Performance Analysis of Black Tiger Shrimp Farmer for Implementation of Traceability from Sea to Table

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Abstract Implementation of traceability in the pond was relatively easy because the track record is not much data to be collected/written related to food safety. This study aims to determine the factors critical point linkage and alignment between performance with consistency and commitment through the implementation of the technical components of cultivation so that traceability can be applied easily, honestly and accurately on shrimp farming. The method used is a fish bone diagram with a combination of balanced score card. Logical and accurate assessment can only be given by researchers with experts in the field of aquaculture panelists include: experienced pond owners; technicians and technical service ponds of shrimp feed, aquaculture facilities and entrepreneurs. The results showed that the tracer to obtain data from high-performance bervaliditas cultivation, the Government together with the existing aquaculture associations should ‘sit together’ to build databases tracer. The database shall contain the technical component tracer cultivation made during cultivation. Based on the factors critical point linkage and alignment between performance with consistency and commitment through a culture of technical components, the initiation of the implementation of traceability from sea to table requires farmers to ask for the sale memorandum of hatchery-coded tracer when buying, selling memorandum issued coded tracer harvest shrimp to the supplier, and submit a copy of a memorandum invoice fry with shrimp sales to the supplier to be delivered to the mill (cold storage) as a search information. Tracer data recorded in the memorandum of farmers by the Supplier to be passed to the factory; then it already has the data traceability ensured complete tracer, trace, accurate and able to answer the claim in case of food safety incidents.

Keywords Traceability; Black tiger shrimp; Aquaculture; Food safety; Indonesia

Introduction Fry is one determinant of success in farming. Fry is believed to contribute to the success of aquaculture in the form of: the growth of shrimp as expected, the number of high life, growth in size over average, the physical characteristics of a healthy and active feeding activity, and not recorded or not as susceptible to disease.

Many farmers intensive, semi-intensive pond, plus traditional or traditional rather buy fry nursery or logs of penggelondong. The reason for separating the purchase of fries or logs are: fries considered by natural selection so that the number of life expected to be high, age of fry are old enough (PL above 20) which is expected to grow and can be harvested faster with a larger size, larva are considered more resistant to disease and able to withstand temperature fluctuations, weather, salinity and other physical factors during cultivation. Reality shows that, using fry nursery and penggelondongan not guarantee productivity as expected.

The fact that the use of antibiotics in shrimp farming in ponds is no longer at this time for several reasons, namely:

(a) Price antibiotics too expensive when applied to the pond. Farmers generally only use chlorine in the preparation stage of cultivation media and probiotics during the cultivation process as easy to apply, inexpensive and environmentally friendly.

(b) Fluctuations in the price of shrimp, the high risk of death and a smaller size; forced the farmers to save money during berbudidaya.

(c) The presence of antibiotic residue tests performed by the manufacturer on samples of shrimp were found to contain residues of banned antibiotics
Performance of traditional shrimp aquaculture in East Java has actually experienced tremendous revolution since the 1990's and the changing patterns of cultivation of traditional farming systems into organic systems. Culture change movement toward organic systems by shrimp growers in Sidoarjo and Gresik Pasuruan has successfully obtained ISO 65 (IFOAM) from Naturland-Germany on March 23, 2002. This certificate covers the performance of 567 farmers cultivating a total area of cultivated land reached 3 500+ hectares. In order to implement traceability from sea to table, then the performance of the business lines in East Java culture certainly will not have trouble.

Thirdly it shows that the implementation of traceability in the pond was relatively easy because the track record is not much data to be collected/written related to food safety. Consistent with the Minister of Marine Affairs and Fisheries Number: PER.15/MEN/2011 (2011) on Quality Control and Safety of Fishery. The Log into the Territory of the Republic of Indonesia, in: Chapter I Article 1 point 14.

1 Objectives
a. Knowing the factors critical point linkage and alignment between performance with consistency and commitment through the implementation of the technical components cultivation by farmers so that traceability can be implemented.

b. The discovery of a form of implementation of traceability in aquaculture shrimp in a simple, easy to implement but has the advantage of accurate, honest and trustworthy.

2 Results and Discussion
Soil as a habitat for shrimp pond bottom was instrumental in providing an environment that supports their growth and survival. Farm productivity significantly affected the age of ponds (Nirmala et al., 2005). The use of chlorine for sterilization and malachite green to kill the parasite is most commonly done by farmers in the preparation stage of cultivation.

European Commission (2006) inspection results into Indonesia in its report: “Final report of a follow up mission carried out in Indonesia 2005” which is the follow up of the previous inspection in 2004, did not mention the existence of antibiotic residues in farmed shrimp. Kleter et al. (2006) state that the use of antibiotics has been banned because it can lead to the emergence of new diseases and economic losses in fish farming and shrimp (Table 1).

In the framework of the implementation of traceability in aquaculture; then the pond should have a data tracer form of a documented track record. Documentation shall contain the technical component of labor action shrimp aquaculture growers are implemented:

Internal factors include the technical components: ridge, the soil, aeration, sterilization, supplements and feed. The technical components of these internal factors have an influence on the potential success of cultivation by 80% for intensive cultivation and 60% for traditional culture.

External factors include the technical components: inlet, outlet, imbibitor, probiotic, water color and plankton. The technical components of these external factors have an influence on the potential success of cultivation by 20% for intensive cultivation and 40% for traditional culture.

Dominance and the urgency of the technical components that can be assessed based on performance or technical implementation level in berbudidaya is an interpretation of the consistency and commitment of farmers to implement operational standards cultivation. The lowest score of 0 s/d 29 or highest 91 s/d 100 is given a red notation means very important; scores low 30 s/d 39 or high 81 s/d 90 is given a yellow color notation which means essential and scores 40 s/d 80 is given a white notation means quite important.

Some important tracer information honestly and details should be recorded by the farmers (farmers and technicians) as the basic information traceability shrimp are as follows (Figure 1).

Based on the relevance factor (Figure 2) it appears that all technical components cultivation by farmers and technicians greatly affect the success of aquaculture. Through in depth interviews also implied that all respondents stated if intensive shrimp farming is very risky and more complicated than vannamei shrimp cultivation.
Figure 1 Fish Bone Diagram Analysis of Balanced Score Card Tiger Shrimp Intensive Culture

Note: Assumption: a. Internal factors dominance 80% vs 20% dominance of external factors; b. Score range 0 to 100

Figure 2 Entanglement factor in tiger shrimp intensive culture

Figure 3 shows the difference in the level of risk that must be faced by the farmers in intensive shrimp berbudidaya. Empirical facts in the pond to the high level of risk in intensive shrimp farming are not affected by food intake which is 70% of the component cost. Highest risk level actually found in the technical components of soil conditions, where quality, soil type and fertility greatly affect the risk of success or failure of shrimp farming in intensive shrimp ponds.

Figure 3 Rate risk at tiger shrimp intensive culture

Biological properties of shrimp living a way of life in two dimensions, so that the foraging activity requires basic plot pond area is sufficient. Unlike vannamei shrimp that lives in three dimensions. Vannamei shrimp floating in a pond of life. Vannamei shrimp down to the bottom of the pond to take food and water up to the surface to take in oxygen.

More tiger shrimp live in the pond bottom in desperate need of pond bottom soil conditions are good. Life on the farm in addition to looking for food as well as to the process of shedding its skin (moulting). The fact is that the cause of the destruction of intensive shrimp aquaculture due to the lack of attention of the farmers and technicians pond cultivation of the land base. Intensive shrimp farming that still exist to this day is the attention to the cultivation of soil fertility, replacing regular basis with the new ground level, attention to sustainable fertilizer ordinance and avoid the accumulation of pollutants in the soil with the use of probiotics, liming, soil leaching base ponds or other physical treatments (raked or plowed).

Figure 4 shows the traditional shrimp farming has a lot of critical points that must be considered by farmers. The nature of traditional cultivation is highly dependent on natural factors require precision and flair specific productivity of farmers in order to obtain high yields. Empirical fact that shrimp farming is traditional or organic polyculture with milkfish as phyto-plankton eaters and natural aerator.

In traditional black tiger shrimp culture (Figure 5, Figure 6) turns the technical component is a soil...
embankment and the factors that influence the success of aquaculture. Empirical fact that shrimp live two dimensions requires the presence of a strong embankment pond and there should be no leaks. Leaking dike resulted in the entry of water from rivers, the sea or the surrounding farms can cause contamination of the disease into the plot pond.

Figure 4 Fish Bone Diagram Analysis of Balanced Score Card Tiger Shrimp Cultivation Traditional

Note: Assumption: a. Internal factors dominance 60% vs 40% dominance of external factors; b. Skore range 0 s/d 100

Land on the traditional shrimp ponds are the factors that determine the success of cultivation. Soil fertility will help the growth and stability of natural food in the food chain. Empirical facts show the behavior of farmers to save the cost of managing the basic plot of land is a major cause of damage, and infection porusitas pest traditional shrimp farms on land and lower productivity.

3 Conclusion

To obtain the data tracer of high performance bervaliditas cultivation, the Government together with the existing aquaculture associations should ‘sit together’ to build databases tracer. The database shall contain the technical component tracer cultivation made during cultivation.

Based on the factors critical point linkage and alignment between performance with consistency and commitment through a culture of technical components, the initiation of the implementation of traceability from sea to table requires farmers to:

a. Ask for the sale memorandum coded tracer of hatchery fry when making a purchase and then store it properly.

b. Issuing a memorandum of sale of shrimp harvest coded tracer to the supplier that contains information on the name of farmers, technicians name, farm location, plot number, date of stocking and harvest date.

c. Submit copies of purchase orders along with a memorandum fry shrimp sales to the supplier to be delivered to the mill (cold storage) as a search information.

Tracer data recorded in the memorandum of farmers by the Supplier to be passed to the factory; then it already has the data traceability ensured complete.
tracer, trace, accurate and able to answer the claim in case of food safety incidents.

4 Methodology
To find the implementation of traceability in aquaculture using fish bone diagram with a combination of balanced score card. Logical and accurate assessment can only be given by researchers with experts in the field of aquaculture panelists include: experienced pond owners, technicians and technical service ponds of shrimp feed, aquaculture facilities and entrepreneurs.

Stages of the study are as follows:

a. Terrestrial surveying shrimp farming in East Java. In purposive sampling to identify the technical components cultivation by each farmer with technicians.

b. Grouping technical component trace, then arranged in the form of a fishbone diagram. The technical components of the fishbone diagram are divided into internal factors and external factors.

c. Establish levels of performance achievement in the implementation of technical components and interpreted in the form of the lowest performance assessed 0 and the highest performance rated 100.

d. Setting the percentage scale of dominance between internal factors and external factors based on the urgency of the technical component. Determination of the percentage scale based on the empirical fact of dominance results in depth interviews with farmers.

e. Make a chart analysis of the relationship between internal factors and external factors to describe in depth the technical component is closely related to the performance culture tracer data that must be owned by the farmers.

f. Calculate the level of risk based on the dominance scale to examine the critical factors and demonstrate empirically the potential hazards that may occur in the performance of cultivation.

g. Designing a data procurement initiation tracer.

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