DEVELOPMENT OF SHRIMP FARMING TECHNOLOGY IN INDONESIA WITH SPECIAL EMPHASIZE ON INTENSIVE AND SUPERINTENSIVE TECHNOLOGY (BEST PRACTICED)

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27 FEBRUARI 2018

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INTENSIVE SHRIMP FARMING B*IOCRET*E TECNOLOGY CITARATE,SUKABUMI ,SOUTH OF JAVA INDONESIA

BIOCRETE TECNOLOGY

Specific ponds design and construcion in sandy ground

- **First built in 1988 locatedi in Citarate, Sukabumi South Coast of Java,, West Java**
- **Biocrete (Construction using combination of Bambo,Coconut Husk,semen nad platic PE (5 cm thickness)**
- **Pond Design - Central Drain**
- **Total area 76 ha**
- **Pond Area 2500 m2**

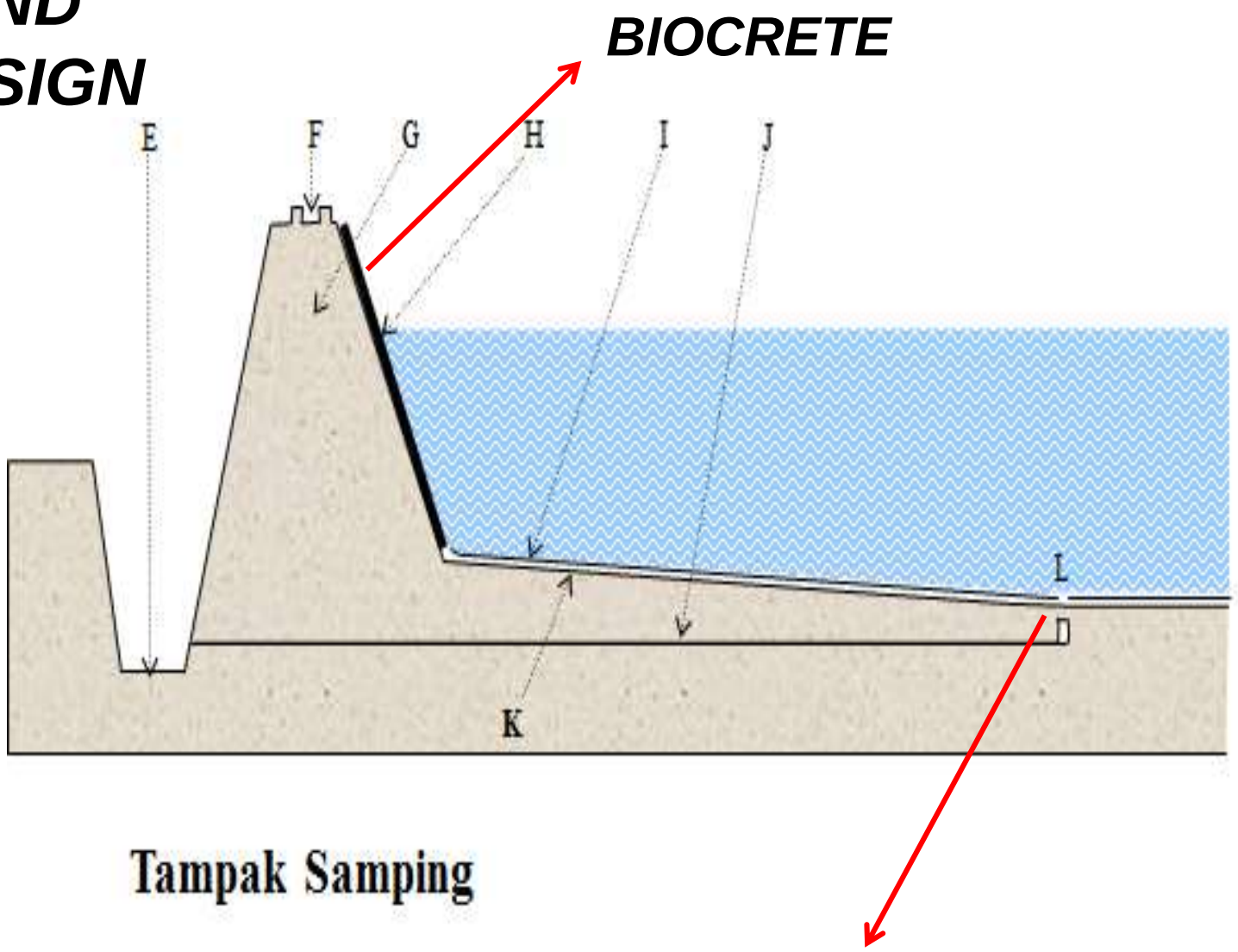
10. 11. 2015

Construction

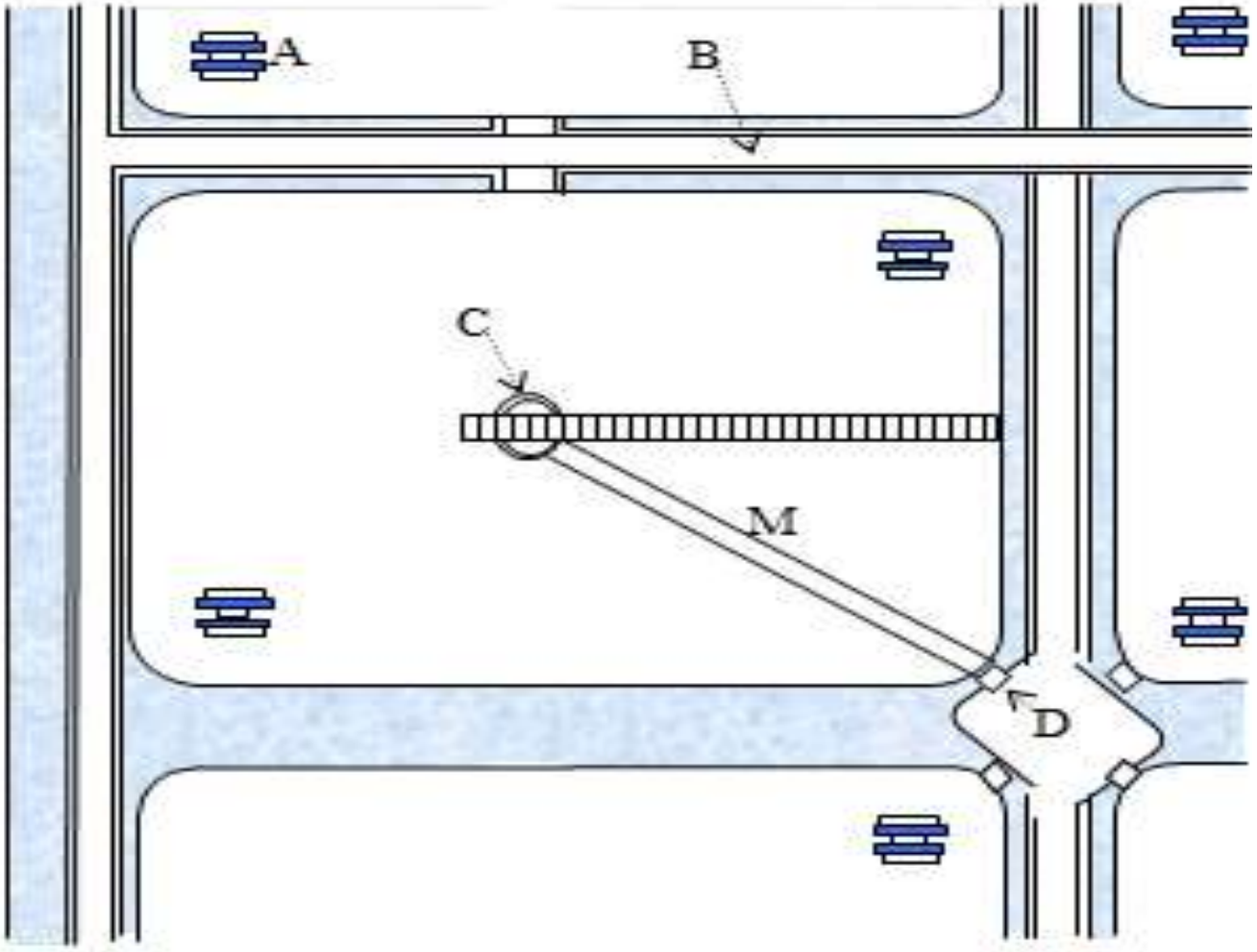
- Dyke construction using combination of bambo husk ,plastic sheet and cement mixed with coconut husk 3-4 cm)- ***BIOCRETE***

- Bottom covered with Poliethylene plasstic (PE- 0.075 mm)(tebal 0.075 mm and than covered wih sandy 4-5 cm

POND DESIGN



Tampak Atas



The size of the Pond is relatively small , 2500 m2 - 3600 m2, and the depth 1.2 m

- Pond size 2500 m2 - 3600 m2, in 1.2 m
- Pond bottem slope to central 1-2%
- "central drain" system with 1-2% elevation from central to harvest gate,
- The bottom of the harvest gate is above the bottom of the drain
- The shape of a pond is square in order to arrange the paddle wheel in concentrating the organic waste to the middle of the pond

10. 11. 2015

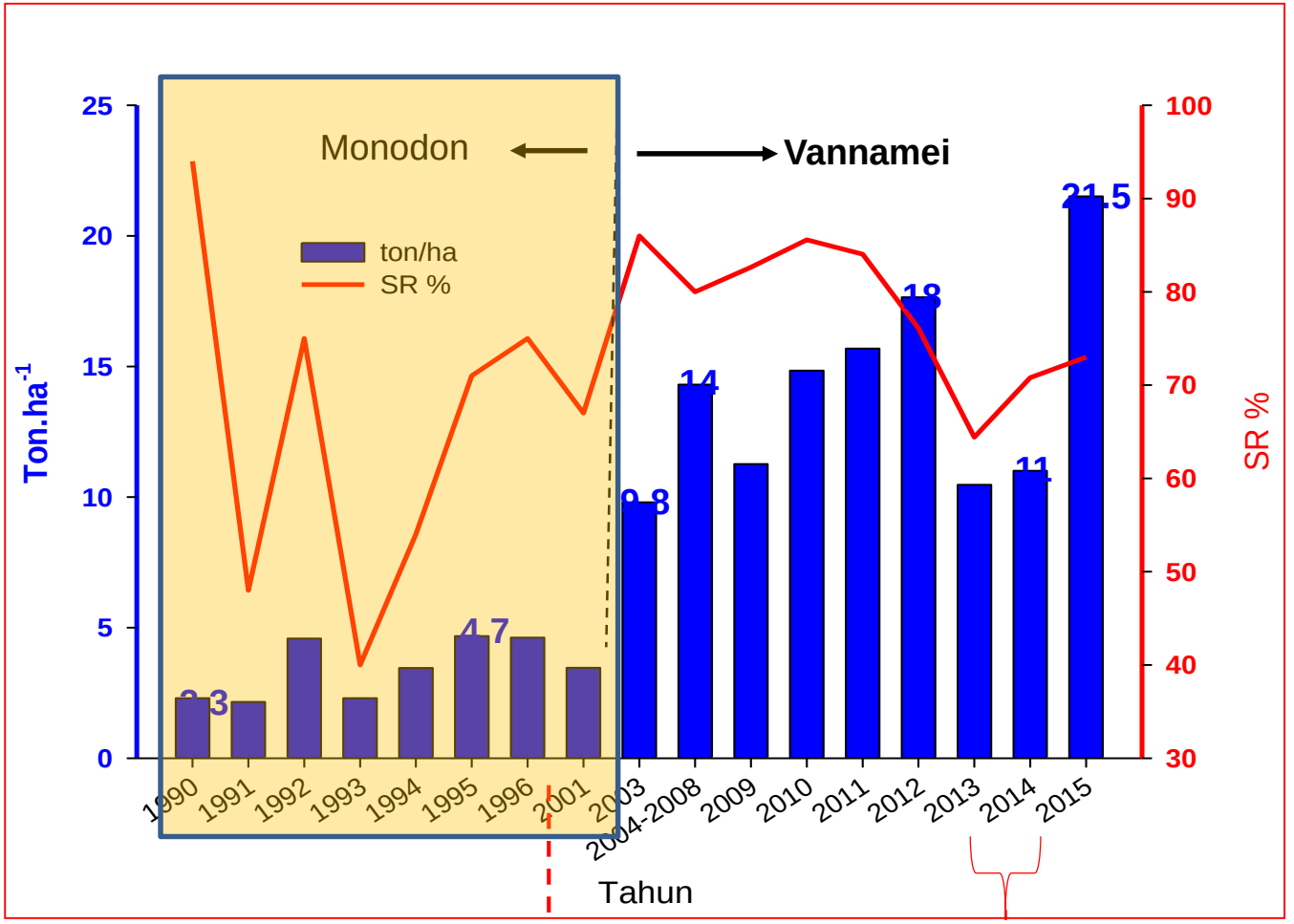
SHRIMP
HARVESTING

SHRIMP POND PRODUCTIVITY TECHNOLOGY BIOCRETE (1990 – May 2015)

Year	Ponds Harvest	Area (Ha)	Density (Ind./m^2)	DOC (days)	Total Harvest (kg)	Size (ind./kg)	Prod. (Kg/Ha)	SR (%)	FCR
1990	3	0.75	11	136	1,727	36	2,300	94	1.7
1991	5	1.25	20	136	2,694	45	2,155	48	1.7
1992	8	2.04	22	118	9,350	36	4,580	75	1.6
1993	4	1	22	120	2,300	40	2,300	40	1.8
1994	15	4.55	22	126	15,600	40	3,456	54	1.7
1995	39	11.77	22	118	48,131	35	4,678	71	1.7
1996	24	7.05	23	124	32,100	33	4,620	75	1.7
2001	136	35.36	25	118	122,431	41	3,462	67	1.8
2003	20	5	80	120	49,000	70	9,800	86	1.4
2004-2008	108	30.3	112	110	86,720	65	14,300	80	1.6
2009	98	27.53	101	102	323,460	75	11,260	83	1.6
2010	101	28.63	117	105	409,154	67	14,840	86	1.7
2011	116	32.59	124	95	502,074	67	15,682	84	1.6
2012	129	35.93	139	92	571,265	60	17,647	76	1.8
2013	96	27.80	113	87	292,979	68	10,468	64	1.8
2014	93	27.59	107	90	291,421	68	11,003	71	1.8
2015	41	11.53	137	96	62,100	48	21,511	73	1.6

Monodon *Vaname*

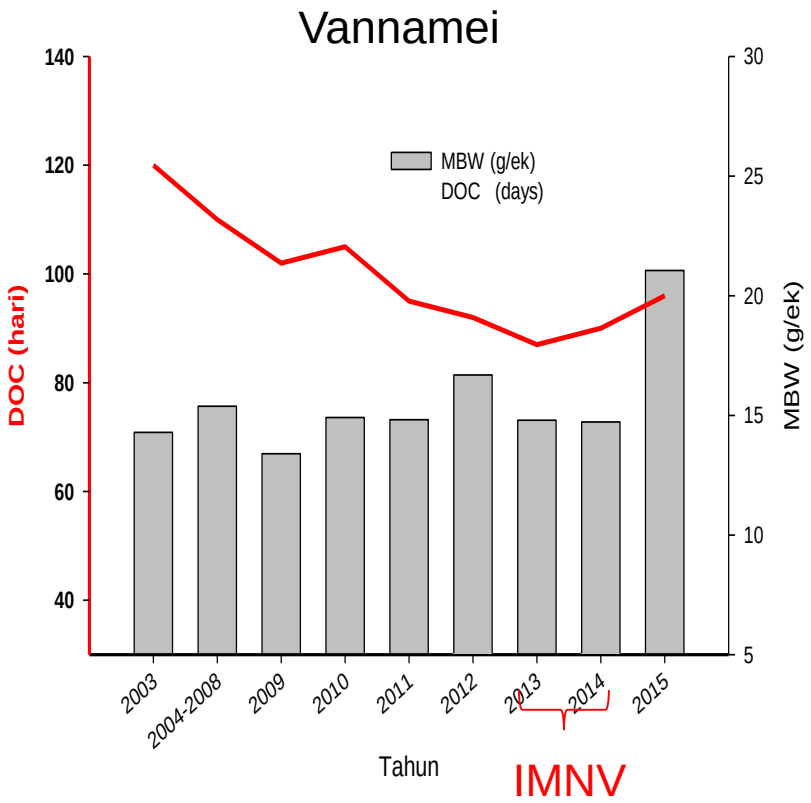
Productivity vs Density

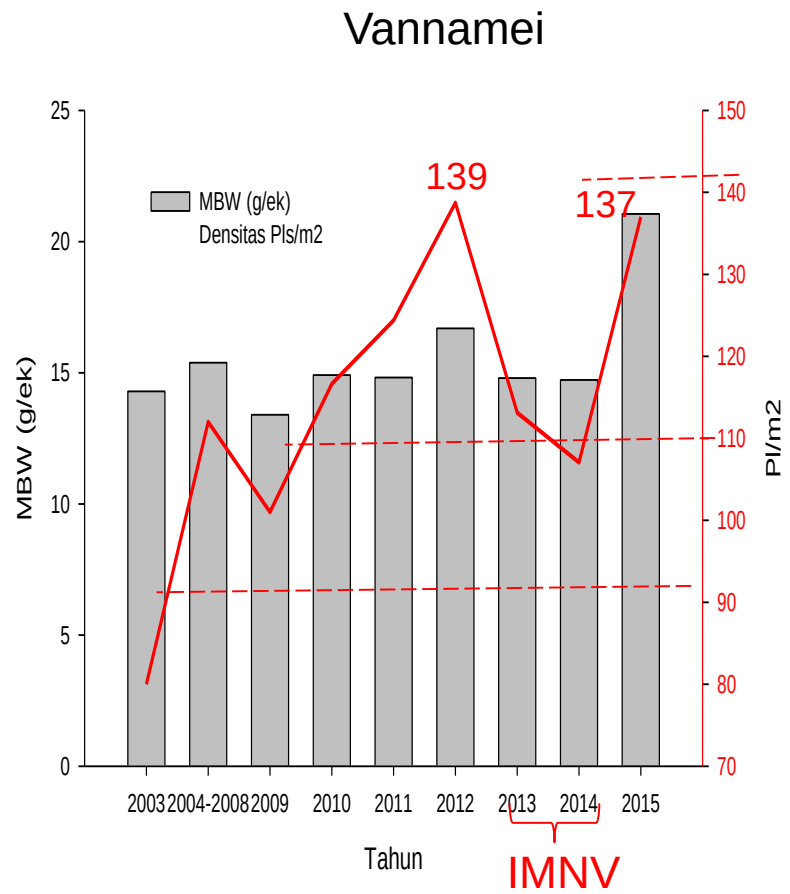


WSSV 50%

IMNV 35%, SR drop

DOC, MBW, and Density





Water Quality Managemntair can maintain MBW stable in each crops even in shorter DOC

Water quality management can maintain shrimp growth up to 14 g although its infected IMNV (th 2013 dan 2014).

Water quality management

- ***Disolved Oxygen (DO) at night time between 11 pm-13 am to be mantained not less than 4.5 ppm***
- ***Mantain different value of pH in the morning and afternoon not more than 0.5 daily***
- ***Used phytoplankton as indicator of water quality management***
- ***Continues application of probiotic to maintain redox potencial stable.***

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INTENSIVE SHRIMP FARMING *BIOSEAL* TECNOLOGY PASAHARI-NORTH OF SERAM ISLAND,EAST INDONESIA

BIOSEAL TECNOLOGY

BOSEAL

- **Bottom isolation of Organic Sedimen to Eliminate Acide Layaer**
- **This is the modification and improvement of BIOCRETE where only using full palstec *(HDPE*) Especially applied in the area of Sandy and non sandy ground**
- **For Culturing monodon the bootom pond still using plastic *PE a*nd cover by 5 cm sand while for culturing Vannamei all surface pond is covered by full plastic.**
- **Design-Central drain,**

POND FOR
MONODON

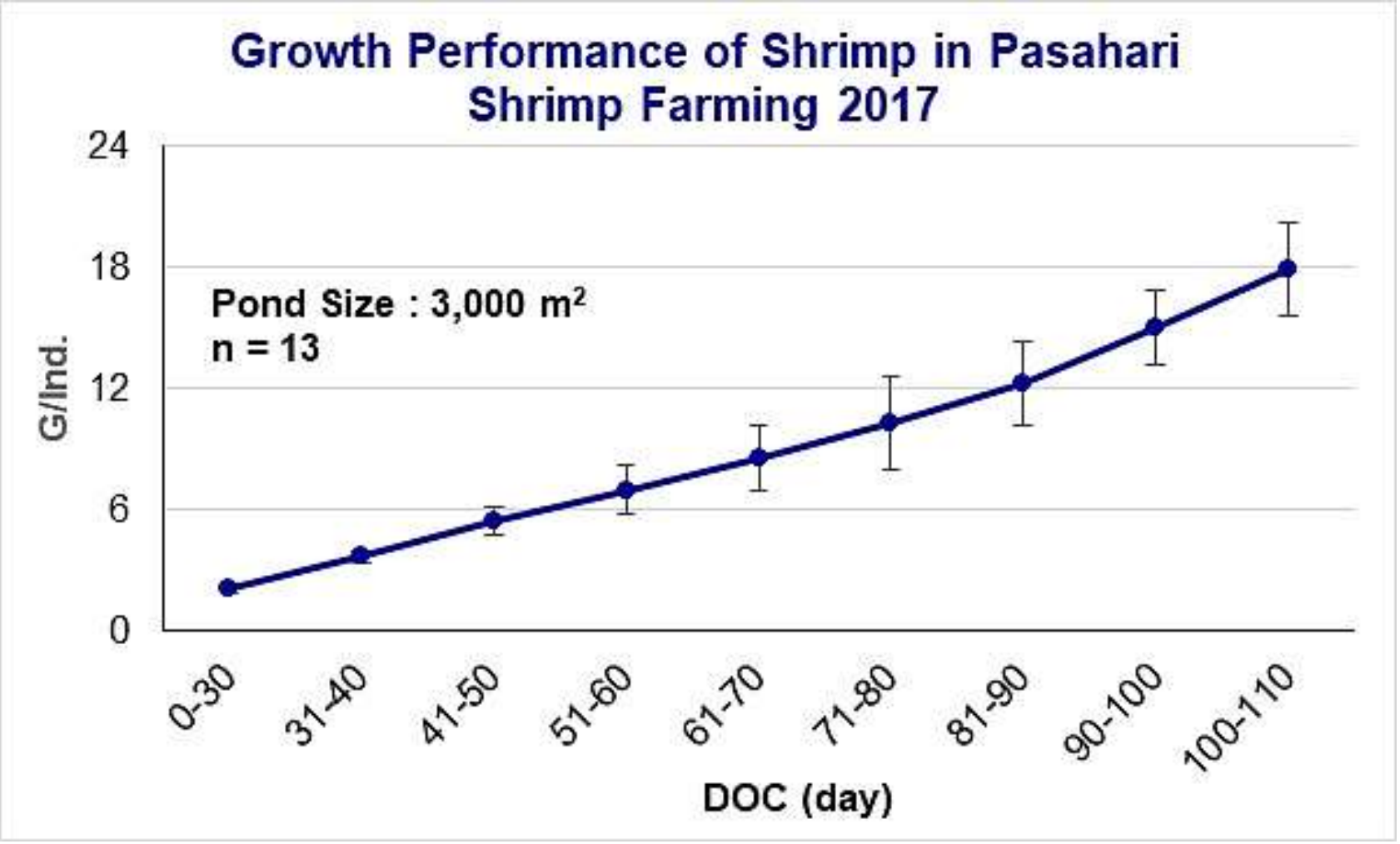
Performance Shrimp ponds constrction Bioseal Pasahari-Seram Utara (1998-2018)

Performance Shrimp ponds constr ction Bioseal Pasahari-Seram Utara (1998-2018)

Pondi condition in 2017

PRODUCTION PERFORMANCE OF SHRIMP FARMING – INTENSIVE "BIOSEAL" TECHNOLOGY IN PASAHARI, NORTH SERAM, MALUKU

Year	Pond Size	Pond Number	Average Stocking Density	Av (To)erage Harvest
	(m^2)	(unit)	(ind./m^2)	(Ton/Ha)
2015	2,500 – 5,000	237	220	24,729
	9,000 – 17,000	62	188	12,843
2017	2,500 – 5,000	13	163	19,190
	9,000 – 17,000	17	155	14,200


Growth Performance of Shrimp in Pasahari Shrimp Farming 2017
Pond Size : 3,000 m²
n = 13
G/Ind.
24
18
12
6
0
0-30
31-40
41-50
51-60
61-70
71-80
81-90
90-100
100-110
DOC (day)

Bioseal Technology Coninued to be appliied in :
other location 2016-2018

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INTENSIVE SHRIMP FARMING TEKNOLOGY BIOSEAL UJUNG KULON,BANTEN,,WEST JAVA, INDONESIA (2016-2018)

B 6123 SSM
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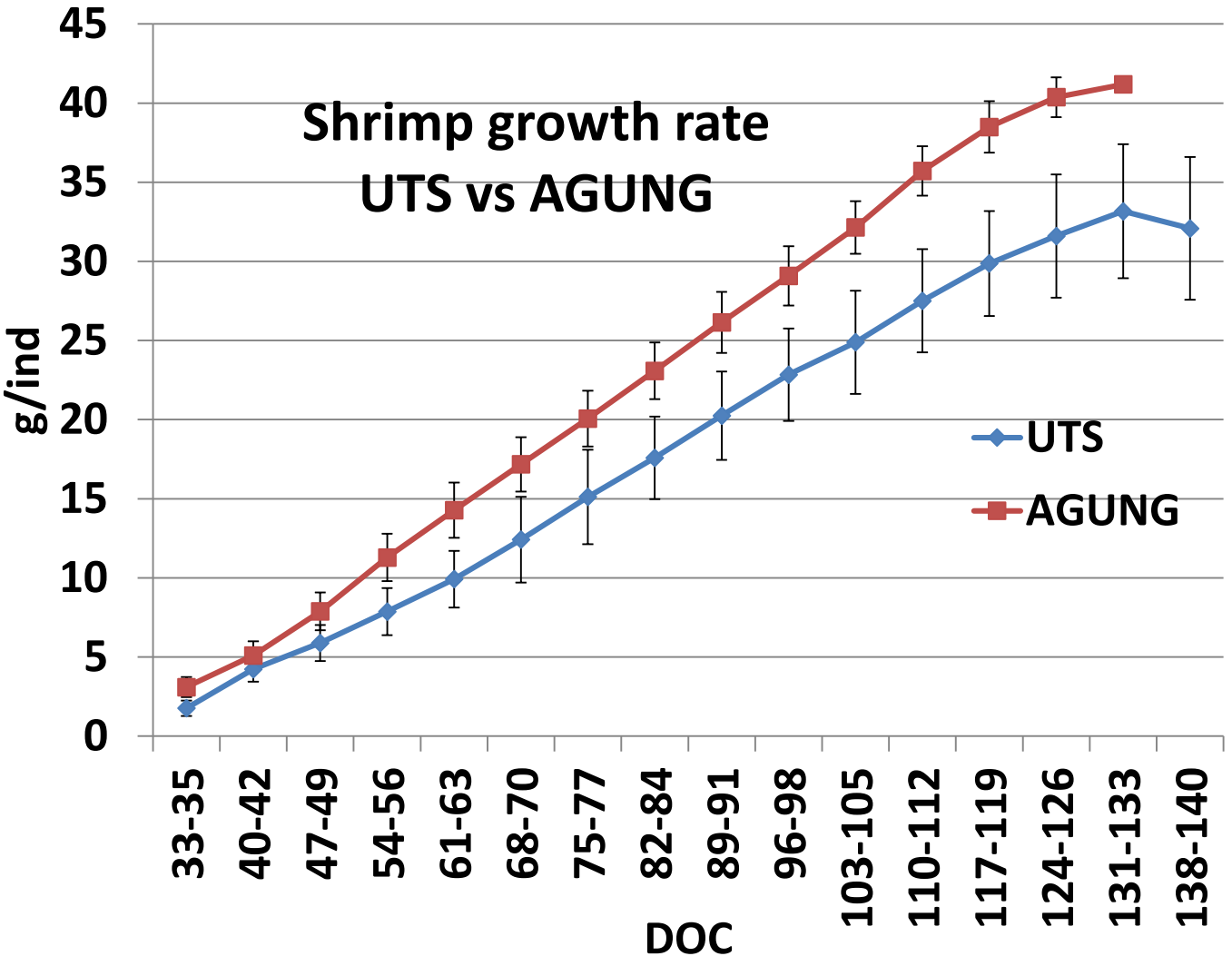
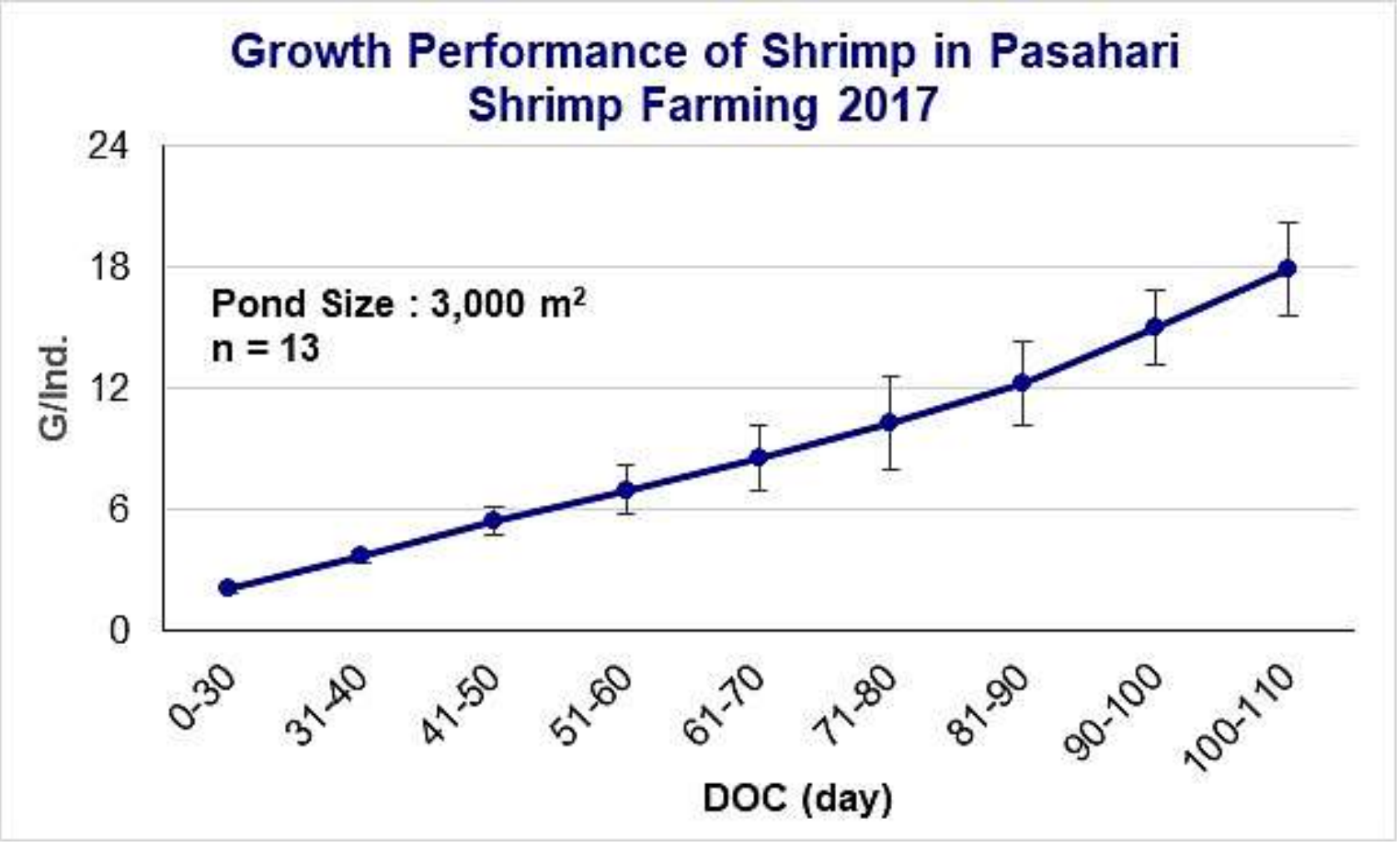
Production performance of two shrimp farms (UTS and Agung) at the same location in Ujung Kulon,Banten, West Java

Parameter	UTS FARM				AGUNG FARM			
	min	Max	Average	STD	min	Max	Average	STD
DOC	119	154	132	10	84	133,00	118,75	14,43
Stocking	293.940	465.750	423.700	42.325,79	408.000,0	499.800,0	477.066,7	16.697,87
Luas m2	2.500	3.600	3.489	286,63	2.700	3.600,0	3.562,5	183,71
Density	106	129,6	121	6,77	131,6	151	*134*	4,24
Mortalitas	16.137	167.627	70.510	29.255	27.570	143.420	69.516	29.071
Biomass	6.253	11.576	9743	1.437	5.111	14.950	11.824	2.446
SR	41,72	82,31	67,09	10	55,5	88,32	74,54	7,76
FCR	1,64	2,29	1,85	0	1,3	2,19	1,70	0,18
MBW	26,88	43,48	33,25	4	18,7	42,96	37,30	7,07
Size	23	37,2	30	3	23,3	53,51	28,22	7,89
Paddle Wheel	20 Unit/m2				24 unit/3600 m2			
Water Exchang	max 7 cm/2hari, DOC 30 up				ratar rate 5%/hari, DOC 30 up			
Prodtv/paddle	487,13 kg/Paddle wheel				492,68 kg/paddle wheel			



Shrimp growth rate in two Farms in the same location with different water quality managemnt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0-30
31-40
41-50
51-60
61-70
71-80
81-90
90-100
100-110
DOC (day)

SUSTAINABILITY OF SHRIMP POND TECHNOLOGY BIOCRET & BIOSEAL

No.*	Location	Pond Size per Unit	Built	Total Area (Ha)		Expansion
		(m^2)	(year)	First Year	Last Year (2017)	
1	Cipucuk, Karawang, West Java	5,000	1986	250	250	-
2.	Citarate, Sukabumi, West Java	2,500	1999	15	72	380%
3.	Pasahari, North Seram, Maluku	3,600	1998	68	125	84%
4.	Sumur Pandeglang	5,000	2016	8	28*	250%

* *Will be Expad this year up to 50 ha*

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SUPER INTENSIVE SHRIMP FARMING BARU,WEST SULAWESI ,INDONESIA

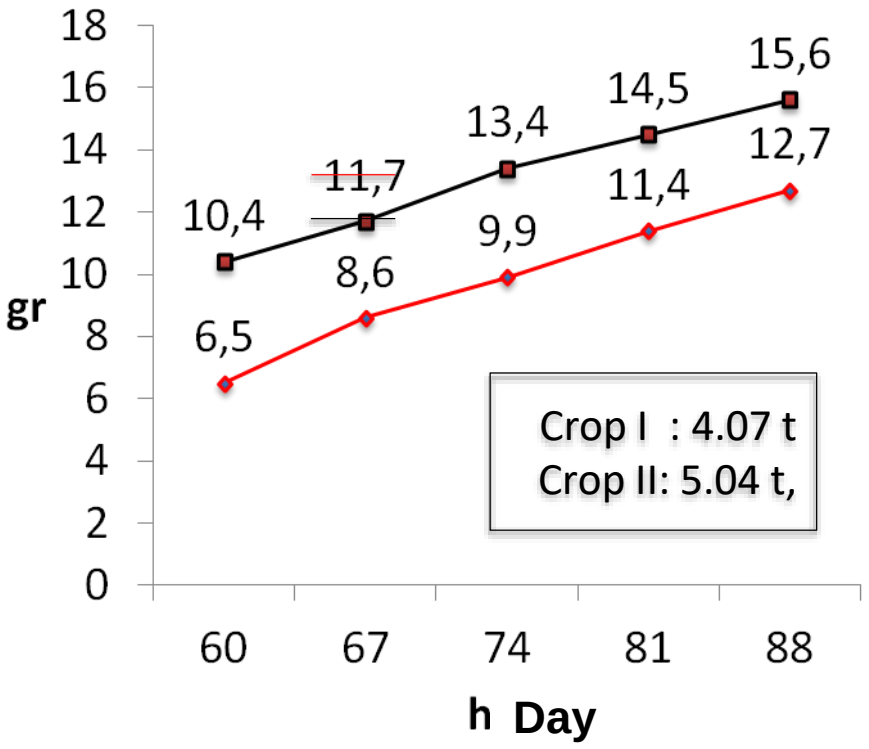
PERFORMANCE OF SHRIMP FARMING SUPRAINTENSIF TECHNOLOGY (Pond Area = 1,000 m^2/unit)

No	PERFORMANCE	CROP I	CROP II	CROP III	CROP IV	CROP V
1	WATER DEPTH (cm)	130	130	230	260	260
2	DENSITY					
	(ind./m^2)	312.5	375	500	720	1,000
	(ind./m^3)	240.4	288.5	217.4	276.9	384.6
3	DOC (DAY)	99	84	116	105	4 Partial Harvest
4	PRODUCTION (kg)	4,069	5,440	10,400	15,300	17,000
5	SIZE (ind./kg)	72	70	60-90	45-90	50-120
6	PRODUCTIVITY					
	(kg/m^2)	4.07	5.44	10.40	15.30	17.00
	(kg/m^3)	3.13	4.18	4.52	5.88	6.54
7	FCR	1.57	1.37	1.34	1.18	1.19

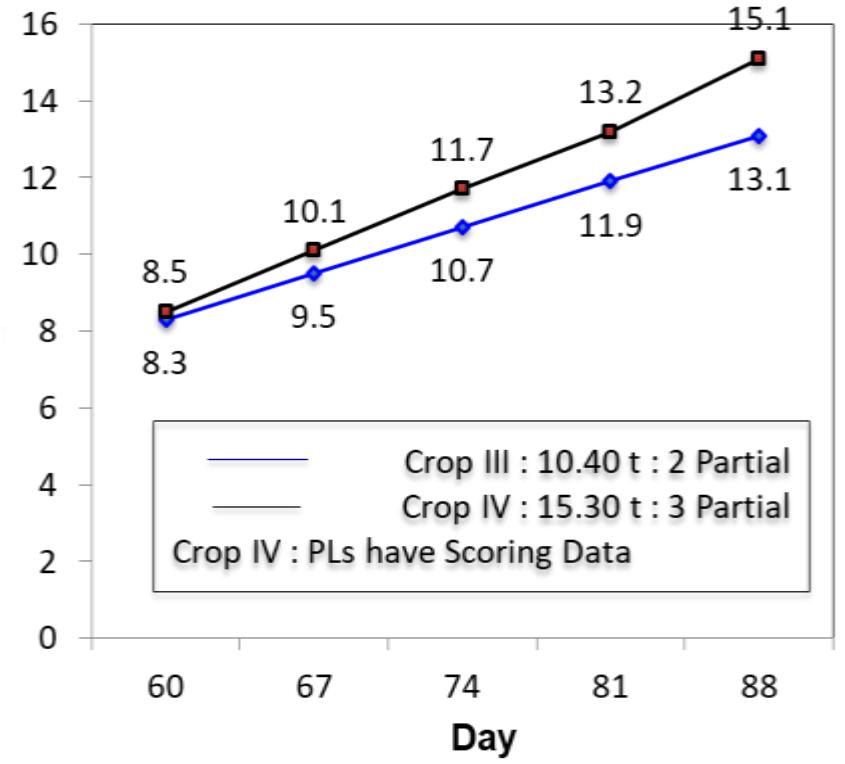
Atjo, H. 2013

1. Crop I and II .Full Soil Pond and no partial harvest
2. Crop III Conreste Pond , Depth 2,30 m and 2 partial harvest
3. Crop Cocrete Pond, Depth 2,60 m, and 3 partial harvest, and used Automatic Feeder
4. Crop V Increase stocking density up to 10001000 PL per m^2

Courtesy Hasanudin Atjo, .2013



Shrimp Growth Performance in Crop I and II

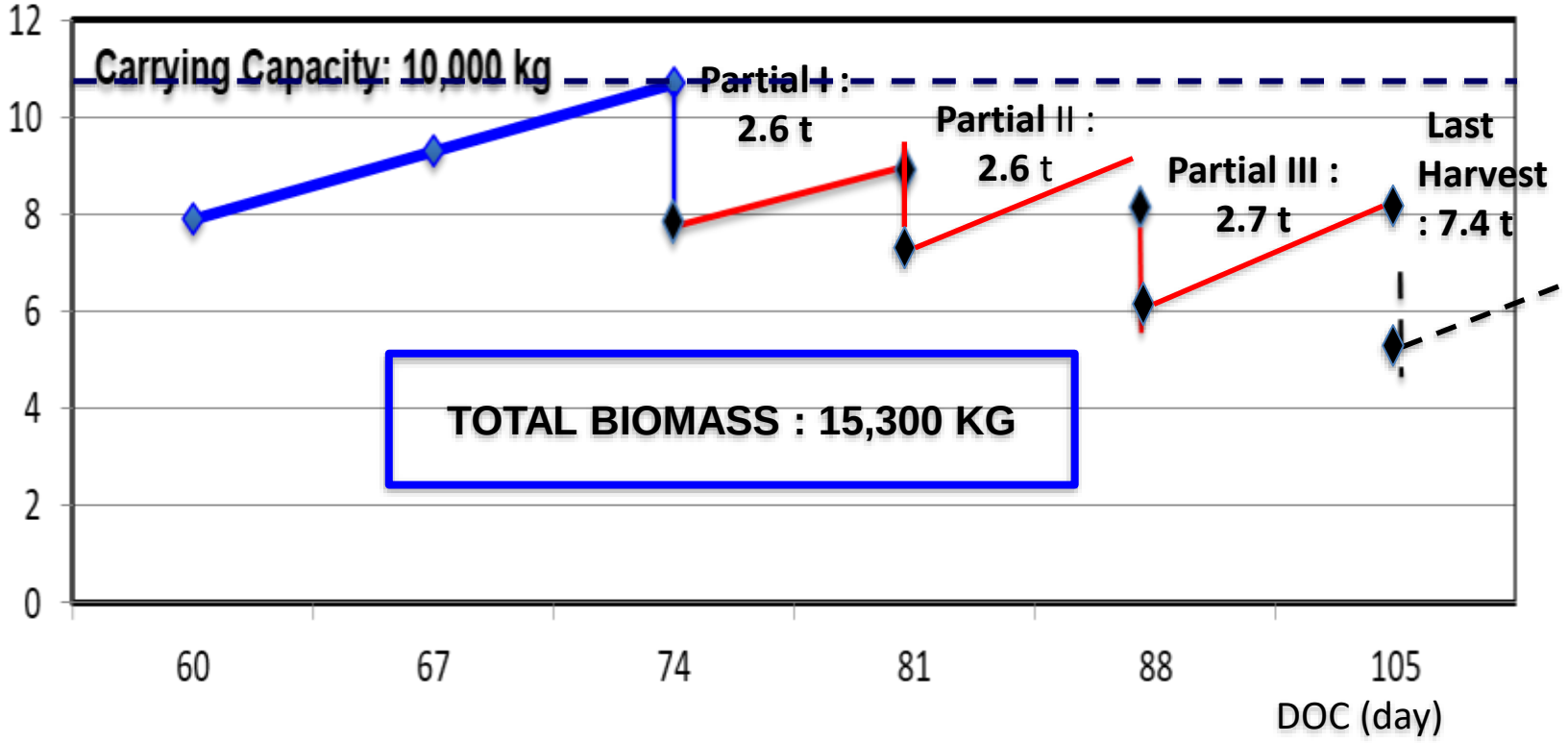


Shrimp Growth Performance in Crop III and IV

Growth, Survival Rate (SR), and Shrimp Biomass

1	DOC (day)	60	67	74	81	88	95	105
2	SR Estimation (%)	130	128,25	-	-	-	-	120
3	Population (000 ind.)	936	923	913	683	537	358	338
4	Weight Average (gr/ind.)	8.5	10.1	11.7	13.2	15.1	17.1	21.9
5	Biomass (kg)	7,960	9,32	10,680	9,020	8,109	6,121	7,400
6	Partial Harvest (kg)			2,600	2,600	2,700		15,300

Relationship Shrimp Biomass with DOC and Partial Harvest



SUPRA INTENSIVE SHRIMP FARMING

- ***This tecnology has been developed in several areas such as Palu District and Kalimantan area but still very limited area***
- ***The goverment is still making an evaluation concerning the environmental impact***

BEST PRACTISED DEVELOPING SHRIMP FARMING BASED ON BIORETE AND BIOSEAL TECNOLOGY IN INDONESIA