

## **Effect of sex ratio and age parent to consumption feed, weight eggs and conversion ration on birds quail (*Coturnix coturnix japonica*)**

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**ABSTRACT:** Birds quail (*Coturnix Coturnix japonica*) is a type of bird lots of quail maintained in the community have morphology i.e. small body, round and tail short Setyawn, Sudjarwo, Widodo, and Prayogi (2011) stated that bird quail is one community poultry of the genus *Coturnix* which can be generated as producer eggs and meat. Destination from study this for knowing the effect of sex ratio and age parent to consumption feed, weight eggs, and conversion feed. Method study is test design Random Complete (RAL) pattern factorial with 2 factors, namely factor 1 is Sex Ratio and factor 2 is age parent with every 3 treatments and 3 replications. Research results show the sex ratio does not give influence real on consumption feed, the weight of eggs, and conversion feed. Average consumption feed of 675.63 (g/ head) to 683.61 (g/ head), average weight egg of 11.28 (g/ item) to 11.60 (g/ item), and the average conversion ration of 5.63 to 6.08. Influence to age parent gives influence that is not real to consumption feed, weight eggs, and conversion feed. Average consumption feed as big as 677.17 (g/ head) to 679.74 (g/ head), average weight egg of 11.28 (g/ item) to 11.55 (g/ item), and the average conversion ration of 5.71 (g/ head ) to 5.92 (g/ head ). Interaction balance male-female and age parent no give influence real to consumption feed, weight eggs, and conversion feed. The conclusion from the research is the influence of the balance of male-female and the age of the parent no give influence the consumption of feed, the weight of eggs, and conversion of feed.

**Keywords:** Bird quail; Consumption feed; Weight egg; Conversion ratio

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## INTRODUCTION

Along increased amount residents, request Public for animal protein specifically meat and eggs also experience increased. Bird quail moment this many cultivated by the community because of some excellence. Type bird quail (*Coturnix Coturnix japonica*) is a type bird lots of quail maintained in the community have morphology i.e. small body, round, and tail short. Bird quail are also known to have fertility very tall with age mature relative gender short that is about 42 days has capable produce in a year could reach 2-4 offspring. According to a study by Akbarillah et al., (2008), quail female (*Coturnix coturnix japonica*) at the age of 42-45 days with a body weight of around 110 – 117 g/head already mature gender and the ability to produce eggs on the moon first about 13 – 17 grains/head with heavy egg ranging from 9 - 10 g / grain. Peak production of eggs on birds quail reached 98.5% at the age of 4-5 months (Kaselung et al., 2014). Bird Quail (*Coturnix coturnix japonica*) is one of the types of the bird-capable quail-producing egg until reaches 250-300 grains/head/year. Peak production occurs at the age of 5 months with a percentage of 96% eggs, productivity starts to decrease after 14 months old. Bird quail females enter the end after 1 – 1.5 years old with a weight reject reach of 130-150g (Anugrah, Sadikin, and Sejati, 2009).

Maintenance of bird quail depends on some influencing factors among them that are the maintenance of seeds bird quail, rearing of used bird for produce egg nor meat required seeds cattle bird quail that has quality good, consisting of from male and brood bird ready quail production (Penenkenan, Loing and Rorimpadey, 2013). Bird quail besides producing eggs, also produce meat, and land production is relatively not too large so that can work on the side at home. Seeds are a problem the main problems faced by livestock quail because of limitations in production so that no capable Fulfill whole needs consumer.

Breeder scale small also wants amount high production, but farmers no notice factors that influence it. Success in the cultivation of cattle determined three Thing that is seeds, feed, and management. factors supporter in nursery bird quail them is *sex ratio* and age of the parent. Age parent influencing performance production and reproduction in quail.

Age parent bird quail related with mature gender and adult body. At the beginning of the production period, the aging parent is still young and will produce small size eggs and the size will increase in line with the increased age parent. Production will increase along increase age until peak production. On the other hand, the aging parent also influences consumption feed, the weight of eggs, and conversion feed. Age parent productive quail will produce consumption feed, weight eggs, and conversion feed will also good but if age parent used past its peak so productivity will decrease so that consumption feed, weight eggs, and conversion feed will be decreased. So can be said age has a connection to the performance production of bird quail. Influencing factors for success in hatching eggs include the age of parent producer egg hatch, the balance of male and female, shape of egg hatch, and long storage eggs (Achmanu, Muharliien, and Salaby 2011).

Marriage bird quail need to be taken into account balance proper male. This thing concerning efficiency and effectiveness uses stud to female to get optimal results. During marriage in progress, management maintenance main in gift feeds very important to be noticed. Giving good feed with gifts and proper nutrition with needs will influence the performance of bird quail that are kept, good performance can also be seen from score conversion feed. Conversion rate low feed showing efficiency usage feed and more efficiency of birds quail consume the feed given (Mone, Sudjarwo, and Muharliien, 2016). The balance of male and female in hatching bird quail is very important because plays a role

big in fertility eggs and very takes effect to success hatching. If quail female too many in one cage so worried will many empty eggs (infertile) because marriage is considered not enough effective, bird quail stud no could marry whole parent quail. Besides that, the population is too many could increase stress and energy competitive the higher (Achmanu, Muharliem, and Fajar, 2010).

Based on the description above so need to conduct a study and research on the influence of *sex ratio* and age parents' different consumption feed, the weight of eggs and conversion feed on birds quail (*Coturnix coturnix japonica*).

**MATERIALS AND METHODS**

Theory research used is Bird quail *Coturnix coturnix japonica* used in the study is quail there are 162 *Coturnix coturnix japonica species* quail male and female consisting of 27 quail male 3 months old, Bird Female age 3 months 27 tails + female age 5 months 45 tails + female age 7 months 63 tails so the total quail female namely 135 tails, and *Sex Ratio* namely 1:3, 1:5, and 1:7 Male - Female.

Materials used in the study Step first is Cage used in a study is cage blocked battery each unit as many as 27 units of drums with size H=30 × W=40 × W=50 cm per unit. Each unit contains 4 birds quail, 6 birds quail, and 8 birds quail. Stage adaptation cattle quail conducted for 17 days after quail lay eggs and males mature gender and ready for marrying quail female. The feed is given

that is feed commercial with the same brand that is *New Hope Py 100* feed bird quail laying 6 weeks old - rejected, drinking water is given not limited. Bird quail entered to in the cage that has been blocked to 27 cages following code treatment age and balance specified male - female for adaptation Among male and female in marriage. Maintenance was conducted for 17 days before the collection egg was conducted because of seeing readiness stud in marry a female.

Study this use method designed experiment use test design Random Complete (RAL) pattern factorial with 2 factors, namely factor 1 is *Sex Ratio* and factor 2 is age parent with every 3 treatments and 3 replications.

Factor combination treatments used in research are:

Factor 1: *Sex Ratio*

A1 : (*Sex Ratio*) 1: 3

A2 : (*Sex Ratio*) 1: 5

A3 : (*Sex Ratio*) 1: 7

Factor 2: Age of parent bird quail

B1: Parent quail Age 3 Months

B2: Parent quail 5 Months Age

B3: Parent quail Age 7 Months

Observed variables are consumption feed, weight eggs, and conversion feed.

**RESULT AND DISCUSSION**

Average data consumption feed, weight eggs, and conversion feed on each *sex ratio* During the study presented in Table 1 as follows:

**Table 1.** Average consumption feed, the weight of eggs, and conversion feed based on *sex ratio*

Treatment	Variable		
	Average consumption feed (g/ head /4 weeks)	Average weight egg (g)	Average conversion feed
A1( <i>sex ratio</i> 1:3)	683.61 ± 7.67	11.60±1.35	5.63±0.68
A2( <i>sex ratio</i> 1:5)	675.36 ± 13, 63	11.44±0.50	6.08±1.68
A3( <i>sex ratio</i> 1:7)	677.22 ± 5.99	11.22±0.53	5.84±0.64

Description: Average in the same column showing existence influence that is not significant (P>0.05).

Based on the results of research, the average consumption of feed bird quail During the study is contained in Table 1. Treatment balance male-female give different influence that is not real to consumption feed. This thing caused inside one cage quail capable consuming feed given. Amount bird the quail there in one cage tends to give results that are not different to consumption feed given. Consumption feed treatment balance male-female 1:3 (A<sub>1</sub>) by  $683.61 \pm 7.67$ g/head, consumption feed treatment balance male-female 1:5 (A<sub>2</sub>) by  $675.36 \pm 13, 63$  g/ head , consumption feed treatment balance male-female 1:7 (A<sub>3</sub>) by  $677.22 \pm 5.99$  g/head. There is an inclination to more balance a little earn more consumption big, compared with more balance a lot.

By numeric, average consumption feed bird quail at the highest 1:3 balance that is  $683.61 \pm 7.67$ g/ head in comparison with 1:5 balance i.e.  $675.36 \pm 13, 63$  g/ head and 1:7 ie  $677.22 \pm 5.99$  g/ head. This is caused because the amount of quail at 1:3 balances more a little i.e. (4 quail) so that the ability quail respond to feed is given taller in comparison with the others. This thing by statement Achmanu, Muharliien, and Salaby (2011) that the difference in consumption feed caused by difference balance increasingly male-female big so that cause cage the more solid and the temperature cage the higher. Added by Suprijatna, Kismiyati, and Furi (2008) the amount of feed consumed varies depending on the size body of cattle these, genetic traits (*breed*), environmental temperature, level of production, housing, place of feed per head, state of drinking water, quality feed and disease. Ta'inindari and Sopandi (2013) stated that consumption of feed on poultry is influenced by content energy in feed, temperature environment as well as strain, weight body, weight egg daily, growth fur, stress level, and activity poultry alone.

Based on the average weight of egg bird quail During the research contained in Table 1 and the calculation analysis variant (Anova). Treatment balance male-female

give influence that is not significant ( $P>0.05$ ) against weight eggs. This thing caused bird quail in one cage not give response to the weight of eggs produced and This is also because the weight of the eggs is more influenced by the body weight of the quail. Weight eggs on balance male-female 1:3 (A<sub>1</sub>) by  $11.60 \pm 1.35$  (g), weight eggs at 1 :5 (A<sub>2</sub>) equal to  $11.44 \pm 0.50$  (g), and weight eggs on balance male-female 1:7 (A<sub>3</sub>) of  $11.22 \pm 0.53$  (g). Yuwanta (2008) stated that the weight of Eggs is also affected by the weight and originality individual. The decrease in egg weight was influenced by the level of feed consumption which also decreased due to the higher male balance - female, the more dense the cage, so the consumption rate per quail is getting smaller. The weight of *Coturnix-coturnix japonica quail eggs* with dotted color, the egg weight is between 9 - 10 g or about 8% body weight. According to Santos, et al., (2011), the mean weight egg is influenced by the type or type of quail, Temperature environment, and consumption of feed can also influence the weight of eggs. Heavy egg according to Widjiastuti and Endang (2008) is 7% to 8% of the weight body or about 10g. Wu, et al., (2005) stated that calcium, energy, and protein in feed influence heavy eggs. The given quail feed containing 22% protein at the age of 20-21 weeks produces heavy eggs of 10.1 - 11.0 g (Eishu, 2005).

By numeric, average weight egg best on balance male-female 1:3 tallest that is  $11.60 \pm 1.35$  g compared with balance male-female 1:5 that is  $11.44 \pm 0.50$  g and 1:7 i.e.  $11.22 \pm 0.53$  g. This thing caused 1:3 balance more a little that is (4 quail) so that ability quail consume feed given produce production maximum eggs Factor - Factors that affect egg weight are mainly broodstock, such as body weight, age, and quality and quantity of Kaharuddin's feed consumption., (2007). Kaharudin., (2007) revealed that the *Coturnix-coturnix japonica quail* was only able to produce 250 eggs - 300 eggs/head/year with uniform egg weight between 9 - 10 g. Based on the average conversion feed bird quail During the

research contained in Table 1 and calculation analysis variant (Anova). Treatment balance male-female give influence that is not real to conversion feed. This is because the *sex ratio* no gives respond to the conversion of the feed produced, as well as all parent bird quail are capable of utilizing feed to produce eggs. Amount bird the quail there in one cage tends to give results that are not different to utilization nutrition the feed given so that no occurs a difference in conversion feed. Conversion feed on balance male-female 1:3 (A1) by  $5,63 \pm 0.68$ , convert feed treatment balance male-female 1:5 (A2) by  $6.08 \pm 1.68$  and convert feed treatment balance male-female 1:7 (A3) of  $5.84 \pm 0.64$ . According to Achmanu, et al., (2010) results of conversion feed got from consumption feed and accompanied amount production eggs (weight eggs) are different. Difference conversion feed is caused because existence difference in consumption feed and quantity of producing eggs. Powered by Astutik, (2018) that treatment use balance male different female giving influence that is not real to conversion feed. The results of the data show conversion feed bird quail is the

lowest in the 1:3 treatment, namely  $5.63 \pm 0.68$  compared with the 1:5 treatment which is  $6.08 \pm 1.68$ , and the 1:7 treatment is  $5.84 \pm 0.64$ .

That thing shows score conversion more feed low showing efficient use optimal feed. According to Surti and Astuti (2006) that conversion high feed on treatment there is a relation with heavy relative egg same for all treatments. Feed control is the most balanced diet nutrient and most efficient for producing eggs. Kaselung, Montong, Sarayar, and Saerang (2014) that consumption feed and weight egg are very factor important for determining tall low conversion feed, if factors the in-state balanced so will obtain conversion more feed good where big number conversion feed depends on the amount feed ration consumed shared with heavy eggs produced bird quail. According to Ocah and Erener (2005) that During the period of gift feed limited bird quail have done restrictions feed have conversion more feed high.

Average data consumption feed, weight eggs, and conversion feed on each aging parent During a study presented in Table 2 as follows:

**Table 2.** Effect age parent to consumption feed, weight eggs, and conversion feed During research.

Treatment	Variable		
	Consumption feed (g/ head /4 weeks)	Weight egg	Conversion feed
B1 (3 months)	$679.28 \pm 18.84$	$11.28 \pm 0.72$	$5.92 \pm 0.20$
B2 (5 months)	$677.17 \pm 18.86$	$11.43 \pm 0.98$	$5.71 \pm 0.56$
B3 (7 months)	$679.74 \pm 4.98$	$11.55 \pm 1.19$	$5.91 \pm 2.08$

Description: Average in the same column showing existence influence that is not significant ( $P > 0.05$ ).

Based on the results of the research, the average consumption feed bird quail During the study is contained in Table 2 and the calculation analysis variant (Anova). Treatment age parents give influence that is not significant ( $P > 0.05$ ) against consumption feed. This thing caused third-age parents inside one cage no occur difference in consume feed given. Each parent bird quail consume feed and utilize the nutrients you get with the same goal that

produces eggs, so age parent tend to give no response different to consumption feed given and not occur difference consumption feed. Consumption value feed treatment age parent in treatment B1 (3 months) of  $679.28 \pm 18.84$  (g), the value of consumption feed treatment age parent in treatment B2 (5 months) of  $677.17 \pm 18.86$  (g), and the value of consumption feed age parent in treatment B3 (7 months) of  $679.74 \pm 4.98$  (g). According to Suprijatna, Kismiyati, and Furi

(2008) bird quail at the moment production egg consume protein mainly for the formation of eggs. Protein in feed very determines adequate protein intake. Consumption feed depends on temperature environment and content energy ration.

Average consumption feed at 7 months is  $679.74 \pm 4.98$  (g) taller in comparison with 3 months old which is  $679.28 \pm 18.84$  (g) and at 5 months that is  $677.17 \pm 18.86$  (g). This thing is because age more parents old will more many consume feed to produce eggs and increase quail body weight. That thing to statement Sujannah, Tanwiriah, and Widjastuti (2012) the amount of feed consumed During a period of growth is about 500-650 g. ratio amount consumption influenced by type gender, size of the body, level of production, activity, palatability, quality, and quantity from energy metabolic. Djulardi, et al., (2006) stated, that energy in the ration is a barrier to consumption because if the need for energy is already fulfilled so poultry by instinctive will stop eating. Content fiber high rough on ration could lower consumption ration because bulky so cause a feeling of satiety (Prawitasari, et al., 2012). Sudrajat, Kardaya, Dihansih, and Putri (2014) stated that the nutritional content in feed and treatment of quail will cause healthy quail, so it cannot affect the process of egg formation and egg production can run normally. According to Maknun, Kismiati, and Magisah (2015) who stated that egg period will increase along with the enhancement of protein consumption in feed.

Based on the results of the research, the average weight of the egg bird quail During the study is contained in Table 2 as well as the calculation analysis variant (Anova). Treatment age parents give influence that is not significant ( $P > 0.05$ ) against weight eggs. This thing caused age parents B1, B2, and B3 have not describe their response to the weight of eggs produced and able to produce weight uniform eggs. Weight value egg age parent in treatment (B1) of  $11.28 \pm 0.72$ , weight egg

age parent in treatment (B2) of  $11.43 \pm 0.98$ , and weight egg age parent in treatment (B3) of  $11.55 \pm 1.19$ .

By numeric, the average weight of eggs at 7 months is  $11.55 \pm 1.19$  taller compared with 3 months old which is  $11.28 \pm 0.72$ , and at 5 months that is  $11.43 \pm 0.98$ . This thing caused age more parents old will earn weight more eggs tall compared with young age. According to Santos, et al., (2011) the mean weight egg is influenced by the type or type of quail. Temperature environment and consumption feed can also influence the weight of eggs. According to Kasiyati, Kusumorini, Maheswari, and Manalu (2011) heavy eggs are related to the condition of the oviduct of females so which affects the age cook gender. The heavy egg could be affected by the production of eggs.

Based on the results of the research, the average conversion feed bird quail During the study is contained in Table 2 as well as the calculation analysis variant (Anova). Treatment age parents give influence that is not real to conversion feed. This thing caused different periods of production egg each one age parent so that gives no response different to utilization efficiency the feed consumed. Conversion value feed at age parent treatment B1 (3 months) of  $5.92 \pm 0.20$ , conversion feed at age parent treatment B2 (5 months) of  $5.71 \pm 0.56$ , and conversion feed age parent B3 treatment (7 months) of  $5.91 \pm 2.08$ . According to Achmanu, et al., (2011) results of conversion feed got from consumption accompanying feed amount production eggs (weight eggs) are different. Differences in consumption feed are caused because of the existing differences in consumption feed and quantity of producing eggs.

Average conversion use at the age of 5 months is  $5.71 \pm 0.56$  more low compared with 3 months old is  $5.92 \pm 0.20$  and at 7 months that is  $5.91 \pm 2.08$ . Utomo, Sudjarwo, and Hamiyanti (2014) stated that score conversion more feed small so will the better too because consumption low feed could be used by livestock optimally for production.

Conversion feed bird quail will increases when preparing the reproductive organs to produce eggs. The more small conversion feed shows that feed consumed by bird quail is already enough efficient because feed used for shape unit egg counted low vice versa. Conversion feed influenced consumption feed and produce eggs. Subekti (2012) states conversion feed is obtained with the count amount of feed that has been consumed compared with the amount weight eggs produced at the same time. So that for knowing level efficiency feed the could is known based on score

conversion feed. The smaller the score conversion feed so the more efficient feed consumed. According to Kasiyati, Kusumorini, Maheswari, and Manalu (2011) heavy eggs are related to the condition of the oviduct of females so which affects the age cook gender. Heavy eggs alone could be affected by the production of eggs.

Average data Interaction Among balance male-female and age parent to consumption feed, weight eggs, and conversion feed on birds quail could be seen in table 3 as follows:

**Table 3.** Interaction average consumption feed, conversion feed, and weight egg During research.

Combination treatment	Variable		
	Average consumption feed (g/ head /4week)	Average weight egg (g)	Average conversion feed
A1B1	686.48	11.11	5.86
A1B2	682.77	11.7	5.58
A1B3	681.58	12	5.43
A2B1	676.45	11.56	5.9
A2B2	670.37	11.51	5.63
A2B3	679.26	11.24	6.71
A3B1	674.92	11.17	6.01
A3B2	678.39	11.06	5.93
A3B3	678.37	11.41	5.6

Data in Table 3 and results in analysis statistics show that no there is interaction on balance male - female and age parent ( $P>0.05$ ) to consumption feed, weight eggs, and conversion feed. This is caused by the interaction Among balance male - female and age parent different no give response to consumption feed, weight eggs, and conversion feed.

**CONCLUSIONS**

Balance male-female (1:3, 1:5, and 1:7) no give influence real on consumption feed, weight egg, conversion feed, and weight hatch. Age parent no give influence to consumption feed, weight egg, conversion feed. And no there is interaction Among balance male-female and age

different parent to consumption feed, weight eggs, and conversion feed.

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