

South African Kelp Farming Project (Phase 2 Feasibility study)

Standard Operating Procedure (SOP): Processing of kelp blades

SOP number: BSASA-3

Date: 1 March 2025

Compiled by:

The Project Manager (Dr Lizeth Botes)
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 hatchery and nursery 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 to process the kelp blades for sporulation (see SOP 4) while as far as possible avoiding contamination. This procedure should be executed in a temperature-controlled room (~15°C)

Preparation for blade processing:

1. Wear powder-free surgical gloves when preparing for and during the processing procedures.
2. Clean the work surface, two plastic trays and a cutting board with 70% ethanol (or isopropyl alcohol) and then distilled water (in that order).
3. Make sure enough paper towels are available for use during the procedure.
4. Sterilize the scalpel and any other utensils/beakers that will be needed for the procedure in the UV Steriliser.
5. Place the two plastic trays on the worktable.
6. Fill the 1st tray with distilled water (fresh water) and the 2nd with sterilised filtered seawater.

Blade processing:

1. With surgical gloves, remove the blades of the species of interest from the Styrofoam box and mesh bag and allow for the seawater to drain off.
2. Place the blade on the cutting board, and cut off the sections where the sori is most prominent while discarding the rest. To prevent excessive mucilage release, try to cut the blades width wise as far as possible.
3. Inspect the selected sections, cut away any damaged areas or visible biofouling. If there is ample material, rather discard sections with visible biofouling entirely and only use sections with no visible biofouling.
4. Microscopic biofouling may be removed using a small sterilised plastic ruler by sweeping ("scraping") lengthwise down the blade, followed by wiping off/rubbing off both sides of the blades with paper towels.
5. Put the cutting board, scalpel and used paper towel aside to be cleaned later.

6. Rinse the prepared blade pieces first in the tray containing the sterilised distilled water for 30 seconds, and then into the tray containing the sterilised filtered seawater for 30 seconds.
7. Put a tinfoil sheet down and on top of that a clean paper towel sheet. Lightly pat the blades dry with paper towel and place them next to each other (without touching) onto the clean paper towel sheet. Place another paper towel sheet on top and repeat until all blades have been stacked.
8. Once done, close the foil and wrap the sides of foil so that the stack is enclosed like a foil parcel and leave for 24 hrs.
9. If more than one species is going to be processed, clean everything before starting with the next species to prevent cross contamination.



Cleaning workplace after blade processing:

1. Clean the workplace and discard, in the appropriate manner, all used paper towels, kelp blade cut-offs and gloves.