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European Shrimp RAS systems and Management Strategies

Bert Wecker

powered by neomar

Key facts German market penaeid shrimp

- Consumption 20.000 t per year (BLE 2016)
- Second place in consumer popularity (NSC)
- German production appr. 50t per year
- Expected market volume 300-500t per year
- European production appr. 100-150t per year

White Tiger Shrimp
Litopeanaeus vannamei

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Firma Shop Rezepte

Zurück zur Übersicht nächster Artikel

White Tiger Garnelen 500 g Schale

mit Kopf und Schale, frisch, 28/40 Stück pro kg

ab 39,50 € *

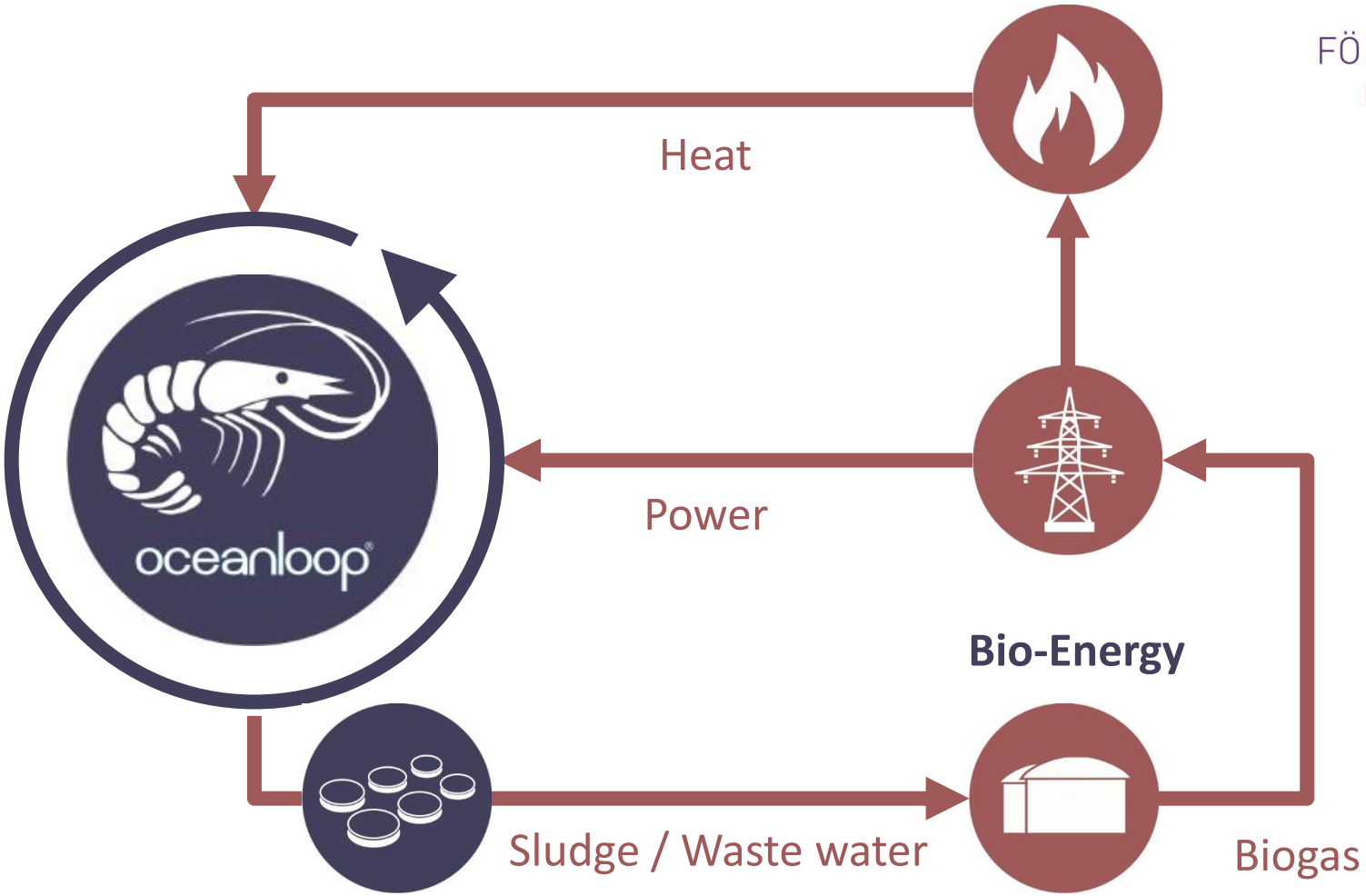
Gewicht: 0.5 kg

Kilogramm:

Kilogramm wählen

In den Warenkorb

In die Lieblingsliste
Auf den Merkzettel
Fragen zu diesem Artikel?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Heat
oceanloop
Power
Bio-Energy
Sludge / Waste water
Biogas

Penaeus monodon · Pleoticus muelleri · Litopenaeus stylirostris · Litopenaeus vannamei · Plesiopenaeus edwardsianus

Individual weight shrimp [g]

300
250
200
150
100
50
0

German White Tiger farms

€- €20 €40 €60 €80 €100 €120 €140

Sales price in € / kg Shrimp incl. Tax, Packaging and Logistics

Clear Water RAS Shrimp Farming

- Constant and Reliable Product Quality
- Controlled Hygienic Condition
- In Situ-Control of Behaviour & Health
- Better Feeding Management
- Easier Biomass Determination


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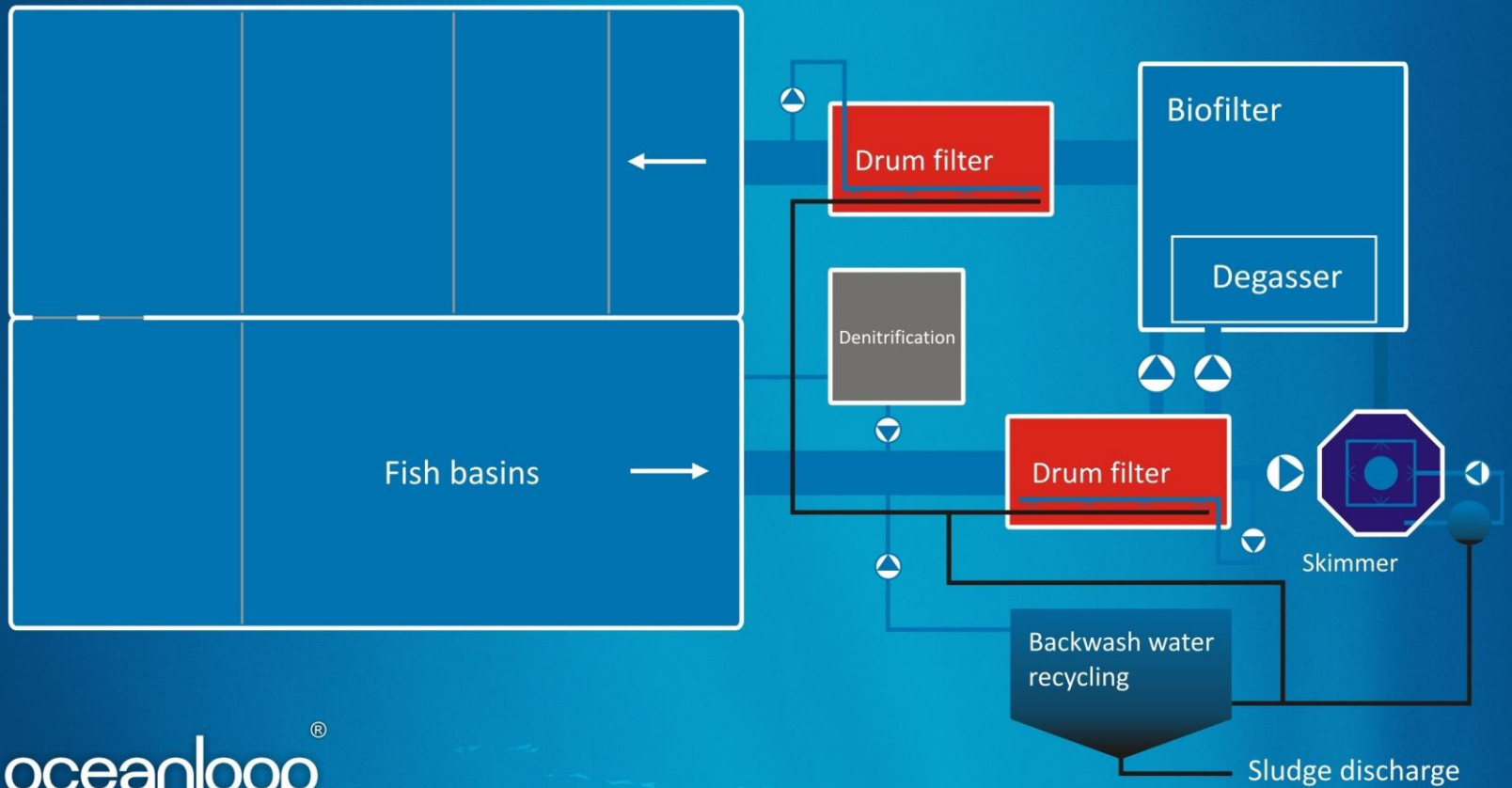
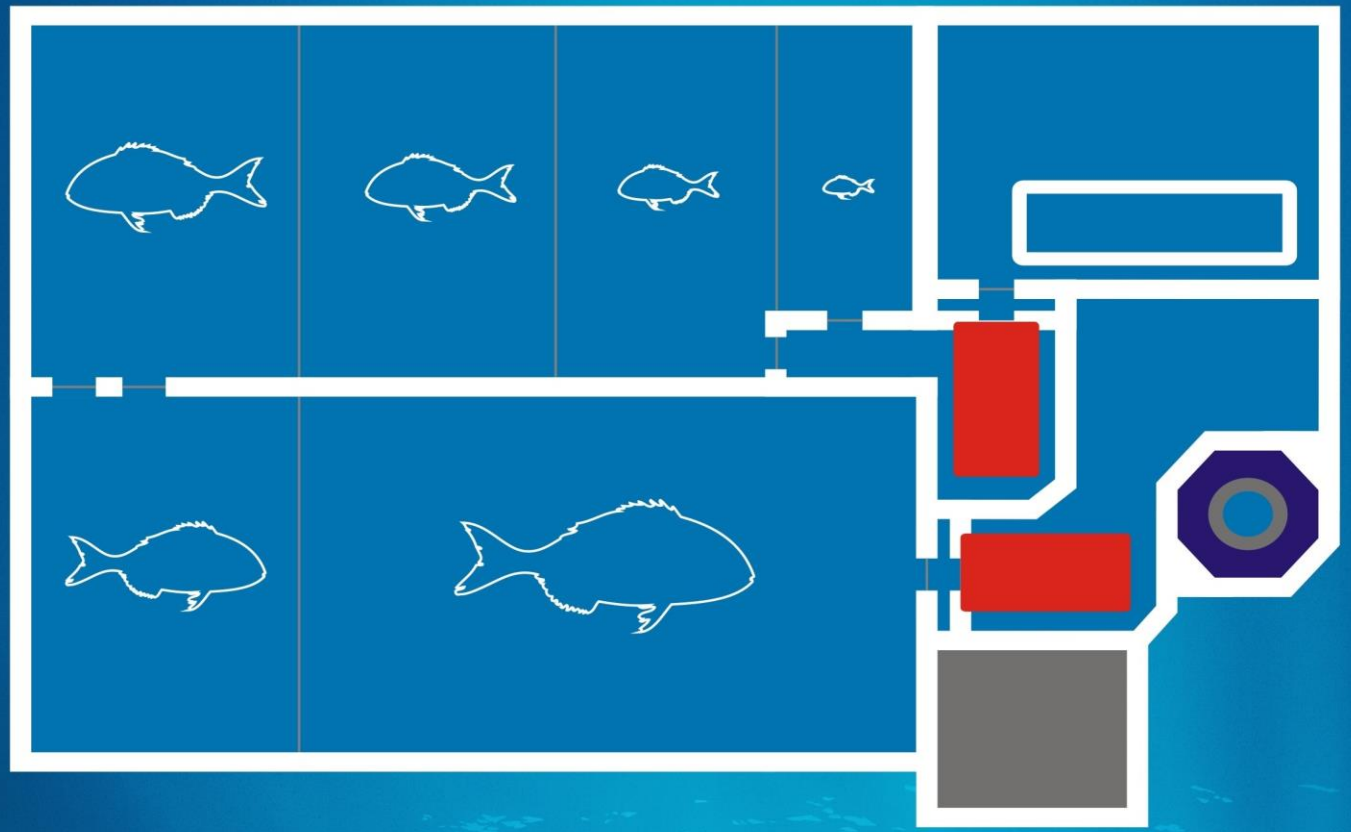
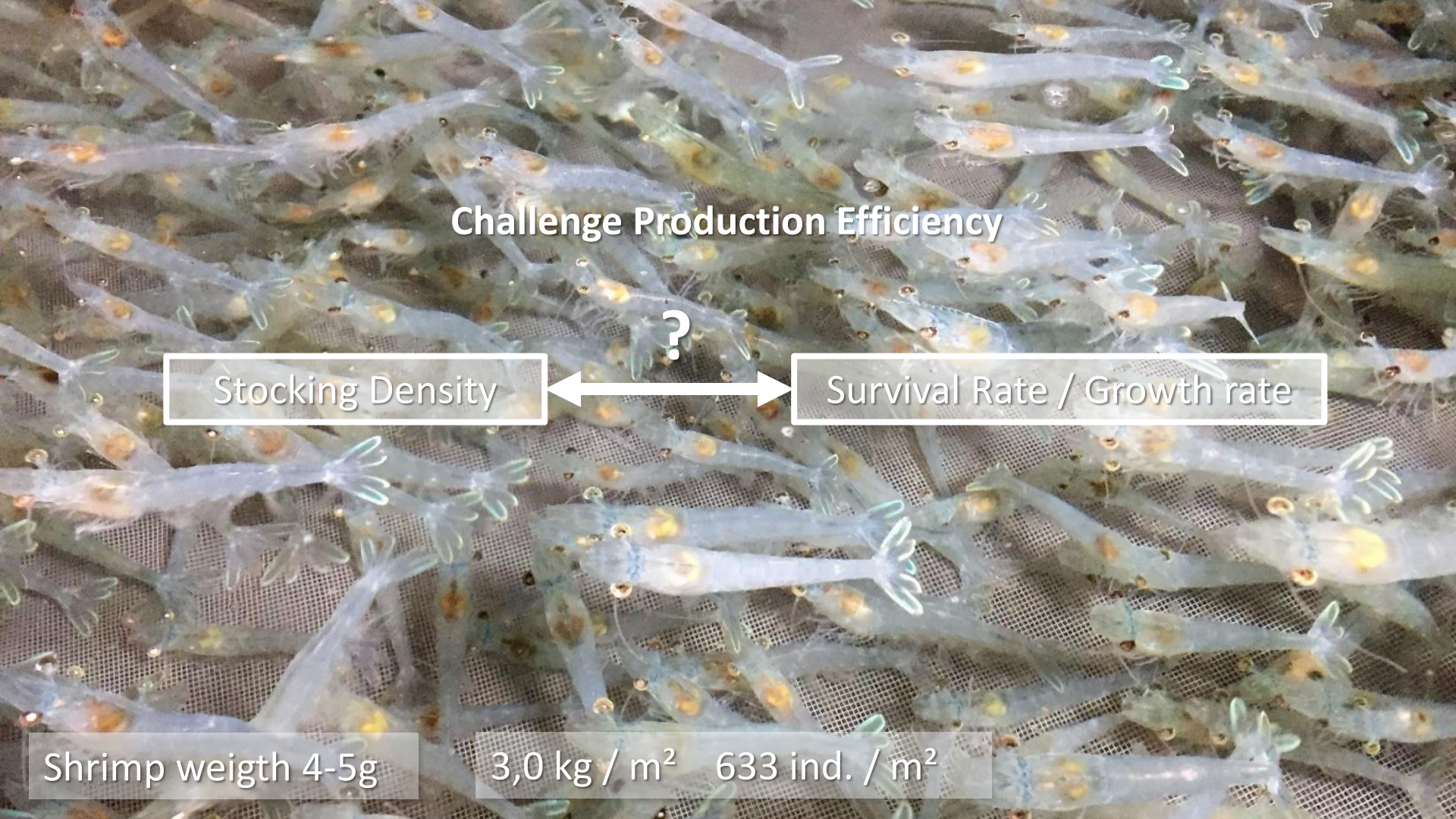

Fish basins
Drum filter
Biofilter
Degasser
Denitrification
Drum filter
Skimmer
Backwash water recycling
Sludge discharge

oceanloop®




Challenge Production Efficiency
?
Stocking Density
Survival Rate / Growth rate
Shrimp weigth 4-5g
3,0 kg / m²
633 ind. / m²

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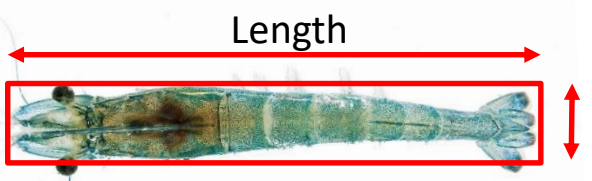
How much space is needed?

Comfort-Zone
? %

Modelling Shrimp Area



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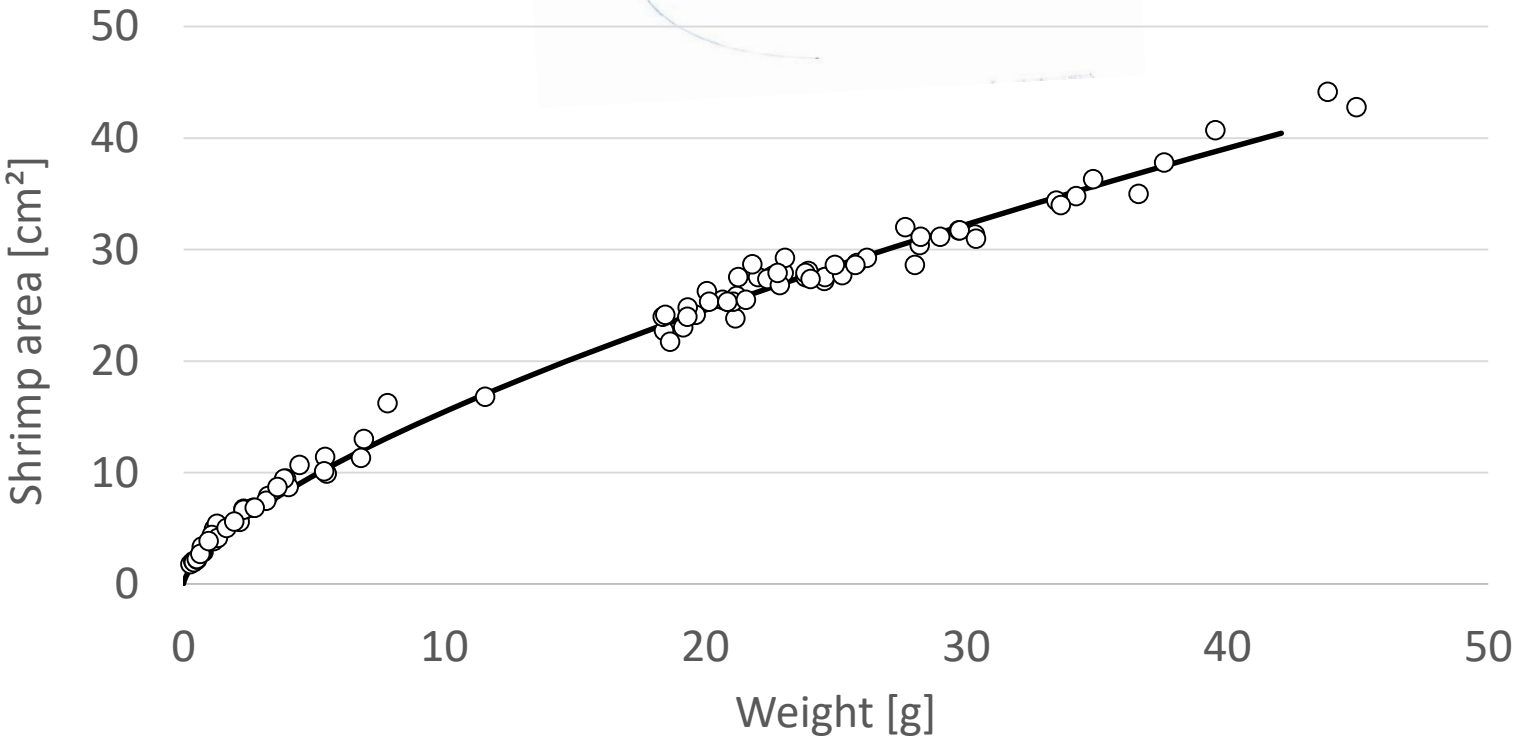

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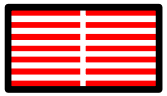
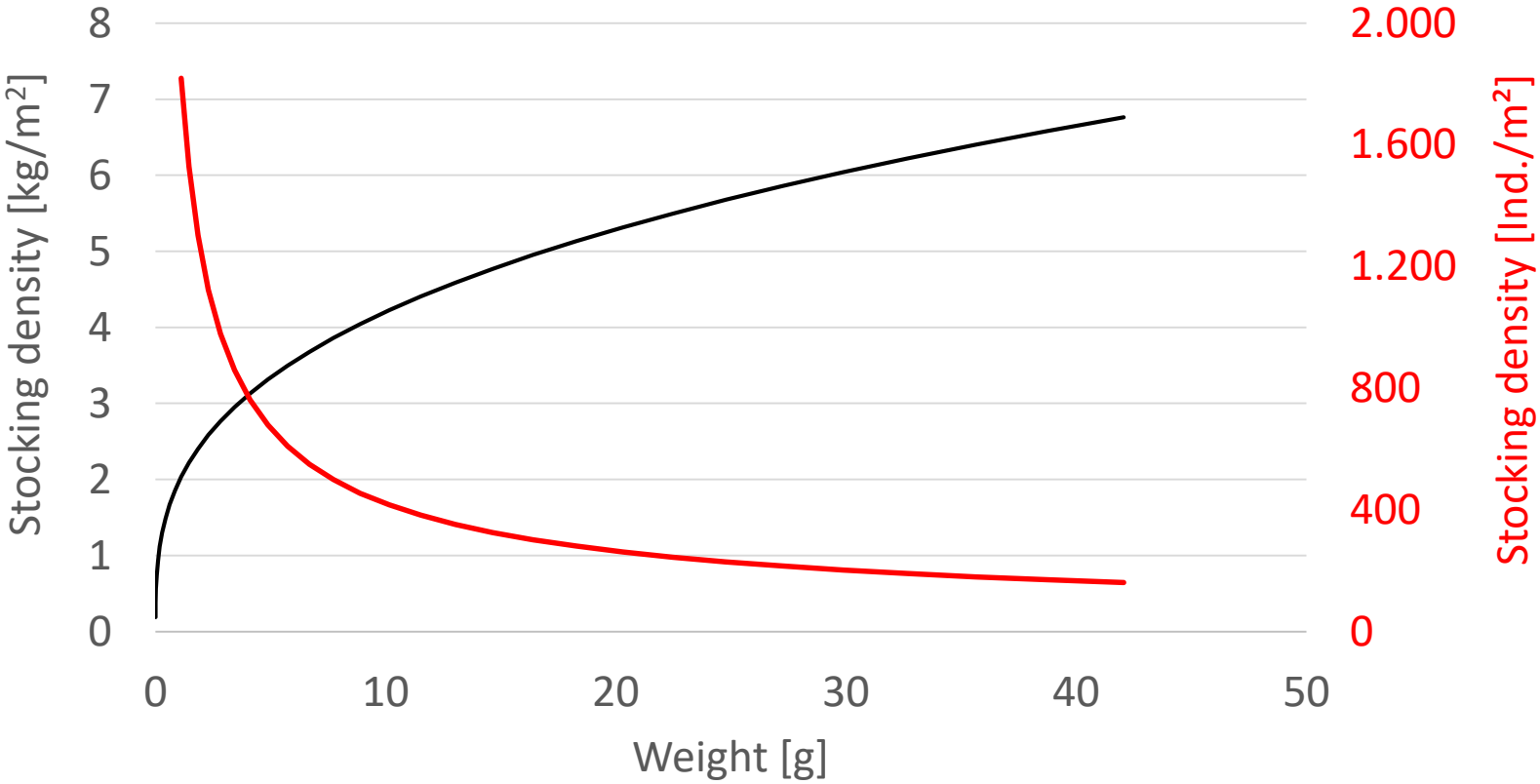
100% Use of Available Area (no comfort zone)



100%



65% Use of Available Area

65%

Monthly Performance (5g Shrimp)

2017	2018
Mortality 25%	Mortality <10%
Growth 1,3g	Growth 6,0g

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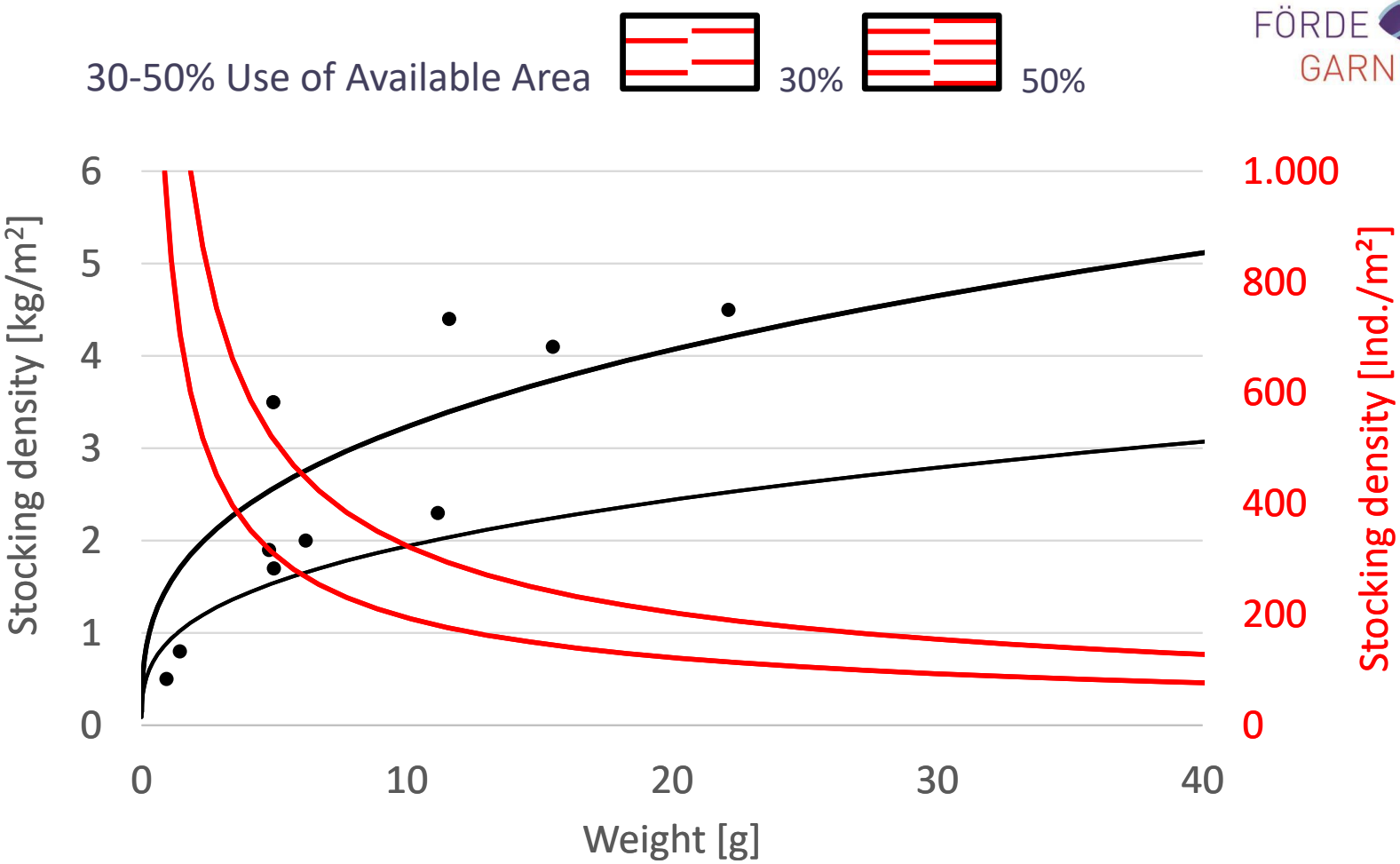


Stocking density up to 20 kg / m³

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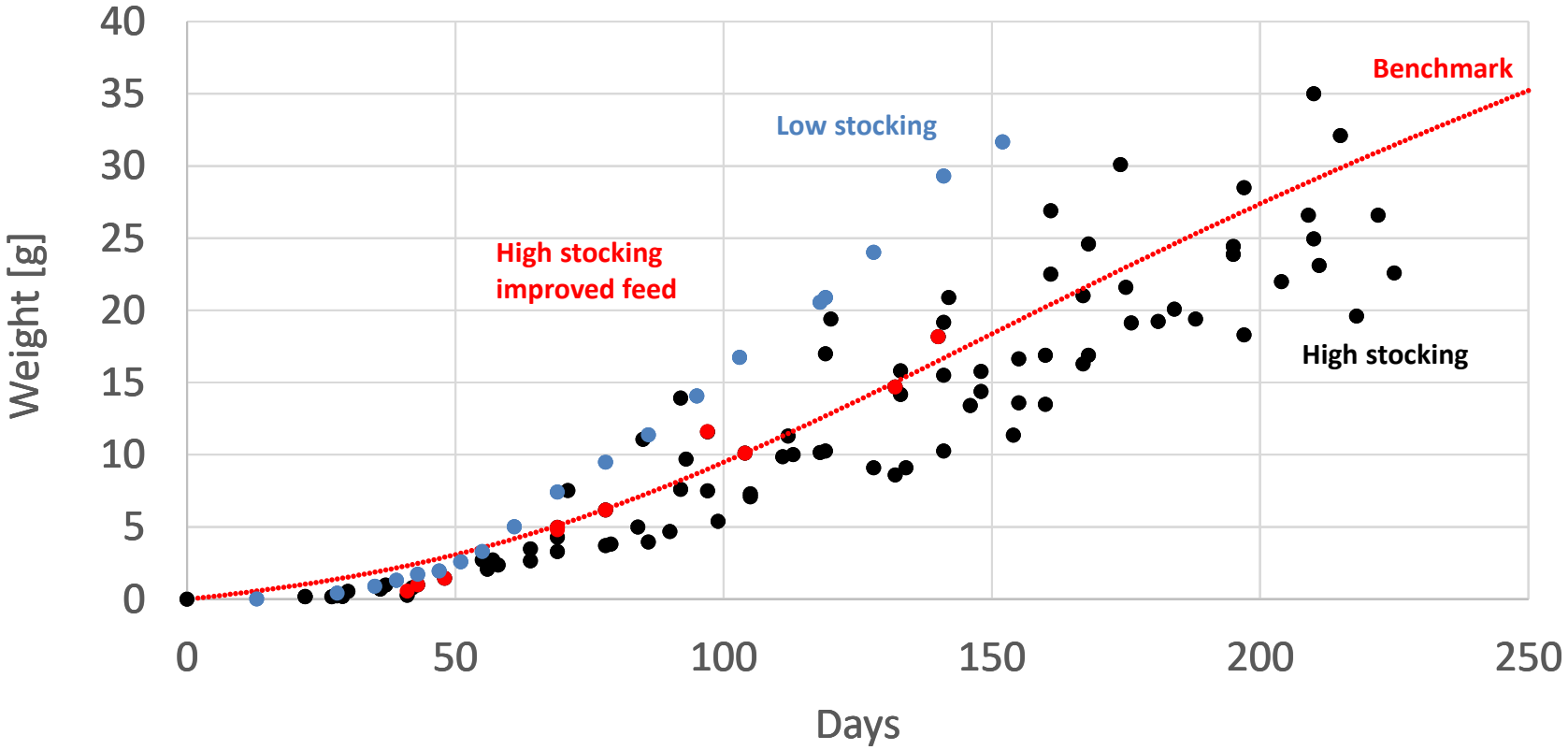
Growth data



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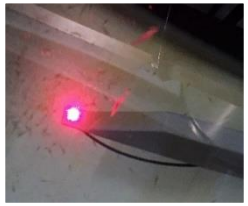
Online Biomass Control Nursery System



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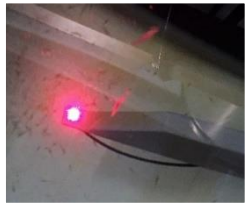
Online Biomass Control Nursery System



Biomass Control Production System

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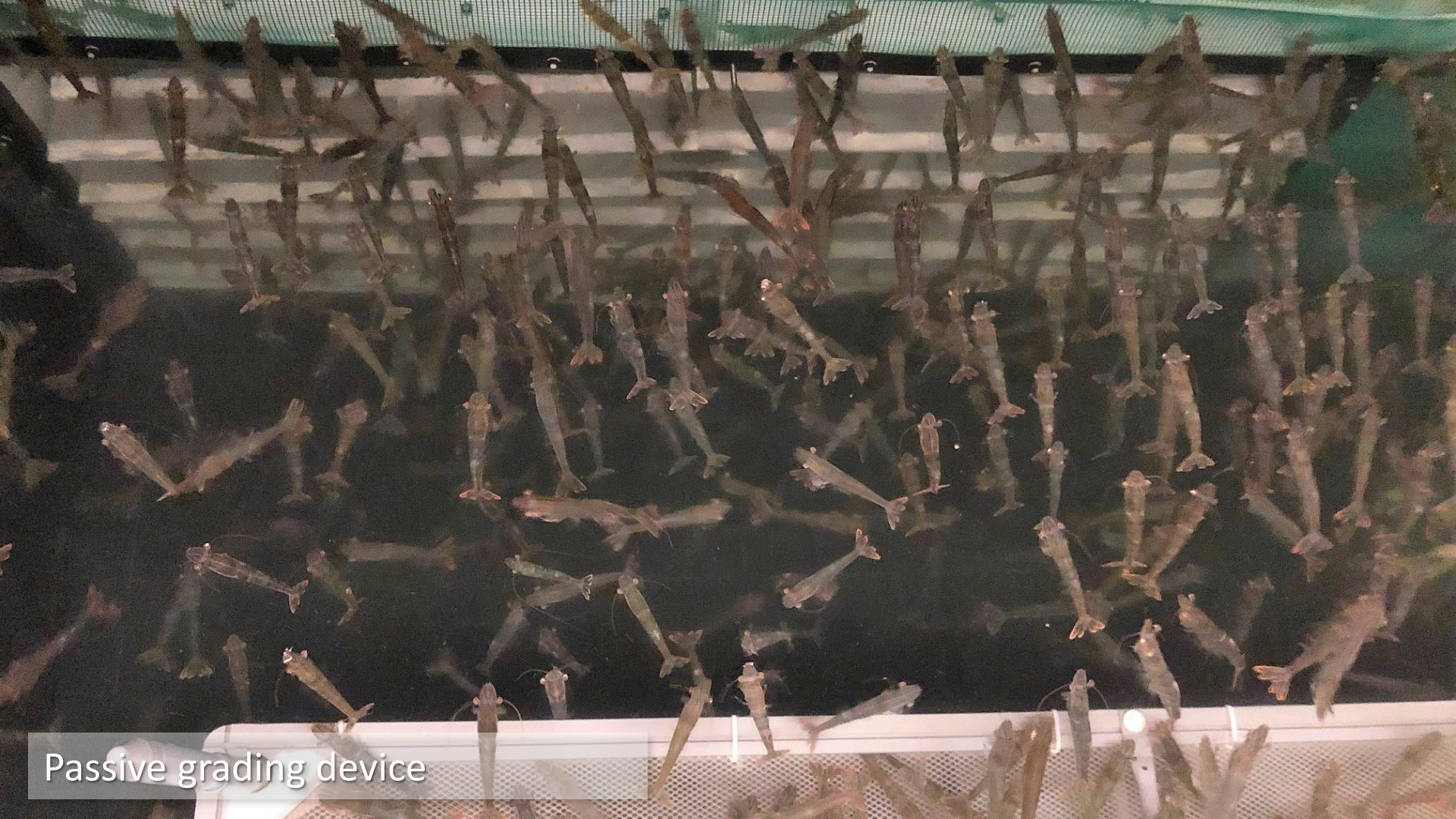
Important Production Criteria

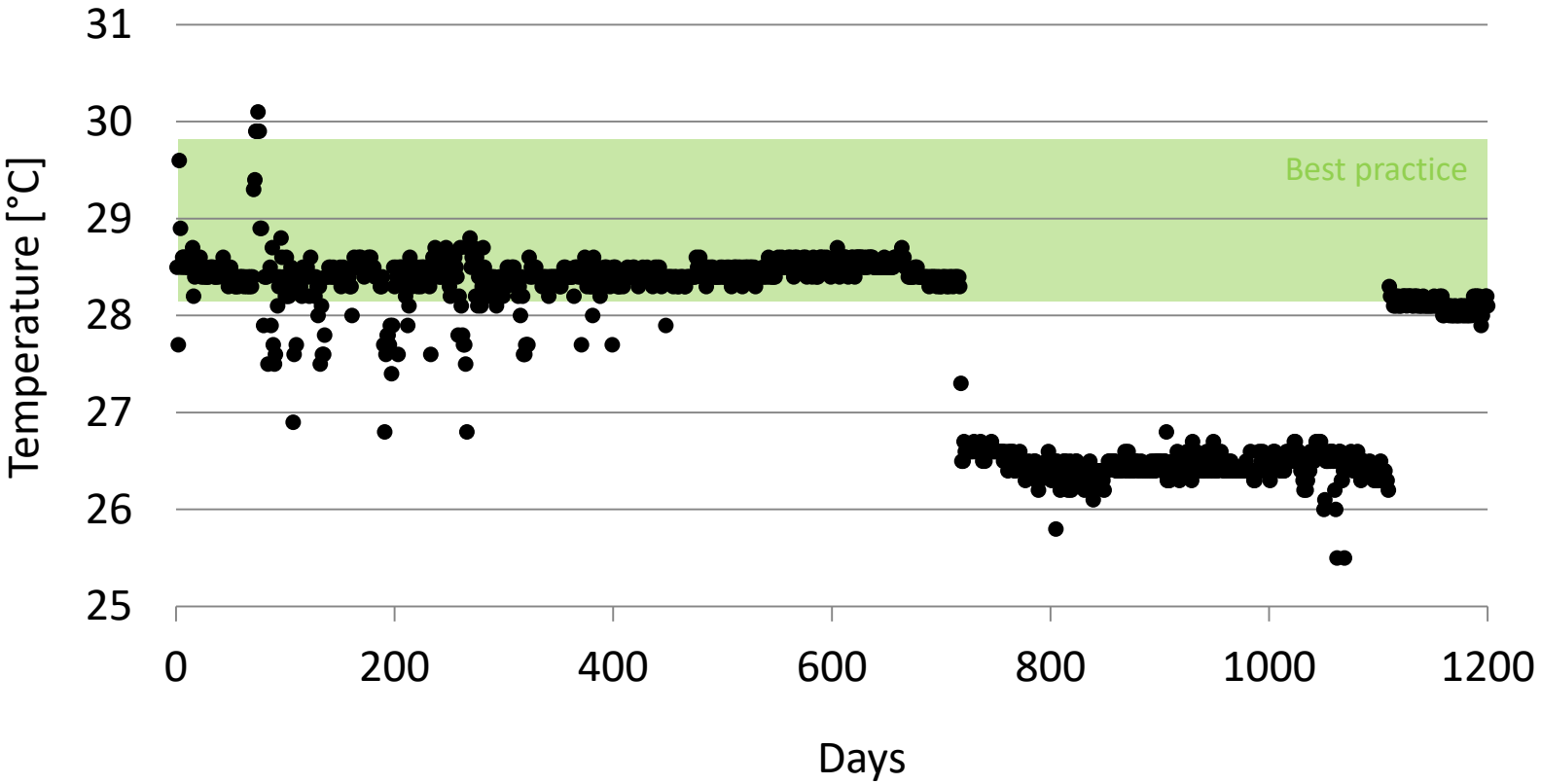
- Sufficient Area: „Artificial mangrove system“
- Quality of Post Larvae / Nursery - Own hatchery?
- Water Quality / Abiotic Conditions: Best practice (the following slides)
- Good Feed and Feeding Practices: Automatic short intervall feeding
- Shrimp Handling: Passive grading system



Passive grading device

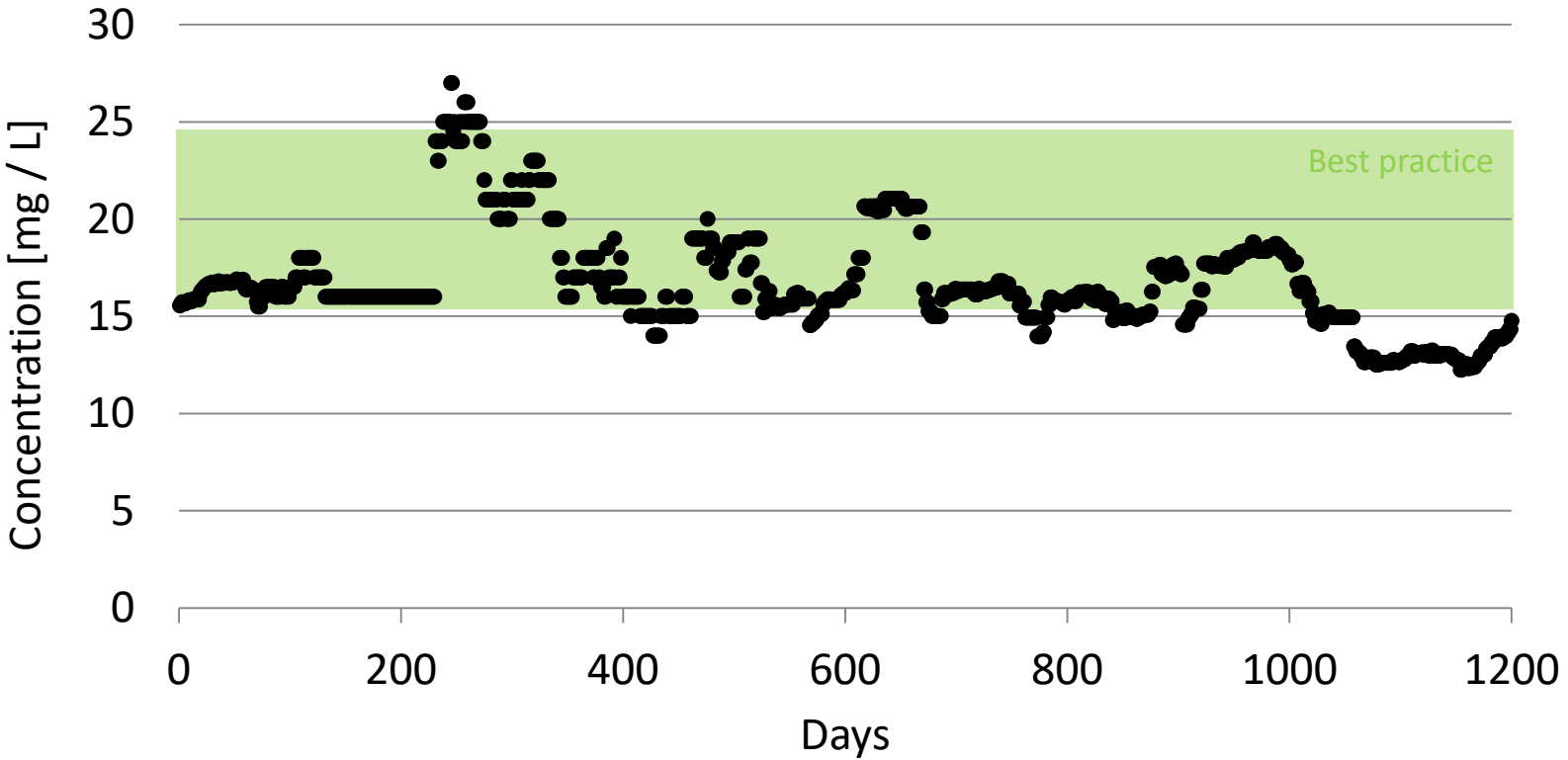
Water Quality Parameter: Temperature

Optimum range 26 – 30 °C (Wickins & Lee 2002)



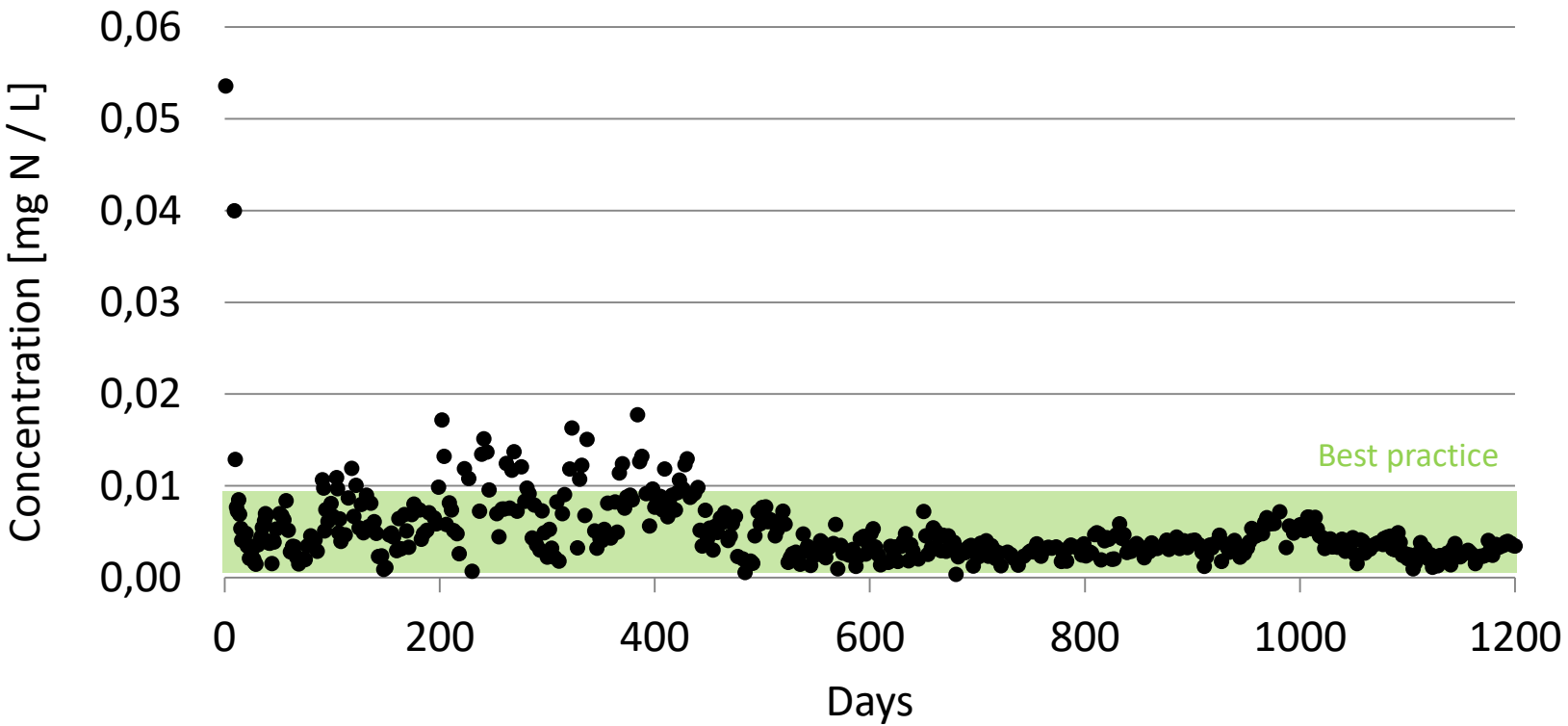
Water Quality Parameter: Salinity

Optimum range 15-25 g / L (Boyd 1989); 10-15 g / L (Briggs et al. 1991)



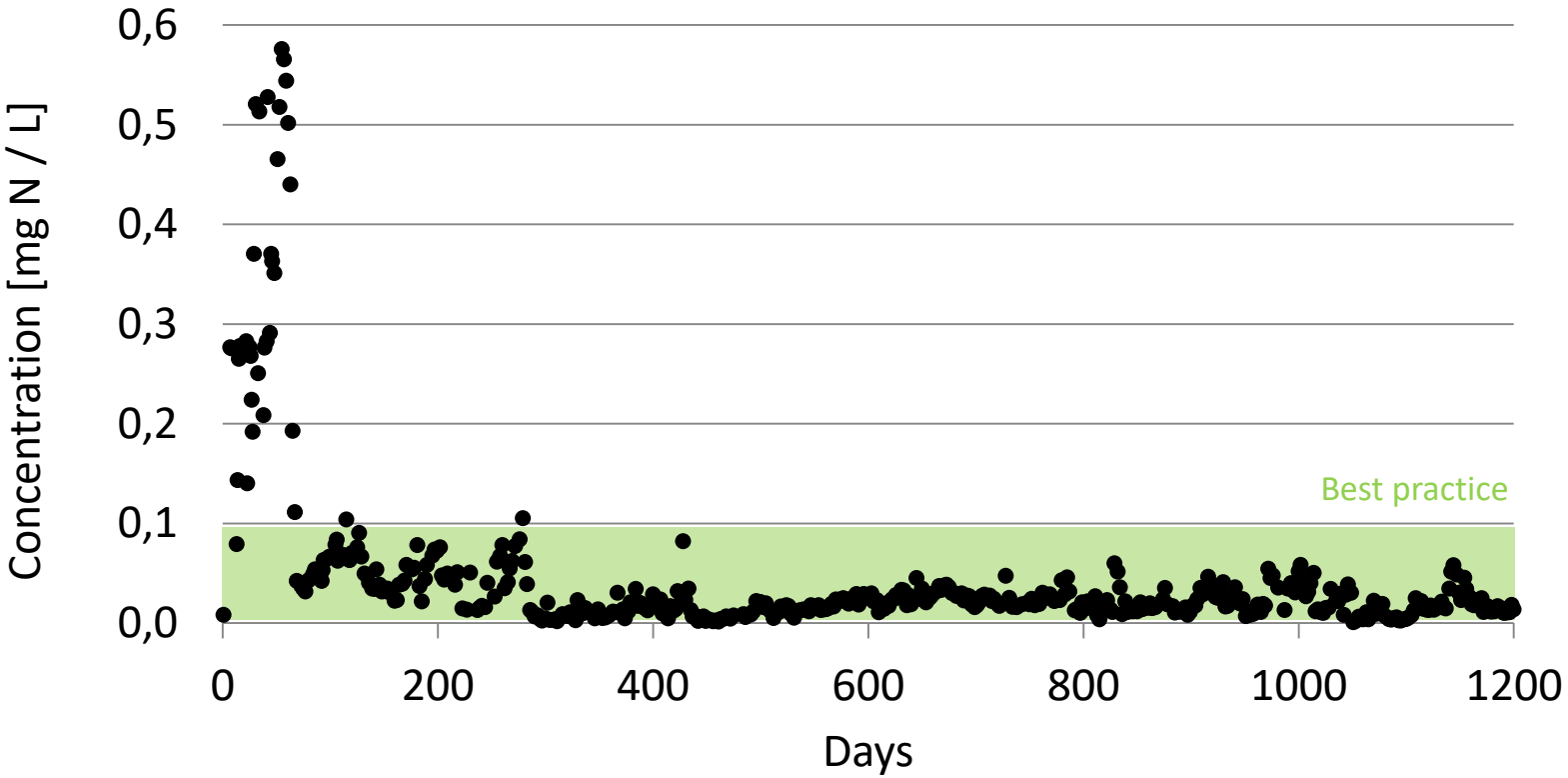
Water Quality Parameter: Ammonia nitrogen

Optimum range <0,03 mg NH3-N / L (Van Wyk et al. 1999)



Water Quality Parameter: Nitrite nitrogen

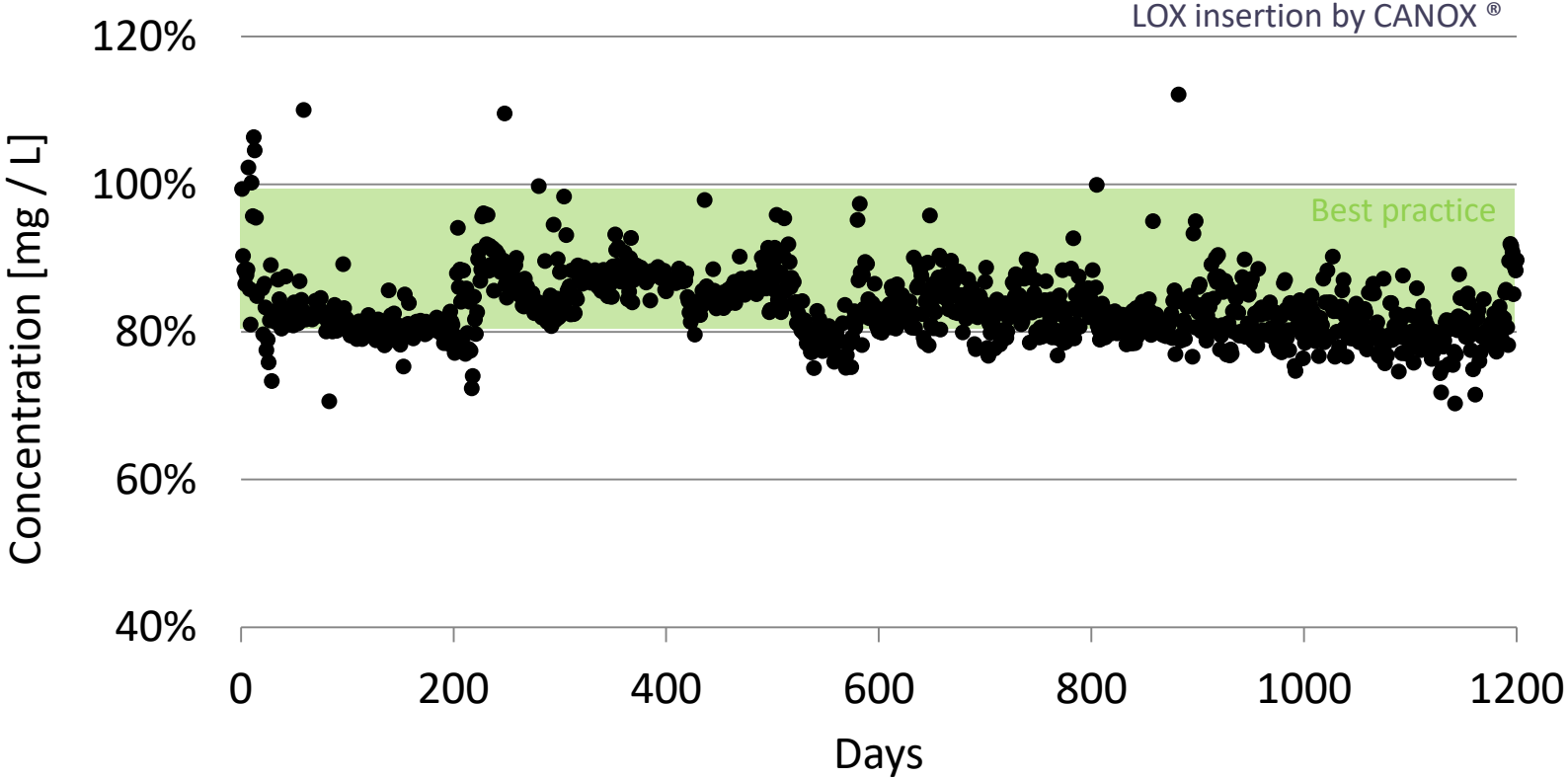
Optimum range <0,3 mg N / L (Elovaara 2001)



Water Quality Parameter: Oxygen

Optimum range >80 % (Van Wyk et al. 1999)

LOX insertion by CANOX ®



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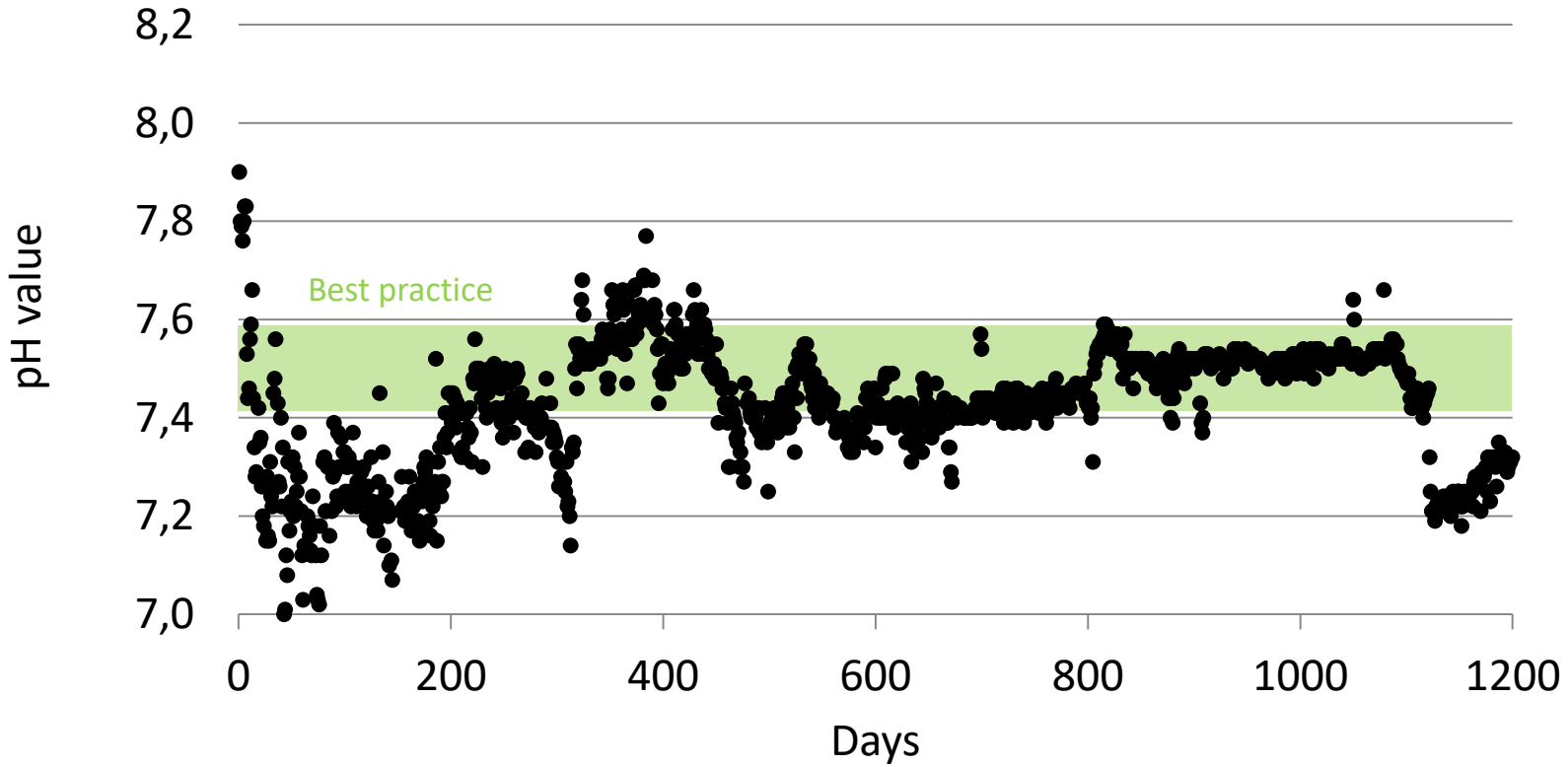
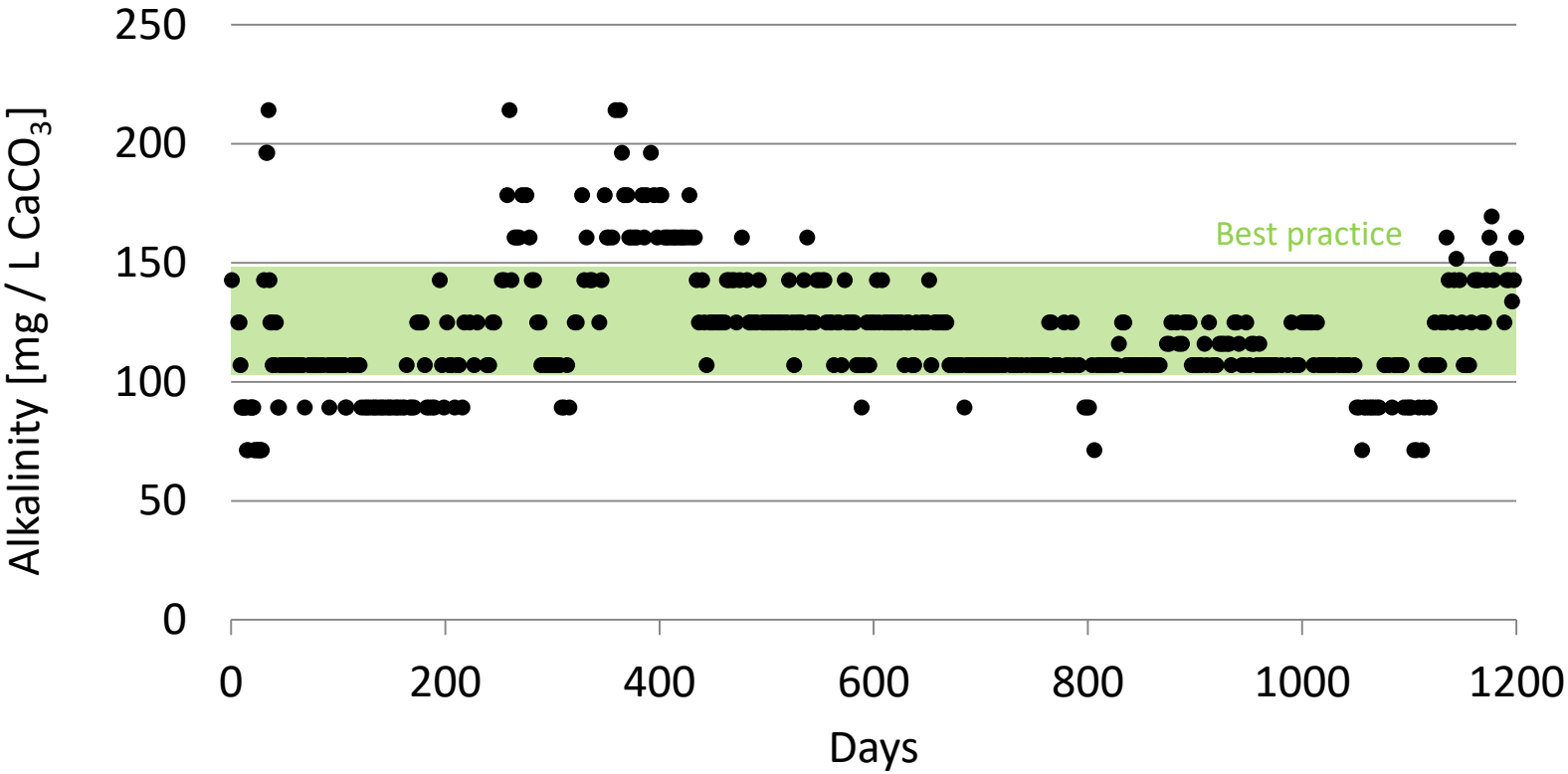
Water Quality Parameter: pH Value

Optimum range 7,0 – 8,3 (Elovaara 2001)



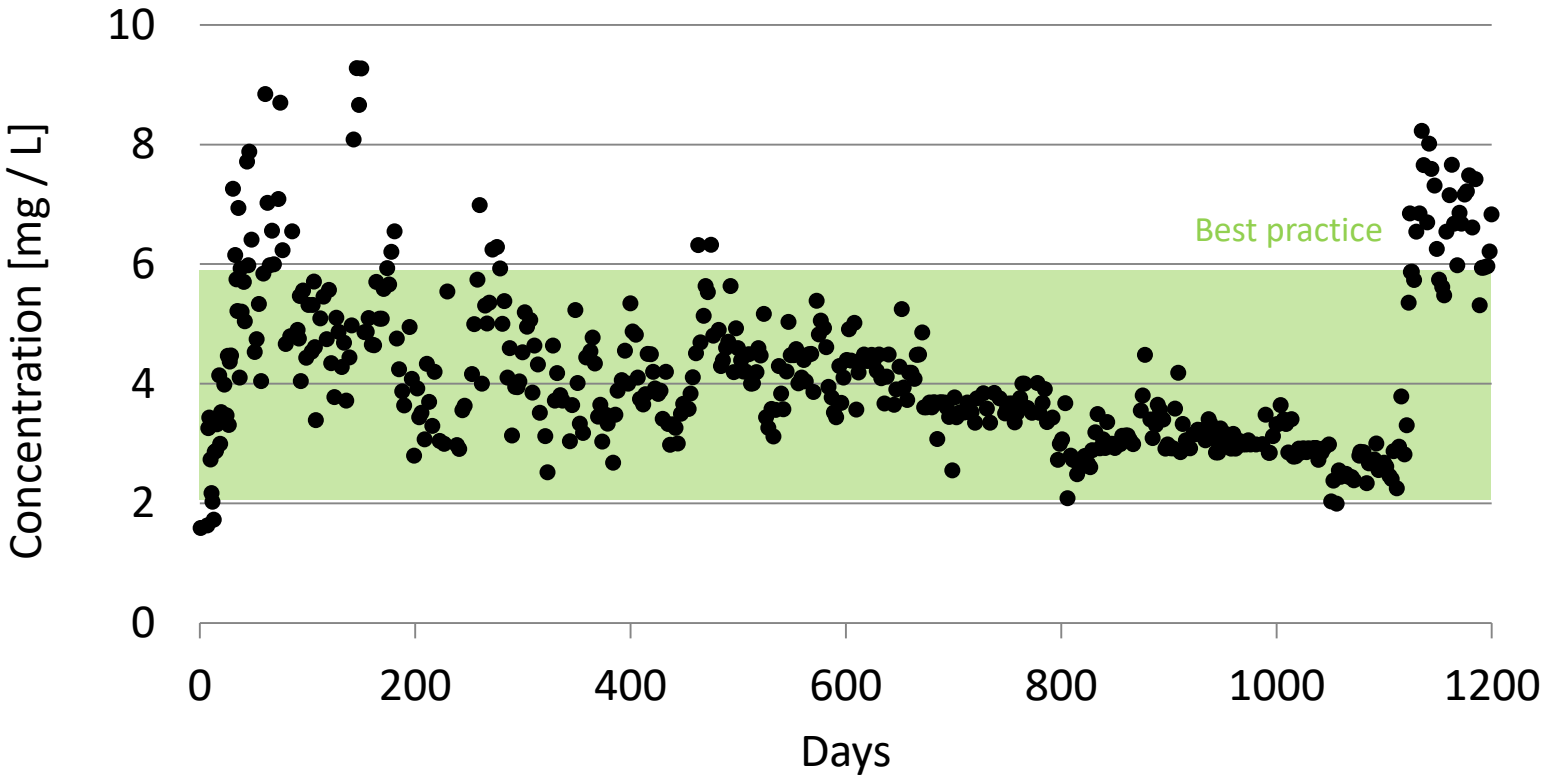
Water Quality Parameter: Alkalinity

Optimum range 100 – 150 mg $CaCO_3$ / L (Ebeling et al. 2006)



Water Quality Parameter: Carbon dioxide

Optimum range <6,2 mg/L (Wasielesky et al. 2014)



Relation between CO_2, pH & Alkalinity (28°C, 15 g/L Salinity)

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CO_2 (mg/L)		Alkalinity [mg $CaCO_3$ / L]																			
		18	36	54	71	89	107	125	143	161	178	196	214	232	250	268	286	303	321	339	357
pH value	7,00	2	5	7	9	12	14	16	19	21	23	26	28	30	33	35	37	40	42	44	47
	7,10	2	4	6	7	9	11	13	15	17	19	20	22	24	26	28	30	32	33	35	37
	7,20	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24	25	26	28	29
	7,30	1	2	4	5	6	7	8	9	11	12	13	14	15	16	18	19	20	21	22	23
	7,40	1	2	3	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	19
	7,50	1	1	2	3	4	4	5	6	7	7	8	9	10	10	11	12	13	13	14	15
	7,60	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12
	7,70	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	8	8	9	9
	7,80	0	1	1	1	2	2	3	3	3	4	4	4	5	5	6	6	6	7	7	7
	7,90	0	1	1	1	1	2	2	2	3	3	3	4	4	4	4	5	5	5	6	6
	8,00	0	0	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	5
	8,10	0	0	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4
	8,20	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3

Optimum

high CO2

high pH

low alkalinity

high alkalinity

Influence of Light Wave Length on Shrimp Growth

Nadine Lefering 2017

Our Challenges

- Genetic quality of postlarvae
- Feed and feed additives
- Control of bacterial diseases

Thanks for your attention.