Protocol for Organic (Bio) Shrimp Farming

Feeding with Fermented Rice Bran, Wheat Bran and Soya

"Intensive Culture"

(Updated September 25 2015)

CONDITIONS:

Pond Size : One Hectare (HA)
Stocking density : 30 – 100 pcs per sqm
Salinity : 10-35 ppt
Culture species : *L. vannamei*

POND AGED : Analyzes the pond bottom pH soil

- Check the soil pH (Lower soil pH is an indication of organic waste accumulation)
- Analyze the soil pH, randomize throughout the pond area.
  - If pond soil pH is 6.0-7.0 : 6 bottle of Red Cap **(RC)** will be required.
  - If pond soil pH is 5.0-6.0 : 9 bottle of Red Cap **(RC)** will be required.
  - If pond soil pH is 4.0-5.0 : 12 bottle of Red Cap **(RC)** will be required.

POND PREPARATION:

- DO NOT apply any type of disinfectant or treat the pond with any toxic chemical.
- Pump the water into pond through 300 micron mesh for filtration.
- Fill up the pond water with maximum of 80 -100 cm.
- Apply 80-100 kg (10 ppm) of Tea Seed Cake to eliminate the small fish (If any).
- Apply 160-200 kg (20 ppm) of Vermicompost (VC).
- Apply 240-300 kg (30 ppm) of grinded rice bran (RB), without any husk. Higher dosage of rice bran, enhances more copepod development.
- Apply the Red Cap **(RC)** according to the result of pH analyzed, but not less than 6 bottles per hectare as initial start up.
- High aeration during the start up, enhances the bloom of copepod as natural feed.
- Chain dragging throughout the pond will greatly reduce the biofilm development.

BEFORE STOCKING:

- Aerates for 7 to 10 days prior to stocking the post larvae.
- Check for the population density of zooplankton, invertebrates and biocolloids.
  - Copepods, zooplankton, diatoms and bloodworms are preferably.
- Decides stocking date.

NOTES:

- Turbidity (Biocolloidals) should not be less than 30 cm (If possible).
- pH will be the range of 7.8 to 8.3

READY FOR STOCKING:

- Select good healthy PL15 for stocking.
- Antibiotics free post larvae are preferably.
- Acclimatizes properly (at least 1 hour in fresh water).
- Adjustments of pH, salinity and temperature.
- Copepods, rotifers, bloodworms are in sufficient densities.

AFTER STOCKING:

- Apply **F**ermented **R**ice **B**ran **(FRB)** daily between 1-5 ppm (10-50 kg per hectare) depends on the pond turbidity. Preferably at 30 cm. If the turbidity is higher than 25-30 cm, reduce the amount of **FRB**. If the turbidity is lower than 30-35 cm, increase the amount of **FRB**.
- Turbidity (Biocolloids) should not be less than 30 cm throughout the cycle.
- Daily check for early morning and late noon.

  - Make sure the pH are not fluctuate more than 0.2 log with max of 0.3 log throughout day and night. Most preferably at 0.0-0.1 log.
- Dissolve oxygen (D.O) should be maintain at least 4.5 ppm during late night and should not exceed 10 ppm during the day time. Between 5.0 – 8.0 ppm is most preferably.
- Divide the **FRB** solution for 1-2 times per day (early morning and afternoon), dilute with pond water and widespread the FRB throughout the pond if possible.
- Apply Green Cap **(GC)** 6-12 bot monthly, will help to prevent the build up of sludge. Apply during night time with full aeration is preferably.
- Apply Yellow Cap **(YC)** 1-2 bot monthly, will help the build up of sludge. Apply during day time with full aeration is preferably. Apply more during of bloom crashed.
- If observed any depletion in dissolved oxygen, immediately stop adding **FRB**. Fully aerate the system and apply Green Cap **(GC)** @ 75 to 150 gram/ha.

- Chain dragging around the feeding zone for the first 15 days after stocking is still preferably (20% of total area/day). Avoid chain dragging the center of the pond. Apply Green Cap **(GC)** before chain dragging will help to degrade the precipitated waste faster.

Preparation of Fermented Rice Bran (FRB) to create the biocolloids and balanced the pond throughout the cycle.

- Set up the facilities to start fermentation process.
- Select husk free rice bran and **GRIND** or **SEIVE** them into smaller pieces (for newly stocked pond or small shrimp) prior to fermentation for at least 12 hours.
- Larger particle of rice bran and wheat bran can be used for larger shrimp.
- Mixing **2**:**1** ratio, **2** liter of water + **1** kg of materials.
  - Rice Bran (mixed 50:50 rice bran & wheat bran can also be applied).
- Add 1-3% of salt if fresh water is being used.
- Dissolves 1 gm of ENGEST **(WC)** with 10 liter of water, suitable for 5 kg of rice bran.
- Covers it with suitable sheet material. Keep in warm place.
- Make sure to maintain the pH of **FRB** at nearest to 6.0-7.0 at all time.
  - If recognized low pH, then add calcium carbonate for pH buffering.
- At start up the system. **FRB** should be grinded or filtered to remove the big particles for at least the first 15 days. Avoid large particle precipitation that can cause black biofilm on the bottom.
- Never use any mold or sour odor smelled **FRB**.

Bactipost Plus **Red Cap (RC)** **Probiotics**	Bactipost **Green Cap (GC)** **Probiotics**	Progest **Yellow Cap (YC)** **Probiotics**	Engest **White Cap (WC)** **Synbiotics**
Before stocking 6 to 12 bottles	Min 6-12 bot/month	Min 1-2 bot/month	1 g per 5 kg of Bran 1 g per 5 kg of Soya

ADDITIONAL FERMENTED SOYA FOR HIGHER PROTEIN REQUIREMENT.

Application rate: After 10 days of stocking

- 5% > 4% for 1-5 gram of shrimp body weight.
- 4% > 3% for 5-10 gram of shrimp body weight.
- 3% > 2% for 10-20 gram of shrimp body weight.
- 2% > 1% for 20-30 gram of shrimp body weight.
- Divide the total **FSy** and feeding at least 3-4 times per DAY.
- Feed tray sample at 1-2% is most preferably.

*** Use grinded smaller particle size of soya when shrimp size are less than 1 gram.

Preparation of Semi Solid **F**ermented **S**o**y**a **(FSy) : Granules form**

- Mixing **1**:**1** ratio. **1** liter of water + **1** kg of Soya (44-50% protein) (Defatted or Deoiled or Dehulled Soya)
- Add 1-3% of salt if fresh water is being used.
- Dissolves 1 gm of ENGEST **(WC)** with 5 liter of water, suitable for 5 kg of Soya.
- Fermentation process minimum of 8-12 hours are required.
- Cover up the tray with any suitable material and keep in warm place.
- Make sure the pH of Fermented Soya maintain at 6.0-7.0 at all time.
  - If recognized low pH, then add calcium carbonate for pH buffering.
- Never use any mold, acid or sour odor smelled **FSy** to feed shrimp.

Please note.

- Wheat bran, organic salt and minerals, vitamin, seaweed, whole egg and other roasted or precooked protein grains can also be used in the fermented materials.
- Makes sure the pH is well balanced (completely steady) during day and night. If pond water becomes dark green, apply more **FRB** and Green Cap (**GC**) to balance the system.

PRECAUTIONS:

- If found afternoon D.O. is above 10 ppm, is an indication of phytoplankton bloom.
- pH fluctuate during the day and night is an indication of phytoplankton bloom. More **FRB** is needed to balance the ecosystem.
- Keep pond bottom as clean as possible at all time by applying Green Cap (**GC**).
- Chain dragging during the pond preparation and continuously 20% around the feeding zone per day until the first 15 days after stocking is preferably. Apply Green Cap (**GC**) before chain dragging will also help to degrade the waste faster.
- During the cycle, do not chain drag and disturb the center of the pond or where sludge settled.
- Pond water should be kept approx. 1 meter depth during the first 30 days with max. of 1.5-2.0 meter (larger shrimp) for better D.O. and temperature exchanging.
- Corner edge and dike of the pond should always be free of black biofilm and filamentous algae.