

Marketing

- Oysters are usually sold live in-shell. A variety of processed and value-added products are being developed, either by growers or by their customers, eg flash frozen in the half-shell.
- UK markets are under pressure from imports from France and Ireland. This has led to a stabilisation or even a decrease in the selling price of the stock in many areas.
- UK growers have to compete on quality rather than price.
- Growers with well-developed regional outlets put a great deal of effort in to servicing and maintaining these outlets.
- Stock may also be marketed through direct sales or by mail order.

Hand grading oysters

Mechanised grading line



Equipment

- At increased production levels mechanisation will be needed. Equipment that may be needed includes tractors and trailers or quad bikes. Occasionally small boats may be required.
- Additional equipment may include storage and dispatch facilities, a depuration facility, weighing and grading machine, packing system, stock handling system.
- An oyster farmer will also need an assortment of smaller pieces of equipment and safety clothing in addition to the more specialised items. Examples of the equipment required include First Aid kit, lifejackets/buoyancy aids, especially when working from small boats, signal flares, pressure washer, gloves, knives, communication equipment (mobile phone or VHF radio).



General advice

- Draw up a business plan and consult independent financial advisors.
- Identify your market(s) at the outset.
- How likely are you to receive planning permission from the competent authority (eg Local Council, Crown Estate)? Consult local aquaculture development plans, where they exist, and speak to the staff involved in granting licences.
- Is the local infrastructure (roads, piers etc) adequate to support your proposal, or will you have to construct them?
- Can a Crown Estate lease be secured? Consult them.
- What conservation value/interest does the site have? What about the surrounding area? Could it affect access to the area? Consult the nature conservation agencies, statutory (English Nature, Countryside Council for Wales, Scottish Natural Heritage, Environment and Heritage (Northern Ireland) and voluntary, for the area.
- Is there likely to be any hazard to navigation or transport? Consult the Maritime & Coastguard Agency and the Department of Transport.
- Are local inhabitants or other user groups of the marine environment likely to object? Can objections be overcome through dialogue, management agreements or design modifications? Consult them early on.
- Does the proposition require grant aid or other assistance and how likely is it to be awarded? Consult the agencies administering grant and other business assistance in the area from the start.
- Generally, avoid areas close to boatyards, marinas, industrial developments or large urban areas.
- This minimises the risks from pollutants or other anthropogenic

inputs. Potential inputs from the water catchment area (eg from farming, forestry, horticulture, chemical industry etc) should be investigated.

■ Evaluate the potential risk (disease, nutrient input, therapeutant use, predator displacement, controls on stock movement/sales following disease events on other sites etc) from any other marine-based aquaculture activity in the vicinity.

■ How secure is the site? What is the risk from interference or other unwanted human activity? Can the site be secured if required?

■ Try and establish whether the area has a shellfish cultivation or harvesting waters classification from the local Environmental Health office or equivalent

■ Try and establish whether the site has a history of algal biotoxin (PSP, DSP, ASP etc) incidents or harmful algal blooms ('red tides'), although past track record is a poor predictor of future performance.

■ What potential predators, competitors or fouling organisms are likely to be encountered?

■ There are strict regulations controlling the movement of molluscan shellfish around the UK. This is to prevent the spread of oyster diseases that principally affect the native oyster stocks. In general, hatchery seed is certified disease-free, but part-grown stock requires investigation before shipment. Check with the Centre for Environment, Fisheries and Aquaculture Sciences (CEFAS), Scottish Executive Environment and Rural Affairs Department (SEERAD) or Department for Agriculture and Rural Development (DARD) in Northern Ireland for the latest position.

■ Once the business is operational, the site must be registered. Consult CEFAS, SEERAD or DARD as appropriate.

Further advice

■ For further advice on any aspect of pacific oyster cultivation please contact the aquaculture advisor for your area.

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Alternatively, please visit our website at www.seafish.org/sea for more information. The website also contains details of the CD-ROM based resources produced by Seafish. There is a specific Hyperbook, which combines in-depth information regarding the culture of this species together with an economic modelling tool for business planning purposes. In addition, there is a more general Guide to commercial bivalve molluscs with information on aspects of cultivation, harvesting, the fishery, depuration and distribution for all species.



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INVESTOR IN PEOPLE

This leaflet is intended to offer a summary of the methods used to cultivate Pacific oysters in the UK. More detailed information about specific aspects of the business may be found in Seafish publications, technical publications from other agencies and books. Prospective cultivators are advised to consult these in addition to this sheet. Preliminary business planning assistance can be found in the associated Seafish economic model and 'Hyperbook' publications.



Pacific oyster



Site selection

- Before beginning any commercial activity, it is prudent to conduct small-scale trials with the species of interest for at least 12 months on the intended site. This will give an indication of its overall suitability.
- Seawater temperatures above 8 – 9°C for much of the year are preferable for fastest growth.
- Salinity generally above 25‰.
- Inter-tidal area sheltered from extreme wave action or strong tidal flows.
- For preference, the seabed should be clean and firm in order to avoid siltation and support the trestles.
- Tidal flow of 1 – 2 knots (50 - 100 cm sec⁻¹) is optimal as this will ensure a good supply of food, although less (around 0.5 knots) is acceptable.
- The trestles should be arranged to maximise seawater flow through the site. If this is not achieved it can result in decreased food availability to the oysters and increased sedimentation around the trestles.
- Maximum of 4 hours aerial exposure per tidal cycle ensures good growth, less exposure is preferable. The longer the period of immersion the better the growth rate, although some exposure is required to promote shell hardness.
- During winter months, exposure to very cold winds and air temperatures close to or below freezing can cause the oysters to die. Similarly, air exposure during hot summer days should also be avoided.
- Avoid areas where the waters carry a very high silt load, it can cause smothering.
- Avoid areas where poor water exchange may result in oxygen depletion, particularly during warm weather. This can weaken or kill the stock.

Cultivation techniques

- Pacific oysters are usually grown in plastic mesh bags secured to metal trestles in the inter-tidal zone. Wire-mesh 'trays' are also available. Alternatively, in some areas, they may be laid directly on to the seabed or on to 'mats' laid on very soft substrates. The seabed plots are often known as 'parcs'.
- Seed or 'spat' oysters are purchased from dedicated hatcheries. They are available in a variety of size grades, usually from 4 mm – 30 mm shell length. The size grade quoted by suppliers generally refers to the size of mesh used to sort the oyster seed (3 – 14 mm mesh).



Pacific oyster spat

- Part-grown or 'half-ware' oysters may also be purchased from suppliers who specialise in this market. They are generally graded by weight and are usually sold at between 4 g – 15 g. Larger sizes can also be purchased. Oysters > 10 g are generally suitable for laying directly on to parcs as they are large enough to be safe from most predators.
- Where oysters are grown in bags to harvest, the size of the mesh in the bags is increased progressively as the oysters grow. Oyster seed between 4 – 8 mm shell-length is generally placed



Oyster bags on trestles

in 2 mm mesh bags. At 8 – 15 mm shell-length 4 mm mesh is used. From 15 – 25 mm shell-length the bag is usually of 7 – 8 mm mesh and above 25 mm shell-length 14 mm mesh is used. By final harvest the bags are generally of 18 – 25 mm mesh. As a general rule try and use the largest mesh that will still retain all the stock. This promotes good water flow and optimises growth.

■ The density of the stock within the bags is also reduced progressively as the animals grow. The dimensions of the bags varies between suppliers, but as a general guide stocking densities are approximately: up to 15 mm, 2 000 - 3 000 m⁻²; > 25 mm, 1 500 m⁻²; > 50 mm, 500 m⁻². Optimal stocking densities for best growth vary from site to site and must be determined by trials.



Pacific oysters in cultivation bags



Loading bags on the shore

- Turn the bags and redistribute the oysters every 2 weeks (spring tides) during the summer growing season and once a month or less (if very cold for instance) during the winter. Less intensive cultivation, ie at lower stocking densities, can reduce the need to turn the bags as space for optimal growth is not restricted. However, turning is still required to reduce fouling on the upper surfaces of the bags. In northern areas, it may not be necessary to disturb the stock during the winter, but they should be monitored in any event.

- Monitor the stock, thin, remove dead shells and transfer to larger mesh bags as required.

- Remove any predators and fouling.

Examining bags for predators and fouling



Harvest

- Stock may be harvested and marketed year-round. However, occasional problems with flesh quality, ie reduced condition, may occur in late summer if the oysters have spawned. Spawning may occur in southern England during very warm summers or at particular sites.
- Harvest the stock when they attain suitable size for your market. This can be from 75 g upwards. It can take 2.5 – 3 years to first harvest.
- Remove the bags from the trestles and transport to the harvesting area. Remove the stock from the bags. Wash off mud, fouling etc. Separate the animals and remove dead shells as necessary.
- Grade the stock in to different sizes - this is usually by weight. It can be done automatically or by hand. Mechanised grading is faster, but it increases the stress on the oyster.
- Before placing oysters on the market, they usually require depuration. This can take place before or after grading and can be done in-house or contracted out. It may be required by the buyer even if the stock is from category A harvesting waters. See the Seafish depuration leaflets for further advice.
- Pack the stock in suitable containers for transport to market. This can vary from polystyrene fish boxes (for bulk) to decorative wooden punnets (point-of-sale display).
- Transport oysters to market in chilled containers or cover the stock with a light ice covering, as appropriate.