MODIFICATION OF LAYING DUCK FEED WITH HERBAL FEED ADDITIVES TO THE QUALITY OF LOCAL DUCK EGGS

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ABSTRACT

Increased production of duck eggs with the support of local potential in the form of feed additives is still rarely used by laying duck breeders as feed additives, in Indonesia and especially in North Sumatra, it has the potential to support herbal feed additives that are easily obtained at low prices and can even be obtained for free. Among them are turmeric, meniran and garlic which contain herbal ingredients as natural antibiotic growth promoters (AGP). The purpose of this study was to determine the benefits of adding herbal feed additives to the production and quality of local duck eggs. The research method used was a non-factorial completely randomized design method consisting of 4 treatments with 5 replications, where treatment 1 was a control ration without the addition of feed additives, treatment 2 was a control ration with the addition of 3% Garlic flour, Treatment 3 was a control ration with the addition of 3% flour and treatment 4 is the control ration with the addition of 3% turmeric flour. Observations of the research carried out were the level of feed consumption, egg production, egg weight, feed conversion and egg yolk index. The results obtained showed that the results were not significantly different in the observations of feed consumption, egg production, egg weight, feed conversion and egg yolk index. The conclusion of this study was that the addition of herbal feed additives in the ration of laying ducks did not have a significant impact on all observations, however, the data improved the quality of feed conversion and increased egg production and weight due to the performance of the essential oil content which acts as an antibiotic, prebiotic and natural phytobiotic. which is owned by turmeric, garlic and meniran. The advice given is that farmers use herbal feed additives in livestock rations to increase feed effectiveness and egg quality.

Keywords: Duck, Eggs, Feed Additive, Modification

INTRODUCTION

Ducks are poultry that have the potential to produce eggs after chickens. Eggs provide nutritional intake, especially protein for the body. However, this duck egg has the disadvantage that it has higher fat and cholesterol than chicken eggs. According to Harahap et al 2021, duck eggs contain 14.7 g fat 100 g-1 egg and chicken eggs contain 11.5 g fat 100 g-1 egg.

Animal products also generally contain large amounts of saturated fatty acids, such as palmitic and stearic acids, as well as monounsaturated fatty acids, such as oleic and small amounts of unsaturated fatty acids (PUFA) (Indriati and Yuniarsih, 2021). Saturated fatty acids are dangerous fatty acids. Meanwhile, unsaturated fatty acids are relatively stable fatty acids and can lower cholesterol levels and do not cause tumors. So there needs to be an effort to produce healthier livestock products, including nutritional engineering. Garlic contains active chemicals such as allicin, skordinin, allil, saponins, diallysulfide and prophyll allyl sulfide and methylalil trisulfide. Allicin (thiopropen sulfinic acid allyl ester) is a compound that is thought to be able to lower blood cholesterol levels (Putra, 2017).

Feed is one of the determining factors in the quality of duck eggs produced. In addition to quality feed, the use of feed additives is also added to optimize the use value of the feed. One of the additives used is an antibiotic. Antibiotic feed reduces the number of disease-causing and toxin-producing microorganisms in the digestive tract, thereby increasing the absorption of nutrients (Hathaway et al. 1996). The use of antibiotics in feed, apart from

being a growth promoter and reducing mortality rates, can also increase farmers' income due to increased feed efficiency. The use of antibiotics can cause residues that have a negative impact on consumers such as allergies in humans, the emergence of resistant microorganisms in the body of livestock. According to the European Union Community Commission, since January 1, 2006 (Regulation No. 1831/2003) the use of antibiotics such as Avilamycin, Avoparcin, Flavomycin, Salinomycin, Spiramycin, Virginiamycin, Zn-Bacitracin, Carbadox, Olaquindox, and Monensin cannot be used in livestock rations . The use of these additives in livestock rations in several European countries was banned earlier such as Sweden in 1986, Denmark in 1995, and Germany in 1996 (Porwanto et al 2019).

Law No. 41 of 2014 concerning Livestock and Health Animals clearly prohibit feed additives in the form of antibiotics. Therefore need a solution to solve this problem. Use of feed additives Herbs can be used to replace antibiotics. Herbal feed additives which consists of temulawak (Curcuma xanthorrhiza) and turmeric (Curcuma longa). The content of the active substance curcumin can function as an antibacterial, appetite enhancer and digestibility of feed ingredients. The active substance curcumin given to broiler chickens affects the level of consumption, weight gain and value conversion (Ayundari, 2021). Therefore, it is necessary to do research with the addition of herbal feed additives in duck rations which are expected to improve the quality of local duck eggs.

METHODS

This study used a non-factorial completely randomized design (CRD) consisting of 4 treatments with 5 replications. Where the treatment consisted of P1 (control ration), P2 (control ration +3% meniran flour), P3 (control ration +3% garlic flour) and P4 (control ration +3% turmeric flour) consisting of 100 female ducks. local 7 months old who were placed into experimental cages consisting of 20 experimental cage plots where each research plot consisted of 5 female ducks. The research was carried out by feeding (treatment) in accordance with the prescribed treatment. And observations were made on the research parameters measured which consisted of: the level of ration consumption, egg production, egg weight, feed conversion and egg yolk index. Observations of this study were carried out for 3 months of duck egg production (January - March). The observational data obtained were then analyzed by analysis of variance using analysis of variance (ANOVA) and if there was a significant difference, Duncan's further test was carried out.

RESULTS AND DISCUSSION

Result

The results of the research observations obtained can be seen in the following recapitulation table:

Table 1. Recapitulation of Research Results

Treatment	Parameter				
	Consumption	Egg Production	Weight egg	Feed Converstion	Egg Yolk Index
Treatment1	148,80 ± 2,07$^{(tn)}$	70,80 ± 1,64$^{(tn)}$	68,21 ± 1,92$^{(tn)}$	2,22 ± 0,07$^{(tn)}$	0,37± 0,02$^{(tn)}$
Treatment 2	150,20 ± 1,30$^{(tn)}$	71,25 ± 1,22$^{(tn)}$	69,42 ± 2,70$^{(tn)}$	2,14 ± 0,10$^{(tn)}$	0,38 ± 0,02$^{(tn)}$
Treatment 3	150,40 ± 3,56$^{(tn)}$	71,81 ± 1,30$^{(tn)}$	69,64 ± 2,07$^{(tn)}$	2,15 ± 0,07$^{(tn)}$	0,36 ± 0,02$^{(tn)}$
Treatment 4	151,40 ± 2,95$^{(tn)}$	72,12 ± 0,73$^{(tn)}$	70,81 ± 2,28$^{(tn)}$	2,12 ± 0,10$^{(tn)}$	0,37 ± 0,03$^{(tn)}$

Explanation: tn notation shows that the results are not significantly different

The results of the research observed showed that the results were not significantly different, but on average there was a good difference with the addition of feed additives given as treatment.

Discussion

Feed Consumption

Consumption of rations showed no significantly different results, but on average it was seen an increase in consumption levels along with the treatment as shown in the following consumption level graph:

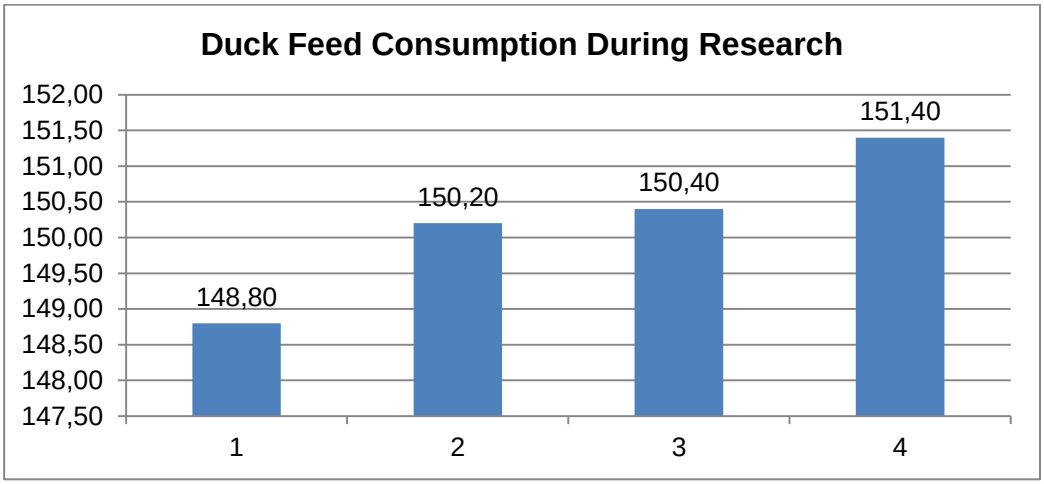

Figure 1. Duck Feed Consumption During Research

The feed consumption data obtained is the consumption data of the research implementation for 3 months of observing feed consumption after starting egg production. From the results of the study, it was obtained that the results were not significantly different where the highest consumption of duck feed was obtained in treatment P4 (feed with the addition of turmeric flour). good digestive tract eating will increase the level of consumption
When compared with the results of other studies, the results obtained have a lower level of consumption compared to the results of Sinurat (2000) which states that the need for feed for ducks at the age of >20 weeks (adults) is 160-180 g/head/day for ducks. layer period. This shows that the amount of duck consumption at the time of the study was almost fulfilled and caused by environmental temperature and calories are the main factors that affect the daily consumption of rations (Amrullah 2004).

According to Purba and Ketaren (2011) during the growth phase, ducks generally require relatively large and quality feed in order to grow and develop perfectly and the use of fish meal with a high enough level (up to 23% in the ration) can trigger ducks to consume large amounts of feed. many. Fan et al. (2008) also stated that the provision of feed containing high energy can increase feed consumption which is closely related to the growth of poultry. Fish meal besides having a high protein content (56.07%) also has a fairly high fat content (5.68%).

Egg Production

Egg production is calculated based on the number of eggs produced compared to the population of ducks that are kept. The egg production data obtained are still in production calculations for 3 months of egg production as shown in the following graph:

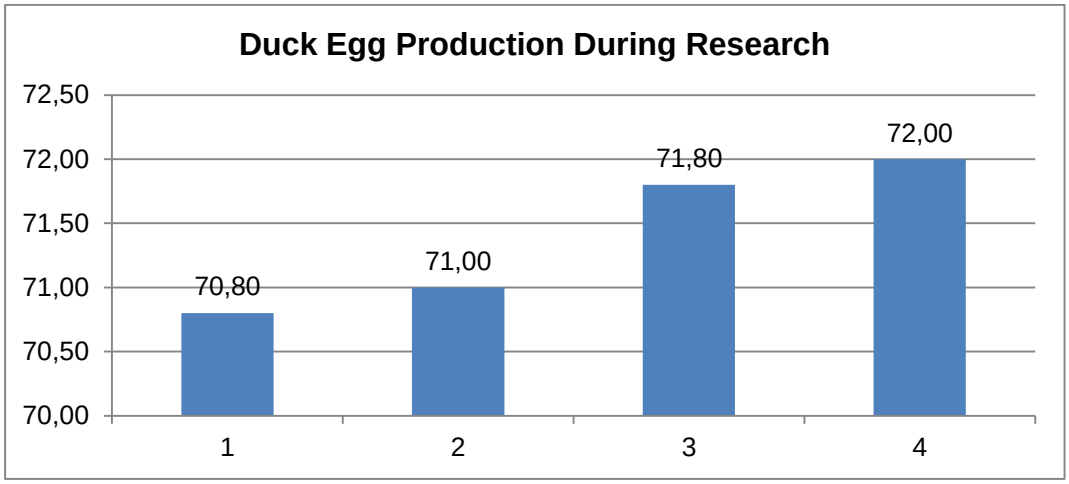

Figure2. Egg Production Chart During the Study

From the results of the study, it was obtained that the results were not significantly different where the highest duck egg production was obtained in the P4 treatment (feed with the addition of turmeric flour) which was 72.00% and the lowest was in the P0 treatment (Control feed) of 70.80%, this is because The benefits of curcumin content in the digestive tract can increase the absorption of nutrients in the digestive tract so as to maximize the value of nutrients absorbed and have an effect on the level of egg production produced. The results showed that the highest production level was in treatment P4 which was 72% and the lowest was in P1 which was 70.80% when compared to the results of the research by Indrasanti et al, 2018 which resulted in egg production of Tegal ducks as much as 64.89% and Magelang ducks as much as 75.44%. , and Setioko and Rohaeni (2001) who reported that Alabio ducks fed with Haliling (water snails) produced an average egg production of 66.68% with a peak production of 80.69%. where the research results are not much different from the results obtained.

Solihat et al. (2003) stated that egg production is influenced by feed, genetics and speed of sexual maturity. And according to Yuwono et al. (2005), another possibility that causes differences in egg production is that the amount and nutrient content of the feed is not optimal, because the nutrient requirements during the egg formation process are inadequate.

Feed Converstion

This temporary feed conversion data is obtained from the total amount of ration consumed divided by the total number/weight of eggs that have been produced. The research data on the average egg weight during the study can be seen in the following graph:

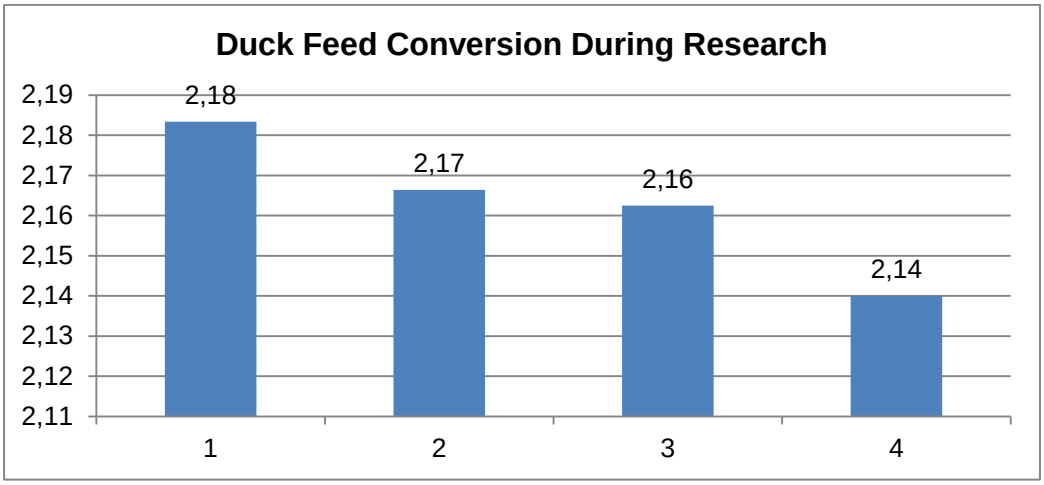

Figure 3. Graph of duck feed conversion during the study

The data from the research above shows that the highest duck feed conversion was found in treatment P4 (control feed) in feed of 2.18 and the lowest was in treatment P1 (with the addition of turmeric flour) of 2.14. The research results obtained are lower than the results of Suswoyo and Rosidi's research (2017) which states that the overall average feed conversion in this study is 3.70 + 0.62 with the lowest ratio 3.16 and the highest 4.83.

Hidanah et al.'s research results. (2011) who reported that the feed conversion of laying ducks in the production period ranged from 5.84 ± 1.55. Furthermore, Ketaren et al. (1999) said that the poor feed conversion of the ducks was caused by the eating habits of the ducks, including the habit of immediately seeking drinking water after eating. In general, the feed is scattered/wasted when the ducks move from the feed to the drinking place or it is also dissolved in when the ducks drink. Good or bad feed conversion may also be caused by the inability of the ducks to control the amount of feed consumption which is regulated by the amount of energy consumption.

Egg Weight Analysis

Egg weight is obtained by weighing eggs using a digital scale with egg weight units of grams/grain, the results of the research carried out are obtained in the following graph:

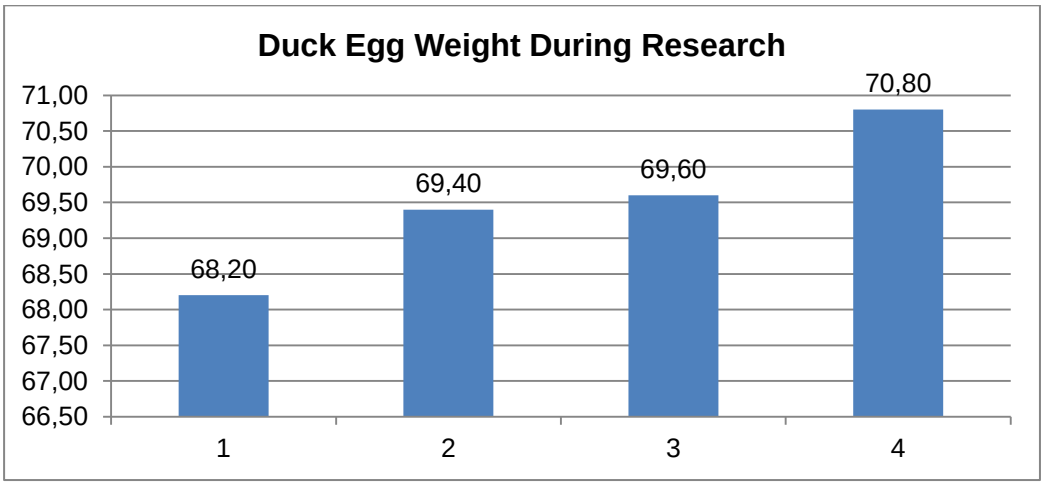

Figure 4. Graph of Egg Weight During the Study

The results showed that the highest egg weight analysis was found in treatment P4 (with the addition of turmeric flour to the ration) of 70.80 g/grain and the lowest was in treatment

P0 (Control Feed) of 68.20 g/grain. The results of this study are almost the same as those of Prasetyo and Ketaren (2005) who reported that the egg weight of Tegal ducks was 70.8 ± 4.7 g/grain. However, it was higher than the results of the research. The egg weight of Magelang ducks was 65.370±4.580 g/grain, which was lower than that of Purba et al. (2006). The egg weight of Mojosari ducks was 71.370 ± 4.863 g/grain, which was higher than that of Prasetyo and Ketaren (2005), which reported the egg weight of Mojosari ducks was 60.3 ± 6.2 g/grain.

The opinion of Tamzil Results (2017) which states that ducks are classified as voracious birds, if the population is too high with a limited feed area, it is very possible for events to crush and stamp on each other while eating. Another possibility that can occur is that the energy consumed is used more for motion energy so that it has a negative impact on egg production and weight. In contrast to the opinion of Prasetyo and Susanti (2000) that the weight of ducks when they first lay their eggs greatly affects the weight of the first egg, where ducks that have a light weight when they first lay eggs tend to produce a smaller weight of the first egg.

Egg Yolk Index Analysis

The yolk index analysis has not been obtained because the measurement of the yolk index on eggs will be carried out at the end of the observation period as shown in the following graph:

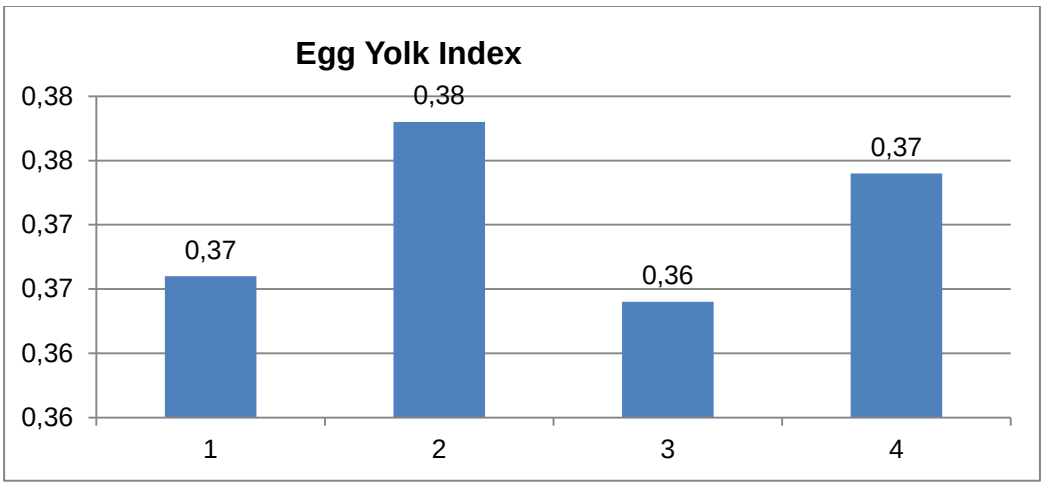

Figure 5. Graph of Duck Egg Yolk Index During the Study

The results showed the average value of the egg yolk index ranged from 0.37 to 0.38 and the results of the analysis showed that the results were not significantly different. This happened because the treatment given to ducks had no effect on the yolk index, and when compared to the results of the research, Haryanto et al (2019) stated that the index value of white egg yolks was 0.37 ± 0.04 with a coefficient of variation of 11.247 and colored eggs. bluish green is 0.38 ± 0.03 with a coefficient of variation of 8.49. A good yolk index ranges from 0.40-0.42, if eggs are stored too long, the yolk index decreases to 0.25 or less. This is because the yolk is getting thinner and has a yolk index of 0.30 to 0.50 (Indratiningsih and Rihastuti, 1996).

This is in accordance with the opinion of Sujana et al. (2006) which states that the measurement of the yolk index carried out at the same time will produce a variety of measurement values that are relatively the same. Widyantara et al. (2017) stated that the older the age of the egg will cause the diameter of the egg white to widen so that the egg white index value is getting smaller

CONCLUSION

The addition of herbal feed additives in the ration of laying ducks had an insignificant impact in increasing the efficiency of feed use and improving the quality of duck eggs, but the data improved the quality of feed conversion and increased egg production and weight due to the performance of the essential oil content which acts as an antibiotic, prebiotic and natural phytobiotics owned by turmeric, garlic and meniran.

REFERENCES

Agustina, R. 2006. Penggunaan ramuan herbal sebagai feed additive untuk meningkatkan performance broiler. Lokakarya Nasional Inovasi Teknologi dalam Mendukung Usaha ternak Unggas Berdaya Saing. Pusat Penelitian dan Pengembangan Peternakan. Bogor.

Agustina, K. K., Dharmayudha, A. A. G. O., Swacita, I. B. N., & Sudimartini, L. M. (2015). Analisis nilai gizi telur itik asin yang dibuat dengan media kulit buah manggis selama masa pemeraman. Buletin Veteriner Udayana, 7(2), 121-128.

Amrullah, I. K. (2004). Nutrisi ayam broiler. Lembaga Satu Gunungbudi, Bogor.

Magunwardoyo, 2009. Ekstraksi dan Identifikasi Senyawa Antimikroba Herba Meniran (Phyllanthus niruri L.). Jurnal Ilmu Kefarmasian Indonesia. September 2009, hal. 57-63. Vol. 7, No. 2.

Ayundari, S. R. (2021). Pertambahan Bobot Badan Ayam Broiler Yang Diberi Ramuan Herbal Kunyit (Curcuma Domestica Val.) Dan Jahe (Zingiber Officinale) Berprobiotik Dalam Air Minum (Doctoral dissertation, Universitas Jambi).

Fan, H.P., M. Xie, W.W. Wang, S.S. Hou and W. Huang. 2008. Effect of dietary energy on growth performance and carcass quality of white growing pekin ducks from two to six weeks of age. Poult. Sci. 87:62-1164

Harahap, D. R. Y., Sipahutar, L. W., & Harahap, M. F. (2021). Kualitas Fisik Telur Itik Yang Dipelihara Di Peternakan Rakyat Kota Padangsidimpuan. Jurnal Peternakan (Jurnal of Animal Science), 5(2), 99-106.

Hardjosworo, P. S. (1995). Peluang pemanfaatan potensi genetik dan prospek pengembangan unggas lokal. Pros. In Seminar Nasional Sains dan Teknologi Peternakan. hlm (pp. 17-23).

Haryanto, A. N., Sunarti, D., & Sarengat, W. (2019). Kualitas Fisik Telur Itik Tegal yang Dipelihara Menggunakan Sistem Pemeliharaan Intensif dan Semi Intensif di KTT Bulusari Kabupaten Pemalang (Doctoral dissertation, Faculty Of Animal And Agricultural Science).

Hathaway et al. 1996 Hathaway, M. R., Dayton, W. R., White, M. E., Henderson, T. L., Young, D. A., & Doan, T. N. (1999). Effect of feed intake on antimicrobially induced increases in porcine serum insulin-like growth factor I. Journal of animal science, 77(12), 3208-3214.

Hidanah, S., Putriayuningtyas, R., & Sardjito, T. (2011). The Use Of Recycle Soybean Fermented Cake (Tempe) with Cellulolytic Bacteria as Corn Substitution to Consumption Feed, Egg Production and Feed Convertion Ratio of Layer Duck. Veterinaria Medika, 4(3), 203-206.

Indratiningsih, R. A dan Rihastuti. 1996. Dasar Teknologi Hasil Ternak Susu dan Telur. Gadjah Mada University Press, Yogyakarta

Indriati, M., & Yuniarsih, E. (2021). Pengaruh Penambahan Tepung Daun Kelor pada Ransum terhadap Kandungan Nutrisi dan Fisik Telur Itik. Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan, 9(1), 42-48.

Ketaren, P. P., Hardi, P. L., & Murtisari, T. (1999, October). Karakter produksi telur pada itik silang mojosari x alabio. In Seminar Nasional Peternakan dan Veteriner (pp.286-291).

Marlina, P. (2019). Kualitas Telur Itik Pada Pemeliharaan Pola Ekstensif Dan Intensif Di Kecamatan Jetis Kabupaten Bantul (Doctoral dissertation, Universitas Mercu Buana Yogyakarta).

Mario, 2010. Pengaruh penambahan kombinasi tepung jahe merah, kunyit dan meniran dalam pakan terhadap kecernaan zat makanan dan energy metabolis ayam pedaging. Jurnal Ilmu-Ilmu Peternakan 24 (1): 1 - 8

Porwanto, D., Yamani, H. A. Z., & Antang, E. U. (2019). Analisis Pendapatan Usaha Ternak Ayam Ras Petelur di Kota Palangka Raya (Studi Kasus: Peternakan Rajawali Poultry Shop dan Satwa Mandiri Farm). Journal Socio Economics Agricultural, 14(2), 28-39.

Prasetyo, L. H., & Susanti, T. (2000). Persilangan timbal balik antara itik Alabio dan Mojosari: Periode awal bertelur. Jitv, 5(4), 210-214.

Prasetyo, L. H., & Ketaren, P. P. (2005). Interaksi antar bangsa itik dan kualitas ransum pada produksi dan kualitas itik lokal. Proseding. In Seminar. Nasional Teknologi Peternakan dan Veteriner. Pusat Penelitian dan Pengembangan Peternakan. Bogor (pp. 12-13).

Purba, M., Prasetyo, L. H., & Susanti, T. (2006). Kualitas Telur Itik Alabio dan Mojosari pada Generasi Pertama Populasi Seleksi. Balai Penelitian Ternak, Bogor.

Putra, K. I. P. (2017). Penampilan Itik Bali Jantan Umur 2-9 Minggu Yang Diberi Ransum Campuran Tepung Ampas Bawang Putih (Allium sativum L) (Doctoral dissertation, Universitas Warmadewa).

Purba, M. A. I. J. O. N., & Ketaren, P. P. (2011). Konsumsi dan konversi pakan itik local jantan umur delapan minggu dengan penambahan santoquin dan vitamin E dalam pakan. Jurnal Ilmu Ternak dan Veteriner, 16(4), 280-287.

Rohaeni, E. S., & Setioko, A. R. (2001). Keragaan produksi telur pada Sentra Pengembangan Agribisnis Komoditas Unggulan (SPAKU) itik alabio di Kabupaten Hulu Sungai Utara, Kalimantan Selatan. Prosiding Lokakarya Unggas Air sebagai Peluang Usaha Baru, Bogor, 6-7.

Setiadi, P., Sinurat, A. P., Setioko, A. R., & Lasmini, A. (1994). Perbaikan sanitasi untuk meningkatkan daya tetas telur itik di pedesaan. In Prosiding. Seminar nasional sains dan teknologi peternakan. Pusat Penelitian dan Pengembangan Peternakan, Bogor).

Sinurat, A.P. 2000. Penyusunan Ransum Ayam Buras dan Itik. Pelatihan proyek pengembangan agribisnis peternakan, Dinas Peternakan DKI Jakatra, 20 Juni 2000

Sinurat, A. P., Purwadaria, T., Togatorop, M. H., & Pasaribu, T. (2003). Pemanfaatan bioaktif tanaman sebagai “feed additive” pada ternak unggas: Pengaruh pemberian gel lidah buaya atau ekstraknya dalam ransum terhadap penampilan ayam pedaging JITV, 8(3), 139-145.

Sirait, C. H. (1986). Telur dan pengolahannya. Pusat Penelitian dan Pengembangan Peternakan, Bogor.

Siregar, R. F., Hintono, A., & Mulyani, S. (2012). Perubahan sifat fungsional telur ayam ras pasca pasteurisasi. Animal Agriculture Journal, 1(1), 521-528.

Solihat, S., & Suswoyo, I. Ismoyowati. 2003. Kemampuan performan produksi telur dari berbagai itik lokal. Jurnal peternakan tropik, 3(1), 27-32.

Suprapti, M. L. (2002). Pengawetan Telur. Kanisius. Yogyakarta.

Suryani, A. (2010). Analisis permintaan telur di Kabupaten Sleman. Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis, 9(2), 197-209.

Suswoyo, I., & Rosidi, R. (2017). Produksi Telur Dan Konversi Pakan Itik Tegal Terkurung Kering Yang Diberi Kombinasi Probiotik Dan Vitamin C. Prosiding, 7(1).

Syamsiah, I. S., & Tajudin, S. (2003). Khasiat dan Manfaat Bawang Putih Raja Antibiotik Alami. Jakarta: Agromedia Pustaka.

Syamsiah, I. S. (2003). Khasiat & manfaat bawang putih: raja antibiotik alam. AgroMedia.

Tamzil, M.H. 2017. Ilmu dan Teknologi Pengelolaan Plasma Nutfah Ternak Itik. Penerbit Mataram University Press. Mataram.

Widyantara, I. N. P., & Ardani, I. G. A. K. S. (2017). Analisis Strategi Pemasaran Telur Ayam (Studi Kasus di Desa Pesedahan dan Desa Bugbug, Kabupaten Karangasem) (Doctoral dissertation, Udayana University).

Yuwono, D,M, Subiharta dan A, Hermawan. 2006. Kajian inovasi kelembagaan pembibitan itik Tegal Unggul model inti-plasma. Prosiding Seminar Nasional Inovasi Teknologi dalam Mendukung Usaha Ternak Unggas Berdaya Saing. Semarang, 4 Agustus 2006. Pusat Penelitian dan Pengembangan Peternakan bekerjasana dengan Jurusan Sosial Ekonomi Fakultas Peternakan Universitas Diponegoro. Semarang. hlm.176-184

Zahid. M, 2012. Hasil Pengujian Sampel Imbuhan Pakan (Feed Additives) Golongan Antibiotika. Pelayanan Sertifikasi dan Pengamanan Hasil Uji Balai Besar Pengujian Mutu dan Sertifikasi Obat Hewan. Bogor.