

OstréA Spin – Tumble Culture

The OstréA Spin is a patented system developed by OstreA'tlantic in France to remove the manual labour from the final growout phase of oyster farming. Designed by a combination of engineers and producers, the system claims to be very robust and allows for similar stocking densities to those used in standard bag and trestle culture because it uses a traditional oyster bag.

Stock is tumbled 4 times in 24 hours based on the tidal cycle giving the oysters a harder shell, a more desirable round shape with a deeper cup and a higher meat content than oysters stocked alongside in the traditional bag and trestle system.



Figure 1: OstréA Spin system on a site in France

Materials and structural specifications

The dimensions of the trestle are specific to the system and the manufacturer recommends the use of 20mm round crenelated steel throughout. They should be 3.42m long, 1.3m wide, and approx. 80cm high with anti-sink bars. Each trestle holds 5 units, called “turners”.

The turners are made from aluminium: the offset axis is 18mm in diameter, the cylindrical bars enveloping the oyster bag are 16mm in diameter and the support bars joining the cylindrical bars are 13mm diameter.

Table 1: Materials required for OstréA Spin system:

Materials	Cost € Guideline only
Modified trestle <ul style="list-style-type: none"> • 20mm rebar, 800mm high, 1.3m wide, 3.42m long trestle with anti-sink bars 	60.00
Bag and accessories <i>Costs per bag*</i> <ul style="list-style-type: none"> • OstréA Spin turner • Intermas oyster bag 4 – 14mm mesh <p>* Each trestle holds 5 turners</p>	54.50 2.70
Cost per 1kg of 50g oysters stocked	€8.14



Figure 2: A single trestle with 5 turners fitted. Note the anti-sink bar on the trestle

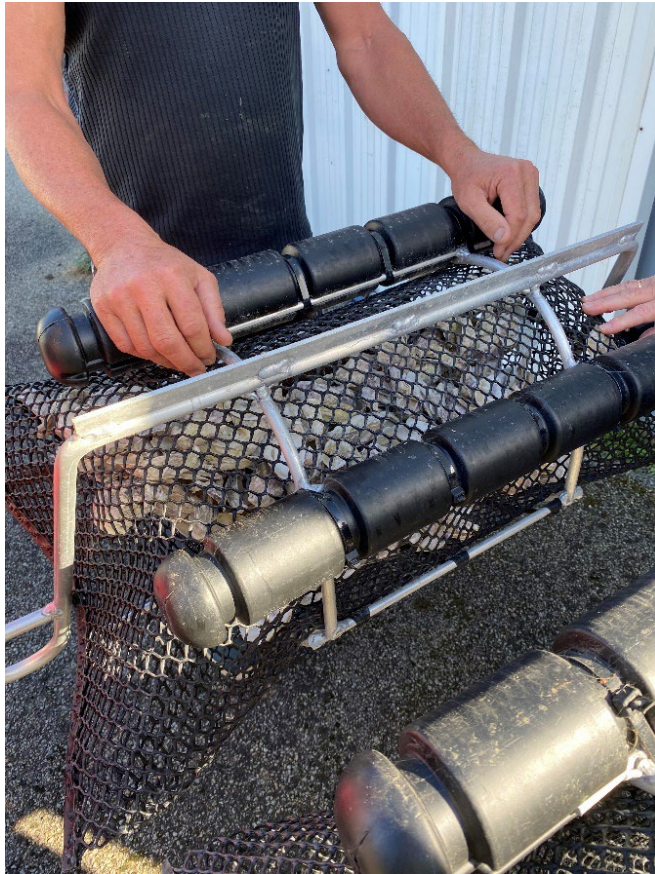


Figure 3: Aluminium frame with specially moulded floats



Figure 4: Fixed rotation bearing attached to trestle

Two UV treated PVC floats are attached to two of the 13mm bars using 3 x 400mm x 7.2mm cable ties each. These floats are 650mm in length, 2.5 litres in volume and have a diameter of 80mm. They are designed to withstand pressure of up to 2 bars per cm². So should hold their shape in depths of 15 to 20m.

The turner is secured to each side of the trestle via fixed rotation bearings made of UV treated nylon, fixed by 3 stainless steel screws with brass nuts. Each bearing is fitted with wear rings which are easily removed and replaced.

Standard envelope oyster bags are used which are inserted and removed from the unit by opening the hinged semi-circular hood which is then closed and secured with 2 rubber bands and hooks.

All components of the Ostrea spin are supplied through Triskell Seafoods, an Agent in Ireland for the manufacturer. Trial packs are available from all suppliers comprising either 20 or 45 OstréA Spin turners, packaged on a 120 x 80 cm Euro pallet. Further information is available from www.triskellseafood.com and on the manufacturers website: <http://www.ostreatlantic.com/>

Recommended Method of Deployment

The turners must be assembled and fitted to the trestle before being put on the shore. Attach two floats with 3 cable ties each onto the frame, followed then by looping two elastic bands around the frame and clipping two PVC hooks to close the hood. The trestle must be fitted with brackets, only on one side, that are spaced according to the plans given on purchase. These brackets must be tightened vertically with the brass inserts on the inside of the trestle. Wear rings can then be placed inside the bracket and the barrel axis slotted in place. The opposite bracket is placed into the barrel axis and fitted to the opposite side of the trestle. Once fitted like this the OstréA Spin would only need disassembly to replace wear rings or to transport trestles.

The OstréA Spin units should be deployed using the same orientation as a standard bag and trestle farm, in line with the tide. The custom trestles must be spaced at least 160mm apart to ensure the turners at each end have enough space to rotate.

Site Specifications

The system is suitable for deployment on firm sandy sites. The manufacturers have developed a reinforced turner for more exposed windy sites. However, it should be noted that a trial of the system on Utah beach was unsuccessful due to the level of exposure.

The Ostrea Spin, although commercially available must be considered to be still in a trial phase where operators are still providing feedback to the manufacturers to allow for minor modifications.

Reported lifespan

The OstréA Spin turner has a reported lifespan of 20 years. Rubbers and hooks used should be inspected regularly for signs of wear. The wear rings within the fixed rotation bearings have a life expectancy of 2 – 5 years but are easily replaced. The screws will also need to be replaced around that time.

The manufacturers emphasise the importance of storing the turners, when not in use, away from any other metal to reduce the risk of oxidation. The hooks securing the opening in place should always be plastic for the same reason.



Figure 4: Trial OstréA Spin units deployed in the same orientation as standard bags and trestles

Recommended Stocking Densities

Because a standard oyster bag is used similar stocking densities to those of traditional bag and trestle farms are recommended.

- Seed at 2,000 – 3,000 per 4mm bag (though not recommended for seed in Ireland)
- Half grown at 150 to 500 per 6 – 9mm bag
- Market size at 100 to 150 per 9 – 14mm bag

Although it is marketed as being suitable for seed, some producers found that the trestle lifted from the ground. The weight of the seed stocked at 2,000 – 3,000 per bag was not enough to counteract the buoyancy of the floats.

One operator has confirmed that the turner is capable of holding up to 15kg of stock and will still turn the required 180° twice on each tide. Therefore 1 year old oysters, approximately 120 – 140 pieces/kg could be stocked at roughly 150 - 200 per bag right through to final growout.

Potential yield per hectare

The assumptions made when estimating the potential yield per hectare from the OstréA Spin system are as follows:

- The area is 100m x 100m
- Trestles are laid out in single rows, 28 per row
- There is a 5m tractor corridor between each row

- An acceptable mortality rate of 20% over one growing season may occur

Table 2: Potential return per hectare

Growth	# Bags/Ha	Stocking Density/bag	Normal mortality rate for one growing season	Potential Return after one season
35g up to 50g	2100	200	20%	17 tonnes
50g up to 85g	2,100	175	20%	25 tonnes

In the case of a typical inter-tidal 6 bag trestle farm, one hectare laid out in double rows with 5m tractor corridors between them will potentially return 28 tonnes of 50g oysters or 31 tonnes of 85g oysters.

Environmental considerations

The risk of losing bags on the shore is greatly reduced with this system. However, the plastic hooks and rubber bands used on each turner should be regularly checked for signs of wear.

The reduced labour requirements with this system means there will be less human activity on the shore and less risk of disturbance of potentially sensitive species. The bags will be visible for a slightly longer period on each tide but the overall height of the trestle and turner is no greater than that of systems already licensed around the country and the visual impact would not be considered significant in the majority of sites.

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Optimises the shape and meat content potential from a given site • Stocking densities are the same as traditional bag and trestle systems • Eliminates turning & shaking requirements and therefore labour requirements • Less human activity on the shore and less disturbance to the environment • The regular automatic turning of the bag may reduce the level of fouling thereby improving waterflow and food availability • Turning can also be restricted temporarily by connecting turners together using rubber bands • Floats are custom designed for the turners and are supplied as part of the system • Detailed assembly instructions and a specification for the trestle are provided • Once harvested the various components are easily stored and the bags return to their usual shape to be used elsewhere on the farm if required. 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • High capital investment required • Initial setup is time consuming • The fact that the turner is made from aluminium means that great care must be taken in its storage to ensure it doesn't come in contact with any other metal causing oxidation. • A custom trestle must be manufactured for the OstréA Spin which cannot be used for traditional bags • The use of floats, elastics and plastic hooks to close the turner pose a marine litter risk
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Modifications have been made to the turner chassis to allow it to be deployed in high energy sites • Manufacturers are working closely with farmers to finetune the system in the field 	<p>THREATS</p> <ul style="list-style-type: none"> • Although commercially available the system is still under trial by producers • The Irish experience to date suggests that it is not suitable for seed