

Norway establishes new research centre to advance seaweed culture

SINTEF, the largest independent research organisation in Scandinavia, has been working for some years to develop a national seaweed culture program. Now SINTEF has established the Norwegian Seaweed Technology Centre in its Fisheries and Aquaculture Institute near Trondheim, Norway. A staff of about a dozen people is devoted to the centre's main objective: the development of commercial-scale cultivation of seaweed for the production of biofuels.

According to Research Director Trina Galloway, the centre is almost a "virtual" unit as it was built into the existing building, but she said there are now about 24 small tanks that act as a "hatchery" where kelp seedlings settle on coiled ropes that can later be set out in the ocean. The centre has direct access to the sea where the cultivation experiments are conducted at several test locations.

Galloway explained that experiments with *Saccharina latissima* and *Alaria esculenta* show very fast growth in the right conditions, and the species are well-adapted to fairly exposed sites. They also are rich in sugars, protein, vitamins and trace metals. The high sugar content of *Alaria* – only slightly lower than sugar cane – makes it a promising candidate for producing biofuels, especially bioethanol. However, SINTEF scientists have estimated it would take an area equal to Norway's Vestfold county (2,225 km² or 8,860 sq miles) to yield two billion gallons (about 8.6 million tonnes) of algae-based biofuel.

Galloway said there are some practical aspects that have yet to be worked out, such as how to provide sufficient nutrients to large fields of inter-competing lines of kelp; and also how to avoid causing problems for other users of the waters. Progress has been made in other areas of inquiry, such as the artificial induction of *Alaria* to produce reproductive spores "out of season." That's important because the biofuel industry will require uninterrupted year-round production. Currently, *Hatchery International* was told, kelp grows best from January through May, as the water warms, and prior to the main period of algal growth when competition for nutrients is highest.

The Centre already has good control of the year-round production of seedlings from *S. latissima*.

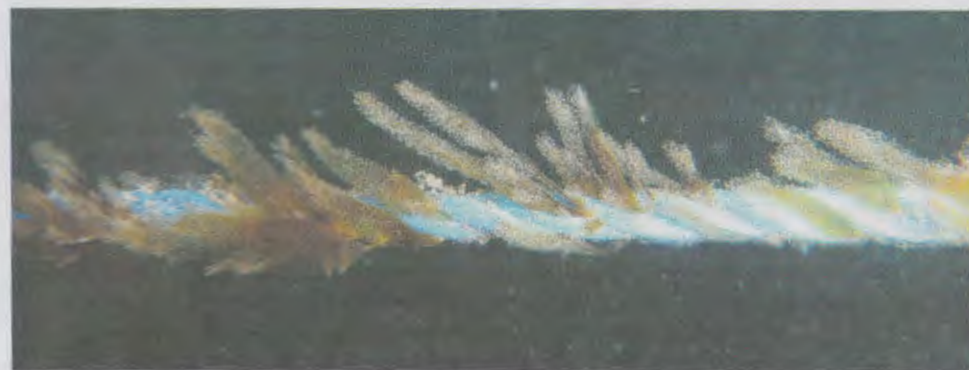
Asked about the growth program at the hatchery centre, Galloway said that the tanks used for reproduction need only measure about 40 x 50cm by 15-20cm deep. Water comes from about 20m deep in the fjord. She added that the spores take only about six weeks to grow to 0.5-1cm length, the size at which the ropes are strung out in the ocean. Once planted out, *A. esculenta* grows quite quickly from January to May, and can reach lengths of 2-3m in that period.

KING HARALD VISITS THE CENTRE

The Seaweed Technology Center, officially opened last August, has already attracted a visit by Norway's King Harald, who is known to be enormously supportive of the country's aquaculture industry. Centre scientist Johanne Arff, who had the honor of describing SINTEF's seaweed program to the King and showing him kelp spores under a microscope said later that the King thought it "very exciting" that kelp might become the raw material for new sustainable biofuels.



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