

Strategy Implementation Traceability of Breeding Shrimp Business in Indonesia

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Received: January 24, 2013 Accepted: February 5, 2013 Published: February 28, 2013

doi:10.5296/jas.v1i1.3334

URL: <http://dx.doi.org/10.5296/jas.v1i1.3334>

Abstract

Broodstock in the preparation of the document traceability from sea to table is upstream of all the problems in the shrimp business in Indonesia. Until now there has been no regulation or standard of Good Breeding Practices Operational procedures that are technically capable of guaranteeing the treatment of antibiotics free. The research aims to identify, locate and establish a starting point in the implementation of traceability Indonesian shrimp from hatchery business. Analyzing the performance of the business associated with breeding success in the implementation of traceability as well as find the implementation strategy of Indonesia's shrimp traceability. The results showed that tracer code to recording the capture area of the broodstock and technically seeding practices is importance. Application numeric code that registered would be included in the memorandum of sale of seed should be done

jointly by the Government and the Association of hatchery. Standards and sanctions, can be implemented by the supplier, and cold storage. Supplier has the right to buy at the local market price for non-tracer prawn; so that cold storage have to refuse shrimp if nothing to seed sales without a memorandum of traceability. Based on these simple sales memorandum format, traceability could have been implemented for accurate searching. The reflects code of location tracer hatchery / backyard in District / City + catcher + spawner + breeder + seed brokers whole or in part. Technicians and Managers responsible for the source of information if cases of food safety incidents, For accounting purposes of the company, that buyers have a recording data search to find a farmer or even seed traders. In the event that a broodstock shrimp business comes from imports, the tracer code catcher broodstock and breeder may contain information search origin imported interpreted code or code numbers importers import documents.

Keywords: Broodstock, Hatchery, Traceability

1. Background

Tiger shrimp (*Penaeus monodon* Fabricius) is a 'native shrimp' Indonesia. Activities: arrest broodstock, captive breeding to produce seed until shrimp are cultured in Indonesia basically produce shrimp first derivative or F1. Broodstock tiger shrimp in Indonesia has been standardized in SNI 01-6142-2006 namely *Penaeus monodon* Fabricius 1798 (Anonymous, 2008. Nurdjana, 2008).

Vannamei shrimp (*Litopenaeus vannamei*), comes from the waters of the Pacific Ocean in the Hawaiian Islands and the West coast of America; making broodstock go to Indonesia is the first derivative of F1 from crosses or natural broodstock at the hatchery on the islands of Hawaii. Therefore, vannamei shrimp cultivated in Indonesia as F1 is essentially a second-generation seed or F2.

Regulation of the Minister of Marine and Fisheries Phone PER.03/MEN/2005 about quarantine measures by third parties; articles 2, 3 and 4 require careful monitoring. Articles 6, 7 and 8 as a form of action that can be taken by the Government with no third-party oversight of technical rules. In addition, the Minister of Marine and Fisheries Number PER.15/MEN/2011 on Quality Control and Safety of Fishery The Log into the Territory of the Republic of Indonesia. Article 6 (paragraph 2) - there is no requirement of integrity pact as a form of full responsibility importer which states that: if the imported fish is detected as carriers of disease or potentially harmful to the spread of disease will be immediately destroyed instantly, including all losses are borne by the importer. There is also no form of supervision by an independent party to quarantine the fish (which comes from imports) is. Whereas the broodstock in the preparation of the document traceability from sea to table is upstream of all the problems in the shrimp business in Indonesia.

Businesses seeding states that that there is no regulation or standard of Good Breeding Practices Operational procedure is technically capable of guaranteeing free treatment of antibiotics. Hatchery since 2004 have begun to consciously change the way seed movement by abandoning the use of antibiotics and to promote the use of probiotics.

Possible use of antibiotics banned in the backyard hatchery or very likely to occur in:

- (1) Phase sterilization of sea water; great potential against malpractices such as the use of antibiotics is prohibited Decree No.20/2003 and the Marine and Fisheries Council Directive 96/23/EC.
- (2) Phase vannamei shrimps local broodstock acceptance comes from the cultivation in ponds is likely to be carrier of disease, bacteria and viruses that can infect the other broodstock or the eggs and larvae.
- (3) Perceptions of the prediction error results shrimp eggs and larvae, due to not knowing kinship broodstock shrimp.
- (4) Phase promotion. A large difference in the perception of farmers (buyers) often force pembenih promoting seed using certain stimulants.
- (5) Phase transportation. The possible use of anti-bacterial chemicals, stimulants and endurance enhancer seed during transportation.

Shrimp seed sector performance is also faced with the problem of productivity. Broodstock shrimp eggs hatch capable of producing between 50,000 until 1 million head, while holding vannamei shrimp eggs hatch only able to produce between 50,000 until 150, 000 pieces. Based on these facts required number of broodstock vannamei shrimp which is more than the broodstock shrimp to produce the same amount of eggs (Dahuri, 2004. Nurdjana, 2008).

Initiation document tracer on seeding in accordance with Article 5 point e the Minister of Marine Affairs and Fisheries No.. 15 of 2011. Documents tracer in the form of a memorandum is a form of concrete technical implementation seeding was implemented GBP.

Broodstock shrimp obtained from the interception at sea 'could have been' derived from hatchery seed salvage disposal proceeds. Bad habits backyard hatcheries and spawning in the cleaning bath is a 'drain' and throwing flushed water its contents into the sea. Assumptions need seeds, broodstock based shrimp production target Indonesia following exchange potentials appear in Table 1.

Table 1. Assumptions Shrimp seed needs, broodstock and target production shrimp indonesia

	Unit	ASUMPTION 1		ASUMPTION 2	ASUMPTION 3	ASUMPTION 4	ASUMPTION 5	ASUMPTION 6
		Tiger Shrimp	Vannamei	Vannamei	Vannamei	Vannamei	Vannamei	Vannamei
Production target	Ton	50.000	450.000	450.000	450.000	450.000	450.000	450.000
ASUMPTION FACTS								
Size (HOSO)	Pcs/kg	50	60	70	60	70	60	70
Weight per piece	Gram	20	16,67	14,29	16,67	14,29	16,67	14,29
Average SR	%	20	70	70	60	60	50	50
Need seed healthy	piece	12.500.000.000	38.571.428.571	45 milyar	45 milyar	52,5 milyar	54 milyar	63 milyar

Broodstock productivity

Eggs per broodstock	Pcs	250.000	50.000	50.000	50.000	50.000	50.000	50.000
% eggs hatch	%	50	40	40	40	40	40	40
Need a healthy broodstock	Pcs	100.000	1.928.571	2.250.000	2.250.000	2.625.000	2.700.000	3.150.000
Origin broodstock		Lokal	Impor	Impor	Impor	Impor	Impor	Impor

HOSO product value	Rp	2,5 trilyun	18 trilyun
Potential devisa	Rp	20,5 trilyun	
Added value export			
Head Less	Ton	31.500	297.000
HL price export	\$/kg	10,50	8,90
	Rp/kg	94.500	80.100
Devisa HL	Rp	4,725 trilyun	36,045 trilyun
Total devisa HL	Rp	40,770 trilyun	

Source: Analysis data, (2012)

2. Purposes

1. Identify, locate and establish a starting point in the implementation of traceability Indonesian shrimp hatchery business.
2. Analyzing the performance of the business associated with potential breeding success in the implementation of traceability.
3. Finding a form of strategy implementation in simple Indonesian shrimp traceability.

3. Methodology

Steps to find traceability implementation strategy using SWOT matrix analysis techniques BSC (Strength Weakness Opportunity Threat - Balanced Score Card) through the following steps:

1. Based on established research questionnaires five (5) priority in the implementation of traceability appropriate strategy titles and research purposes.
2. Establish 5 (five) priority as basic assumptions systematically arranged by serial number; then later be formulated Strength, Weakness, Opportunity and Threat systematically into the SWOT matrix.
3. Each formulation SWOT given scores. Delivery techniques based on Balanced Score Cards scores were set assuming achievement that should (rated 100 on a scale of 0 s / d 100) compared with the facts. Description Strength and Opportunity considered positive, while the description of Weakness and Threat judged negatively.
4. Based on the compilation of a negative positive value at every stage of the matrix obtained five (5) a brief description of the form of traceability implementation strategy. Compilation of scores is a priority, which is the highest scores form the most important step in the strategy implementation.

4. Result and Discussion

Business of shrimp in fact involve many businesses at every stage. Each stage has a HACCP that must be considered by the business itself because of the potential occurrence of irregularities in the system of quality assurance of food safety (food safety) should be recorded in the document search (traceability). Facts that show high potential for seedling deviation form made active use of antibiotics can be seen in the distribution of illicit drugs in the vicinity of the farm shop seeding.

Based on these empirical facts, the five basic assumptions to find strategies for implementing traceability in the seeding is:

Table 2. Basic Assumptions

Basic assumption	Tiger shrimp	Vannamei shrimp
1	Experience hatchery sector actors	Experience hatchery sector actors
2	Kinship tiger shrimp broodstock	Kinship vannamei shrimp broodstock
3	Scientific aspects of practical / theoretical breeder	Aspect of the available of broodstock
4	Sustainability of production towards seed	Facts broodstock towards seed production process
5	Broodstock sustainability	The procurement and distribution of eggs

Table 3. BSC SWOT Analysis of Broodstock and Tiger Shrimp Seed / Black Tiger Shrimp

		FA	STRENGTH	SCORE	WEAKNESS	SCORE		
		1	Actors shrimp hatcheries have specific expertises	90	Lack of knowledge and skills enhancement	-60		
		2	Each actor has a clear record of the origin of the broodstock	90	No quantitative analysis of kinship (DNA code)	-70		
		3	Breeder know and recognize each broodstock is crossed	80	Egg quality is not all good	-70		
		4	Broodstock is always available either locally or imported	90	The size and quality of the broodstock is not always as desired	-60		
		5	Price and supply mains to pembenih relatively stable	90	Catcher broodstock stem mere collector shrimp	-70		
FA	OPPORTUNITY	SCORE	STRATEGY S-O	SCORE	STRATEGY W-O	SCORE	COMPILATION SWO STRATEGY	SCORE
1	Spawning failure can always be / able to be minimized	50	Need to continue efforts to increase egg production	140	Need to increase skills for the better	-10	Skills training for breeder	130
2	Avoid any possibility of inbreeding	70	Keep the identification of kinship applicative	160	Need for government facilitation means of identification	0	Procurement means of identification at the Aquaculture Center nearest	160
3	Breeder can predict better / proper quantity	80	Breeder have consistently recorded	160	breeder noted the quality of eggs from	10	Awareness of the importance of quality	170

	of eggs		the cross		crosses		and kinship broodstock	
4	Seed production can take place at any time desired	90	Keep in quality improvement efforts, the broodstock	180	Encourage breeders to send only good broodstock	30	Socialization quality and handling host for breeder	210
5	Breeder to selecting a good quality mains	90	Incentives for breeders who produce quality of broodstock	180	Improved knowledge of the quality of the broodstock for breeder	20	Creating quality standardization broodstock and prices	200
FA	THREATH	SCORE	STRATEGY S-T	SCORE	STRATEGY W-T	SCORE	COMPILATION SWT STRATEGY	SCORE
1	Confidence high breeder often careless	-70	Need understanding of quality management for breeder	20	Need to train performance good breeding practices applicable	-130	Applying recording in good breeding practices	-110
2	Equipment and / or the cost of holding expensive DNA analysis	-70	Need for government facilitation means of identification	20	Keep subsidy cost analysis of kinship broodstock	-140	Broodstock always selected kinship = recorded	-120
3	Breeder perform a variety of ways to seed 'good'	-80	Keep in understanding long term business strategy for breeder	0	Need technical understanding to avoid malpractice	-150	Maintain commitment and consistency of work spawner	-150
4	Fertility broodstock is no guarantee of 'natural'	-90	Need for standardization and certification of carrier-grade	0	Strengthen understanding about the quality of the broodstock breeder	-150	breeder commitment in determining the quality of the broodstock	-150
5	Treatment catcher / breeder many engineering	-90	Strengthening business ethics of the breeder broodstock	0	Providing knowledge to the breeder seed	-160	Breeder's commitment to supply a good broodstock	-160
			COMPILATION SOT STRATEGY	SCORE	COMPILATION WOT STRATEGY	SCORE	SWOT STRATEGY	SCORE
			breeder commitment and consistent record breed process	160	Skills offset by the implementation of quality systems	-140	Storing data track record of spawning	40
			Certificate of kinship is the basis of traceability	180	Facilitation and DNA analysis subsidy = ensure quality seed	-140	The broodstock must be certified origin (COO)	80
			breeder reported pijah process in writing (form)	160	Commitment and consistency in recording (for tracer)	-140	The publication of the data tracer seed by breeder	40
			breeder issued integrity seed quality	180	Broodstock selection for spawning to be precise	-120	Building a search the data security system origin master	120
			broodstock receiving system at the hatchery should be strictly	180	Strengthen understanding of quality to seed for breeder	-140	Determination of price incentives seed from the broodstock-grade	80

Table 4. BSC SWOT Analysis of Broodstock and Seed Vannamei Shrimp

	FA	STRENGTH	SCORE	WEAKNESS	SCORE
	1	Actors shrimp hatcheries have specific expertises	90	Handling skills seed each egg so different breeder	-60
	2	The origin of the broodstock vannamei (imports) certified	100	Spawner as breeder only trust from a certificate course	-50
	3	Imported broodstock shrimp are always available	70	Quality is determined broodstocks country exporters	-80
	4	Crossed broodstock by spawner definitely fit with GBP	90	The process of enlargement towards the seed depending breeder	-50

		5	Eggs from importers spawn always of high quality	90	Spawner alone bear spawning failure	-50		
FA	OPPORTUNITY	SCORE	STRATEGY S-O	SCORE	STRATEGY W-O	SCORE	COMPILATION STRATEGY SWO	SCORE
1	Hatchery spawning results do not bear failure	90	Strengthening the performance of enlargement eggs into seed	180	Need to increase skills for the better	30	Skills training for breeder	210
2	Kinship broodstock clearly written imports its DNA code	100	Need precision observe broodstock if appropriate documents	200	Need precision observe broodstock if appropriate documents	50	Training continued to recognize the quality of a good broodstock	250
3	Broodstock vannamei easily import process	80	Imports should always pay attention to grammar while cultivating	150	Breeder keep a record / document the origin of the broodstock	0	The introduction of traceability until towards seed	150
4	Egg production results according to the theory of hatchery spawning	90	Need to improve the quality of the eggs so seed	180	Encourage increased hatchery performance	40	Socialization quality seed and engineering aspects of the technology	220
5	Hatchery always receive good quality eggs	80	Accuracy of the hatcheries must always high	170	Strengthening efforts to produce quality seed	30	The application of environmentally friendly technologies	200
FA	THREATH	SCORE	STRATEGY S-T	SCORE	STRATEGY W-T	SCORE	COMPILATION SWT STRATEGY	SCORE
1	Confidence high spawner often careless	-60	Need understanding of quality management for pemijah	30	Strengthening the performance of good breeding practices applicable	-120	Applying recording in good breeding practices	-90
2	Spawner no longer pay attention to kinship broodstock	-50	Need precision observe broodstock if appropriate documents	50	Need precision observe broodstock if appropriate documents	-100	Training continued to recognize the quality of a good broodstock	-50
3	There is still a decline in the quality of the broodstock as a result of handling	-40	Preparation of pre-spawning holding to be really careful	30	Strengthening the application record data on all actors	-120	Maintain commitment and performance consistency seeding	-90
4	Spawner perform a variety of ways to seed 'good'	-50	Spawner encouraged to issue quality seed	40	Strengthening business ethics based breeder quality	-100	Breeder commitment in determining the quality of the broodstock	-60
5	Treatment breeder creates many engineering seed	-40	Minimize production engineering with regulation	50	Minimize production engineering with regulation	-90	The application of environmentally friendly technologies	-40
			COMPILATION STRATEGY SOT	SCORE	COMPILATION STRATEGY WOT	SCORE	SWOT STRATEGY	SCORE
			Breeder commitment and consistent record process	210	Habituation implementation of good breeding practices	-90	Storing data track record of spawning	240
			Need precision observe broodstock if appropriate documents	250	Need precision observe broodstock if appropriate documents	-50	Document the origin of the broodstock displayed publicly	400
			Seed production pond needs appropriate planning time	180	Commitment and consistency in recording (for tracer)	-120	The publication of the data tracer by breeder	120
			Breeder issued integrity seed quality	220	Avoid the use of chemicals and antibiotics	-60	Quality assurance through data search seed from the broodstock	320
			Stimulating the production of high quality natural	220	Familiarize production system with probiotics	-60	Issuance of letters of guarantee seed green	320

SWOT analysis Balanced Score Card (Table 3) found 5 traceability implementation strategy following tiger shrimp hatchery business priorities as follows:

1. Build a data security system search origins stem (120).
2. Determination of price incentives seed from the broodstock-grade (80).
3. Broodstock must be certified origin (COO = Certificate Of Origin) (80).
4. The publication of data by breeder seed tracer (40).
5. Storing data track record of spawning (40).

The five step strategy as well as recommendations for government action with its associates and business people seeding. Efforts are offset commitment, consistency and fairness in implementing traceability in business lines and seed shrimp broodstock; believed to be able to lift the shrimp business back on all fronts that will ultimately promote national shrimp production comes from the seed breeders in the country.

SWOT analysis Balanced Score Card (Table 4) found 5 traceability implementation strategy follows vannamei shrimp hatchery business priorities as follows:

1. Document the origin of the broodstock displayed openly (400).
2. Seed quality assurance through data search from the broodstock (320).
3. Issuance of letters of guarantee seed green (320).
4. Storing data track record of spawning process (240).
5. The publication of the data tracer by spawner (120).

The results of the comparative table shows that the implementation of traceability in vannamei shrimp hatchery business is now more important priority than the shrimp hatchery business.

Production of vannamei shrimp in Indonesia is much larger than the black tiger shrimp. Needs to vannamei shrimp seed it much higher than tiger shrimp. In order to support the achievement of shrimp vannamei productivity targets; that quality of implementation traceability on vannamei shrimp is a major priority. The majority of farmers stated that the price of seeds is not a major consideration in farming (Caporale, V., et al. 2001; Kosim, et al. 2007; Nurdjana. 2008).

Table 5. Comparison Traceability Implementation Priorities Breeding Business

TIGER SHRIMP		VANNAMEI SHRIMP	
Build a data security system search origins stem	120	Document the origin of the broodstock displayed openly	400
Determination of price incentives seed from the broodstock-grade	80	Seed quality assurance through data search from the broodstock	320
Broodstock must be certified origin (Certificate Of Origin)	80	Issuance of letters of guarantee seed green	320
The publication of data by breeder seed tracer	40	Storing data track record of spawning process	240
Storing data track record of spawning	40	The publication of the data tracer by spawner	120

Source: Analysis Data (2012)

LOGO

Dates

Kepada Yth.

.....

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NO. NOTA

di

TRACER CODE:

.....

NO	NAMELY	UNITS	PRICE (Rp)	TOTAL (Rp)
			TOTAL	

Says:

Technician

Accounting

Manajer

Customer

Figure 1. Specimen Nota Traceability

Determination of tracer code to record the capture area of the broodstock and technically seeding practices. Preparation numeric code that registers will be included in the memorandum of sale of seed should be done jointly by the Government and the Association of seeding. Standards and sanctions, can be played by the supplier, and cold storage. Supplier has the right to buy at the local market price for non-tracer prawn cold storage while the right to refuse shrimp seed sales do not have a memorandum of traceability.

Based on these simple sales memorandum format, traceability could have been implemented with accurate and contains in-depth search. The code reflects the location tracer hatchery / backyard in District / City + catcher + spawner + breeder + shrimp brokers whole or in part. In the memorandum contained a company logo (symbol A) following the registration number that shows companies or individuals who run a seed business. Memorandum and the date may contain internal information about the technical aspects are reinforced by information based on records technician for seeding lasts includes tracing up to the broodstock identity number like spawning and hatchery. Technicians and Managers responsible for information resources in case of food safety incidents, Accounting for the purposes of the company, while the buyer is a data search to find a farmer or even seed traders.

In the event that a broodstock shrimp business comes from imports, the tracer code catcher broodstock and breeder may contain information search origin imported interpreted code or code numbers importers import documents.

5. Conclusion

Initiation of tracer at the level of seed documents is an important step that should be realized in the framework in implementing the traceability. This is in accordance with Article 5 point e the Minister of Marine Affairs and Fisheries No. 15 Year 2011; then document tracer in the form of a memorandum is a form of concrete technical implementation seeding was implemented GBP. Oversight functions should be performed by government personnel as well as Article 1, paragraph 8, 9, 11, 12, 14 and 15, and Chapter III Article 11, 12, 13 and 14; in fact do. Benefits of initiation document tracer can be directly enjoyed by the share holders to consumers and exporters.

Initiation tracer document should be designed in standard form documents and flexibly defined circulation with an umbrella memorandum of law in the form of technical guidelines seed marketing. Monitoring circulation memorandum supervised by government staff in the area. Another benefit of implementing traceability through the documents in the form of a memorandum of tracer marketing is obtaining accurate data, continuous updating, as well as the creation of a system of reporting and to naturally seed business.

The principle of substance in the document should contain information such as tracer:

1. Code of the city / county where seed production in East Java two-digit numbers or letters,
2. Code catcher (fishing base fishermen) or the importer holding one digit letters or numbers,
3. Code of broodstock shrimp breeder also one digit letters or numbers,
4. Spawner also one digit code letter or number,
5. Breeder Code (hatchery or backyard) two-digit numbers or letters,
6. Penggelondong as breeder two-digit code numbers or letters,
7. Pender as breeder code (in terms of the involvement of brokers seed, specifically the government officials or local seed associations can be formed to assist the formulation of tracer code for brokers, so the broker also responsible in terms of establishing traceability of shrimp Indonesia) maximum three-digit combination of numbers and / or letters.

Seventh tracer codes are compiled by systematic trace defined above is information directly related to traceability of data in document / memorandum of sale. Thus, in case of food safety incidents that allegedly directly or indirectly related to the performance of seeding, the source of the problem can be found and determined accurately.

Acknowledgments

Prof. Dr. Ir. Kamiso, H.N., M.Sc. (Gajah Mada University); Dr. Ir. Nazori Djazuli, M.Sc. (Director of Quality, Ministry of Marine Affairs and Fisheries); Dr. Ir. Hardoko, MS. (Brawijaya University); Partono (hatchery entrepreneurs); Ir. Sardjono Budi Santoso (CEO of hatchery and animal healthy distributor) and Ir. Junaedi Ispinanto (Secretary General of ASPAKINDO).

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