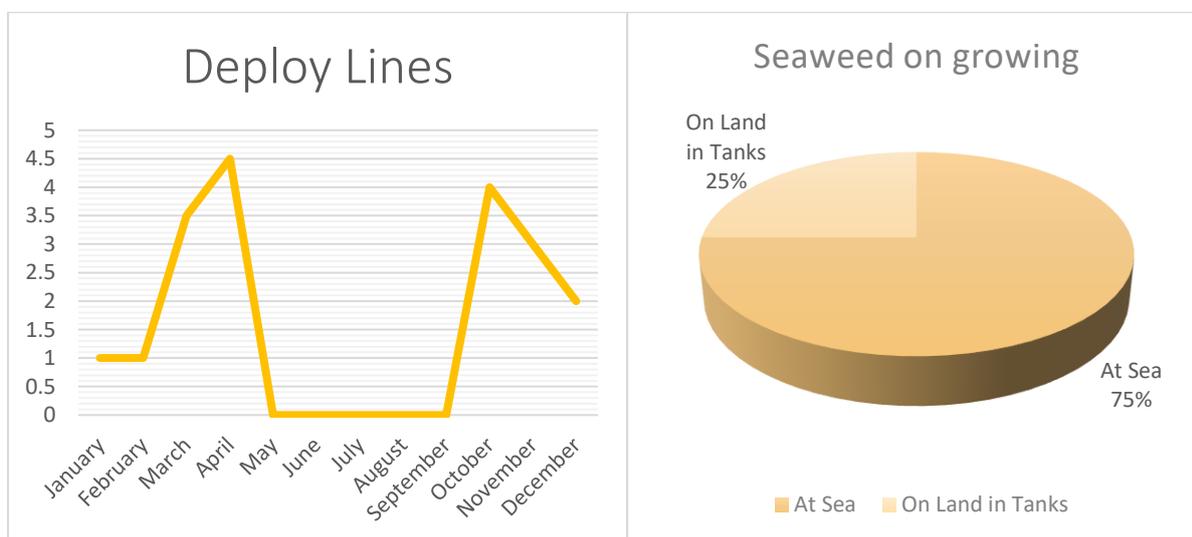


Figure 5 Deployment of lines

Figure 6 Seaweed On growing

In relation to the distance from the site of the seaweed point to the landing site, the largest distance offshore can be seen as 10km, followed by the average of 5km and one stating 500m. Three of the respondents are using on shore tanks for their cultivation.

Harvesting of seaweed

This segment deals with the harvesting methodology of both wild and cultivated seaweed.

It is evident that 66% report to harvest throughout the year. The chart below outlines the months of the year where respondents harvest, the most common months for harvest is March, April, and May.

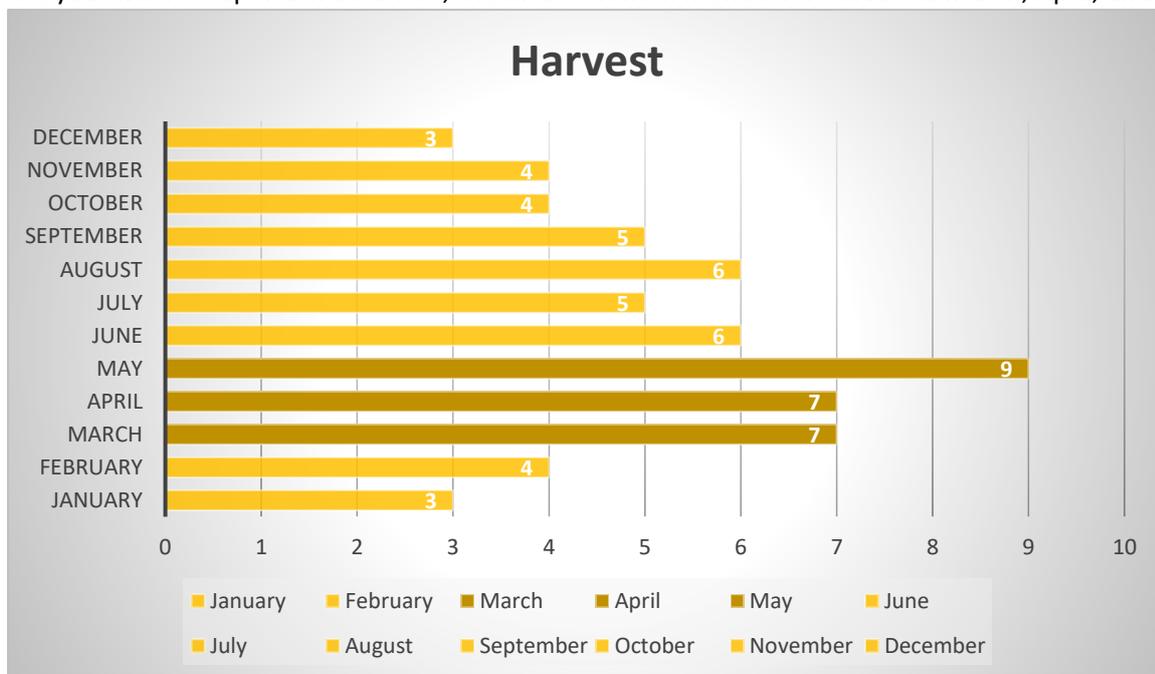


Figure 7 Harvest

Methods of harvesting both cultivated and wild seaweed was examined, with hand harvesting on shore being the most common method.

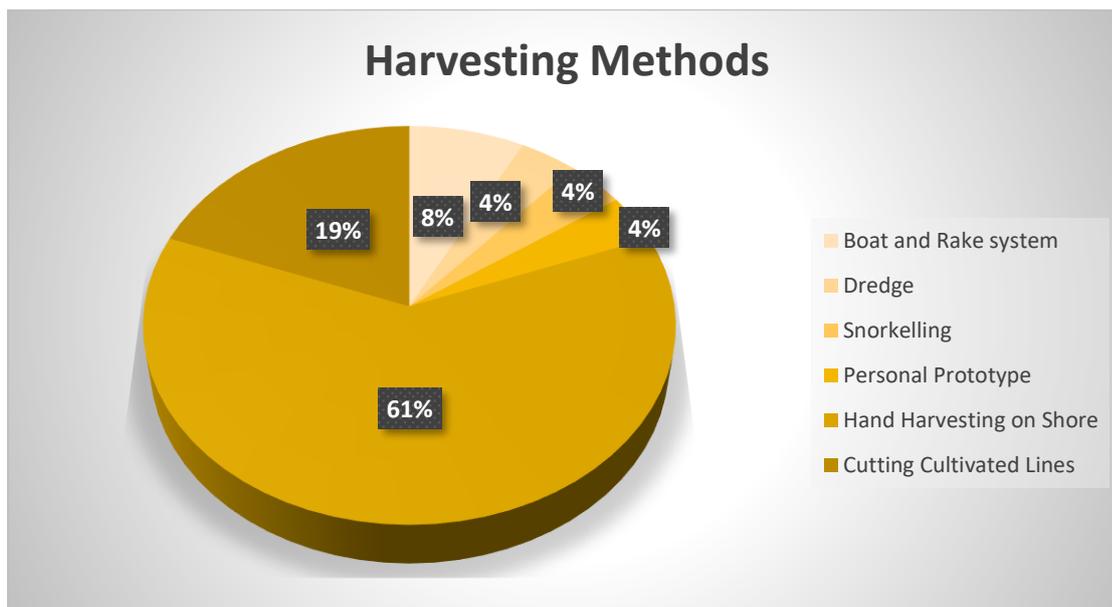


Figure 8 Harvesting Methods.

Harvesting Yield

Cultivated seaweed: Yield of seaweed per meter of seeded line depends highly on the species of seaweed. From the limited responses to this question, the analysis of the results on *Alaria esculenta* showed a varied yield. This yield ranged from 4kg (Wick, UK), 5kg (The Faro Islands) to more than double 12kg (Bantry Ireland) per m of seeded line.

This figure outlines the maximum daily yield in wet weight that respondents harvest/process at their facility. 240,000 kgs being the largest figure, to 5kg being the smallest amount recorded. The most common daily yield being 2,000kg followed by 800kg.

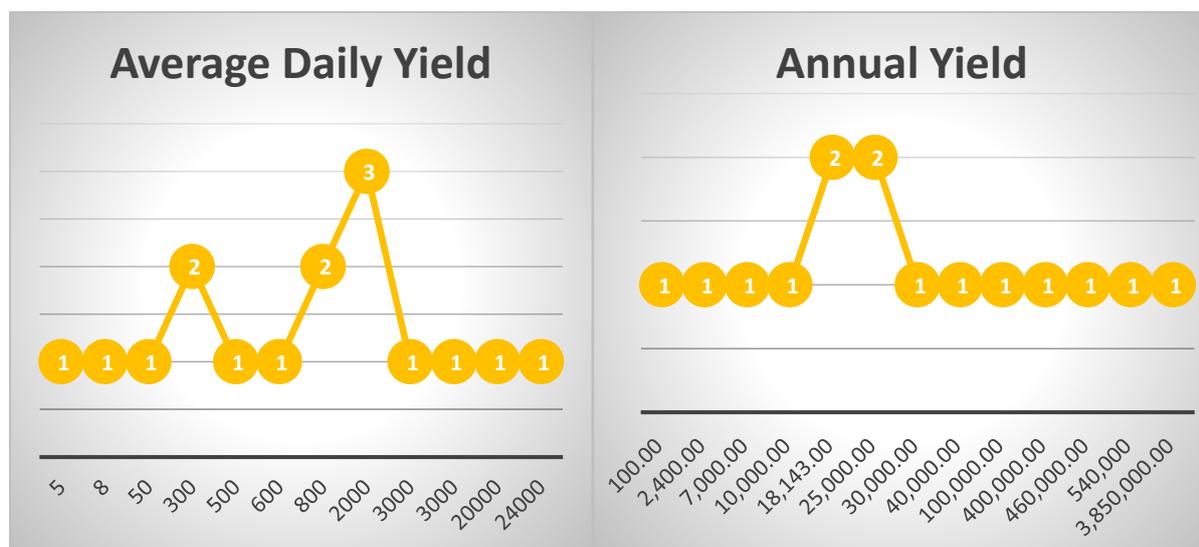


Figure 9 Average Daily Yield

Figure 10 Annual Yield

Like above, in figure 9, the annual yield average KG wet weight varies greatly. Visible from figure 10, the wet weight of annual yield ranges from 100kg being the lowest figure to 3,850,000kg being the highest figure.

Processing of seaweed

This section analyses the results in relation to the pre-processing, processing and energy requirements surrounding the processing of seaweed.

Pre processing

70% of respondents wash their seaweed after harvest, while 30% do not. Out of the 70% of those who was their seaweed wash in the following way.



Figure 11 Washing Methodology

Storage of Seaweed

Storage of seaweed is varied within this report, varying from storing the seaweed in seawater (2) until processing, ambient (2), to processing immediately (4) after harvesting. Once dried, seaweed has been reported to last for 2-4 years in this survey.

Processing facility

Distance from landing point to processing facility in KM was recorded and results are below. The largest figure being 250km, which is unusual as majority of processing facilities are within 20km or located at the landing facility.

Quantity of seaweed processed at the facility daily wet weight can vary from as little as 2-3kg to large amounts such as 13,000kg.

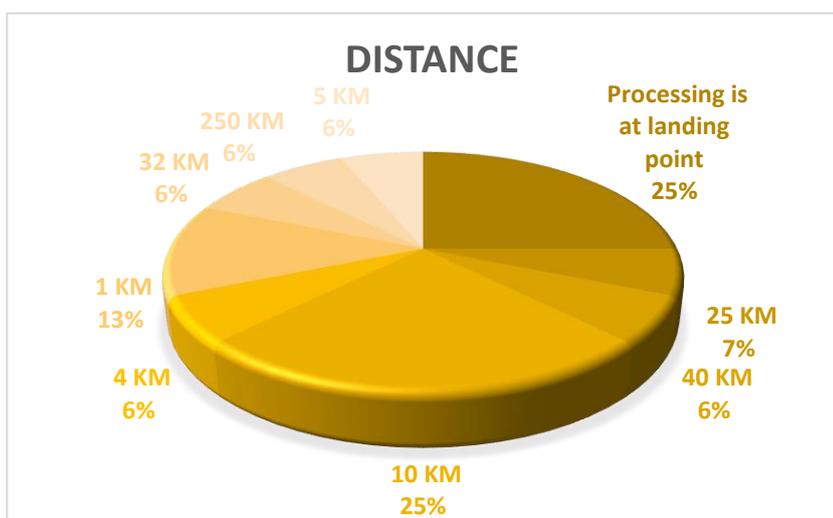


Figure 13 Distance

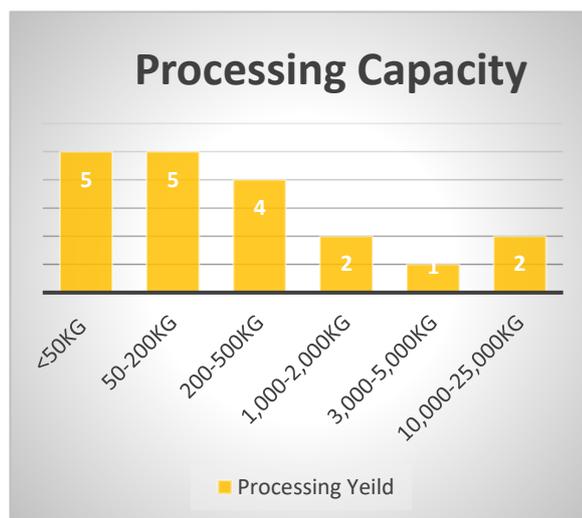


Figure 12 Processing Capacity

Seaweed Drying

73% of respondents dried their seaweed vs the 27% that do not. In relation to drying temperatures, it varies due to seaweed species and quantity being dried, however a general guide to what respondents dry their seaweed at is outlined below.

- 400 degrees c, 40 minutes
- 35C 24h
- 29 degrees C for ca. 2 days
- 24 hrs at 30 degrees C
- 35 degrees and 12 hours
- by geothermal 100°C
- Air temp outdoor
- 40C for 24hr
- room or outdoor temperature - several days
- Continuous Process circa 85* Celsius
- 33C for 15 hours

In relation to methods for drying seaweed the following can be found:

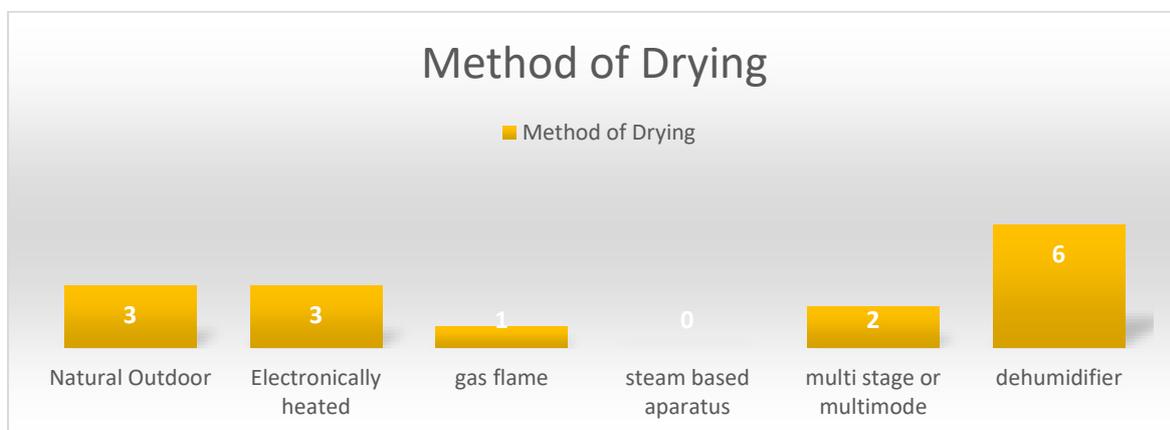


Figure 14 Method of Drying

Electricity is the most used mode of energy for the processing of seaweed. Sources of the electricity supply is outlined below. Following from that, only 4 respondents use Gas, the most common source of gas is bottled butane at 50%, followed by Mains and Bottled methane at 25% respectively.

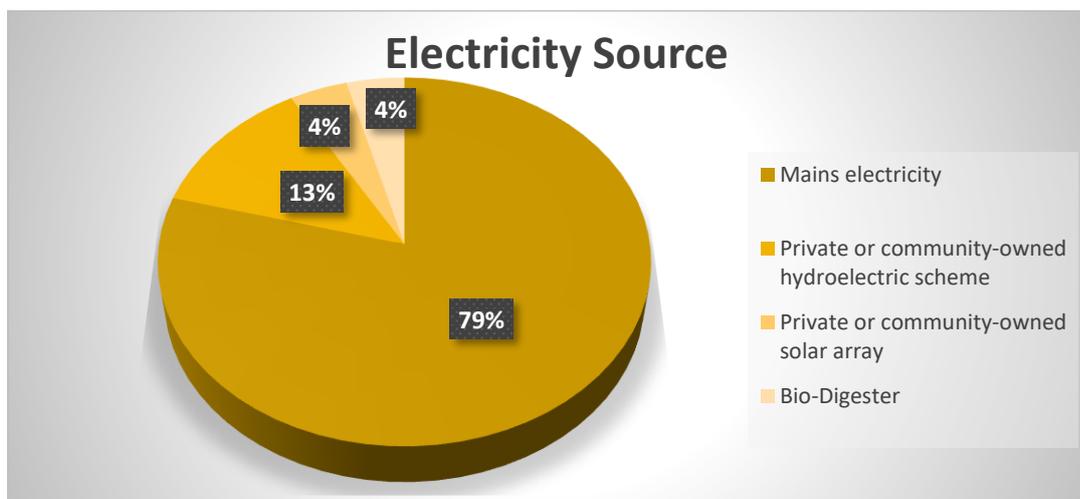


Figure 15 Electricity Source

In relation to gas supply, 50% of gas consumed is from bottled butane, 25% from mains gas and 25% from bottled methane.

100% of respondents find it is important to them to produce using green, sustainable energy.

When examining moisture content of seaweed, it is evident that an average 10% moisture content is the most common. On closer examination, when asked if reducing the moisture content further would help them commercially 85% agreed that it would not, and 15% did.

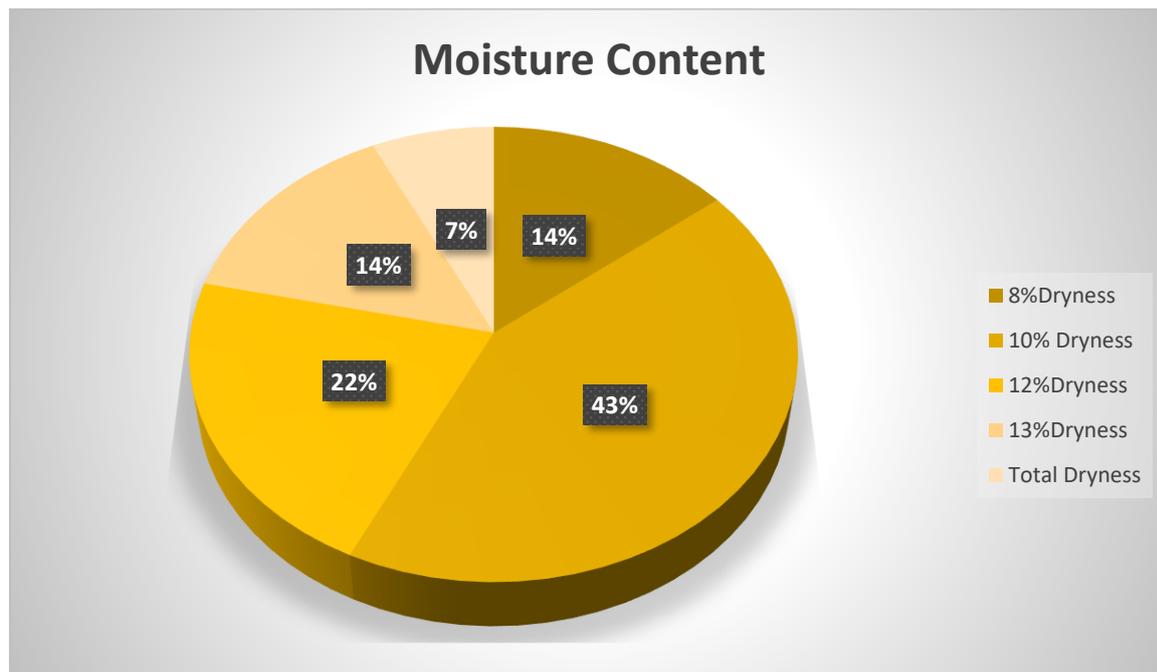


Figure 16 Moisture Content

Processing timeline

Although the time from harvest to market depends on the species and the product, the majority of respondents have their product on the market within a month.



Figure 17 Time to Market

Traceability & Information Search

Traceability & DNA

95% of respondents believe proving origin/provenance of seaweed is important to their business. With 69% agreeing a DNA based certification of the identity of the seaweed species would add value to their products.

Information gathering

Online selling has increased across the board in recent times, however for the seaweed industry there is a significant proportion of the respondents not online, at 43% compared to 57% who are selling online.

In relation to staying informed on industry news, respondents find the majority of their data from Online Publications, followed by social media.

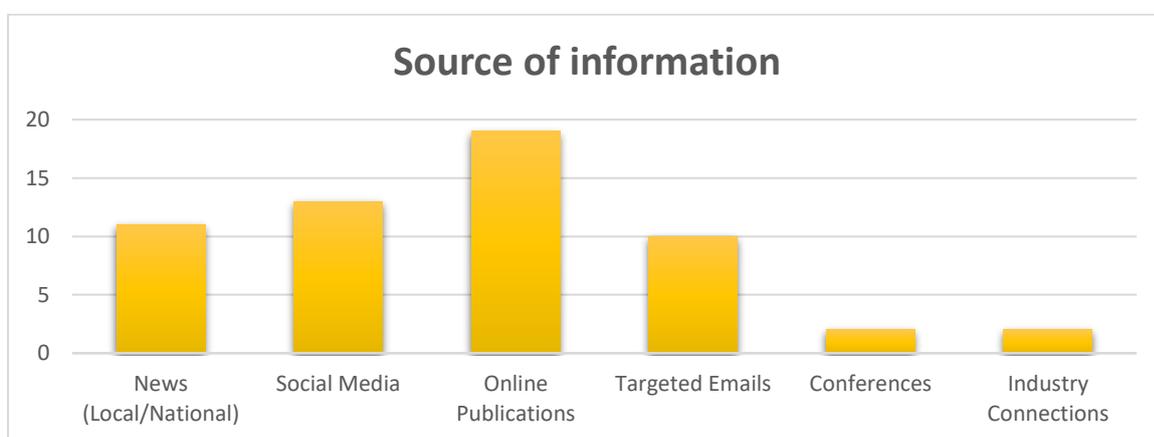


Figure 18 Source of Information

Specifically looking at social media, facebook followed by twitter & linkedin in are the most common platforms used.

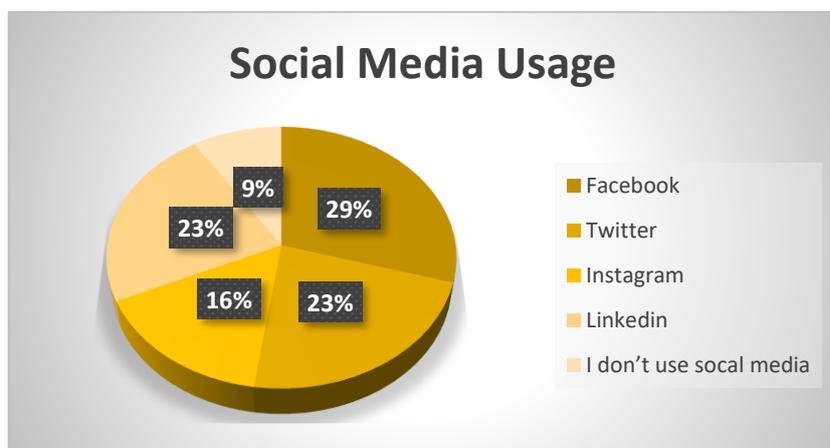


Figure 19 Social Media Usage

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