

DEVELOPMENT OF SEA VEGETABLE CULTURE TECHNOLOGIES IN MAINE

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Biological integration is important to achieve environmental sustainability and multiple crops in aquaculture. We are building infrastructure in Maine to encourage use of sea vegetables in integrated polytrophic aquaculture (IMTA or IPTA) with field trials of the kelp *Saccharina latissima* on shellfish lease sites and by establishing a spore seed-stock nursery for multiple species (e.g., laver, dulse, kelps) at the Center for Cooperative Aquaculture (University of Maine, Franklin, ME). A pilot project in integrated aquaculture was initiated in December 2011 by seeding seven different shellfish lease sites from Casco Bay to Lamoine with juvenile sugar kelp plants. Information on site characteristics, growth and yield were collected throughout the growing period, and results from this pilot project will be used to inform further work in integrated systems, to build relationships between growers and potential buyers, and to encourage diversification. Our seed stock system for *Porphyra umbilicalis* was started in January 2012 from a unialgal culture from the Maine coast. Mature, spore-producing plants were produced from juveniles within 6 weeks. Net seeding with wild and laboratory raised seed stock is in progress. Seeded nets will be incubated in a recirculating fish aquaculture system, and preliminary trials show blades retain their deep reddish-brown color without any other nutrient additions. These studies should expand interest among Maine aquaculturists in sea vegetable crops for the development of a sustainable seaweed aquaculture industry in Maine.