

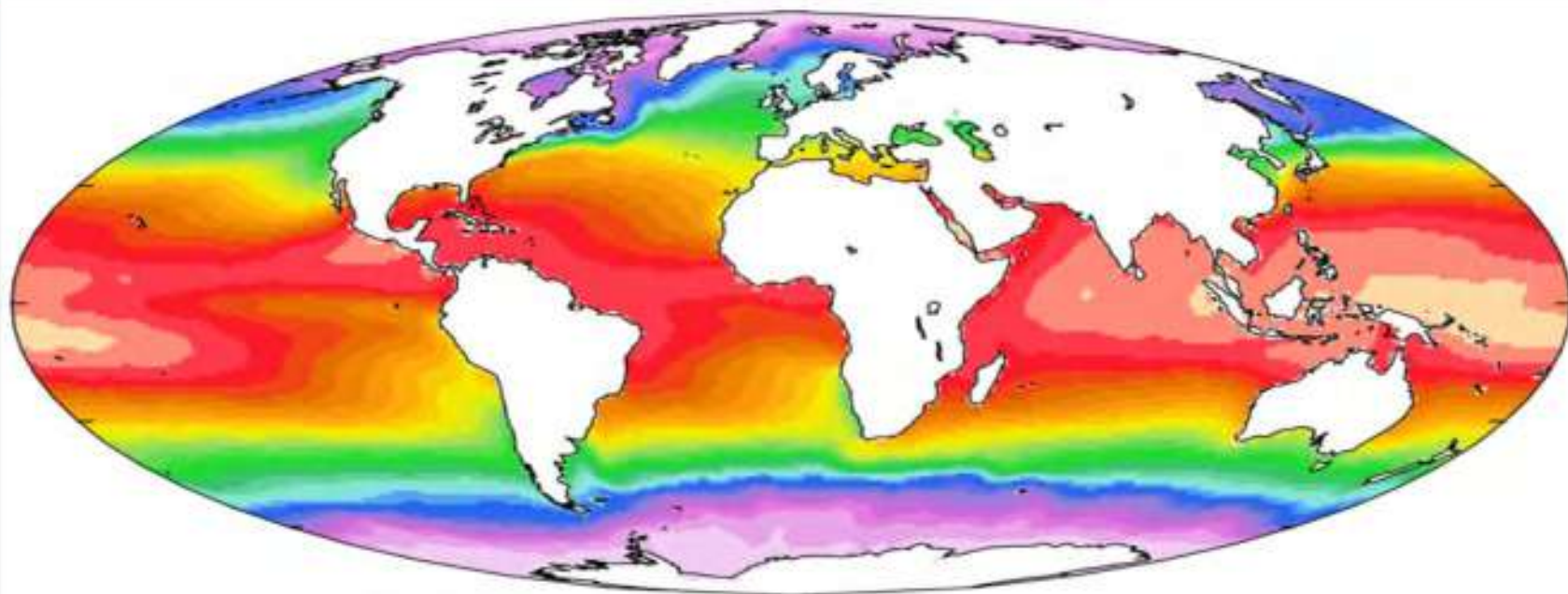
AGRICULTURE ON THE SEA ▶

SUSTAINABLE FEED, FOOD & ENERGY



GOAL- 2019
CHENNAI

www.sea6energy.com

Sea-surface temperature [$^{\circ}\text{C}$]

Some commonly cultivated vegetatively propagated red seaplants



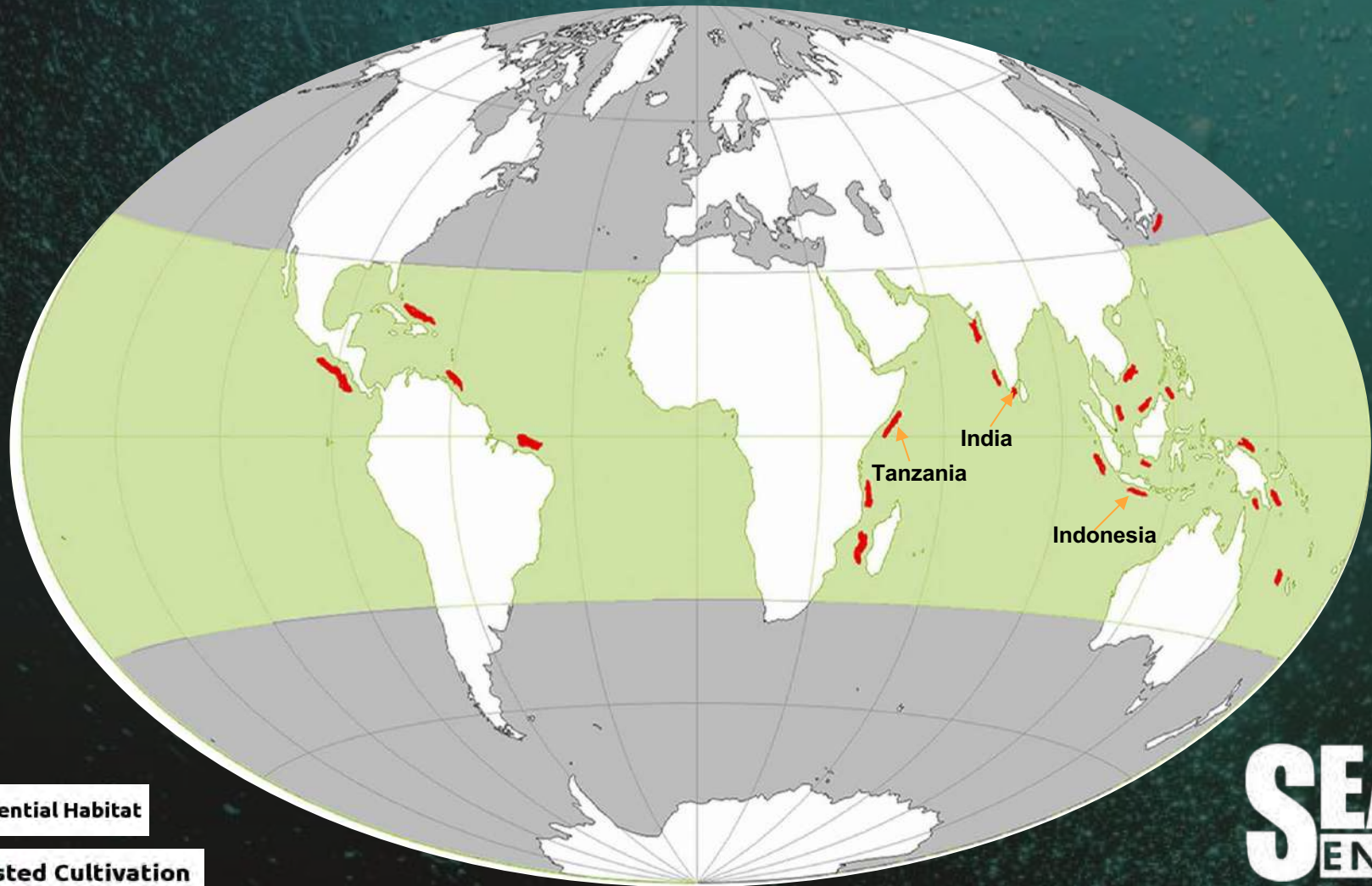
Kappaphycus spp.



Eucheuma spp.



Gracillaria spp.







Seaplant Cultivation is Labour intensive



Mechanization can lower costs

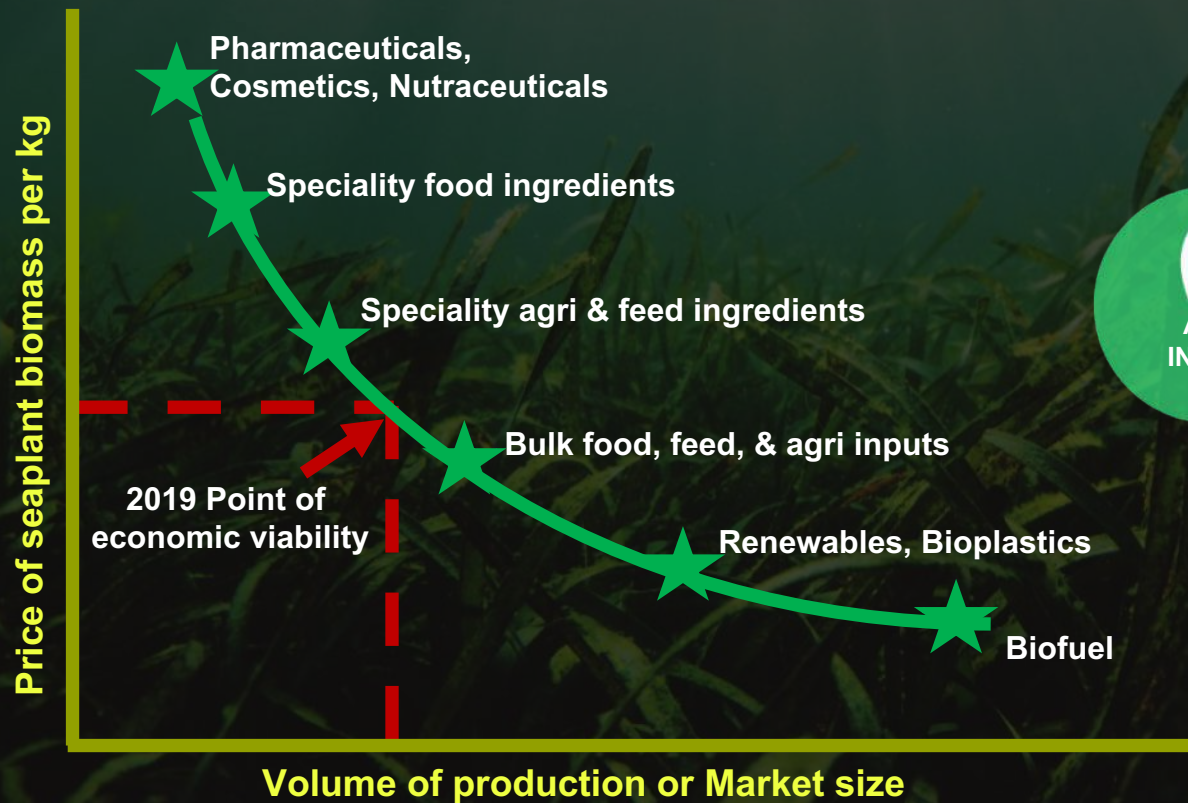




The SeaCombine automates Cultivation



Cost drives application viability



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CrossMark

Research Article

Effect of Red Seaweed *Kappaphycus alvarezii* on Growth, Salinity Stress Tolerance and Vibriosis Resistance in Shrimp *Litopenaeus vannamei* Hatchery

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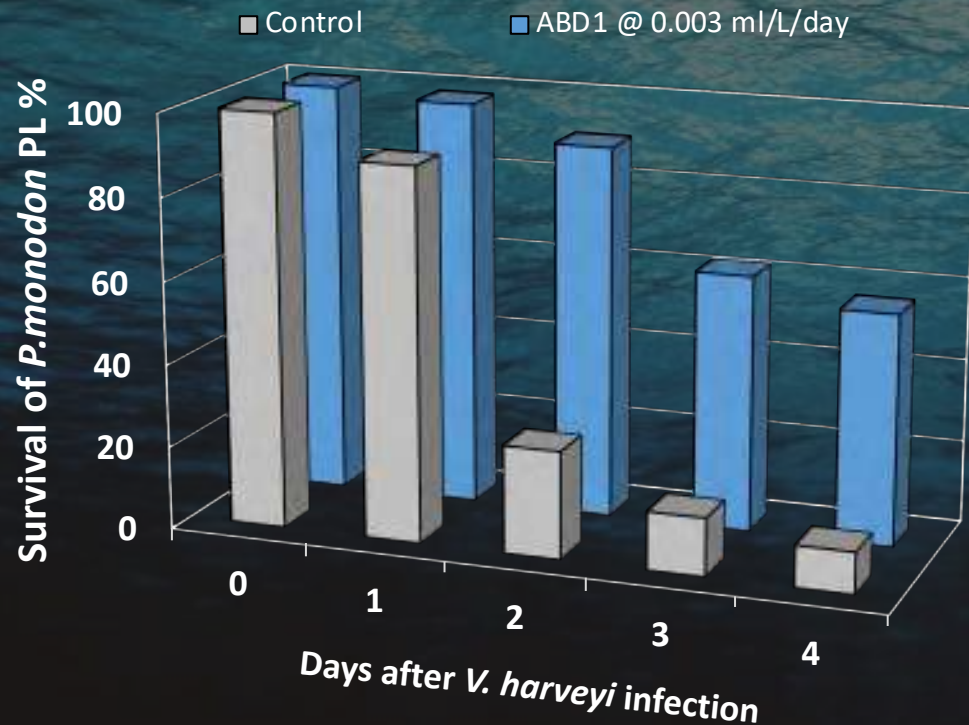
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ABD1 INCREASES SURVIVAL OF *P. monodon* PL TO *V. harveyi* INFECTION



N1-PL1, 13 day study, 100 lit tanks, 10000 larvae/tank.

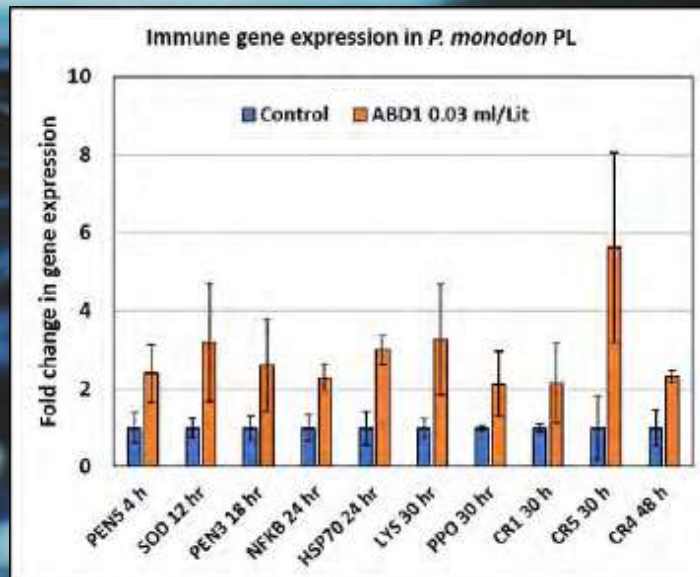
Dosage of ABD1: 0.003 and 0.01 ml per lit of culture water per day

PL10 (25 shrimp) infected with *V. harveyi* at 1×10^6 cfu/ml

Survival in ABD1 treated shrimp is more than 50% compared to 10% in control



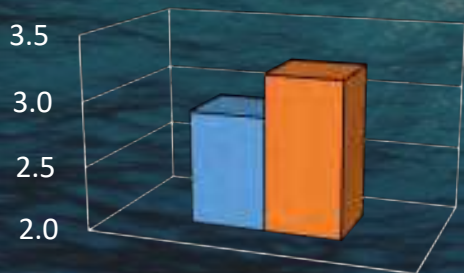
Sulfated galactans can stimulate immune response genes in shrimp hemocytes



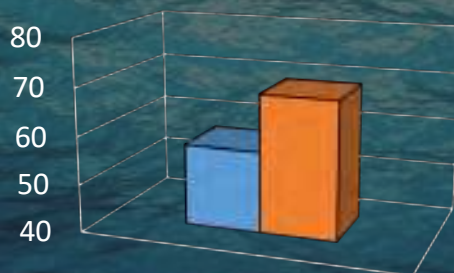
Sustained stimulation of immune response upto 48 hrs. Anti-microbial defense: Penaeidins, Crustins & Lysozyme

INCREASE IN SURVIVAL & YIELD OF *L. vannamei* IN FIELD TRIALS

Total harvest (tons/acre)*



Survival (%)

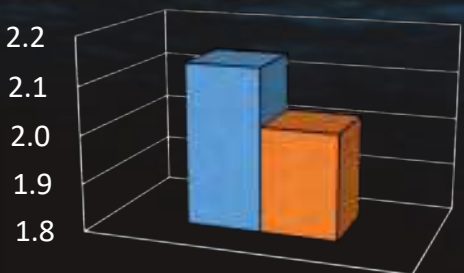


Grow out pond trial, seeded with PL11, 107 to 114 days duration, 4 lined ponds of 300 sq m each, stocking density of 60/sq m.

Dosage of ABD2: DOC 40 to 47, and DOC 55 to 61 i.e. 2 alternate weeks in the second month. Recommended @ 15 g/kg feed.

At least 11% increase in harvest due to ABD2. Harvested at ~ 50 count.

FCR



Harvested shrimp DOC 114



ABD2 improves survival of the shrimp - stimulates the immune system which improves stress tolerance.

Lower variation between treated ponds w.r.t control – assured yields.

Improves FCR by 0.12 w.r.t control.

Cost benefit ratio of using ABD2 is 1:2.7

■ Control ■ Eqqua Royyal

ABD IN TILAPIA AQUACULTURE

ABD INCREASES WEIGHT GAIN & LENGTH IN TILAPIA FRY

Benefits of ABD to Tilapia fry:

- Increase in weight gain of upto 50%
- Increase in length of upto 16%
- Increase in SGR of upto 45%

ABD INCREASES WEIGHT GAIN & LENGTH IN TILAPIA (GROW-OUT)

Benefits of ABD to Tilapia (in Grow out phase):

- Increase in weight gain of upto 40%
- Increase in length of upto 12%





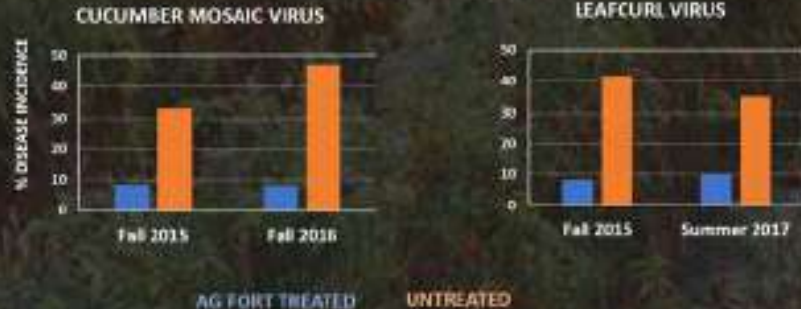
AGROGAIN IMPACT ON YIELD



Data from multi-season & multi-location trials



AG FORT TREATMENT LOWERS VIRAL INCIDENCES



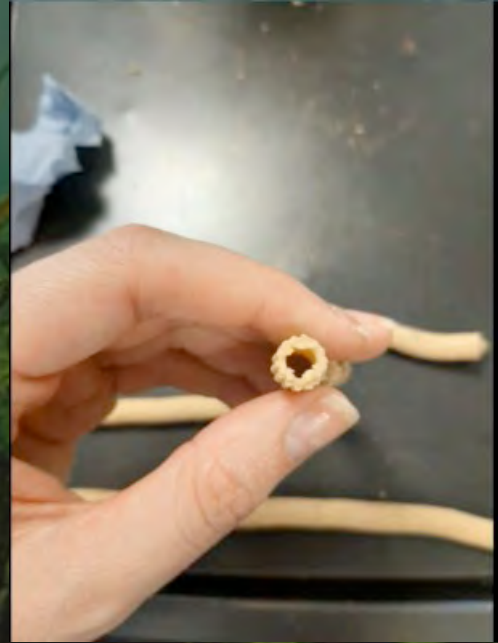
Biodegradable replacement for plastic



Sheets



Pouches & Bags



Straws

Renewable crude oil - from Seaplants



Seaplant Biomass

HTL reaction mixture

Biocrude

HTL – An accelerated conversion process that mimics nature at high temperatures & pressures

A map of India is shown with a large blue shaded area extending from the coast into the ocean, representing the potential for sea agriculture. The landmass is in a light tan color, and the surrounding ocean is a darker blue. The blue shaded area covers a significant portion of the Indian coastline and extends into the Bay of Bengal and the Arabian Sea.

**100,000 sq km in the ocean –
less than the area of Tamil Nadu**

SEA AGRICULTURE : AN OCEAN OF POSSIBILITIES