FECUNDITY, FERTILIZATION RATE, HATCHING RATE, AND SURVIVAL RATE OF CATFISH (*CLARIAS. SP*) WITH HATCHERY SEMI -ARTIFICIAL METHOD

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ABSTRACT

Catfish (Known Indonesian name as Ikan lele) has latin name Clarias, sp, it is one of fresh water fisheries in Indonesian is often a commodity fish that have develovement lots of cultivation, and is in great demand by the Indonesian people as fish protein requirement. Based on data from the Central Bureau of Statistics of the Ministry of Maritime Affairs and Fisheries, catfish production on the island of Java experienced a significant increase in 2017 in direct proportion to the increase in public interest. This Field Work Practice will be held in July - August 2022 at the FPIK Teaching Factory, Dipenogor University, Central Java. It was carried out using the observation method, namely making observations, conducting interviews, collecting observational data, and complementing it with literature studies. The purpose of this Field Work Practice (PKL) is to know hatchery techniques, know the survival rate, fish fertilization rate, and hatching rate as a result of catfish hatchery. The results obtained from the fish hatchery process are that catfish have a survival rate of 95%, fertilization rate of 98%, and hatching rate of 86%. Observation of the hatchery process is very important in the scope of aquaculture.

Keyword : *Clarias sp, Catfish Hatchery, Semi-artificial Culture.*

1. INTRODUCTION

Catfish (*clarias sp*) is one commodity freshwater fisheries that have development lots of cultivation done throughout Indonesian people in particular island java. Moment this, catfish Many are cultivated by the community and are superior enhancement production by the ministry Maritime Affairs and Fisheries. Enhancement production catfish farming very possible Because wide land fresh water available with amount big, development technology cultivation has mastered, source Power man available with market demand will increased [1]. It cause because height enhancement need public in consume fish as source proteinm for body [2]. Superiority can maintained with density high, low capital, land narrow with limited water resources (Saparinto, 2012). Production catfish farming in Indonesia experienced enhancement every yea, According to statistical data in 10 years final enhancement the highest in 2017 namely 360,730 tons (statistics.kk.p.go.id).

Development commodity catfish No regardless from aspect cultivation. Aspects in catfish farming is aspect technica, aspect financial, and aspects marketing, Success cultivation fishery influenced by several factor that is internal factors (genetics and hormones) and factors external (feed and environment). It in accordance with study [3] which states that various constraint cultivation fishery including composition feed, productivity low, problem genetics, limited land, pests and diseases as well as factor weather. Success development cultivation catfish supported by management good try to get results optimal production [4].

Success in fulfillment need for get results production needed available seeds in sufficient quantity and time appropriate as well as quality and effort good seeding. Seeding is one process for raise parent, spawn, incubate, look after the larvae or seed until Ready stocking [5].Several factors are needed in catfish hatchery so need knowledge and abilities technical for implementation. Factors production of catfish larvae this need is known more far for produce quality seeds in sufficient amount.

2. METHOD

2.1 Preparation

Preparation pool is one factor support in activity hatchery in teaching factory. Catfish hatchery use pool tarpaulin measuring 3 x 3 m with water height of about 60 cm. Preparation pool done with drying. Drying usually done for ± 1 day. Drying done after the lel fish in the pond the has harvested. Then remaining fish will be netted and transferred to another pond or pond temporary or holding systems. Then after that failed with water.

2.2 Selection

Objective from selection is for get candidate parent already gonad maturity. The catfish used in the selection parent namely catfish vote. Characteristic features main used as determinant is candidate parent Already mature gonads ie can seen from tool gender. Own tool long and pointed genitals as well as colored reddish Then the movement nimble and possessive help slim body, meanwhile berina own tool round and colored redness , movement slow and possessive shape big belly.
On mains male, exists protrusion at the back anal canal and when stripping will emit sperm and urine. Meanwhile on the parent female, have tool rounded genitals and when stripping will emit egg. Besides it, shape body parent male slimmer meanwhile parent female mature gonads will own form more belly big.

Fig -1. Parent Male

Fig- 2. Parent Female

2.3 Injection hormone

Inject done Morning day 08.00 started with water receding trough, catching parent use seser parent, parent then lifted with eye closed use cloth wet so as not to rebelled , then done weighing weights, measurements long, check tanggging for determine level pregnancy, and examination gonadal maturity. After that parent injected base dorsal fin and released return to tub maintenance. Hormones used is ovaspect Dose Ovaprim in female fish 0.5 ml/kg fish body weight and dosage Ovaprim 0.3 ml/kg fish body weight is given to male. Inject use ovaprim done in the back in a manner with method parent catfish laid on the floor or flat table, cover head parent catfish female with cloth so that the fish do not rebel and escape from shaft. Inject parent in the back with tilt needle inject 40 – 45° C and depth needle injection ± 1 cm or adjusted with big its small fish body.

2.4 Spawning

Spawning of catfish in the Teaching Factory is carried out with method semi artificial spawning. Spawning mother catfish need 1 day. Spawning done after parent finished on stage maintenance or in level gonadal maturity IV. Spawning done semi artificial, spawning this done with comparison parent 1:1. Then a pair parent entered to in pool spawning and eggs will fertilized in period 24 hour time.

2.5 Larvae Care

Maintenance of catfish larvae in the Teaching Factory includes gift feed and measurement water quality. Feed used moment maintenance of catfish larvae that is feed experience form silk worms and flour pellets. Giving feed experience no always done, so that the catfish larvae in the day to 10 observations given pelleted feed flour. Larva rearing is carried out for 12 days then moved into the pool nursery. Count magnitude SR value is done as observation results larval rearing. Larval rearing is carried out until get seeds measuring 3-5 cm. From the results

calculation obtained the SR (Survival Rate) value is 86%. This can concluded that results SR calculation obtained for catfish larvae is ok.
During maintenance carried out, the feed given to the larvae viz feed experience form silk worms. On maintenance 1 to 10th day using feed natural. Then day the 11th to so on use feed in the form of flour pellets and continued gift crumble feed.

2.6 Nursery

Nursery done on the day the 12th to so on until observation done. Maintenance seeds at the catfish nursery stage in the Teaching Factory include gift feed and measurement water quality. Stage earlydeep nursery is with preparation pond. Preparation pool covers pool dried One day and filled with water with height 60 cm. Giving probiotics done For guard water quality and sweeping universe For kill seeds disease and care immunity. Then done purpose of water change for guard fixed water quality ok. Giving feed seed catfish done 3 times a day i.e. 08.00 WIB, 12.00 WIB and 16.00 WIB Fish feed given is 300 grams of pellets nanolis 1 and 700 grams of feed flour for a total of 1 kg. After 1 week comparison the feed given changed to 500 grams of feed pellets and 500 grams of feed flour.

a. Fecundity
Fecundity is comparison between amount the resulting eggs with weight body parent. Fecundity counted with formula (Andy omar, 2005)

$$F = \frac{berat\ sebagian\ gonad}{berat\ total\ gonad} X \text{ jumlah telur sample}$$

b. Fertilization Rate (FR)
Fertilization rate (FR) is is degrees hatching whole Where all hatched larvae counted shared with egg fertilized. Following Effendi formula (2002)

$$FR(\%) = \frac{\sum telur\ terbuahi}{\sum total\ telur} X\ 100$$

c. Hacking Rate (HR)
Power hatch eggs (%) constitute comparison between amount hatched eggs _ with amount scattered eggs. Following formula according to Arfah et al (2006)

$$HR = \frac{jumlah\ telur\ yang\ menetas}{jumlah\ telur\ yang\ dibuahi} X\ 100\%$$

d. Survival Rate(SR)
According to Wicaksono et al. (2016), Survival Rate (SR) is percentage from fish survival that can counted with formula as following:

$$SR = \frac{jumlah\ ikan\ awal\ pemeliharaan}{jumlah\ ikan\ akhir\ pemeliharaaan} X\ 100\%$$

3. RESULT AND DISCUSSION

Inject done Morning day 08.00 started with water receding trough, catching parent use seser parent, parent Then lifted with eye closed use cloth wet so as not to rebelled , then done weighing weights, measurements long, check tanggging For determine level pregnancy, and examination gonadal maturity. After that parent injected base dorsal fin and released return to tub maintenance. Hormones used is ovaspect Dose Ovaprim in female fish 0.5 ml/kg fish body weight and dosage Ovaprim 0.3 ml/kg fish body weight is given to male. Inject use ovaprim done in the back in a manner with method parent catfish laid on the floor or flat table, cover head parent catfish female with cloth so that the fish do not rebel and escape from shaft. Inject parent in the back with tilt needle inject 40 – 45° C and depth needle injection ± 1 cm or adjusted with big its small fish body.

3.1 Fecundity

Based on results practice Work field during Teaching factory, results calculation fecundity can seen in table 1.

Table 1. Fecundity Value

Observed data	Amount released eggs (items)	Weight before spawning	Fecundity (item)
Fecundity	120	15	15000

Based on results calculation fecundity that has carried out, the results of catfish fecundity of 15,000 grains. Fecundity value obtained enough ok Fecundity is amount egg in the ovary. Fecundity value very influenced by various factor, like internal as well as environmental factors this reinforced by [6], who stated that tall low mark fecundity influenced by factors broodstock. Factor important influential to eggs (number and size) is size from parent used. The more big / heavy size parent will the more increase mark its fecundity. Whereas For factor environment consists from feed, water quality, temperature, pH and salinity.

3.2 Fertilization Rate (FR)

Table 2. Value of Fertilization Rate (FR)

Observed data	Amount egg fertilized (grain)	Amount released eggs (items)	FR (%)
Fertilization Rate (FR)	118	120	98%

Fertilization rate (FR) is calculation degrees hatching whole where all hatched larvae counted shared with egg fertilized. Based on results calculation of fertilization rate (FR) that has been carried out at the Teaching factory was obtained results of catfish fertilization rate (FR) by 98% this reinforced by [7], who stated that the average percentage fertilization during study that is by 98.5 percent which shows quality Enough ok. A number of influencing factors degrees conception is quality from sperm water quality and genetics.

3.3 Hatching Rate (HR)

Based on results practice Work field during Teaching factory, results calculation fecundity can seen in table 3.

Table 3. Hatching Rate (FR)

Observed data	Amount egg fertilized (grain)	Amount released eggs (items)	HR (%)
Hatching Rate (HR)	112	120	95%

Power hatch eggs (%) is comparison between amount hatched eggs with amount scattered eggs. Based on results calculation of the hatching rate (HR) that has been carried out at the Teaching Factory, obtained hatching rate (HR) results of catfish by 95%. The hatching rate (HR) value obtained enough ok this reinforced by [8] stated that mark standard for the hatching rate of catfish generally 80%. Ability Power hatch egg part big is inherited traits. Eggs are not hatch can caused because level different fertility from each parent. Condition parent female can influential to amount eggs that hatch, can also relate direct with quality eggs produced by the mother female [6].

3.4 Survival Rate (SR)

Based on results practice Work field during Teaching factory, results calculation fecundity can seen in table 4.

Table 4. Survival Rate (SR) Value

Observed data	Number of live larvae (tail)	Amount egg hatch (grain)	HR (%)
Survival Rate (HR)	96	112	86%

Survival Rate (SR) is percentage number of live fish at the end compared maintenance with initial number of fish spread. Based on results calculation of survival rate (SR) that has been performed, obtained the results of the

survival rate (SR) of catfish by 86%. The obtained survival rate (SR) enough ok this in accordance with provisions of SNI 6138:1999, namely level The survival rate of catfish in nursery 1 was 60 %, nursery 2 was 70%, and nursery 3 was 70%. catfish own high resilience to disease and resistance to less water environment ok activity selection in a manner direct can worn For increase more survival good [9]. The catfish has resilience good body chosen for made parent. Good resistance properties from parent the will inherited to his descendants.

3.5 Water Quality

Based on measurement water quality for catfish hatchery carried out at the Teaching factory, measurement water quality includes DO, pH, ammonia, temperature and salinity. In catfish hatchery, measurement water quality is one important thing because, water quality can influential to level fish production. If the water quality is not in condition good so level Fish productivity will also decreased. Measurement water quality is carried out every day. Check done Morning at 08.00 WIB and in the afternoon at 16.00 WIB

Table 5. Measurement Results water quality

No	Parameter	Unit	Results	Quality Standard (SNI 6484.4 :2014)
1	Temperature	℃	25.9-29℃	25-30℃
2	pH	-	6-7	6,5-8
3	DO	mg/l	4-7	Min. 3

Activity measurement water quality in practice Work field done every day For know catfish rearing water conditions including temperature : 25.9-29 ° pH 6-7 and oxygen dissolved 4-7 in accordance with [10] that business water quality proper catfish hatchery is temperature 26.5-28, pH between 6.5-8, oxygen dissolved between 3-5 ppm.

Water plays a role very important as a living medium for fish, then in cultivation fisheries water quality or living media for fish to be noticed for the sake of guarding suitable life for farmed fish unsuitability mark water quality will very affect the life of fish [11]. The low DO value in research this correlated with height mark temperature, more tall mark temperature so the more low DO value. Water temperature is important for growth living organism waters Because Lots influential to growth organism. Temperature can influence various activity life and influence to oxygen dissolved in water, increasingly tall temperature more low solubility oxygen in the water [12]. But the catfish very tolerant to rate sufficient temperature tall that is range between 20-35 ^{o} C and can life in condition waters environment very bad [13].

Change water temperature in one pool factor caused by the season heat, change too temperature extreme will cause stress fish, and can cause death in fish [14]. Oxygen dissolved (DO) is factor barrier in system cultivation, if DO value is not maintained at a value that meets SNI, then the fish will become stressed and not can eat with ok. on one research at oxford states DO levels still under SNI but catfish Still survive at low DO levels because of the catfish have tool Respiratory extra you can take oxygen in a manner direct, low DO in research This caused by levels high organic water so that increase ammonia levels, though thereby catfish Still capable because of the catfish have high tolerance to rise DO levels [15].

Optimal pH levels for fish life ie between 6.5-8 (SNI, 2014) Degrees the acidity of water is determined by the concentration of H+ ions shown with numbers 1-14. Less numbers of 7 shows that the water is atmospheric sour, meanwhile number more of 7 shows alkaline environment, water has a higher pH small of 4 and over big of 11 will killing catfish , pH between 6-9 is good For catfish farming in ponds , however If more of 9.5 catfish No will produce again. According to study Hermansyah (2017), stated that water temperature can affect the water pH, conditions the will influence fish activity, one observed catfish activity is consumption feed, if the pH of catfish pond water under 5 will cause catfish not enough eat, p This influenced by the acidity of the pond water the so will increase percentage catfish death .

4. CONCLUSIONS

Catfish hatchery process semi artificially consists of preparation pond, selection parent, injection hormone, spawning, rearing of the larvae consisting from gift feed gift probiotics as well as checking water quality for maintenance of larvae and seeds. Based on from activity seeding carried out obtained results that is the Fertilization

Rate (FR) value obtained is 98%, the Hatching Rate (HR) value is 95% and the Survival Rate (SR) of tilapia seeds by 86%.

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