

South African Kelp Farming Project (Phase 2 Feasibility study)

Standard Operating Procedure (SOP): Transferring spools to grow-out

SOP number: BSASA-11

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Compiled by:

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on behalf of BSASA

Version: 1

Review date: to be adapted and revised by industry

Introduction

The overall goal of the South African Kelp Farming Project (SA KFP) was to gather, analyse and disseminate evidence and research results to a broad stakeholder base, including the existing aquaculture industry and new potential entrants, to lay the foundations toward building a sustainable Kelp Aquaculture Industry in SA and the region.

One of the project objectives was to investigate and tailor the weaning and grow-out methods for our local kelp species (based on the kelp farming manuals from elsewhere that are already publicly available and accessible on the [SA KFP webpage](#)), which can then be adapted and revised by industry to suit their own needs. Although the temporary set-ups that were used in Phase 2 of the SA KFP were aimed at achieving the short-term project objectives, it was the first successful attempt to cultivate *Macrocystis pyrifera*, *Ecklonia maxima* and *Laminaria pallida* in South Africa, and also the first successful attempt to cultivate *E. maxima* and *L. pallida* anywhere.

Purpose of SOP:

The purpose of this SOP is to provide a breakdown of steps required to transfer/unwind the ~2cm sporophytes on the spools onto the 6-7m vertical droppers in Grow-out.

Grow-out preparations:

When receiving the notification that the juvenile sporophytes in Weaning are ~2cm, the following preparations in grow-out need to be done:

1. Select a cool day with little wind, enquire about the sea water temperature at the grow-out site (which should be 15°C or below) and book the boat.
2. Notify the team so that the preparations can commence.
3. The required number of floats must be attached in position (1.5-2m apart) a few days prior. If more than one species is going to be out-planted, try to colour code the floats or at the very least mark the floats with spray-paint with the corresponding letters (L for *Laminaria*, E for *Ecklonia*, M for *Macrocystis*) so that it is clearly visible. Do consider that biofouling will grow on the floats, so the markings should rather be on the top (as opposed to the sides which will get covered with biofouling).
4. Prepare the required number of dropper ropes (as per SOP9), and make sure that there are enough hollow bricks for the number of droppers that will be hung.
5. Cut two to four 40cm tie-up ropes per dropper which will be used to tie the droppers to floats and weights. The ends of the tie-up ropes can be melted or sealed with insulation tape.
6. If handles are going to be attached, decide on the amount that will be needed and splice these as per SOP9.
7. The required number of cooler boxes, canisters, frozen ice packs, sprayer as well as the crate containing all the tools and consumables must be prepared.



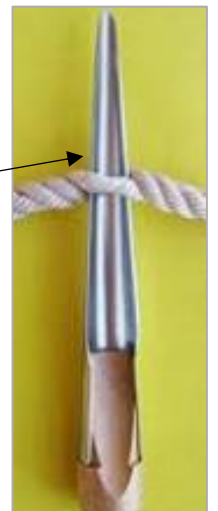
Sprayer with sea water to keep the kelps wet while unwinding

8. Pack all the above together in a demarcated place so that it is easily accessible for the team the next day.
9. Make sure the team is notified of the next day's departure time.

Hanging the droppers and unwinding of spools:

On the day that the spools will be collected from weaning to be transferred onto droppers, the following tasks need to take place to ensure that all activities run smoothly and as planned:

1. The team must arrive 30min before the boat departs to assist with loading the dropper components that were prepared during the day prior.
2. When arriving at the long-line, record the temperature of the water sea surface temperature and fill all the canisters with sea water.
3. Then lift the rope hanger to access the rung at 3m. Take the side cutter and cut the cable ties in order to place the spools with the sporophytes carefully into the canisters. Since the kelps are now ~2-2.5cm make sure that the blades do not get damaged when the spools are being placed into the canisters and when taking them out when getting unwound onto the droppers.
4. Once the spools have been collected, go to the allocated floats to where the droppers will be attached.
5. Make sure the spools are being unwound onto their corresponding floats (i.e. E, L, M).
6. Once at the floats, the spools first have to be unwound onto the 6m dropper ropes that were prepared in the days prior. This can be done by sticking the dropper rope through the spool and then by tying the top end of the hatchery twine to the top end of the dropper rope. Once secured with a cable tie, carefully run the spool along the dropper so that the hatchery twine automatically unwinds as you move along. When getting to the bottom end of the dropper rope, tie the hatchery twine to the end of the dropper rope and secure with a cable tie. All the while, one of the team members must use the sprayer to spray the ~2cm kelp sporophytes to keep them wet and moist.
7. If the rope handles that were prepared the day before are going to be used, use the splicing fid to open the dropper rope, stick a cable tie through and tie the handles tightly over the dropper rope and the hatchery twine at every metre. Alternatively, if rope handles won't be used, the hatchery twine still needs to be secured to the dropper rope with cable ties at every metre.
8. Once done with the unwinding, tie the top end of the dropper to the corresponding float and the bottom end of the dropper to a hollow brick weight and carefully lower the dropper into the sea. **DO NOT** drop the dropper overboard so that the dead weight of the brick yanks everything down.
9. Proceed as above until all the droppers have been unwound and securely attached to the long-line.
10. Once done, decant all the water out of the canisters and put all the spools together in a bucket for cleaning later.



Off-loading the boat:

1. Before off-loading, help the skipper by picking up all cable tie off-cuts and rubbish lying on the boat.
2. Off-load all the items and make sure that nothing stays behind and that all the hand tools are in the crate.
3. Record the boat use time for invoicing purposes later.

Cleaning the spools, cooler bags etc:

1. All hand tools and equipment must be rinsed off with fresh water to prevent rust, spray Q20 lubricant where needed especially on the side cutters.
2. All the spools need to be cleaned, and a plastic shoe horse works very well for this. Once all the fouling (especially the barnacles) and debris have been scrubbed off, rinse with fresh water.
3. Return the clean spools, canisters and cooler bags to the nursery for storage until the next time.

