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Review Article : Molting in Mangrove Crab (Scylla serrata Forsskäl, 1775)

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ABSTRACT

One of the export commodities of Indonesian marine resources is soft shell crab. Efforts to increase the export of soft shell crab are through cultivation but have problems in the molting phase. This article aims to determine the factors that influence the molting of the Mangrove Crab (*Scylla serrata* Forsskäl, 1775). From various information obtained that the factors that influence this molting can come from internal and external factors. Internal factors include heredity, age, relative growth rate, sex, reproduction, resistance to disease and the ability to utilize feed. External factors include water quality, density and the amount and composition of amino acids/proteins contained in the feed

Keywords: export, commodity, internal, external.

A. Introduction

Mangrove crab is an export commodity that is still prospective, especially products in the form of soft shell crab. However, until now there are still many obstacles, including the time of molting or molting that is not simultaneous and the relatively long maintenance period and the high mortality rate. This will result in uncertain production and inefficient maintenance costs.

Various studies have been carried out to overcome these problems, including stimulation with feed, the environment and by cutting the legs (Fujaya, 2009). However, the results are still not as expected. The main problem in the cultivation of

mud crabs, especially soft crabs or soft crabs, is determined by various factors, including growth, survival and molting rate. The survival factor is very important because crabs are sold by tail. Meanwhile, moulting crabs (soft shell crab) have a higher selling value than non-moulting crabs.

To meet market demand which is quite high, it is necessary to increase the production of mud crabs in terms of quantity and quality. One of the technological developments in aquaculture in increasing the production of mangrove crabs is the production of soft shell crabs. According to Fujaya (2007) the selling price of soft-shelled crabs is higher than that of hard-shelled crabs, which can be up to two times.

Soft crab production is carried out by raising individual crabs in a crab box which is placed in the pond until moulting. Moulting is a natural process of changing skin, which is removing the old, hard skin for the purpose of growth. After molting, the new crab shells are still very soft and will harden again a few hours later after water absorption occurs. These soft crabs are harvested as soft crabs or soft crabs. Mangrove crabs that have undergone moulting will increase in size about 1/3 of the time before, in addition to adult crabs, the carapace length also increases by 5-10 mm or about 2 times of its original size (Kordi, 1997 in Soviana, 2004).

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The mangrove crab (S. serrata Forsskäl, 1775) will molt 18 times from the instar stage to adulthood. In general, the frequency of moulting occurs more frequently in the early stages than in the adult stage, thus the opportunity for crabs to grow occurs when the crabs are young (Hanafi, 1992).

Physiologically, the growth and moulting process of mud crabs is influenced by physiological factors both directly and indirectly. The direct effect is done by giving hormones (Bliss, 1983). Hormone control in crabs is influenced by the presence of inhibitory hormones including hormone inhibiting metabolism, hormone inhibiting moulting (MIH) and hormone inhibiting gonadal development (GIH) (Carlisle, 1953). While the indirect physiology method is carried out by the autotomy or ablation method (Kanna, 2000). This article aims to determine the factors that influence the moulding of the Mangrove Crab (*Scylla serrata* Forsskäl, 1775).

B. Factors Affecting Moulting in Crab

Mangrove crab is an export commodity that is still prospective, especially products in the form of soft shell crab. The factors that affect the level of production in a soft shell crab cultivation business are the percentage of moulting, growth rate and survival (Kanna, 2000). and these factors are influenced by internal and external factors (Kordi, 2000).

Internal factors include heredity, age, relative growth rate, sex, reproduction, resistance to disease and the ability to utilize feed. While external factors include water quality, density and amount and composition of amino acids/proteins contained in the feed. Growth observations were based on daily specific growth rates obtained through gravimetric body weight calculations. The high percentage of molting in the period is suspected by external factors such as changes in tides. According to Fujaya et al (2012), moon conditions and tides are also very influential. The crab will experience a moulting peak when it will enter the low tide period, the low tide period is the time when the crab is actively eating to store energy for moulting activities in the next low tide period.

The growth of crabs with the ablation method is higher because it has a higher number of moulting than other methods. Meanwhile, at the time of moulting, there was a significant increase in growth in terms of length, width and weight. Ablation method is done by removing one eye stalk. The removal of these organs results in the absence of growth-inhibiting hormones. According to Carlisle (1953), in the eye stalk of crustaceans there are hormones that can inhibit moulting and gonadal development. Therefore, the removal of the X-organ that produces moulting-inhibiting hormone in the eye stalk through the ablation process can further increase the number of moulting events in cultured crabs. The working process of the ablation method is direct to the target organ, namely by removing the eye stalk as the organ that produces the hormone inhibiting moulting so that the moulting work process becomes fast. autotomy also causes stress due to taste

Pain due to treatment is greater than the treatment of other methods, namely cutting claws and walking legs. This requires the crab to recuperate in the formation of new individuals. The molting process of crabs requires energy and movement that is strong enough, so for adult crabs that experience moulting requires energy from large enough feed. Cutting the claws or autotomy aims to increase hormones that can cause imbalance or stress so that the crab will respond to regenerate by moulting, but the level of stress on the crab can also cause death. In addition to this, the moulting factor

also affects the survival rate. The moulting process is shorter than the moulting interval, it will increase the hormone imbalance or stress, causing death.

C. Conclusion

Mangrove crab is an export commodity that is still prospective, especially products in the form of soft shell crab. Until now, there are still many obstacles, including molting that is not simultaneous. From various information obtained that the factors that influence this molting can be from internal and external factors. Internal factors include heredity, age, relative growth rate, sex, reproduction, resistance to disease and the ability to utilize feed. External factors include water quality, density and the amount and composition of amino acids/proteins contained in the feed

D. References

Arriola, F. J. 1990. A Preliminary Study of Life History of Scylla serrata Forskal. Phil. J. Sci. 73(4); 437-456.(http://sokafarm.

Afrizal, H. 2009. Teknik pemoultingan kepiting (*Scylla* sp.) cangkang lunak dan penanganan hasil panen. Sekolah Tinggi Perikanan Jakarta, 30-36 hlm.

Anggoro, S. 2001. Peran hidrobiologi dalam pengembangan perikanan pantai. Fakultas Perikanan dan Ilmu Kelautan, Universitas Diponegoro Semarang, 20 – 21 hlm.

Azis. 2008. Perangsangan moulting pascalarva lobster air tawar jenis capit merah (*Cherax quadricarinatus*, Von Martens) dengan perlakuan suhu. Tesis. Program Studi Ilmu Perairan, Sekolah Pasca Sarjana, Institut Pertanian Bogor, 5-17 hlm.

Bliss, Dorothy. E. 1983. The Biology of Crustacea. Vol.8 Environmental Adaptations. Academic Press, New York, 198 p.

Carlisle, D. B. 1953. Moulting hormone in *Leander* (Crustacea Decapoda). *Mar. biol.*, *Ass*. United Kingdom, 32:95-289 pp.

Chang, E. S. and Snyder, M.J . 1986. Effect of eyestalk ablation on larval molting rates morphological development of the American lobster (*Homarus americanus*). *Biol., Bull.*, 170: 232-243.

Changbo, Z., D. Shuanglin, W. Fang & H. Guoqiang. 2004. Effects of Na/K ratio in seawater on growth and energy budget of juvenile *Litopenaeus vannamei. Aquaculture*, 234: 485-496.

Department of Ocean Development. 1999. Fattening of spiny lobster