

# The Productivity Performance of Male and Female Kumbang Janti Duck Reared Intensively

Tertia Delia Nova<sup>1</sup>, Rijal Zein<sup>2</sup>

*1.2.. Department of Animal Production, Faculty of Animal Science Andalas University. Padang, West Sumatra, Indonesia*

**ABSTRACT.** Kumbang Janti ducks as one of germplasm in Profinsi of West Sumatra need to be investigated. Information on the physical characteristics Kumbang janti ducks had enough. This study aimed to evaluate the performance of productivity Kumbang janti ducks male and female by reared intensively. The study 1 using day-old duckling (DOD) Kumbang janti 150 males and 150 females were reared in. 2 plots the cage (150 head per cage). The variables measured were weight DOD, weight of age one week and one month old. In the second study, feed consumption, body weight and feed conversion were measured, using duckling unsex 80 head that will be added to the feed additive turmeric. The research result that heavy hatching ducks that DOD,  $42.49 \pm 4.73$  g Males and females  $43.84 \pm 4.57$ . At age 1 Week,  $245.77 \pm 38.8$  g Males and females  $220.24 \pm 27.93$  and the age of one month of weight ducks research into  $865.38 \pm 35.64$  which males and females  $846.27 \pm 8.34$ . Feed consumption Kumbang janti ducks with the addition of turmeric in the diet ranging from 4080,35 to 4253.35 grams / head. While body weight during the study was 1120.65 to 1256.30 grams / head and the kumbang janti ducks feed conversion, gained 3.38

**Key word:** Kumbang janti duck, Performance, Productivity, turmeric, reared intensively

## 1. Introduction

Ducks are a kind of waterfowl that spread in the countryside close to the river, swamp rice cultivation or the beach in the management of traditionally. The high population of duck and important role as a source of protein for livestock is a national potential still to be improved. Indonesia's role as a producer of duck eggs and meat. More than 19% of eggs filled purposes of duck eggs, but its role as a producer of meat is still low at 0.94% of the total demand for meat in Indonesia. [7] Indonesian society already realizes the needs of animal protein intake, then the demand for meat and duck eggs is increasing from year to year This can be seen in 2006 when the meats consumption reach 341 389 kg and egg consumption reach 4,763,733 kg. It increased at 2008 reached 7,010,928 kg for mats and 4,782,335 kg for eggs. In addition, at 2010, becomes 7,716,573 kg for meats and egg consumption it is 5,274,335 kg [1]

Kumbang janti have different phenotypic characteristics with other ducks. In West Sumatra Kumbang janti duck are known as a local laying ducks, come from

Payakumbuh, especially in Village Kotobaru Payobasung Payakumbuh. Local communities know Kumbang janti ducks as white ducks, otherwise the male ducks have grey greenness colour from the upper neck to head, and these the female are also belong to active eggs producer [4]. However, the existence of Kumbang janti ducks begins to rare, because they are replaced by another, more produktiv ducks. Besides, the derivated of Kumbang janti duck's population are drastically down by the presure of breeders' economy that sell the ducks even thought in the productive period.

The characteristics of Kumbang janti ducks as follow [4]

1. The color of grayish-white fur, the adult male has a dark gray marks on the head, whereas the females has only plain white, the wing tip grayish brown, so that it is easier to diferentiate tha male withe female.
2. The beak and the claws is dark brown to both males and females.
3. At the end of the wing feathers are blue-black that are characteristic of Kumbang janti ducks.

4. The eggshell is bright blue green.
5. The weight of female had been laying between 1.23 - 1.37 kg
6. The eggs' production are 190-210 grains / head / year.

The newly hatched ducklings still fragile and vulnerable to disease and even to a high mortality rate, then the newly hatched period (ie DOD Day Old Duck) to the intensively reared its infancy, so the decline in cattle can be prevented.

To determine the performance of productivity growth Kumbang janti ducks male and female identity since they are one day-old (DOD) until the period of growth and feathers completed. The data obtained can add more information about the performance of local ducks in West Sumatra.

### Research Metodology.

The research is done for 8 weeks at the location of the cage breeding farms ER Koto Baru Payakumbuh

### Research material

#### 1. Research on ducks

In this study, using the Kumbang janti duck males and females aged one day (DOD) as many as 300 head, come from Village Koto Baru, Payobasung, East Payakumbuh Payakumbuh. Feed given during the study was commercial feed CP 511. The measurement starts at the beginning hatch weighed, week 1 through week 4 to 8 weeks

#### 2. The research feed

The substance used at the start of the maintenance is commercial feed produced by PT. Charoen Phokphan Jaya Farm called the CP 511. The feed is given at the first time of hatching until day 30 with nutrition can be seen in Table 1. Furthermore, after 31 days to replacement feed rations formulated with it self, gradually so ducks do not stress caused replacement of feed rations which the composition consists of consists of: corn, bran, soybean meal, fish meal, mix top and palm oil. Feed the experiment is based on the nutritional needs of local ducks by [2]. The needs of local ducks food's substances can be seen in Table 1

**Table 1.** The nutritonal needs of local ducks

Food's substances	Age	
	0-4 weeks	4-8 weeks
Protein (%)	20	16 – 18
Metabolic Energy (kkal/kg)	2900 – 3000	2500 – 2800
Rounge fiber (%)	7,60	8,20
Ca (%)	0,9 - 1,2	0,9 - 1,2
Phophorous (%)	0,7 – 0,9	0,7 - 0,9

Source: [2]

**Table 2.** Nutrient content contained in commercial feed, CP 511

The Nutrient content contained in commercial feed	Percentage (%)
Protein (%)	21
Rough fiber (%)	4
Rough fat	4
Ash	6,5
Ca (%)	0,9
Fosfor (%)	0,5
Water	13
Energi metabolis k/kcal	3000

Source: *PT Charoen Phokphan Jaya Farm (2014)*

**Table 3.** The composition of constituens material of research 2

Feed Nutrition (%)	Feed 1 (starter)	Feed 2 (grower)
Corn	50	49
Rice barn	15	22
Soybean meal	14	13
Flour fish	20	15
Top mix	0,5	0,5
Oil palm	0,5	0,5
Acount	100	100

**Table 4.** The content of feed's substance and metaboloc energy of feed 2

Food substance (%)	Feed 1(stater)	Feed 2 (grower)
Protein	20,26	18,26
Lemak	3,39	3,45
Serat kasar	5,40	5,91
Kalsium	1,28	1,14
Fosfor	0,42	0,35
Energi metabolis (Kkal/kg)	2902,1	2806,1

#### 4.2. Research 1

##### 3. Equipment and cage

The cages used in research studies 1. ie cage litter floor mat as much as 2 plots, with each plot size 2 x 3 m Equipped with a feed, drink, and electric lights on each plot where the light also serves as a heater.

##### Research Methodology

###### 1. Treatment on the duck

The treatment given to the local ducks Beetle janti at week 2, which is placed on each plot of 150 ducks male and 150 female ducks, feeding of the feed so Charoen Phokphan CP 511

##### 4.2.2. Data analysis

The data is analyzed descriptively by using the formulas of [16], that stated in mean and deviation standard : as follow.

Mean:

$$\bar{x} = \left( \frac{\sum xi}{n} \right)$$

Deviation standard

$$Sd = \sqrt{\frac{\sum_{i=1}^n (xi - \bar{x})^2}{n-1}}$$

Description

$\bar{x}$  = the average value of the sample

$\sum$  = Addition

S = standard deviation

$x_i$  = Observation- i

n = the sum of population

To determine difference of live weight, Kumbang janti duck, used T-Student test [19].

The formula used is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

$$s^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

Description:

t = the measure parameter

$x_1$  = the mean of duck 1

$x_2$  = the mean of duck 1

$s^2$  = standard deviation of mean 1

$s_1$  = Standard deviation of duck 1

$s_2$  = Standard deviation of duck 2

$n_1$  = the number of duck 1

$n_2$  = the number of duck 2

#### 4. 3. Research 2

##### 4.3.1 Livestock

The livestock used in this study is one-day-old 80 unsex Kumbang janti come from Koto Baru Payobasung Payakumbuh. The first week is the adaptation periode were the duck conform the new environment and the duck are being introduced to the feed that will be used during the research. The treatment starts at the beginning of the second week until the eight week.

##### 4.3.2. Cages and Equipment

The cages used in this study is 75cm x 60cm x 50cm box cage with 20 unites of wire base. The equipment used is a feed, drinking water, incandescent 60 watt, carts, curtains cover, black plastic is great for pedestal boxes, buckets, digital scales with a capacity of 5000 grams, black plastic bags, paper labels, paperboard, husks, knife, stationery and so on.

##### 4.3.3 Feed Experiment

The feed material used consisted of: yellow corn, rice bran, soybean meal, fish meal, mix top and palm oil. Additive ingredients (*turmeric powder*) form of Turmeric from plantations owned by farmers in Koto Tuo, land in the area around the University of Andalas. Feed the experiment is based on nutritional needs according to the local ducks. [2]. The nutritional needs of the local ducks can be seen in Table 1, Nutrient content contained in commercial feed, CP 511, Table 2 The composition of constituents material of research 2 Table 3, The content of

feed's substance and metaboloc energy of feed 2, Table 4.

#### 4.3.4. Research Metode.

##### 4.3.5. Research Design.

This research was conducted with the experimental method, using a randomized block design (RBD). Ducks are used as much as 100 individuals. The ducks adaptation for 1 week, then duck totaling 100 individuals have been as many as 80 head unsex and grouped into 5 groups based on body weight ranging from the lowest to the highest. Furthermore ducks were placed into a cage with a box of 20 units each - each unit enclosure contains four ducks randomly.

In one group was given 4 different treatment turmeric powder. The treatment consists of:

Treatment 1 was given turmeric powder in the feed experiment many ducks as (0%) per feed, called A as a control. Treatment 2 that is given turmeric powder in feed ducks trial as much (0.2%) per feed, which is referred to as B. Treatment 3 is given turmeric powder in feed ducks trial as much (0.4%) per feed, which is referred to as C. Treatment 4 is given turmeric powder in feed ducks trial as much (0.6%) per feed, known as D.

Linear model of design that is used is according to [16], namely:

$$Y_{ij} = \mu + t_i + B_j + E_{ij}$$

Description:

$Y_{ij}$ : observations to - i dar treatment to - j

i: treatment to - i

j: group to - j

$\mu$ : the general average value dr entire treatment

$t_i$ : effect of treatment to - i represents the difference between the mean and median treatment general

$B_j$ : the influence of groups to - j.

$e_{ij}$ : random error by treatment to - i and replicates to - j

The diversity analysis by ANOVA. If there is a difference between the treatment, then continued with Duncan's Multiple Range Test / DMRT [16].

#### 4.3.6. The research conducted

The research was conducted in the form of experiments within the stages of

preparation, adaptation and treatment. At the preparation stage, the turmeric powder is made, set up and clean the maintenance area is used in such a way that the animal feels comfortable, setting up equipment enclosure and the procurement of feed materials research.

##### 1. Tumeric powder making (*Curcuma domestica* Val)

Turmeric powder is made by way of turmeric washed first, scraped skin deep roots that are still lagging behind and the ground, then sliced thinly. Turmeric slices are then allowed to stand for 2 days and oven with a temperature of  $\pm 50^\circ \text{C}$  for 1 day. Turmeric is then pulverized in a blender and filtered using a sieve into a turmeric powder.

##### 2. Preparation Cages

Before DOD comes into the sccond week, the cage need to be cleaned, by using water and detergent. Then the cages is being sprayed with formades that has been diluted with water, then followed by calcification. One day before the DOD come, the cage is being claned again. The hot bulb is set foe each box cages and covered by plastic curtain.

##### 3. Feed preparations research

The constituent of each research feed each being measured according to the composition of the feed treatment, and then stir them evenly until they mixed. The stirring began with little material composition and continued with litle more material until it is on homogenous composition.

##### 4. Treatment and placement of duck in a cage

The treatment for each unit is randomily is done, that is by writing the letters and numbers on paper in deals with the sump of treatments and the group: A1-A5, B1-B5, C1-C5, D1-D5. The letter on the paper placed on the treatment enclosure.

At the time when the ducks are being grouped, the weighing is done beforehand to determine the initial weight before they are

given treatment entering treatment. The grouping is done based on the lowest weight until the highest weight:

- a. Group 1: 88 g - 106 g
- b. Group 2: 108 g - 127 g
- c. Group 3: 129 g - 141 g
- d. Group 4: 142 g - 161 g
- e. Group 5: 170 g - 210 g

## Result and discussion

### 1. Kumbang janti ducks' farm

Kumbang janti ducks farm is located in the district of East Payakumbuh Payakumbuh, was founded in 1995 and integrated with P4S Bina Karya. Breeding The ER breeding supplier the provide germs for farmers. The ducks which are being cared are Pitalah duck, Kumbang janti duck, and Kamang duck by farmers under the auspices Farm breeding ER now this is Pitalah, Kamang duck.

Local ducks reared with the system is done by breeders there are 2 kinds of semi-intensive and extensive. For the maintenance of semi-intensively, the livestock released in the morning, let them hang around the yard and at take them back to the cage at the noon. The purpose of semi-intensive care is to make the ducks able to move freely. Whereas in extensive care, the livestock released in the morning to the rice field and then are gathered and take into to the cages in the afternoon, with the care of an extensive system can reduce feed costs.

The duck with intensive systems are given feed twice a day, morning and afternoon. This is related to what [13] believe that are given of feed to the ducks in system intensive and semi-intensive given twice a day ie morning and afternoon. The feed given in semi-intensive care is mixture of rice and bran blend with refined corn.

According to the finding of the research. The mean of Kumbang janti ducks' live weight can be seen in Table 5

**Table 5** The. mean of DOD weight, of live, the weight in one week, one month Age weight body weight ducks ducks and Kumbang janti male and female are cared intensively.

NO	Description	The weight of ducks at the age of		
		BW DOD	BW 1 week	BW 1 month
		Mean ± Sd	Mean ± Sd	Mean ± Sd
1	Male (g)	42,49 ± 4,73	245,77± 38,8	865,38± 35,64
2	Female (g)	43,84 ± 4,57	220,24±27,93	846,27± 8,34

Description: The results are not significantly different (P> 0.05)

At Table 5, the mean of weight of live is on three level of Kumbang janti ages that is DOD, Male 42.49 ± 4.73 g and females 43.84 ± 4.57.

At age 1 week, male 245.77 ± 38.8 g and females 220.24 ± 27.93 and the age of one month of weight ducks for research becomes 865.38 ± 35.64 for males and females 846.27 ± 8.34.

These finding are not far different from reseach, which explain that the everage body weight of 4 weeks are 693.26 ± 29.61 g for Magelang ducks, 809.08 ± 73.64 g for Mojosari ducks, 801.38 ± 5.53 g for Tegal

ducks, and 1119.86 ± 284.69 g for Manila duck. Furthermore reported that the tendency od body is influenced by genetic factor and externaal, maternal effect, and environmental factor. (feed and care system). The body weight can also influenced by genetic factor, maternal effect, and environmental factor.

Body weight is one of quantitative element the should be noticed in animal's care. The weight of body is an inheritable, but it is closely influenced by the environment. [17] state that the Alabio ducks weight of live, Mojosari ducks, as well as the croosing among them at the age 8 weeks can reach 1437 g.

Meanwhile, according to [3] the weight is really influenced by the environment. The different The differences are possibly caused by the way of care, where shepherd ducks tends to do much activity compare to those who are locked on the cage

## 5.2. The finding of results 2

The effect of treatment toward Kumbang janti ducks performance canbe seen in Table 6

**Table 6.** Performance of Kumbang janti ducks is given turmeric as a feed additive

Variable	FA(0%)	FB(0,2%)	FC(0,4%)	FD(0,6%)	SE
consumtion (g/e)	4080,35	4195,53	4253,35	4088,00	38,615
BW Gain (gr/ek)	1227,38	1120,65	1237,10	1256,30	21,777
Feed convertion	3,33	3,74	3,38	3,32	0,07

Description: The effect of given treatment of turmeric powder in feed are not different significantly affect the performance ( $P > 0.05$ )

### 5.2.1 Effect of the Treatment of Feed Consumption.

The effect of treatment on feed consumption of ducks during the study are presented in Table 6 above. According to Table 6 it can be seen that the average feed consumption in the delivery of turmeric in the diet ranging from 4080.45 to 4253.35 gram/head. The highest average consumption is on treatment, RC 4253.35. RC treatment is treatment of the provision of turmeric 0.4% in the ration, the ration given ad libitum in accordance with the needs of the ducks every day. during the observation of 2-8 weeks was 7500 g / head. In contrast to research Gunawan (2005) reported that the addition of leaf powder and leaf beluntas as much as 1% over the age of eight weeks of age 3-10 weeks, resulting in the average feed consumption were not different between treatments, ranging from 4743.2 to 474.92 grams /head.

### 5.2.2. Effect of the Treatment of Body Weight

The effect of treatment on body weight gain during the study ducks can be seen in Table 6 above. Results of analysis of variance showed that the addition of turmeric powder to 0.6% had no significant effect on body weight gain. This is due to the content of substances - meal

(quality) and the average feed consumption at each treatment is the same then no significant effect on body growth ducks. Means that the ration given palatibilitas equally good. [15] argue that weight gain is closely linked to the quality and quantity of feed, while according to [8] to produce a body weight that is both required quality and quantity sufficient to contain substances - nutrients needed by the body of livestock by the body livestock to build, improve and form a component of the body.

Duck body weight gain during the study ranged from 1120,65- 1256.30 grams/ head. This result is lower than the research [11] who get weight gain local duck Males MA (Mojosari Alabio) aged 8 weeks were given additional santoquin and vitamin E in the feed ranged from 1391 to 1466.32 gr/head. While Ketaren weight gain duck Mojosari 8 weeks of age by 1260 gram / head.

### 5.2.3.The effect of the treatment of feed conversion

The effect of treatment of duck feed conversion Jackie beetles as in Table 6 above. From the analysis of variance showed that the addition of turmeric powder to 0.6% had no significant effect on feed conversion, this is due to the balance between feed intake and body weight gain is also high and vice versa so

that feed conversion is derived from a comparison between the ratio intake and body weight did not differ

Feed conversion study ranged from 3.32 to 3.38. Means the outcome of this study is lower than the research [11] to get the local ducks feed conversion between 5.03 to 5.53. While the results of this study is similar to study [7] found muscovy duck feed conversion by giving polar 20%, 40% and 60% respectively 3.42, 3.39 and 3.47.

## Conclusion.

According to the results of this study concluded that:

Kumbang janti duck DOD males,  $42.49 \pm 4.73$  gr and females  $43.84 \pm 4.57$ . At age of 1 week, males  $245.77 \pm 38.8$  g and females  $220.24 \pm 27.93$  and the age of one month of weight ducks for research become males  $865.38 \pm 35.64$  and females  $846.27 \pm 8.34$ . gr

The feed consumption in turmeric given in the feed ranges. 4080.45 to 4253.35 gram/head duck. The additional weight of ducks during the study is 1120,65- 1256.30 grams/head. For the Kumbang janti feed conversion from 3.32 to 3.38.

## Acknoeledge ment

I would like to thank to University of Andalas. That this research funded by the University of Andalas through BOPT funds in seed research program Special Themes West Sumatra. Fiscal Year 2015.

**No. 09 /UN.16/PL/TKS/2015**

## Reference

- [1] Badan Pusat Statistik Sumatera Barat. 2010. Sumatera Barat Dalam Angka. BPS Sumbar, Padang.
- [2] Bintang, I.A.K., Silalahi, M.,A.G. Natamijaya., dan Rahardjo, Y.C.1997. Pengaruh berbagai tingkat kepadatan gizi ransum terhadap kinerja itik jantan lokal dan silangannya.Jurnal Ilmu Ternak dan Veteriner. 2(4): 237-241.
- [3] Ensminger, M. A. 1992. Poultry Science (Animal Agriculture Series). 3th Edition Interstate Publisher. Inc, Danville. Illionis.
- [4] Fricillia, V. 2014. Tingkat keragaman dan korelasi sifat kuantitatif itik "kumbang jati" di usaha peternakan netty payoka farm di Kenagarian Koto Baru Payobasuang Kota Payakumbuh. Fakultas Peternakan. Universitas Andalas, Padang.
- [5] Gunawan, A. 2005. Penampilan itik lokal jantan yang diberi tepung daun beluntas (*Pluchea indica* L.) dalam pakan. Skripsi. Institut Pertanian Bogor, Bogor.
- [6] Iskandar, S., Vanvan. S. Nugroho., D.M Suci dan A. R. Setioko. Adaptasi Biologis itik Jantan Muda Lokal Terhadap Ransum Berkadar Dedak Padi Tinggi. Pross. Lokakarya Unggas air. Pengembangan Agribisnis Unggas Air Sebagai Peluang Usaha Baru. Ciawi, 5-6 Agustus 2001. Fakultas Peternakan IPB Bogor-Balai Penelitian Ternak Bogor. Hlm 118-127
- [7] Ketaren, P.P. 2006. Optimalisasi Pemanfaatan Wheat Bran untuk. Produksi Daging Unggas melalui Imbuan Enzim Xilanase dan Glukonase: Itik Pedaging. Pross. Seminar Nasional Biotechnologi. LIPI. Cibinong Bogor. Hlm. 352-331
- [8] Maynard, I.A and J.K. Loosli. 1978. Animal Nutrition. McGraw-Hill Book. Co. Philipine. 433-455
- [9] Mirnawati. 1997. Biokonversi Kulit Ubi Kayu dengan tahu tempe sebagai pakan alternatif itik. Laporan Penelitian Lembaga Penelitian Universitas Andalas Padang
- [10] Nova, T.D., Y. Yelita, 2015. Pengaruh Pemberian Tepung Kunyit (*Curcuma domestica* Val) Dalam Ransum Terhadap Gambaran Darah Itik Lokal. Pross. Seminar Nasional II. Pengembangan Ternak Lokal. Fakultas Peternakan. Universitas Andalas
- [11] Purba, M. Dan P. Ketaren 2011. Konsumsi dan konversi Pakan Itik Lokal Jantan Umur delapan Minggu dengan Penambahan Santoquin dan Vitamin E dalam Pakan. Balai Penelitian Ternak. Bogor
- [12] Rasyaf, M. 1999. Beternak Itik. Kanisius.Yogyakarta.
- [13] Ranto, M. Sitanggang. 2007. Panduan Lengkap Beternak Itik. Jakarta: Agro Media Pustaka
- [14] Samosir, D.J. 1993. Ilmu Ternak Itik. PT. Gramedia Pustaka Utama, Jakarta
- [15] Srigandono, B.2000. Beternak Itik Pedaging. Tribus Agriwidya. Jakarta
- [16] Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistik, Suatu Pendekatan Biometrik. Terjemahan. Judul asli :Principles and Procedures of Statistics, a Biometrical Approach. Penerjemah : Bambang S. Gramedia, Jakarta.
- [17] Susanti, T. 1999. Karakteristik pertumbuhan Itik Bali sebagai plasma nutfah ternak. Jurnal Lokakarya Nasional Unggas air BPT Ciawi. Bogor
- [18] Sturkie ,P.D and Griminger. 1976. Avian

Physiology. 1<sup>st</sup> Published. Ithaca. New York:  
Cornell University Press  
[19] Sudjana. 2005, Metoda Statistika. Transito,

Bandung  
[20] Wahyu, J. 1997. Ilmu Nutrisi Unggas. Cetakan IV.  
Gadjah Mada Univeersity Press Yogyakarta