



THAI AGRICULTURAL STANDARD

TAS 7427-2012

**GOOD AQUACULTURE PRACTICES FOR BLUE
SWIMMING CRAB FARM AND MUD CRAB FARM**

**National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives**

ICS 67.120.30

ISBN 978-974-403-887-6

UNOFFICIAL TRANSLATION



THAI AGRICULTURAL STANDARD

TAS 7427-2012

**GOOD AQUACULTURE PRACTICES FOR BLUE
SWIMMING CRAB FARM AND MUD CRAB FARM**

National Bureau of Agricultural Commodity and Food Standards

Ministry of Agriculture and Cooperatives

50 Phaholyothin Road, Ladyao, Chatuchak, Bangkok 10900

Telephone (662) 561 2277 Fax (662) 561 3357

www.acfs.go.th

Published in the Royal Gazette Vol.129 Section 165D Special,

Dated 30 October B.E. 2555 (2012)

**Technical Committee on the Elaboration of Thai Agricultural Standard on
Good Aquaculture Practices for Blue Swimming Crab Farm and Mud Crab Farm**

1. Ms. Varin Tanasomwang
Department of Fisheries Chairperson
2. Mr. Twee Chindamaikul
Department of Fisheries Member
3. Ms. Usa Bamrungbhuet
National Bureau of Agricultural Commodity and Food Standards Member
4. Mr. Kritapol Youngvanichset
Coastal Fisheries Research and Development Bureau, Department of Fisheries Member
5. Ms. Jintana Jindalikit
Marine Fisheries Research and Development Bureau, Department of Fisheries Member
6. Mr. Chanin Sangrungruang
National Institute of Coastal Aquaculture, Department of Fisheries Member
7. Mr. Chumpol Srithong
Faculty of Fisheries, Kasetsart University Member
8. Associate Professor Somkiat Piyateratitiworakul
Department of Marine Science, Faculty of Science, Chulalongkorn. University. Member
9. Mr. Pol Polsen
Thai Aquaculture Association Member
10. Associate Professor Mayuree Chaiyawat Member
11. Assistant Professor Banchong Tiensongrusmee
Expert on Aquaculture Member
12. Mr. Siri Ekmaharaj
Expert on Aquaculture Member
13. Mr. Paisan Sriprach Member
14. Ms. Chitrlada Booncharoen Member and Secretary
Office of Standard Development,
National Bureau of Agricultural Commodity and Food Standards

Blue swimming crab and mud crab are nutritious and great meat taste. Market demand of these crabs is gradually increasing. Therefore, products from blue swimming crab and mud crab play an important role in Thai economy. At present, the quality and quantity cannot fulfill consumer needs. The aquaculture practices should be developed and the production increased in order to meet the demand for consumers as well as food safety requirements. The Agricultural Standards Committee deems it necessary to establish the Thai Agricultural Standard on Good Aquaculture Practices for Blue Swimming Crab Farm and Mud Crab Farm.

This standard is based on the following documents:

Coastal Fisheries Research and Development Bureau, Department of Fisheries. 2005. Good Aquaculture Practices. Fishery Cooperatives Limited. 59 p.

Banchong Tiensongrusmee. 2004. Aquaculture Technology of Blue Swimming Crab. Paper Comp Service Publisher, Bangkok, Thailand. 132 p.



NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES
SUBJECT: THAI AGRICULTURAL STANDARD:
GOOD AQUACULTURE PRACTICES FOR BLUE SWIMMING CRAB FARM AND
MUD CRAB FARM
UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Good Aquaculture Practices for Blue Swimming Crab Farm and Mud Crab Farm as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its standard on quality and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551(2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on the Establishment of Thai Agricultural Standard: Good Aquaculture Practices for Blue Swimming Crab Farm and Mud Crab Farm (TAS 7427-2012) as a voluntary standard, details of which are attached herewith.

Notified on 20 August B.E. 2555 (2012)

(Mr. Theera Wongsamut)
Minister of Agriculture and Cooperatives

THAI AGRICULTURAL STANDARD
GOOD AQUACULTURE PRACTICES FOR BLUE SWIMMING CRAB
FARM AND MUD CRAB FARM

1. SCOPE

This Thai Agricultural Standard covers good practices on farm at all stages of blue swimming crab and mud crab culture including harvesting and post-harvest handlings prior to transportation from farms. This standard does not cover the practices at the hatchery and nursery of swimming crab and mud crab, transportation from farms, and culturing of soft shell crab.

2. DEFINITIONS

For the purpose of this standard:

2.1 **Blue swimming crab** means crab in the family Portunidae which are genus *Portunus* i.e. *Portunus pelagicus* or horse crab and genus *Charybdis* i.e. *Charybdis feriatius* or streaked crab or cross crab.

2.2 **Mud crab** means crab from the genus *Scylla* of the family Portunidae i.e. *Scylla olivacea* or black crab, *S. Paramamosian* or white crab, *S. serrata* or violet crab and *S. Tranquebarica* or green crab.

2.3 **Blue swimming crab farm and mud crab farm** mean an establishment devoted for raising swimming crab and mud crab which includes rearing pond, cage, pen, feed preparation area, building and other sanitary facilities which are necessary for crab culture.

2.4 **Rearing pond** means an inland water-filled pond for raising crabs such as earthen, concrete, coated canvas and plastic layered pond.

2.5 **Cage** means tool hanging or floating in natural water sources used for crab culture. It has a variety of shapes such as polygon or round with or without frame. It is made from fishing net or wood and may be stationed with poles or buoy.

2.6 **Pen** means confined area used for crab culture located in the sea or coastal area. It is made from wood or tile or fishing net and 50 to 75 cm of lower part of the pen is buried under the ground.

2.7 **Veterinary drug** means any substance applied or administered to any food-producing animal, whether used for therapeutic, prophylactic, or diagnostic purposes or for modification of physiological functions or behavior.

2.8 **Residues of veterinary drugs** mean the veterinary drugs as defined in Section 2.7 including parent compounds, and/or their metabolites and include residues of associated impurities of the veterinary drug concerned, in any edible portion of the animal product which is used for human consumption.

3. REQUIREMENTS

3.1 Requirements of Good Aquaculture Practices for blue swimming crab farm and mud crab farm are classified into two levels as follows:

3.1.1 **Major requirements** mean the mandatory requirements that shall be complied with. In case of non compliance, it will directly or seriously affect the health and quality of crabs as well as consumer safety. It also includes the requirements under relevant laws and regulations.

3.1.2 **Minor requirements** mean the requirements that should be complied with. In case of non compliance, it will directly affect the health and quality of crab, or indirectly affect consumer safety.

3.2 Judgement criteria

Judgement criteria for the assessment of compliance with the requirements of this standard are as follows:

3.2.1 All of the “major requirement” shall be complied.

3.2.2 The “minor requirement” shall be complied with not less than 60% of total number of all minor requirements or not less than 60% of overall evaluation score from all minor requirements. (The improvement up to 80% shall be made within 2 years.)

3.3 Requirements of good aquaculture practices for blue swimming crab farm and mud crab farm are as Table 1.

Items	Requirements	Levels
1. Farm registration	1.1 Farmers shall register their farms with the responsible authority.	Major
2. Farm location	2.1 Availability of farm map and layout	Minor
	2.2 Farm shall be kept distance or not be affected by the polluted sources.	Major
	2.3 Quality of water source shall be suitable for crab culture.	Major
	2.4 Availability of convenient transportation both within and outside the farm	Minor
	2.5 Availability of basic infrastructure such as electricity, tap water, etc.	Minor
	2.6 Suitability of farm site for each type of crab culture	Minor
3. Culture farm 3.1 Rearing pond	3.1.1 In case of earthen pond, it should be mud, clay or sandy clay for good water holding capacity.	Minor

Items	Requirements	Levels
	3.1.2 In the case of sandy soil, the pond should be lined with proper material such as polyethylene sheet, canvas, etc. for water holding capacity.	Minor
	3.1.3 In the case of concrete or canvas pond, it should be strongly constructed.	Minor
	3.1.4 Prepare the condition of pond bottom appropriately to the type of crab.	Minor
	3.1.5 If farm is located near polluted water source, there shall be treatment pond for water prior to culturing and/or installation of circulation system.	Major
	3.1.6 Availability of a good system for water inlet and outlet	Minor
3.2 Cage and pen	3.2.1 Permit shall be granted for cage and pen area by authorized agencies.	Major
4. Management 4.1 Rearing pond	4.1.1 Farm manual shall be made available and put into practices. This manual comprises of farm history, farm layout, production plan, pond preparation, water preparation, feed management, health management, harvesting, post-harvest handling, and training of workers on farm, etc.	Major
	4.1.2 Test the water quality as specified in Appendix A for rearing pond at least once a year.	Minor
4.2 Cage and pen	4.2.1 Farm manual shall be made available and put into practices. This manual comprises of farm history, boundary of permitted area, farm layout, production plan, cage preparation, pen preparation, feed management, health management, harvesting, post-harvest handling, training of workers on farm, etc.	Major
	4.2.2 Availability of appropriate mesh size of net to facilitate water flow and prevent crab from getting out	Minor

Items	Requirements	Levels
	4.2.3 Lay appropriate spacing for cage or pen for the convenience of water flow and good management	Minor
	4.2.4 Test the water quality as specified in Appendix A of the cage or pen areas at least once a year.	Minor
5. Production inputs	5.1 Select quality, healthy and disease-free fry for culture.	Minor
	5.2 Availability of Fry Movement Documents (FMD) or evidence showing source of fry purchased	Minor
	5.3 Store feed including fresh feed for crab appropriately.	Minor
	5.4 In case feed is prepared on farm, feed raw materials shall be free from veterinary drugs and substances prohibited by laws and regulations concerned.	Major
	5.5 Feed prepared on farm shall be hygienically produced without using any expired or deteriorated feed raw material. The formula of feed shall be appropriate.	Major
	5.6 Formulated feed shall be registered with the competent authority. The feed shall be clearly labeled with ingredients or nutrition facts, manufacturing and expiry dates, name and address of the manufacturer.	Major
	5.7 Feed supplements, vitamins and other feed substances which registration is required (in case such input is required for registration) shall be clearly labeled with composition or nutrition facts, manufacturing and expiry dates, name and address of the manufacturer.	Minor
	5.8 Store production inputs properly in an appropriate area and not directly contacted with the floor. Preventive measures against pests are in place.	Minor
6. Health Management 6.1 Rearing ponds	6.1.1 Prepare rearing ponds, equipment and tools properly.	Minor

Items	Requirements	Levels
	6.1.2 Availability of appropriate preventive measures against pests such as using fenced net, seine, or plastic, etc.	Minor
	6.1.3 Check crab health regularly. If any abnormal symptom is found, diagnose to find cause and take corrective action and keep the record.	Minor
	6.1.4 When an unusually large number of dead crabs are found or there is suspicion of an outbreak, relevant competent authority shall be immediately informed. Disposal methods of dead crabs and effluent management shall be appropriately in place.	Major
	6.1.5 In case of sick crabs, if the use of veterinary drugs and chemicals is necessary, the farmer shall apply only registered ¹ veterinary drugs and chemicals, and strictly follow the instruction on the label. The use of veterinary drugs or chemicals shall be recorded.	Major
6.2 Cage and pen	6.2.1 Clean cage, pen and equipment regularly throughout the culture cycle.	Minor
	6.2.2 Check crab health regularly. If any abnormal symptom is found, diagnose to find cause and take corrective action and keep the record.	Minor
	6.2.3 Availability of appropriate preventive measures against pests such as covering cage or pen with net or tightening the opening with rope, etc.	Minor
	6.2.4 When an unusually large number of dead crabs are found or there is suspicion of an outbreak, relevant competent authority shall be immediately informed. Disposal methods of dead crabs and effluent management shall be appropriately in place.	Major

^{1/} Hazardous substances used in aquaculture under the Hazardous Substances Act B.E. 2535 (1992) and its amendments which is enforced by the Department of Fisheries.

Items	Requirements	Levels
	6.2.5 In case of sick crabs, if the use of veterinary drugs and chemicals is necessary, the farmer shall apply only registered veterinary drugs and chemicals, and strictly follow the instruction on the label. The use of veterinary drugs or chemicals shall be recorded.	Major
7. Environment and farm hygiene 7.1 Rearing pond	7.1.1 Discharge water from rearing pond shall be complied with relevant laws and regulations.	Major
	7.1.2 Separate household waste water from the rearing water.	Minor
	7.1.3 Availability of hygienic design of toilets and segregation of toilets from the rearing pond	Major
	7.1.4 Dispose of waste from rearing, empty veterinary drug and chemical containers, expired veterinary drugs and chemicals in an appropriate and hygienic manner.	Minor
	7.1.5 Keep tools and equipment used on farm orderly, clean, hygienic and maintained properly for use.	Minor
	7.1.6 Prevent pets from entering to the rearing pond areas.	Minor
	7.1.7 Dispose waste properly. Trash bins with lids are provided. Separate waste disposal area from the rearing ponds.	Minor
7.2 Cage and pen	7.2.1 Manage to dispose waste hygienically and prevent rubbish and garbage from contaminating water resource.	Major
	7.2.2 Keep tools and equipment orderly, clean, hygienic and maintained properly for use.	Minor
8. Harvest and post-harvest handlings	8.1 Plan for harvest and distribution in advance.	Minor
	8.2 Availability of the Movement Document (MD) issued by the competent authority or designated agency	Major

Items	Requirements	Levels
	8.3 The residues of veterinary drugs or chemicals in the produce shall not exceed the maximum residue limits.	Major
	8.4 Availability of methods to manage and handle crab quality hygienically during the harvest and post-harvest	Minor
	8.5 Availability of clean and proper containers of crab for hygienic transportation	Minor
9. Social Responsibility	9.1 The farm site should not obstruct the customary route and/or not impact the livelihoods and activities of the local community.	Minor
	9.2 Participate in the activities that promote relationship between the farmers and the community.	Minor
	9.3 Participate in activity of crab farmer associations or related organizations.	Minor
	9.4 Attend meetings, seminars or technical trainings on environmentally friendly aquaculture, animal health and welfare, as well as food safety.	Minor
	9.5 Availability of fundamental worker welfare as appropriate	Minor
10. Record Keeping	10.1 Record important information and regularly update i.e. pond preparation, fry procurement, population density, rearing management, water quality during culture, feeds and feeding, use of veterinary drugs and chemicals, post harvests.	Major
	10.2 Record important information of culture and regularly update i.e. growth rate, death rate, disease occurrence, evidence of purchase or sources of production inputs, and harvesting data.	Minor

APPENDIX A

RECOMMENDATION ON WATER QUALITY SUITABLE FOR BLUE CRAB
AND MUD CRAB FARMING

Parameter	Standard value
Salinity: blue crab : mud crab	25 g/kg to 30 g/kg 15 g/kg to 30 g/kg (part per thousand or ppt)
Suspended Solids (SS)	< 70 mg/l
Transparency (using Secchi disc)	30 cm to 40 cm
Temperature	28 °C to 30°C
Dissolved Oxygen (DO)	> 4 mg/l
Biochemical Oxygen Demand (BOD)	~ 2 mg/l (equal to natural water quality)
Total Ammonia (Total NH ₃)	< 0.4 mg/l
Nitrite (NO ₂ ⁻)	< 0.1 mg/l
Hydrogen Sulfide (H ₂ S)	< 0.02 mg/l
pH	7.0 to 8.5
Total Alkalinity	80 mg/l to 150 mg/l
Phosphorus	< 0.4 mg/l

Source: Modified from Water Quality Standard for Coastal Fishery Aquaculture, Coastal Fisheries Research and Development Bureau, Marine Shrimp Culture Research Institute, Department of Fisheries.

APPENDIX B
COASTAL AQUACULTURE EFFLUENT STANDARD

Parameter	Standard value
pH	6.5 - 9
Biochemical Oxygen Demand (BOD)	< 20 mg/l
Total Ammonia (Total NH ₃)	< 1.1 mg/l
Suspended Solids (SS)	< 70 mg/l
Phosphorus	< 0.4 mg/l
Nitrite (NO ₂)	< 0.4 mg/l
Hydrogen Sulfide (H ₂ S)	< 0.02 mg/l

Source: Notification of the National Environment Committee entitled Specification of the Effluent from Coastal Aquaculture Farm, Published in the Royal Gazette Volume 121 Section 49D Special, Dated 1 May B.E. 2547 (2004).

Appendix C
Unit

The units and symbols used in this standard and the units recognized by the International System of units (*Le Système International d' Unités*) or SI are as follows:

Type of Measurement	Name of Unit	Symbol
Mass	milligram	mg
	gram	g
	kilogram	kg
Volume	litre	l
	milligram per litre	mg/l
Length	centimetre	cm
Quantity	gram per kilogram	g/kg
Temperature	degree Celsius	°C