

Challenge of Restoring Seagrass Beds in Indonesia Using Seeds

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Abstract

Enhalus acoroides is the climax species and the target species for restoration of seagrass in Indonesia.

We studied the feasibility of maintaining a seed stock for *Enhalus* restoration and studied seed germination in three types of substrata (marine sand, coral rubble, and terrestrial sand) as well as the field. We found that marine sand was the best substrate to grow for the *Enhalus* seed. The *Enhalus* grown in marine sand had the longest leaf size and roots, also the biggest root diameter. In average, the performance of the seedling in the field is promising where the survival rate is 100% in 3 months period.

However, treatment of the *Enhalus* fruit (with the seed inside) with different lengths of storage and storage temperature (room and refrigerator) showed that *Enhalus* seeds did not survive well at longer storage periods both in room temperature (~30°C) and in the refrigerator (4°C). The longest time seeds survived were 2 and 8 days in refrigerator and room temperature, respectively.

Survival rate in the field was also correlated with the performance of the seedling when we raised them in the laboratory. There was 87.5% survival of seedling treated with 2 days storage in refrigerator, whereas all the seedling treated with 2 to 5 days storage in room temperature can grow well in the field (100% survival). However, storing the seed up to 8 days even though in room temperature did not show a good survival both in laboratory and in the field (survival was less than 20%).

Our results indicate that long-term seed storage in the laboratory will not be feasible for restoration. Because using seeds for restoration is important for maintaining genetic diversity, the establishment of a seedling nursery in the field provides a viable alternative for *Enhalus* restoration, although it will be logistically more challenging than a seed storage bank.

Keywords: *Enhalus acoroides*, restoration, seed bank, seed storage