

# Report of TWC Experiment

Internal Document

Reporter: Aquaculture Company

## **I. Basic Information of Company**

Address: Rudong, Nantong City, Jiangsu Province

Customer name: Mr. Lee

Aquaculture Sheds Information : 360m<sup>2</sup>/Ponds (Filled with sediment as bottom and underground water).

4,2000 shrimps/Sheds, water deep 80cm, carefully breeding *Penaeus vannamei*. Experiment ponds and the control group ponds are all side by side and breeding the same batch of *Penaeus vannamei*.

Experiment Time: 29th May.2018– 19th Jul. 2018, this experiment delivered the water cleanser after 38 days of young shrimp breeding in the ponds. The whole breeding period was 89 days.

## II. Experiment Plan

TWC Experiment Ponds: Ponds No.2 and No. 4, 6 pieces for each pond

Chinese Water Purifier Experiment ponds: Pond No.6 and No. 8, 2 pieces for each pond

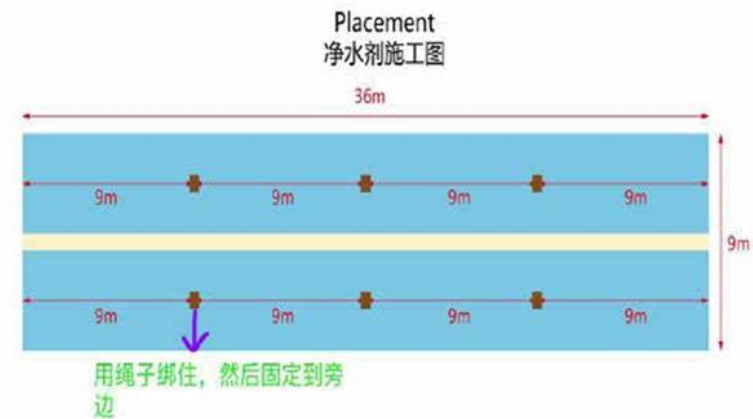
Pond No.10 and No. 12, 1 piece for each pond

Control Group: Pond No.14 and No. 16

### Methods of TWC delivered:

TWC has a length of 29.5cm, width of 19.5cm and height of 2.5cm.

TWC will be fastened every 9 meters in the pool and 2.5 meters away from the pool side.



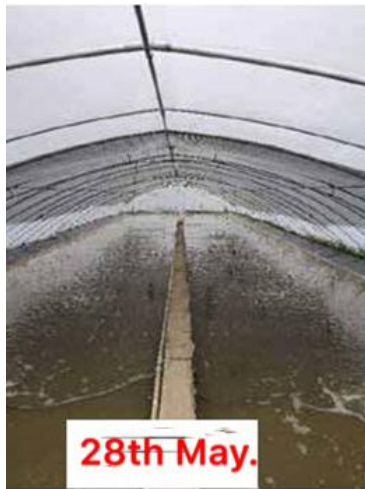
### III. Experiment Notes

Date	No. 2 Pond (TWC-using)						No. 4 Pond (TWC-using)						No. 6 Pond (Chinese Purifier)						No. 8 Pond (Chinese Purifier)					
	Morning			Afternoon			Morning			Afternoon			Morning			Afternoon			Morning			Afternoon		
	pH	NH3-N	NaNO3	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2
28-May	8.2	0.2	>0.3	8.2	0.2	>0.3	8.2	0.2	>0.3	8.2	0.2	>0.3	8	0.2	>0.3	8	0.2	>0.3	8.3	0.2	>0.3	8.2	0.2	>0.3
6-Jun	8.2	0	>0.3	8.1	0	>0.3	8	0	>0.3	8	0	>0.3	8	0.6	>0.3	8	0.6	>0.3	8.3	0.6	>0.3	8.2	0.9	>0.3
13-Jun	8.2	0.6	>0.3	8	0.6	>0.3	8.1	0.4	>0.3	8	0.4	>0.3	8.2	0.4	>0.3	8.2	0.6	>0.3	8.1	0.6	>0.3	8.1	0.6	>0.3
20-Jun	8.2	0	>0.3	8.2	0	>0.3	8.2	0	>0.3	8.2	0	>0.3	8	0.4	>0.3	8	0.4	>0.3	8	0.4	>0.3	8	0.4	>0.3
27-Jun	8.2	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.4	>0.3	8	0.4	>0.3	8.1	0.4	>0.3	8	0.4	>0.3
4-Jul	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.2	>0.3	8	0.4	>0.3
11-Jul	8	0	>0.3	8	0	>0.3	8.1	0	>0.3	8	0	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3
18-Jul	8	0	>0.3	8	0	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3
Date	No. 10 Pond (Chinese Purifier)						No. 12 Pond (Chinese Purifier)						No. 14 Pond (Control Group)						No. 16 Pond (Control Group)					
	Morning			Afternoon			Morning			Afternoon			Morning			Afternoon			Morning			Afternoon		
	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2	pH	NH3-N	NaNO2
28-May	8.2	0.2	>0.3	8.2	0.2	>0.3	8.2	0.2	>0.3	8.2	0.2	>0.3	8	0.2	>0.3	8	0.2	>0.3	8.3	0.2	>0.3	8.2	0.2	>0.3
6-Jun	8.2	0.2	>0.3	8.1	0.3	>0.3	8	0	>0.3	8	0	>0.3	8	0.6	>0.3	8	0.6	>0.3	8.3	0.6	>0.3	8.2	0.9	>0.3
13-Jun	8.2	0.6	>0.3	8	0.6	>0.3	8.1	0.4	>0.3	8	0.4	>0.3	8.2	0	>0.3	8.2	0.6	>0.3	8.1	0.6	>0.3	8.1	0.6	>0.3
20-Jun	8.2	0	>0.3	8.2	0	>0.3	8.2	0.4	>0.3	8.2	0.4	>0.3	8	0.2	>0.3	8	0.4	>0.3	8	0.4	>0.3	8	0.4	>0.3
27-Jun	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.4	>0.3	8	0.4	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8.3	0.4	>0.3
4-Jul	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.4	>0.3	8	0.4	>0.3	8.1	0.2	>0.3	8	0.4	>0.3	8.1	0.2	>0.3	8	0.4	>0.3
11-Jul	8.1	0	>0.3	8	0	>0.3	8.1	0	>0.3	8	0	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8.2	0.6	>0.3
18-Jul	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3	8.1	0.2	>0.3	8	0.2	>0.3

**Conclusion of Water Cleanser Experiment Record listed above:**

- (1) TWC had an obvious control to  $\text{NH}_3\text{-N}$ , but an in-distinctively control to  $\text{NaNO}_2$ .
- (2) PH was not changing a lot and in most of the time remained stable.

Water  
situation  
changing  
(Ponds  
No.2 using  
TWC)





28<sup>th</sup> May, before used.



6<sup>th</sup> Jun. No biomembrane



13<sup>th</sup> Jun. Biomembrane shown unclearly



20<sup>th</sup> Jun. biomembrane shown.



27<sup>th</sup> Jun. biomembrane shown.



4<sup>th</sup> Jul. biomembrane shown.



11<sup>th</sup> Jul. biomembrane shown.



18<sup>th</sup> Jul. biomembrane shown.

*After 3 weeks of using TWC, biomembrane began to show on the English printed side.*

Shrimps production Record	TWC-using ponds		Chinese water purifier using ponds				Control Group Ponds		
	Pounds Number	2	4	6	8	10	12	14	16
	Size of shrimps (g)	13.4	14.7	20	12.5	14.2	10	12.5	11.6
	Shrimps Number/kg	37	34	25	40	35	50	40	43
	Average Shrimps Number/kg	35.7		37.6				41.6	

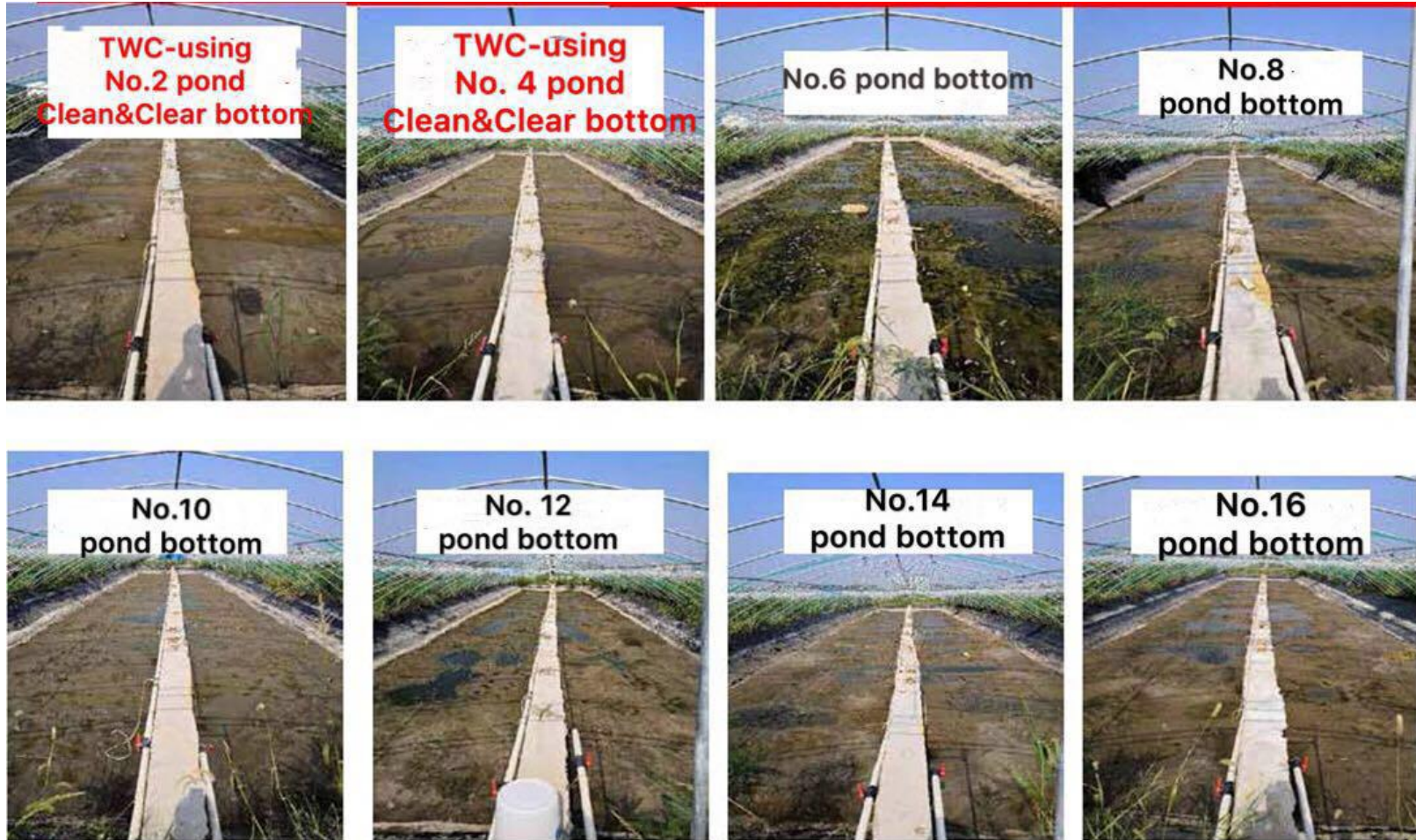
*Ponds using TWC has the largest numbers of shrimps, while Chinese water purifier using ponds and the control group ponds ranked the second and third respectively.*

Feed Coefficient Analysis	TWC-using ponds		Chinese water purifier using ponds				Control Group Ponds		
	Pounds Number	2	4	6	8	10	12	14	16
	Total feed input	1144.6	14.7	20	12.5	14.2	10	12.5	11.6
	Output of shrimps	929	977	31	350	807	364	484	352
	Feed Coefficient	1.23	1.17	15.51	1.58	1.32	1.41	1.39	1.67
	Average of Feed Coefficient	1.20		1.43				1.53	

*Average of production of TWC-using Ponds is 476.5kg(953 Jin), while other groups are 194-253.5kg(388-507 Jin)  
Ponds using TWC has the least average of feed coefficient, while Chinese water purifier using ponds remains the second and control group the third.*



Pond  
Bottom  
Situation  
after  
Harvest  
of Shrimp



*TWC-using Pond showed a clean and clear bottom after shrimp harvest, while the Chinese water purifier using ponds and Control Group Ponds showed a dirty and dead shrimp filled bottom.*

## Problems happened during experiment period and methods of handling them.

No illness situation happened in TWC-using ponds (Ponds No. 2&4), while the opposite situation happened successively in other ponds.

No.6 ponds began to show ill on 4<sup>th</sup> Jun., no recovers were shown after treatments of changing the water bottom, adjusting water and medication.

No.8 ponds began to show ill on 8<sup>th</sup> Jun., recovers were not shown until 26<sup>th</sup> Jun. after treatments of changing the water bottom, adjusting water and medication.

No.10 ponds began to show ill on 5<sup>th</sup> Jun., recovers were shown 2 days after treatments of changing the water bottom, adjusting water and medication.

No.12 ponds began to show ill on 2<sup>rd</sup> Jun., recovers were not shown until 25<sup>th</sup> Jun. after treatments of changing the water bottom, adjusting water and medication, if the same situation happened again, the whole production should be sold.

No.14 ponds began to show ill on 3<sup>rd</sup> Jun., recovers were not shown until 16<sup>th</sup> Jun. after treatments of changing the water bottom, adjusting water and medication, feeding rate was at a low point.

No.16 ponds began to show ill on 2<sup>nd</sup> Jun., recovers were not shown until 21<sup>st</sup> Jun. after treatments of changing the water bottom, adjusting water and medication, feeding rate was at a low point.

## **IV. Experiment Conclusion**

---

### **Using TWC Purifier:**

1. **Stable Water Clearness.**
2. An obvious control to  $\text{NH}_3\text{-N}$ , but an in-distinctive control to  $\text{NaNO}_2$ .
3. Inhibition of Vibrio.
4. **High rates of breeding success:** No special situation occurred in the TWC experiment pools.
5. Effectively **Reduce pollution of the pools bottom** and improve water quality.
6. Compared to the ponds without using water cleanser which continually had situation of illness and finally resulted in reduction of output, using TWC effectively **increase not only production but also weight of the shrimp, and decrease food coefficient.**

### **Chinese Water purifier Using Group/Control Group:**

1. An in-distinctive control to  $\text{NaNO}_2$ ,  $\text{NH}_3\text{-N}$  and illness situation either.
2. No satisfactory results were seen in weight increasing and pollution controlling of the pools bottom.

## **IV. Deficiency**

---

### **1. Breeding Period**

As young most of risks of young shrimp breeding is within 40 days of the whole breeding period, however this experiment delivered the purifier after 38 days of young shrimp breeding in the ponds. As how the purifier works before 40 days of breeding needs further examination.

### **2. Amount of Deliver**

Only 1 piece of biological wax should be delivered in 100m<sup>2</sup> of water area. In this experiment, it is possible to say an over-used of biological wax where 6 pieces of biological waxes are delivered in 360m<sup>2</sup> water area, which refers to an issue of higher marketing cost.

### **3. Method of Wax Placement**

Is it better to settle the TWC biological wax in a vertical way, instead of a flat way? In that case, one side of the biological wax won't be touching or even be covered with the sediment, which result in a dragging of TWC biological wax affection. This also remains a question to be solved by TWC technologists.