RESEARCH INSTITUTE FOR AQUACULTURE NO2
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PRACTICAL SUPER INTENSIVE WHITE LEG SHRIMP FARMS IN THE MEKONG DELTA, VIETNAM

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Outline

1. **Introduction**

- Shrimp land area, models, and species
- Shrimp production from 2013-2016 in the Mekong Delta, Viet Nam

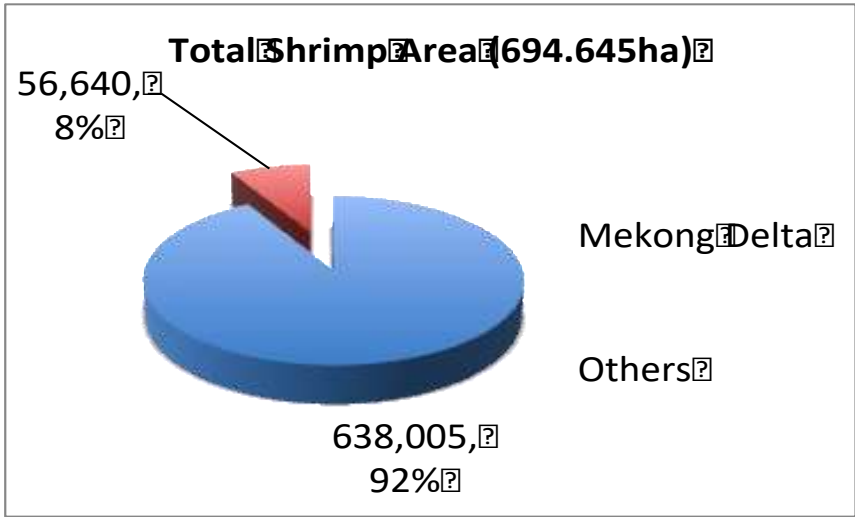
2. **Status of super intensive white leg shrimp farms**

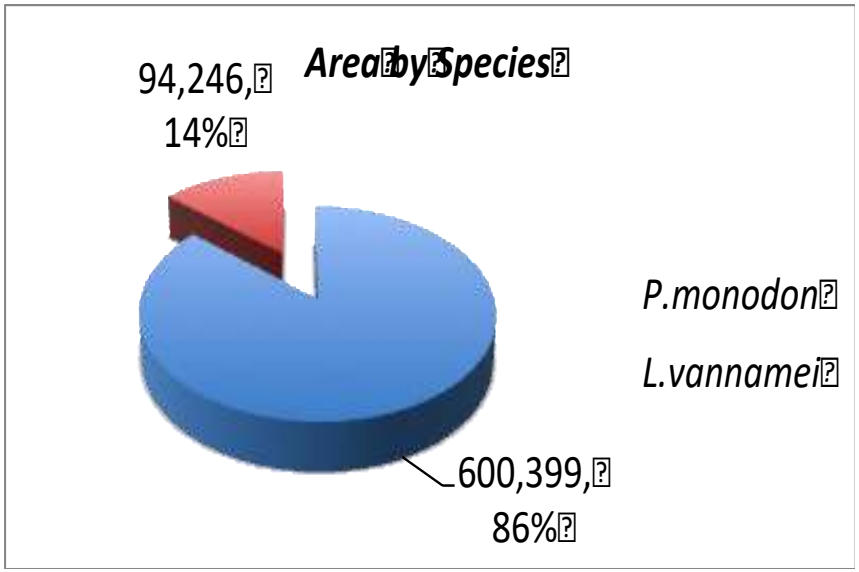
- Description
- Advantages
- Disadvantages

3. **Demonstration model**

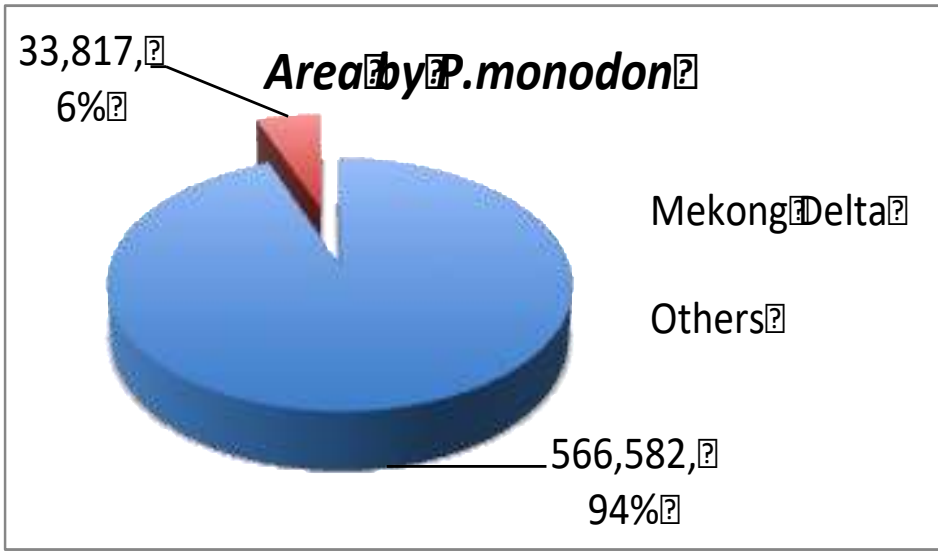
INTRODUCTION

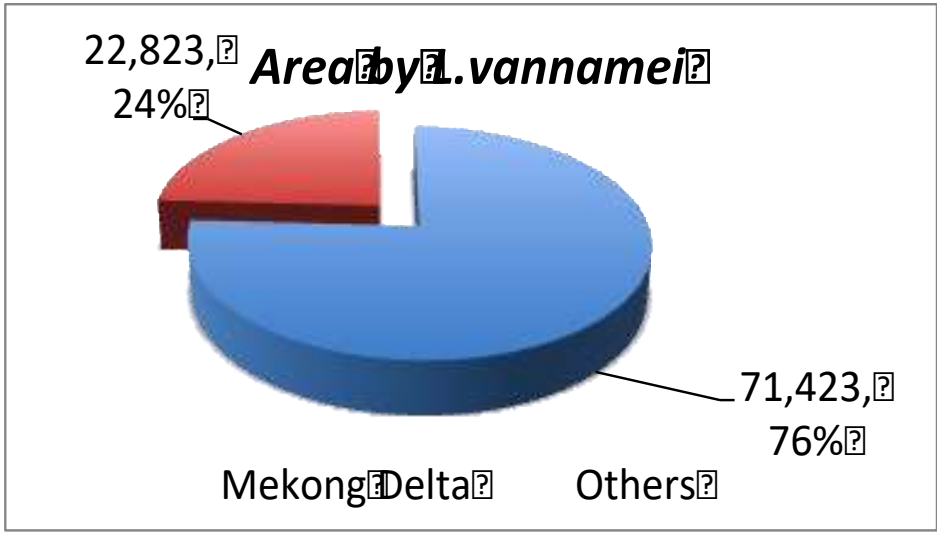
SHRIMP LAND AREA BY 2016



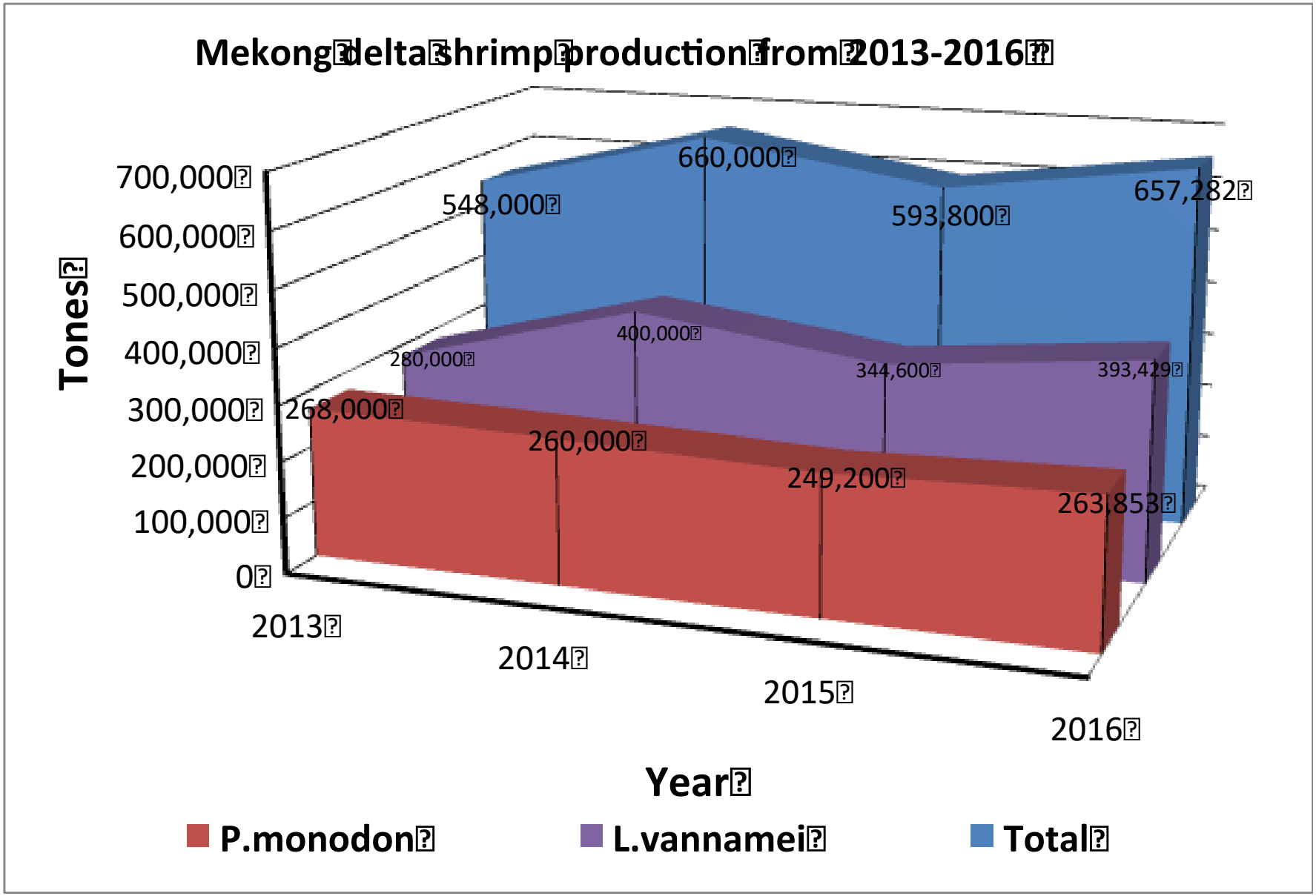


AREA BY SHRIMP SPECIES IN 2016





SHRIMP PRODUCTION OF THE MEKONG DELTA



SHRIMP MODELS

IMPROVED EXTENSIVE MODELS

Rice-shrimp model in Ca Mau province, Viet Nam
(Source: Vu Anh Tuan, 2015)

IMPROVED EXTENSIVE MODEL

Traditional shrimp extensive model in Ca Mau, Viet Nam
(Source: Vu Anh Tuan, 2015)

IMPROVED EXTENSIVE MODEL

Mixed mangrove shrimp farm in Ca Mau province, Viet Nam
(Sourced from Vu Anh Tuan, 2015)

INTENSIVE MODELS

Intensive with earth pond in Bac Lieu province, Viet Nam. Sourced Vu Anh Tuan, 2014

Intensive with bioflocs, Binh Thuan province, Viet Nam. Sourced from Truong Minh Duc, 2012

SUPER INTENSIVE MODELS

Semi-Bioflocs model is widely applied in Mekong Delta. Sourced: www.trucanh.vn dated 26.10.2016.

Water exchange model is widely applied in Ca Mau and other provinces in Mekong Delta. Sourced by Vu Anh Tuan, 2017.

SUPER INTENSIVE MODELS

Green house model in Bac Lieu Province, Viet Nam. Sourced by Research Institute For Aquaculture No.2, 2015)

Steel frame model in Bac Lieu province, Viet Nam. Sourced from www.vietlinh.vn, date: 10/2/2018)

STATUS OF SUPER INTENSIVE SHRIMP FARMS

Semi-Bioflocs and water exchange models

- **extensively applied (more than 300 ha)**
- **high yield: 100 tones/ha/year**
- **high successful rate: > 90%**

Summary of technical data

Order	Parameters	Unit	Mean (N=15)
1	Average land area/farm	m2	24.000
2	Numbers of grow-out pond/farm	Pond	1,7
3	Grow out pond area	m2	1.380
4	Total grow-out water surface	m2	2.327
5	Density	PL/m2	233
6	Period (days)	days	88
7	Size (g/shrimp)	g/shrimp	29
8	Yield	tones/ha/crop	51
9	FCR	Kg/kg	1,3

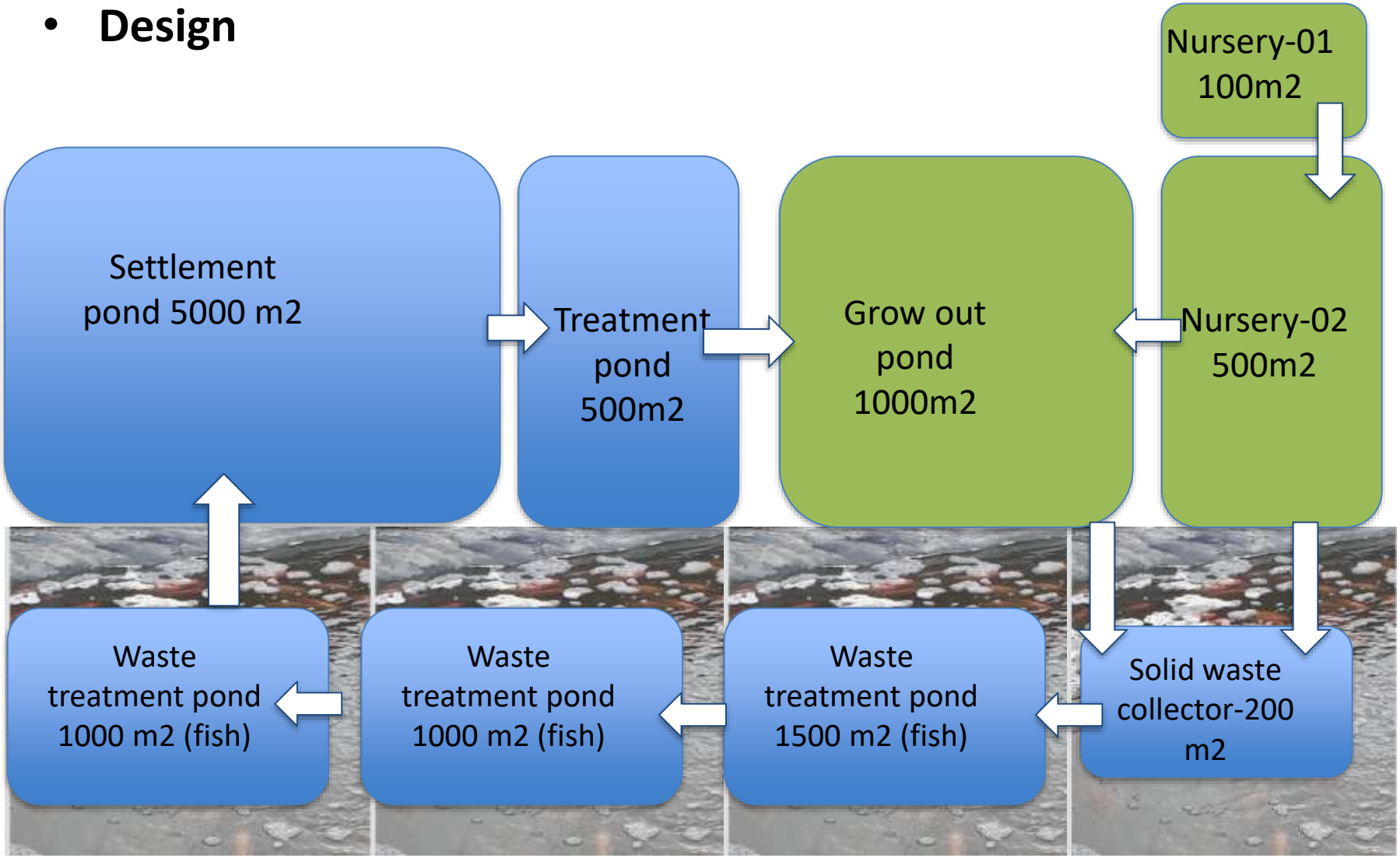
Summary of Advantages and Disadvantages

Models	Advantages	Disadvantages
Semi-Bioflocs	• Low investment	• Highly skill request
	• Low FCR	• Slow growth
	• High successful rate (>85%)	• High inputs (mineral, probiotic)
	• Widely applied	• **Waste treatment request (lowest)**
Water exchange	• Fast Growth	• Too much water exchange
	• Big size	• Less disease control
	• Less input costs	• High energy cost
	• High successful rate (>95%)	• Waste treatment request
Green house	• Suitable for cold weather	• Very high cost
	• High biosecurity	• Not much been applied
	• Weather control (raining)	• Too high temperature in dry season
	• Automatic system application	• Waste treatment request
Steel frame	• Easy operation	• High cost
	• High yield	• High skill request
	• High successful rate (>95%)	• High energy cost
	• Started applying widely	• **Waste treatment request**

DEMONSTRATION

SUPER INSTENSIVE WITH Semi-BIOFLOCS

- **Design**



FARM INFORMATION

Stage	Shrimp numbers	Density (shrimp/m2)	Period (days)
Nursery stage 1 (100 m2)	200.000	2000	20
Nursery stage 2 (500 m2)	191.000	382	21
Grow out (1000 m2)	188.000	188	47

WATER QUALITY

Nursery-stage

Value	Water temperature (°C)		DO (ppm)		pH	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
Min.	26,2	27,6	3,8	3,3	6,7	6,8
Max.	29,9	32,2	5,7	5,5	7,6	8,1
Average	27,8	29,4	4,5	4,4	7,1	7,2

Grow out stage

Value	Water temperature (°C)		DO (ppm)		pH	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
Min.	25,5	26,6	4,5	4,3	7,4	7,4
Max.	28,7	31,3	5,6	6,5	7,7	8,4
Average	27,2	29,1	5,1	5,5	7,6	7,9

WATER QUALITY

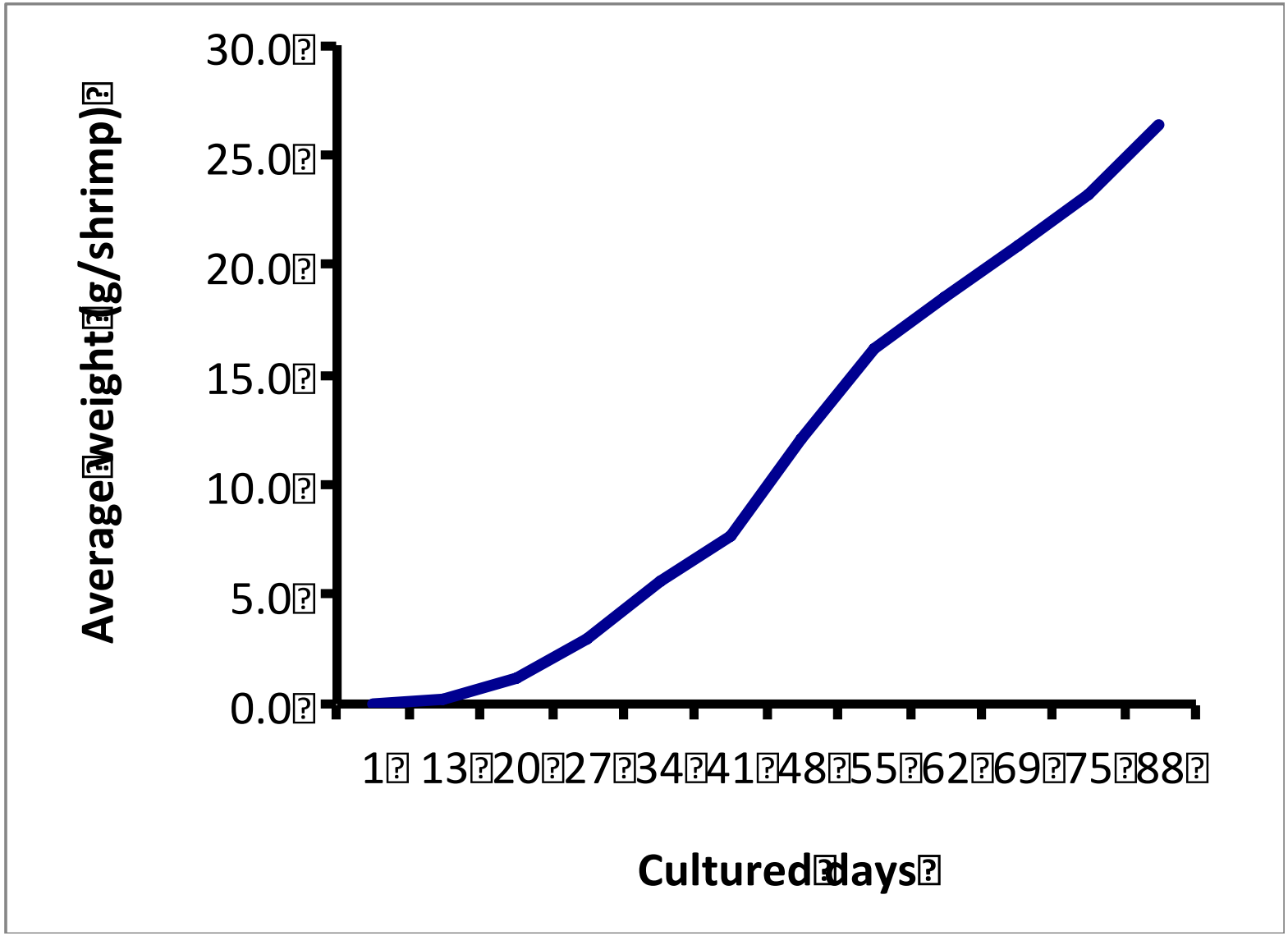
Nursery-stage

Value	Total alkalinity (ppm)	Salinity (‰)	Mg (ppm)	Ca (ppm)	Nitrite (ppm)
Min.	90	13	500	120	2
Max.	130	15	753	320	4
Average	109	14	615	217	3

Grow out stage

Value	Total alkalinity (ppm)	Salinity (‰)	Mg (ppm)	Ca (ppm)	Nitrite (ppm)
Min.	110	14	608	180	3
Max.	160	16	753	200	5
Average	136	15	689	197	4

GROWTH

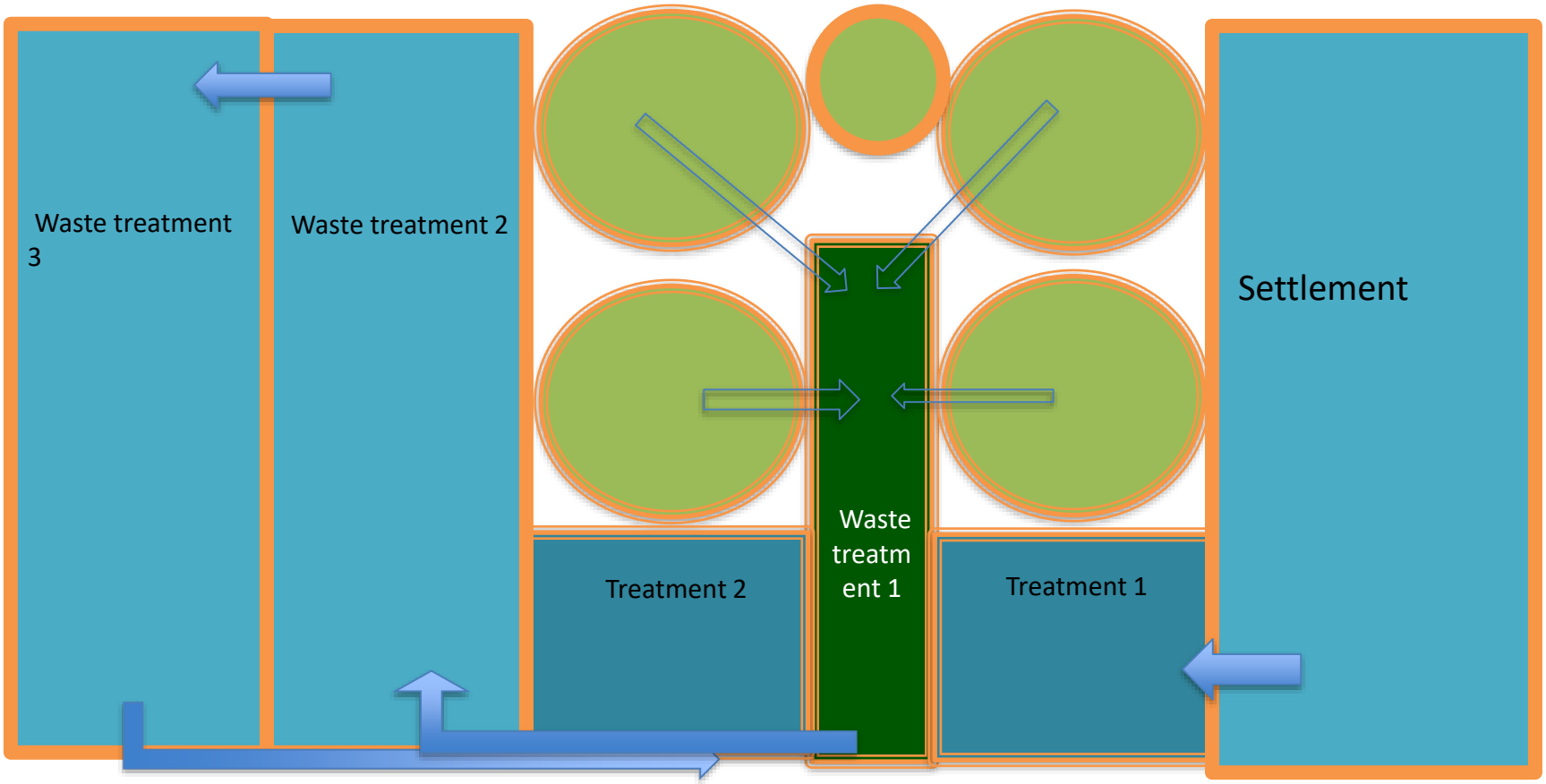

30.0
25.0
20.0
15.0
10.0
5.0
0.0
Average weight (g/shrimp)
1 13 20 27 34 41 48 55 62 69 75 88
Cultured days

HARVESTED RESULTS

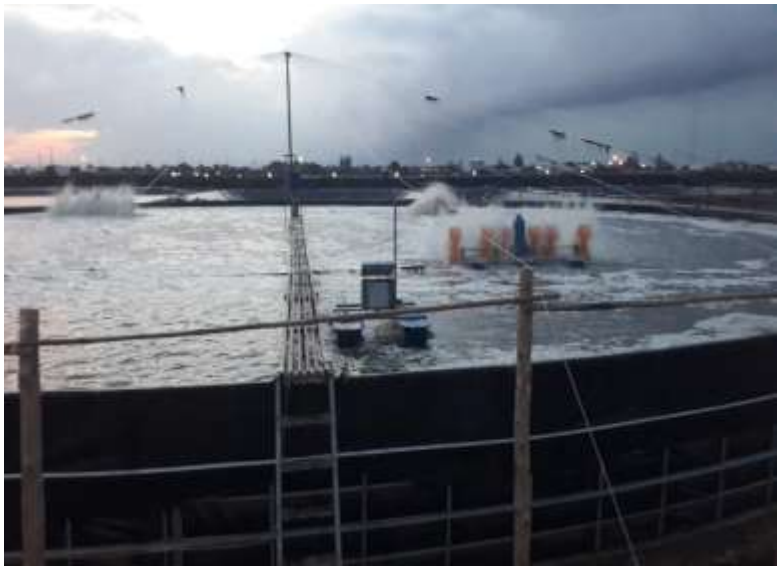
Nursery stage	Values
Total weight (kg)	1.447,0
Size (g/shrimp)	7,7
Survival rate (%)	94,1
Dailly growth rate (g/day)	0,2
Grow out stage	
Total weight (kg)	4.311,0
Size (g/shrimp)	26,3
Survival rate (%)	82,0
Dailly growth rate (g/day)	0,3
Feed conversion ratio (FCR)	1,5
Yield (tones/ha/crop)	43

STEEL FRAME SUPER INTENSIVE MODEL

MODULE DESIGN



ON GOING PICTURES



Thank you very much for your attention