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Supplementary Material

Mama's Clams: Environmental Performance of an Extended Nursery Phase for Manila Clams—Sand-Nurseries as a Potential Strategy to Address Juvenile Scarcity

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Table S1. Life Cycle Inventory (LCI) of the production 1 kg of T10 Manila clam in the sand-nursery system. The LCI includes all production phases, thus encompassing T0.5 and T3 production phases as well.

		Unit	Total
	Manila clam T10, sand-nursery	**kg**	1,00E+00
	Manila clam, T3	**kg**	5,71E-02
	Manila clam, T0,5	**kg**	3,45E-04
Metals	Aluminium	kg	1,98E-03
	Steel	kg	8,16E-04
	Metal working	kg	2,79E-03
	Waste metals (recycling incl.)	kg	2,19E-03
Plastics	Fibreglass	kg	2,42E-04
	Latex	kg	1,80E-05
	Nylon	kg	1,79E-04
	Polyethylene	kg	7,30E-04
	Polycarbonate	kg	2,10E-06
	Polypropylene	kg	8,69E-04
	Polysterene	kg	1,12E-05
	Polyvinyl chloride	kg	1,98E-03
	Plastic working	kg	3,65E-03
	Waste plastics	kg	4,01E-03
Consumables | chemicals	Ammonium nitrate	kg	0,000211415
	Phosphoric acid	kg	1,99E-05
	Urea	kg	1,62E-05
	Trisodium phosphate	kg	3,31E-06
	Oxygen, liquid	kg	0,00791262
	Carbon dioxide, liquid	kg	0,002038099
	Lubricating oil	kg	3,30E-05

	Bleach	kg	0,000187325
	Tap water	kg	0,781828292
Other materials|equipment	Concrete block	kg	1,80E-03
	EUR-flat pallet	p	1,12E-06
	Gas boiler	p	1,35E-06
	Heat pump	p	3,00E-06
	Light emitting diode	kg	3,67E-07
	Water pump	p	2,26E-06
	Waste concrete	kg	1,80E-03
	Waste wood	kg	2,81E-05
	Used fluorescent lamp	kg	2,47E-06
	Municipal solid waste	kg	1,80E-02
	Excavation, hydraulic digger	m3	1,43E-03
Transport	Transport, freight, lorry with refrigeration machine	tkm	3,61E-03
	Transport, freight, lorry	tkm	7,17E-04
Energy	Electricity, grid {IT}	MJ	8,30E+00
	Electricity, grid {NL}	MJ	1,53E+00
	Electricity, photovoltaic {NL}	MJ	6,54E-01

Table S2. LCIA results for 1000 animals at T10 size and 1000 animals at T3 size.

Impact category	Unit	1000 animals T10	1000 animals T3
Global warming	kg CO2 eq	0.7422	0.2959
Terrestrial acidification	kg SO2 eq	0.0020	0.0008
Freshwater eutrophication	kg P eq	0.0003	0.0001
Marine eutrophication	kg N eq	0.0000	0.0000
Land use	m2a crop eq	0.4269	0.0138
Water consumption	m3	0.0102	0.0038
Abiotic depletion	kg Sb eq	0.0000	0.0000
CED	MJ	17.4153	6.4322

Table S3. Results of the Monte Carlo analysis based on data input variability determined by the Pedigree Matrix for all created processes and electricity used in the sand-nursery system, referring to the production of 1 kg of T10 juveniles Manila clam in a sand-nursery system.

Impact category	Unit	Mean	Median	SD	CV	2,5%	97,5%
Global warming	kg CO2 eq	1.11E+00	1.10E+00	7.89E-02	**7.13%**	9.66E-01	1.27E+00
Terrestrial acidification	kg SO2 eq	3.01E-03	3.00E-03	2.13E-04	**7.06%**	2.63E-03	3.46E-03
Freshwater eutrophication	kg P eq	4.16E-04	4.15E-04	2.41E-05	**5.79%**	3.73E-04	4.67E-04
Marine eutrophication	kg N eq	3.08E-05	3.07E-05	1.64E-06	**5.34%**	2.78E-05	3.42E-05
Land use	m2a crop eq	1.52E-02	1.51E-02	1.11E-03	**7.34%**	1.32E-02	1.75E-02

Water consumption	m3	6.37E-01	6.37E-01	2.63E-03	**0.41%**	6.32E-01	6.43E-01
Abiotic depletion	kg Sb eq	1.63E-05	1.63E-05	9.82E-07	**6.02%**	1.45E-05	1.84E-05
CED	MJ	2.60E+01	2.59E+01	1.26E+00	**4.86%**	2.25E+01	3.01E+01

Table S4. Life Cycle Impact Assessment (LCIA) referred to the production of 1 kg of T3 juvenile clams in a raceways/FLUPSY system.

Impact category	Unit	Total
Global warming	kg CO2 eq	6.576418
Terrestrial acidification	kg SO2 eq	0.018005
Freshwater eutrophication	kg P eq	0.003258
Marine eutrophication	kg N eq	0.00026
Land use	m2a crop eq	0.307546
Water consumption	m3	0.085244
Abiotic depletion	kg Sb eq	0.000123
Cumulative Energy Demand	MJ	142.9373

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