

DAFTAR PUSTAKA

- Abioja, M.O., K.B. Ogundimu, T.E. Akibo, K.E. Odukoya., O.O. Ajiboya., J.A. Abiona., T.J. Williams., E.O. Oke, and O.O. Osinowo. 2012. Growth, mineral deposition, responses of broiler chickens offered honey in drinking water during hot-dry season, *Int. J. Zoo.* (403-502).
- Acikgöz Z, Ahyan V, Özkan K, Özge A, Altan A, Özkan S, Akbas Y. 2003. The effects of dietary oil and methionine on performance and egg quality of commercial laying hens during summer season. *Arch. Geflügelkunde* 67 (5): 204-207.
- Aengwanich W, Chinrasri O. 2003. Effects of chronic heat stress on red blood cell disorders in broiler chickens. *Mahasarakham Univ. J.* 21: 1-10.
- Agustanti, L. 2014. Gambaran Sel Darah Putih dan Indeks Stres Ayam Broiler yang diberi Jamu Bags Waras (Jahe, Kunyit dan Kencur) Melalui Air Minum. Skripsi. Fakultas Kedokteran Hewan, Institut Pertanian Bogor, Bogor.
- Amrullah, I. K. 2004. Seri Beternak Mandiri : Nutrisi Ayam Broiler. Bogor: Lembaga Satu Gunungbudi.
- Baratawidjaja, K. G. dan I. Rengganis ., 2010. Imunologi Dasar. Jakarta: Balai Penerbit Fakultas Kedokteran Universitas Indonesia.
- Butcher, G. D, and R. Miles. 2003. Heat stress management in broiler 1.<http://edis.ifas.ufl.edu>. (15 Agustus 2019).
- Charles, D. R. 2002. Responses to the thermal environment. In *Poultry Environment Problem, A guide to solution*. Nottingham University Press, Nottingham, United Kingdom.
- Davidson, F. 2008. The importance of the avian immune system and its unique feature in avian immunology. Academic Press, Elsevier.
- Dewanti. A. C., P. E. Santosa dan K. Nova.2014. Pengaruh berbagai jenis bahan litter terhadap respon fisiologis broiler fase finisher di closed house. *Jurnal Ilmiah Peternakan Terpadu.* 2 (3) : 81 – 87.
- Ensminger, M. E., C. G. Scanes, and G. Brant. 2004. *Poultry Science*. 4th Edition. New Jersey : Pearson Prentice Hall. hlm 45.

- Ernadi, M. and H. Kermanshahi. 2007. Effect of turmeric rhizome powder on the activity of some blood enzyme in broiler chicken. *Int. J. Poult. Sci.* 6(1): 48-51.
- Esmay, Merle. L. 1978. Principles of Animal Environment. Avi Publishing Company. Westport.
- Farnell M.B., A. M, Donoghue., F, S. de los Santos ., P. J, Blore , B. M, Hargis., G, Tellez, and D. J, Donoghue. 2006. Upregulation of oxidative burst and degranulation in chicken heterophils stimulated with probiotic bacteria. *Poult. Sci.* 85(11):1900-1906.
- Ferro P. J., C. L, Swaggerty., P, Kaiser., I. Y, Pevzner, and Kogut, 2004. Heterophils isolated from chickens resistant to extra-intestinal salmonella enteritidis infection express higher levels of pro-inflammatory cytokine mRNA following infection than heterophils from susceptible chickens. *Epidemiol. Infect.* 132: 1029–1037.
- Frandsen, R.D., W.L. Wike and A.D. Fails. 2009. Anatomy and physiology of Farm Animals, 7th Ed. Iowa States USA : Wiley-Blackwell. hlm 65-68.
- Frandsen. 1992. Anatomi dan Fisiologi Ternak Edisi IV. Gadjah Mada University Press, Yogyakarta.
- Hardjosworo dan Rukminasih . 2000. Tinjauan Pustaka Ayam Broiler <http://repository.usu.ac.id/bitstream/123456789/17672/3/Chapter%20II.pdf> [26 Mei 2019]
- Harmon B. G. 1998. Avian heterophils in inflammation and disease resistance. *Poult. Sci.* 77:972–977.
- Heckert, R.A., I. Estevez, E.R. Cohen dan R.P. Riley. 2002. Effects of density and perch availability on the immune status of broilers. *Poult. Sci.* 81:451-457.
- Hillman, P. E., N. R, Scot, and A.V, Tienhoven. 2000. Physiological Responses and Adaptations to Hot and Cold environments.
- Ingram, D.R., L.F. Hatten, and B.N. Mc Pherson, 2000. Effects of light restriction on broiler performance and specific body structure measurements. *J. Poult. Sci.* 9 : 501-504.

- Kusnadi, E. 2006. Suplementasi vitamin C sebagai penangkal cekaman panas pada ayam broiler. JITV, 4(11): 249 – 253.
- Kusnadi, E. 2008. Perubahan Malonaldehida Hati, Bobot Relatif *Bursa fabricius* dan Rasio Heterofil/Limfosit (H/L) Ayam Broiler yang diberi Cekaman Panas. Skripsi. Fakultas Peternakan, Universitas Andalas. Padang.
- Lin. H., H. F. Zhang.,R Du., X. H. Gu.,Z. Y. Zhang.,J. Buyse dan E. Decuypere.2005. Thermoregulation responses of broiler chickens to humidity at different ambient temperatures. II. Four Weeks of Age. Poultry Science 84 (1) :1173–1178.
- Maliselo, P.S. and G.K. Nkonde. 2015. Ammonia production in poultry houses and its effect on the growth of gallus gallus domestica (Broiler Chickens): A case study of a small scale poultry house in Riverside, Kitwe, Zambia. International Journal of Scientific & Technology Research 4(4): 141-145.
- Mayes, P. A., R. K. Murray, D. K. Granner, and V. W Rodwell. 1997. Biokimia Harper. 24 th Ed. Buku Kedokteran, Jakarta.
- Metasari, T., D. Septinova., dan V. Wanniatie. 2012. Pengaruh berbagai jenis bahan litter terhadap kualitas litter, broiler fase finisher di closed house. Jurusan Peternakan. Fakultas Pertanian. Universitas Lampung.
- Miles, D.M., S. L. Branton, dan B.D. Lott. 2004. Atmospheric ammonia is detrimental to the performance of modern commercial broilers. Journal Poultry Science, 10(83): 1650 – 1654.
- Nangoy, F.J. 2012. Kajian Penyusutan Berat Badan dan Peningkatan Suhu Tubuh Ayam Broiler Terimplentasi Kurkuma (Curcuma Longa), Gula Aren (Arenga Pinata) Akibat Lama Transportasi. IJS. (2):3.
- North, M. O. and D. D. Bell. 1990. Commercial Chicken Production Manual. 4th edn. Van Northland Reinhold, New York.
- Nova, K. 2008. Pengaruh perbedaan persentase pemberian pakan antara siang dan malam hari terhadap performa broiler strain CP 707.
- Pereira, J.L.S. 2017. Assessment of ammonia and greenhouse gas emissions from broiler houses in Portugal. Atmospheric Pollution Research, 8(2017): 949 – 955.

- Pratikno, H. 2010. Pengaruh ekstrak kunyit (*Curcuma Domestica Vahl*) terhadap bobot badan ayam broiler (*Gallus Sp*). *Buletin Anatomi dan Fisiologi*, 18(2): 39-46.
- Prihandanu A, A Trisanto, dan Y Yuniati. 2015. Model Sistem Kandang Ayam Closed House Otomatis Menggunakan Omron Sysmac CPM1A 20-CDR-A-V1. *Jurnal Rekayasa dan Teknologi Elektro* . 9 : 1 (54-62).
- Redmond S. B., P, Chuammitri., C. B, Andreasen., D, Palić., and S, J. Lamont. 2011. Genetic control of chicken heterophil function in advanced intercross lines: associations with novel and with known *Salmonella* resistance loci and a likely mechanism for cell death in extracellular trap production. *Immunogenetics*. 63:449–458.
- Renata, T.A. Sarjana , dan S. Kismiati. 2018. Pengaruh zonasi dalam kandang closed house terhadap kadar amonia dan dampaknya pada kualitas daging broiler di musim penghujan. *Jurnal Ilmu-Ilmu Peternakan* 28 (3): 183 – 191. ISSN : 0852-3681.
- Sandyawan. A., dan Ary. B.K.P. 2019. Studi Numerik Pengaruh Peletakan Cooling Pad Terhadap Distribusi Temperatur dan Pola Aliran Udara Ventilasi Kandang Ayam Broiler Close House Tipe Ventilasi Lorong. *Jurnal Teknik its Vol. 8, No. 2, (2019) Issn: 2337-3539.*
- Sarjana, T.A., L.D. Mahfudz, M. Ramadhan, Sugiharto, F. Wahyono, dan S. Sumarsih. 2017. Emisi ammonia dan kondisi litter pada kandang ayam broiler sistem terbuka yang mendapatkan additive berbeda dan kombinasinya dalam ransum. Seminar Nasional Pengembangan Peternakan Berkelanjutan, Universitas Padjajaran. Sumedang.
- Sujana, E., S. Darana, dan L. Setiawan. 2011. Implementasi teknologi semi closed – house system pada performan ayam broiler di test farm sustainable livestock techno park,. Fakultas Peternakan Universitas Padjadjaran, Jatinangor.
- Suprijatna, E. U, Atmomarsono. R, Kartasudjana. 2005. Ilmu Dasar Ternak Unggas. Penebar Swadaya, Jakarta.
- Suptijatna, E., Atmomarsono, U. Kastasudjana. 2005. Ilmu Dasar Ternak Unggas. Penebar Swadaya. Jakarta.

- Suud, H. M. 2009. Simulasi pola aliran udara dan distribusi suhu pada kandang closed house menggunakan computational fluid dinamics. Fakultas Teknologi Pertanian. IPB. Bogor.
- Widjajakusuma. R dan S. H. S. Sikar. 1986. Fisiologi Hewan. Institut Pertanian Bogor Press, Bogor.
- Yalcinkaya, L., T. M. Gonggor, Basalan and E. Erdem. 2008. Mannan oligosaccharides (MOS) from *Saccharomyces cerevisiae* in broilers: Effects on performance and blood biochemistry. Turk. J. Vet. Anim. Sci. 32 (1) : 43-48.
- Yudha, F., Eliawardani, A. Rafina, Al Azhar, & N. Asmilia. 2014. Profil darah Tikus Putih (*Rattus norvegicus*) yang diinfeksi Trypanosoma evansi dan diberikan ekstrak kulit batang Jaloh (*Salix tetrasperma Roxb*). Jurnal Kedokteran Hewan 8(2): 164-168.
- Yuwanta T. 2004. Dasar Ternak Unggas. Kanisius. Yogyakarta.
- Zulkifli I. 2003. Effects of early age feed restriction and dietary ascorbic acid on heterophil/lymphocyte and tonic immobility reactions of transported broiler chickens. Asian Aust J Anim Sci 16:1545–1549.

Lampiran 1. Analisis Ragam Suhu kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable: suhu

| perlakuan | Mean | Std. Deviation | N |
|-----------|---------|----------------|----|
| p120 | 29,2333 | ,90738 | 3 |
| p30 | 28,4333 | ,77675 | 3 |
| p60 | 28,7333 | ,80829 | 3 |
| p90 | 29,0333 | ,97125 | 3 |
| Total | 28,8583 | ,80618 | 12 |

Levene's Test of Equality of Error Variances^a

Dependent Variable: suhu

| F | df1 | df2 | Sig. |
|------|-----|-----|------|
| ,076 | 3 | 8 | ,971 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + perlakuan

Lampiran 2. Analisis Ragam Kelembaban kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable: kelembaban

| perlakuan | Mean | Std. Deviation | N |
|-----------|---------|----------------|----|
| p120 | 57,0000 | 2,48797 | 3 |
| p30 | 60,0000 | 2,64575 | 3 |
| p60 | 58,4000 | 2,76225 | 3 |
| p90 | 57,7333 | 2,02567 | 3 |
| Total | 58,2833 | 2,42293 | 12 |

Levene's Test of Equality of Error Variances^a

Dependent Variable: kelembaban

| F | df1 | df2 | Sig. |
|------|-----|-----|------|
| ,112 | 3 | 8 | ,951 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + perlakuan

Lampiran 3. Analisis Ragam Kecepatan Udara didalam kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable: kec.udara

| perlakuan | Mean | Std. Deviation | N |
|-----------|--------|----------------|----|
| p120 | 1,8633 | ,86726 | 3 |
| p30 | 2,3900 | 1,03697 | 3 |
| p60 | 2,0067 | ,88059 | 3 |
| p90 | 2,0600 | ,96141 | 3 |
| Total | 2,0800 | ,82577 | 12 |

Levene's Test of Equality of Error Variances^a

Dependent Variable: kec.udara

| F | df1 | df2 | Sig. |
|------|-----|-----|------|
| ,105 | 3 | 8 | ,955 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + perlakuan

Lampiran 4. Analisis Ragam kadar amonia didalam kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable: amonia

| perlakuan | Mean | Std. Deviation | N |
|-----------|--------|----------------|----|
| p120 | 1,4633 | 1,17730 | 3 |
| p30 | ,2867 | ,27301 | 3 |
| p60 | ,5067 | ,62140 | 3 |
| p90 | ,9433 | ,78780 | 3 |
| Total | ,8000 | ,81826 | 12 |

Levene's Test of Equality of Error Variances^a

Dependent Variable: amonia

| F | df1 | df2 | Sig. |
|-------|-----|-----|------|
| 1,775 | 3 | 8 | ,230 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + perlakuan

Lampiran 5. Analisis Ragam suhu rektal ayam yang dipelihara pada kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable:rektal

| Perlakuan | Mean | Std. Deviation | N |
|-----------|---------|----------------|----|
| p120 | 41.3800 | .48683 | 5 |
| p30 | 41.6000 | .80312 | 5 |
| p60 | 41.2000 | .54314 | 5 |
| p90 | 41.4200 | .40249 | 5 |
| Total | 41.4000 | .55060 | 20 |

Levene's Test of Equality of Error Variances^a

Dependent Variable:rektal

| F | df1 | df2 | Sig. |
|------|-----|-----|------|
| .363 | 3 | 16 | .781 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: perlakuan

Lampiran 6. Analisis Ragam Kecepatan Bernapas ayam yang dipelihara pada kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable:kec.bernapas

| Perlakuan | Mean | Std. Deviation | N |
|-----------|---------|----------------|----|
| p120 | 39.8000 | 9.06642 | 5 |
| p30 | 33.6000 | 4.09878 | 5 |
| p60 | 35.8000 | 5.63028 | 5 |
| p90 | 30.8000 | 5.11859 | 5 |
| Total | 35.0000 | 6.66491 | 20 |

Levene's Test of Equality of Error Variances^a

Dependent Variable:kec.bernapas

| F | df1 | df2 | Sig. |
|-------|-----|-----|------|
| 2.038 | 3 | 16 | .149 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: perlakuan

Lampiran 7. Analisis Ragam Ratio H/L ayam yang dipelihara pada kandang Closed House berdasarkan pembagian zona dalam kandang.

Descriptive Statistics

Dependent Variable: hl

| perlakuan | Mean | Std. Deviation | N |
|-----------|-------|----------------|----|
| p120 | ,7560 | ,07635 | 5 |
| p30 | ,8000 | ,09354 | 5 |
| p60 | ,7460 | ,12973 | 5 |
| p90 | ,8160 | ,06618 | 5 |
| Total | ,7795 | ,09185 | 20 |

Levene's Test of Equality of Error Variances^a

Dependent Variable: hl

| F | df1 | df2 | Sig. |
|-------|-----|-----|------|
| 1,210 | 3 | 16 | ,338 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + perlakuan

Lampiran 8. Dokumentasi



Kondisi di dalam kandang



Pengukuran Kondisi mikroklimat di dalam kandang



Pengukuran suhu rektal dan kecepatan bernapas Ayam



Pengambilan sampel darah ayam



Pengujian sampel darah ayam

BIODATA



Sri Rahayu (I111 15 094) lahir di Manisa pada tanggal 19 Oktober 1997. Merupakan anak ke empat dari empat bersaudara dari pasangan Alm. Lannoki dan Nasirah. Penulis berasal dari Manisa, kecamatan Baranti, Kabupaten Sidenreng Rappang. Penulis memulai jenjang pendidikan formal pada tahun 2001 di Taman Kanak-kanak PGRI Manisa. Setelah itu melanjutkan ke pendidikan dasar di SD N 10 Benteng lulus pada tahun 2009. Setelah itu melanjutkan ke jenjang yang lebih tinggi di SMP N 2 Baranti yang lulus pada tahun 2012. Kemudian melanjutkan ke sekolah menengah kejuruan di SMK N 1 Watang Pulu dengan mengambil jurusan Peternakan. Setelah lulus penulis mendaftar masuk perguruan tinggi melalui jalur SNMPTN di fakultas Peternakan Universitas Hasanuddin. Selama menjadi mahasiswa penulis aktif menjadi asisten di Laboratorium Ternak Unggas, dan aktif dalam berbagai organisasi Fakultas Seperti HIMAPROTEK, FOSIL dan MATERPALA UNHAS.