

## DAFTAR PUSTAKA

- Abbas, B., M.H. Bintoro, Sudarsono, M. Surahman, and H. Ehara. 2009. Genetic relationship of sago palm (*Metroxylon sagu Rottb*) in Indonesia based on RAPD markers. *Biodiversitas*. 10(4): 168–174.
- Abd-aziz, S. 2002. Sago starch and its utilisation. *J. Biosci. Bioeng*. 94: 526–529.
- Aberle, E.D., E.S. Reaves, M.D. Judge, R.E. Hunsley, and T.W. Perry. 1981. Palatability and muscle characteristics of cattle controlled weight gain: time on high energy diet. *J. Anim. Sci*. 52 (4): 757 – 765.
- Aberle, E.D., J.C. Forrest, D.E. Gerrard, and E.W. Mills. 2001. *Principles of Meat Science*. 4thEd. Kendall/Hunt Publishing Company.
- Abidin, Z. 2002. *Penggemukan Sapi Potong*. Agromedia Pustaka. Jakarta.
- Adawiyah, R. dan M.A. Dirgantoro. 2019. Karakteristik produksi dan pendapatan pengolah sagu (*Metroxylon* spp.) pada agroekologi tanaman sagu yang berbeda di Kota Kendari. *J. Berkala Penelitian Agronomi*. 7(2): 130–138.
- Addah, W., J. Baah, E.K. Okine, and T.A. McAllister. 2015. A third-generation esterase inoculant alters fermentation pattern and improves aerobic stability of barley silage and the efficiency of body weight gain of growing *feedlot* cattle. *J. Anim. Sci*. 90: 1541–1552. DOI:10.2527/jas.2011-4085.
- Adesogan, A.T. 2002. What are feeds worth? A critical evaluation of selected nutritive value methods. In: *Proceedings 13th Annual Florida Ruminant Nutrition Symposium*. 33–47.
- Adewuyi, A.A., E. Gruys, and F.J. van Eerdenburg. 2005. Non-esterified fatty acids (NEFA) in dairy cattle: A review. *Vet. Q*. 27(3): 117–126.
- Adhyatma, M., H. Nuraini, dan A. Yani. 2017. Proses eksanguinasi dan kualitas fisik daging sapi Brahman Cross dengan waktu istirahat berbeda sebelum pemotongan. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*. 5(3): 106–109.
- Aditia, E.L., R. Priyanto, M. Baihaqi, B.W. Putra, dan M. Ismail. 2013. Performa produksi sapi peranakan ongole yang digemukkan dengan pakan berbasis sorghum. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*, 01(03): 155-159.
- Afrianti, H. 2013. *Teknologi Pengawetan Pangan*. Alfabeta, Bandung.
- Agus, A., B. Suwignyo dan R. Utomo. 2005. Penggunaan complete feed berbasis jerami padi fermentasi pada sapi Australian commercial cross terhadap konsumsi nutrisi dan penambahan bobot badan harian. *Buletin Peternakan*, 29(1): 1-9.
- Ahmed, K., M. Shaheen, F. Mirzaei, Z.I. Khan, S. Gondal, A. Fardous, A. Hussain, F. Arshad, and T. Mehmood. 2013. Proximate analysis: Relative feed values of various forage plants for ruminants from semi-arid region of Punjab, Pakistan. *Agric Sci*. 04(06): 302–308. DOI:

10.4236/as.2013.46043.

- Aktas, N., M.I. Aksu, and M. Kaya. 2003. The effect of organic acid marination on tenderness, cooking loss and bound water content of beef. *Journal of Muscle Foods*. 14(3): 181–194. DOI: 10.1111/j.1745-4573.2003.tb00699.x.
- Al-Arif, M.A., L.T. Suwanti, A.T.S. Estoepongastie, and M. Lamid. 2017. The Nutrients contents, dry matter digestibility, organic matter digestibility, total digestible nutrient, and NH<sub>3</sub> rumen production of three kinds of cattle feeding models. In *The Veterinary Medicine International Conference, KnE Life Sciences*, pages 338–343. DOI: 10.18502/cls.v3i6.1142.
- Al-Haidary, A.A., E.M. Samara, A.B. Okab, and K.A. Abdoun. 2013. Thermophysiological responses and heat tolerance of saudi camel breeds. *IJCEBS*. 1(1): 2320–4087.
- Aling C., R.A.V Tuturoong, V.I.R. Tulung, and M.R. Waani. 2020. Kecernaan serat kasar dan BETN (Bahan Ekstrak Tanpa Nitrogen) ransum komplit berbasis tebon jagung pada sapi Peranakan Ongole. *Zootec*. 40(2): 428–438.
- Allaily, Samadi dan A. Fitriani. 2023. Kualitas ampas sagu yang difermentasi menggunakan EM4 untuk pakan ternak terhadap pH, populasi BAL dan total bakteri. *JPI*. 25(2): 150-155. DOI: 10.25077/jpi.25.2.150-155.2023.
- AlZahal O., L. Dionissopoulos, A. Laarman, N. Walker, and B. McBride. 2014. Active dry *Saccharomyces cerevisiae* can alleviate the effect of subacute ruminal acidosis in lactating dairy cows. *J Dairy Sci*. 97(12): 7751–7763. DOI: 10.3168/jds.2014-8212.
- Amam dan Haryono. 2021. Pertambahan bobot badan sapi impor Brahman Cross heifers dan steers pada bobot kedatangan yang berbeda. *Jurnal Ilmu Peternakan Terapan*. 4(2): 104-109. DOI: 10.25047/jipt.v4i2.2357.
- Amertaningtyas, D. 2012. Kualitas daging sapi segar di pasar tradisional Kecamatan Poncokusumo Kabupaten Malang. *Jurnal Ilmu dan Teknologi Hasil Ternak*. 7(1): 42–47.
- Amertaningtyas, D. 2013. Kualitas daging sapi segar di pasar tradisional Kecamatan Poncokusumo Kabupaten Malang. *Jurnal Ilmu dan Teknologi Hasil Ternak*. 8(2): 27-31.
- Amien, I. 2013. Pertambahan Bobot Badan dan Konversi Pakan Sapi Limousin Cross Dengan Pakan Tambahan Probiotik. Universitas Brawijaya, Malang.
- Amin, N., N. Sabli, S. Izhar, and H. Yoshida. 2019. Sago wastes and its applications. *Pertanika J. Sci. & Technol*. 27(4): 1841–1862.
- Amos. 2010. Dampak limbah pengolahan sagu skala kecil terhadap mutu air anak sungai di Kelurahan Cibuluh Bogor. *JHP*. 5(1289): 32–39.
- Amri, U. 2000. Kajian Produktivitas dan Sifat Fisik-Kimia Daging Sapi Brahman Cross pada Ransum yang Berbeda. Disertasi. IPB, Bogor.

- Ananda, S. and A. Mujnisa. 2021. The Effect of inoculation sago waste (*Metroxylon sagu*) with *Aspergillus niger* on the ADF and NDF content of sago waste. *Jurnal Peternakan Sriwijaya*. 10(1): 1-7.
- Andini M. dan I.B.N. Swacita. 2014. Kualitas daging sapi wagyu dan daging sapi Bali yang disimpan pada suhu 4°C. *Indonesia Medicus Veterinus*. 3(5): 430-435.
- Andjelić, B., R. Djoković, M. Cincović, S. Bogosavljević-Bošković, M. Petrović, J. Mladenović, and A. Čukić. 2022. Relationships between milk and blood biochemical parameters and metabolic status in dairy cows during lactation. *Metabolites*. 12(8): 733. DOI: 10.3390/metabo12080733.
- Anggorodi, 1994. Ilmu Makanan Ternak Umum. Gramedia Pustaka Utama. Jakarta.
- Anonimus. 1992. Cara Uji Makanan dan Minuman. Badan Standardisasi Nasional. SNI: 01-2891-1992.
- Anonimus. 2001. Animal Science [Breeds of Beef Cattle]. Instructional Materials Service (IMS). Texas A&M University. 2588 TAMUS. College Station. Texas: 77843-2588. <http://www-ims.tamu.edu> (diakses tanggal 8 Desember 2019).
- Anonimus, 2008a. Petunjuk Pemeliharaan Sapi Brahman Cross. BPTU Sembawa, Ditjen Peternakan, Sumatera Selatan.
- Anonimus. 2008b. Mutu Karkas dan Daging Sapi. Badan Standarisasi Nasional. SNI: 3932.
- Anonimus. 2012. National Guidelines for Beef Cattle *Feedlots* in Australia. 3<sup>rd</sup> ed. Meat and Livestock Australia Limited, North Sydney.
- Anonimus. 2014. Meat Standards Australia. Published by Meat and Livestock Australia. <https://www.mla.com.au/marketing-beef-and-lamb/meat-standards-australia/> (Diakses tanggal 04 April 2021).
- Anonimus. 2018. Statistik Pertanian. Pusat Data dan Sistem Informasi Pertanian, Sekretariat Jenderal. Kementerian Pertanian, Republik Indonesia.
- Anonimus. 2021a. Statistik Perkebunan Unggulan Nasional 2020-2022. Sekretariat Direktorat Jenderal Perkebunan. Kementerian Pertanian, Republik Indonesia.
- Anonimus. 2021b. Handbook of Australian Beef Processing. Version 8. AUS-MEAT Limited, Queensland, Australia.
- Antari, R. dan U. Umiyasih. 2009. Pemanfaatan tanaman ubi kayu dan limbahnya secara optimal sebagai pakan ternak ruminansia. *Wartazoa*. 19(4): 191–200.
- Aprilia, R.M., S. Kuserawaty, and H. Soetanto. 2021. *In vitro* gas production and its prediction on metabolize energy of complete feed using rumen fluid of three Indigenous cattle as inoculum taken from abattoir. *Jurnal Ilmu-Ilmu Peternakan* 31(2): 168–174. DOI: 10.21776/ub.jiip.2021.031.02.10.

- Arbabi, S. and T. Ghoorchi. 2008. The effect of different levels of molasses as silage additives on fermentation quality of foxtail millet (*Setaria italica*) silage. *Asian Journal of Animal Science*. 2(2): 43–50.
- Ardani, A. dan Djoemantoro, 1979. Penentuan bilangan atsiri untuk menguji adanya kerusakan bahan makanan hewan karena proses oksidasi lemak. *Buletin Biokimia*, No. 9. Bogor.
- Ardiyati, A. 2012. Penawaran Daging Sapi di Indonesia (Analisis Proyeksi Swasembada Daging Sapi 2014). Tesis. Fakultas Ekonomi, Universitas Indonesia, Jakarta.
- Arihara, K. 2006. Strategies for designing novel functional meat products. *Meat Science*. 74: 219-229.
- Arnold, G.W. 1966. The special senses in grazing animals. 2. Smell, taste and touch and dietary habits in sheep. *Aust J Agric Res*. 17: 531-542.
- Arora, S.P. 1995. Pencernaan Mikroba pada Ruminansia. Gadjah Mada University Press, Yogyakarta.
- Arowolo, M.A. and J. He. 2018. Use of probiotics and botanical extracts to improve ruminant production in the tropics: a review. *Animal Nutrition*. 4: 241–249.
- Arriola, K. G., S.C. Kim, C. R. Staples, and A. T. Adesogan. 2011. Effect of fibrolytic enzyme application to low- and high-concentrate diets on the performance of lactating dairy cattle. *J Dairy Sci*. 94(2): 832-841. DOI: 10.3168/jds.2010-3424.
- Arroyo, C., D. Lascorz, L. O'Dowd, F. Noci, J. Arimi, and J.G. Lyng. 2015. Effect of pulsed electric field treatments at various stages during conditioning on quality attributes of beef longissimus thoracis et lumborum muscle. *Meat Science*. 99: 52–59. DOI: 10.1016/j.meatsci.2014.08.004.
- Asngad, A. 2005. Perubahan kadar protein pada fermentasi jerami padi dengan penambahan onggok untuk makanan ternak. *Jurnal Penelitian Sains dan Teknologi*. 06(1): 65–74.
- Astuti, A., A. Agus, dan S.P.S Budhi. 2009. Pengaruh penggunaan *high quality feed supplement* terhadap konsumsi dan pencernaan nutrisi sapi perah awal laktasi. *Buletin Peternakan*. 33(2): 81–87.
- Astuti, A., Erwanto, dan P.E. Santosa. 2017. Pengaruh cara pemberian konsentrat-hijauan terhadap respons fisiologis dan performa sapi peranakan simmental. *Jurnal Ilmiah Peternakan Terpadu*, 3(4): 201–207.
- Awg-Adeni, D.S., K.B. Bujang, M.A. Hassan, and S. Abd-Aziz . 2013. Recovery of glucose from residual starch of sago hampas for bioethanol production. *Biomed Res Int*. <https://doi.org/10.1155/2013/935852>.
- Ayuningsih, B. 2017. Pengaruh Nutrisi Terhadap Timbulnya Ketosis Pada Sapi Laktasi. Universitas Padjajaran. Bandung
- Bakhtiar, R.H., Ardian, dan S. Yoseva. 2017. Kajian budidaya sagu (*Metroxylon* spp) rakyat di Kecamatan Tebing Tinggi Barat Kabupaten Kepulauan Meranti. *JOM Faperta*. 4: 1–14.

- Baldwin, R.L. and E.E. Connor. 2017. Rumen Function and Development. *Veterinary Clinics of North America: Food Animal Practice*. 33(3), 427–439. DOI: 10.1016/j.cvfa.2017.06.001.
- Banerjee, G.C. 1978. *Animal Nutrition*. Oxford and IBM Pub.Co Calcutta
- Ban-Tokuda, T., E.A. Orden, A.N. Barrio, R.M. Lapitan, C. Delavaud, Y. Chilliard, T. Fujihara, L.C. Cruz, G. Homma, and Y. Kanai. 2007. Effects of species and sex on plasma hormone and metabolite concentrations in crossbred Brahman cattle and crossbred water buffalo. *Livest. Sci*. 107: 244–252.
- Beever, D.E. 2006. The impact of controlled nutrition during the dry period on dairy cow health, fertility and performance. *Animal Reproduction Science*. 96: 212–226.
- Bellof, G. and Pallauf, J. 2004. Deposition of protein, fat, and energy in lambs of the breed German Merino Land sheep. *J. Anim. Sci*. 78: 369–378.
- Bere, J.O., S. Sio dan G.F. Bira. 2019. Pengaruh pemberian pakan sumber energi terhadap profil darah kambing Kacang jantan. *Journal of Animal Science (Portal Jurnal Unimor)*. 4(4): 52–55.
- Berg, R.T., dan R.M. Butterfield. 1976. *New Concepts of cattle Growth*. Sydney University Press.
- Besung, I.N.K., N.M.D.A. Wulandari dan I.B.N. Swacita. 2013. Pengaruh rempah-rempah dan lama penyimpanan daging babi terhadap angka lempeng total bakteri. *Bul Vet Udayana*. 6(1): 29–34.
- Bertram, J.D. and M.R. Oliver. 1990. Lot feeding of beef cattle. *Technical Bulletin No. 13*. Northern Territory. Dalam Usmiati, S., dan Setiyanto, H. 2008. Penampilan karkas dan komponen karkas ternak ruminansia kecil. Hlm: 371–380. *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*. Balai Besar Penelitian dan Pengembangan Pascapanen Pertanian Bogor.
- Bertoni, G., and E. Trevisi. 2013. Use of the liver activity index and other metabolic variables in the assessment of metabolic health in dairy herds. *Vet. Clin. North Am. Food Anim. Pract*. 29: 413–431.
- Bhatta, R., M. Saravanan, L. Baruah, P.K. Malik, and K.T. Samppath. 2016. Nutrient composition, rate of fermentation and *in vitro* rumen methane output from tropical feedstuffs. *The Journal of Agricultural Science*. 155(01): 171–183. DOI: 10.1017/s0021859616000642.
- Bidura, I.G.N.G. 2015. *Limbah untuk Pakan Ternak*. Bahan Ajar MKB 7056 Program Studi Peternakan, Fakultas Peternakan, Universitas Udayana, Denpasar.
- Binnie, M.A., K. Barlow, V. Johnson, and C. Harrison. 2014. Red meats: Time for a paradigm shift in dietary advice. *Meat Science*. 98: 445–451. DOI: 10.1016/j.meatsci.2014.06.024
- Bintoro, H.M.H. 2008. *Bercocok Tanam Sagu*. Bogor (ID): IPB Press, Bogor.
- Bintoro, H.M.H., M.Y.J. Purwanto, dan S. Amarilis. 2010. *Sagu di Lahan Gambut*. IPB Press, Bogor. 169.

- Bintoro, H.M.H. 2019. Potensi dan Produksi Sagu di Indonesia. Buletin Faperta IPB. (<http://faperta.ipb.ac.id/buletin/2019/04/12/potensi-dan-produksi-sagu-di-indonesia/> Diakses tanggal 18 Agustus 2020).
- Blakely, J., dan D.H. Bade. 1998. Ilmu Peternakan. Edisi ke Empat. Gadjah Mada University Press. Hal: 351-352.
- Blanchette, R.A. 2000. A review of microbial deterioration found in archaeological wood from different environments. International Biodeterioration and Biodegradation. 46: 189–204.
- Boer, M., P.B. Arizal, Y. Hendri, dan Ermidias. 2003. Tingkat penggunaan onggok sebagai bahan pakan penggemukan sapi bakalan. Prosiding pada Seminar Nasional Peternakan dan Veteriner. 99–103.
- Bouton, P.E., P.V. Harris, and W.R. Shorthose. 1971. Effect of ultimate pH upon the water-holding capacity and tenderness of mutton. Journal of Food Science. 36(3): 435–439. DOI: 10.1111/j.1365-2621.1971.tb06382.x.
- Boyles, S., S. Loerch, Fluharty, W. Shulaw, and Stanfield. 1996. *Feedlot Management Primer*. Department of Animal Sciences. The Ohio State University. <http://beef.osu.edu/library/feedlot/feedlot.pdf>. (Diakses tanggal 8 Februari 2020)
- Brew, M., R. Myer, M. Hersom, J. Carter, M. Elzo, G. Hansen, and D. Riley. 2011. Water intake and factors affecting water intake of growing beef cattle. Livestock Science. 140(1-3): 297–300. DOI: 10.1016/j.livsci.2011.03.030.
- Bohac, C.E., and K.S. Rhee. 1988. Influence of animal diet and muscle location on cholesterol content of beef and pork muscles. Meat Sci. 23: 71–75.
- Bond J.J., L.A. Can, R.D. Warner. 2004. The effect of exercise stress, adrenaline injection and electrical stimulation on changes in quality attributes and proteins in Semimembranosus muscle of lamb. Meat Sci. 68: 469–477.
- Bowden, D.M. 1971. Non-eseterified fatty acids and ketone bodies in blood as indicators of nutritional status in ruminants: A review. Canadian Journal of Animal Science, 51(1): 1–13.
- Bragagnolo, N. 2009. Cholesterol and Cholesterol Oxides in Meat and Meat Products. Page 187-219 In Handbook of Muscle Foods Analysis. L. M. L. Nollet, and F. Toldra, ed. CRC Press, Boca Raton, FL.
- Broucek, J. 2014. Production of methane emissions from ruminant husbandry: A review. Journal of Environmental Protection 5: 1482–493. DOI: 10.4236/jep.2014.515141.
- Buckle, K.A., R.A. Edwards, G.H. Fleet, dan W. Wooton. 2007. Ilmu Pangan. Penerjemah: Hari Purnomo dan Adono. International Development Program of Australian Universities and Colleges, UI Press.
- Bueno, I.C.S., D.M.S.S. Vitti, H. Louvandini, and A.L. Abdalla. 2008. A new approach for *in vitro* bioassay to measure tannin biological effects based



- on a gas production technique. *Anim. Feed Sci. and Technol.* 141: 153–170. DOI: 10.1016/j.anifeedsci.2007.04.011.
- Bulkaini, Dahlanuddin, T. Ariana, D. Kisworo, Maskur, dan Mastur. 2022. Skor marbling, kolesterol, dan kandungan fisik-kimia daging sapi Bali jantan yang diberi pakan kulit nanas fermentasi. *J Adv Vet Anim Res.* 9(3): 419–431. DOI: 10.5455/javar.2022.i610..
- Cahyasari D., A. Husni, Liman, dan A. Qisthon. 2022. Perbandingan kualitas kimia daging sapi Brahman Cross dari *feedlot* dan peternakan rakyat di wilayah Lampung. *Jurnal Riset dan Inovasi Peternakan.* 6(2): 181–187. DOI: 10.23960/jrip.2022.6.2.181-187.
- Cakra, I.G.L.O. 2016. Ruminologi. Bahan Ajar, Fakultas Peternakan Universitas Udayana, Denpasar.
- Calsamiglia, S., M.D. Stern, and J.L. Firkins. 1996. Comparison of nitrogen-15 and purines as microbial markers in continuous culture. *J. Anim. Sci.* 74(6): 1375–1381.
- Carballo, J.A., L. Monserrat, and L. Sánchez. 2000. The Galician blond calf carcass quality. [Calidad de la canal de ternero Rubio Gallego]. *Bovis.* 92: 55-64.
- Carvalho, M.C, Soeparno, dan N. Ngadiyono. 2010. Pertumbuhan dan produksi karkas sapi Peranakan Ongole dan Simmental Peranakan Ongole jantan yang dipelihara secara *feedlot*. *Buletin Peternakan.* 34(1): 38–48.
- Castillo C., J. Hernández, M. García Vaquero, M. López Alonso, V. Pereira, M. Miranda, I. Blanco, and J.L. Bedito. 2012. Effect of moderate Cu supplementation on serum metabolites, enzymes and redox state in *feedlot* calves. *Research in Veterinary Science,* 93(1): 269–274. DOI: 10.1016/j.rvsc.2011.06.014.
- Castillo-Gonzalez, A.R., M.E. Burrola-Barraza, J. Dominguez-Viveroz, and A. Chavez-Martinez. 2014. Rumen microorganisms and fermentation. *Arch Med Vet.* 46: 346–361.
- Chambaz, A., M.R.L. Scheeder, M. Kreuzer, and P.A. Dufey. 2003. Meat quality of angus, simmental, charolais, and limousin *steers* compared at the same intramuscular fat. *Meat Sci.* 63: 491–500.
- Chaucheyras-Durand, F.E. Chevaux, C. Martin, and E. Forano. 2012. Use of yeast probiotics on ruminants: effects and mechanisms of action on rumen pH, fibre degradation and microbiota according to the diet. *Probiotic in Animals.* Chapter 7.
- Cecchi, L.A., D.L. Huffman, W.R. Egbert and W.R. Jones. 1988. Chuck muscle: Effect of electrical stimulation, hot boning and high temperature aging. *J. Food Sci.* 53: 411.
- Chalupa, W. 1975. Amino Acids Nutrition in Growing Cattle. In: *Tracers Studies on NPN for Ruminant II.* Int. Atomic Energy Agency. Vienna, Austria. pp. 175-195.
- Chapinal, N., A.M. de Passillé, M. Pastell, L. Hänninen, L. Munksgaard, and J. Rushen. 2011. Measurement of acceleration while walking as an

- automated method for gait assessment in dairy cattle. *Journal of Dairy Science*. 94(6): 2895–2901. DOI: 10.3168/jds.2010-3882.
- Cheeke PR. 1998. *Applied Animal Nutrition*. Volume ke-2, Feed and Feeding. New Jersey (USA): Prentice Hall, Upper Saddle River.
- Chen, X.B., Y.K. Chen, M.F. Franklin, E.R. Ørskov, and W.J. Shand. 1992. The effect of feed intake and body weight on purine derivative excretion and microbial protein supply in sheep. *J. Anim. Sci.* 70: 1534–1542.
- Chen, X.B., A.T. Meija, D.J. Kyle, and E.R. Ørskov. 1995. Evaluation of the use of the purine derivat: creatinine ratio in spot urine and plasma samplings as an index of microbial protein supply in ruminants: Studies in sheep. *J. Agri. Sci. Camb.* 125: 137–143.
- Chen, X.B. and Ørskov. 2003. Research on urinary excretion of purine derivates in ruminants: past, present and future. Review. International feed resources unit. Maculay land use research institute, Craigiebuckler Aberdeen, UK.
- Cherian, G. 2019. *A Guide to the Principles of Animal Nutrition*. Oregon State University. <https://open.oregonstate.edu/animalnutrition/>
- Chesson, A. (1993). Feed enzymes. *Animal Feed Science and Technology*. 45(1): 65–79. DOI: 10.1016/0377-8401(93)90072-r.
- Chimonyo, M., N.T. Kusina, H. Hamudikuwanda, and O. Nyoni. 2000. Reproductive performance and body weight changes in draught cows in a smallholder semi-arid farming area of Zimbabwe. *Trop. Anim. Health. Prod.* 32(6): 405–415. DOI: 10.1023/a:1005285720169.
- Chizzolini, R., E. Zanardi, V. Dorigoni, and S. Ghidini. 1999. Calorific value and cholesterol content of normal and low-fat meat and meat products. *Trends Food Sci.* 10:119-128.
- Chladek G, Machal L, Hibner A, Nowalkowski P. 2004. The relationship between bloodplasma cholesterol and milk production parameters in Czech Pied cows-preliminary results. *Electronic J. Polish Agric. Univ.* <http://www.ejpau.media.pl/volume7/issue2/animal/art-02-html>.
- Choi, B., K. Ryu, J. Bong, J. Lee, Y. Choy, S. Son, O. Han and M. Baik. 2010. Comparison of steroid hormone concentrations and mRNA levels of steroidreceptor genes in longissimus dorsi muscle and subcutaneous fat between bulls and steers and association with carcass traits in Korean cattle. *Liv. Sci.* 131: 218–226.
- Choudhury, P.K., A.Z.M. Salem, R. Jena, S. Kumar, R. Singh, and A.K. Puniya. 2015. Rumen microbiology: an overview. *Rumen Microbiology: From Evolution to Revolution*. Springer. DOI: 10.1007/978-81-322-2401-3\_1.
- Christiyanto, M dan C.S. Utama. 2021. Kecernaan ADF, NDF, dan hemiselulosa secara *in vitro* pada litter fermentasi dengan lama peram yang berbeda. *Jurnal Ilmu Ternak*. 21(1):1-9. DOI: 10.24198/jit.v21i1.33221.
- Chung, C.S., W.K. Cho, I.S. Jang, S.S. Lee, and Y.H. Moon. 2017. Effects of feeding system on growth performance, plasma biochemical



components and hormones, and carcass characteristics in hanwoo steers. *Asian Austral J Anim Sci.* 30(8): 1117–23. DOI: 10.5713/ajas.17.0166.

Church, D.C. and W.G. Pond. 1988. *Basic Animal Nutrition on Feeding*. Edisi ke 3. John Wiley & Sons, New York. 13, 45, 117.

Cifuni, G. F., F. Napolitano, A. M. Riviezzzi, A. Braghieri, and A. Girolami. 2004. Fatty acid profile, cholesterol content and tenderness of meat from Podolian young bulls. *Meat Sci.* 67: 289–297.

Cooke, R.F., J.D. Arthington, D.B. Araujo, and G.C. Lamb. 2009. Effect of acclimation to human interaction on performance, temperament physiological responses, and pregnancy rates of Brahman-crossbreed cows. *J. Anim. Sci.* 87: 4125–4132. DOI: 10.2527/jas.2009-2021.

Crawford, D.M., J.T. Richeson, T.L. Perkins, and K.L. Samuelson. 2022. Feeding a high-energy finishing diet upon arrival to high-risk *feedlot* calves: effects on health, performance, ruminal pH, rumination, serum metabolites, and carcass traits. *Journal of Animal Science*, 100: 1–12. DOI: 10.1093/jas/skac194.

Crossland, W.L., C.M. Cagle, J.E. Sawyer, T.R. Callaway, and L.O. Tedeschi. 2019. Evaluation of active dried yeast in the diets of *feedlot* steers. II. Effects on rumen pH and liver health of *feedlot* steers1. *J. Anim. Sci.* 97(3): 1347–1363. DOI: 10.1093/jas/skz008.

Cruzen, S.M., Y.H. Kim, S.M. Lonergan, J.K. Grubbs, A.N. Fritchen, and E. Huff-Lonergan. 2015. Effect of early postmortem enhancement of calcium lactate/phosphate on quality attributes of beef round muscles under different packaging systems. *Meat Sci.* 101: 63 – 72.

Czerkawski, J.W. 1986. *An Introduction to Rumen Studies*. Pergamon Press.

Da Silva, G.S., A.S.C. Vêras, M. de A. Ferreira, W.M. Dutra Jr., M.L.M.W. Neves, E.J.O. Souza, F.F.R. de Carvalho, and D.M. de Lima Jr. 2015. Performance and carcass yield of crossbred dairy steers fed diets with different levels of concentrate. *Trop Anim Health Prod.* 47:1307–1312. DOI: 10.1007/s11250-015-0864-x.

Daigle, C.L., A.J. Mathias, E.E. Ridge, R. Gill, T.A. Wickersham, and J.E. Sawyer. 2018. Case study: effect of exercise programs during receiving in a commercial *feedlot* on behavior and productivity of Brahman crossbred calves: results from a commercial environment and a comparison to the research environment. *The Professional Animal Scientist.* 34(6): 653–663. DOI: 10.15232/pas.2018-01744.

Daniel, Y. Yustendi, dan Fawwarahli. 2023. The effect of fermentation time using *Aspergillus niger* and urea on nutritional levels of sago dry (*Metroxylon sp.*). *Jurnal Peternakan Lokal.* 5(1): 54–59.

Daud, M., Zulfan, dan Arismawan. 2017. Uji palatabilitas produk pakan wafer ransum komplet berbasis limbah ampas sagu. *Seminar Nasional Peternakan 3 tahun 2017*. Universitas Hasanuddin, Makassar. 150 – 156.

- Davies, H.L. 1982. Nutrition and Growth Manual. Editor Hal. Davies AUDP. Canberra. Hal 47-96.
- Dayyani, N., K. Karkudi, and A. Zakerian. 2013. Special rumen microbiology. *Int. J. Adv. Biom. Res.* 1: 1397–1402.
- De Ondarza, M.B., C.J. Sniffen, I. Dussert, E. Chevaux, J. Sullivan, and P. N. Walker. 2010. Case study: multiple-study analysis of the effect of live yeast on milk yield, milk component content and yield, and feed efficiency. *Prof Anim Sci.* 26: 661–666. DOI: 10.15232/s1080-7446(15)30664-1.
- Dempsey, M. E. 1974. Regulation of steroid biosynthesis. *Annu. Rev. Biochem.* 43:967-990.
- Desimone T.L., R.A. Acheson, D.R. Woerner, T.E. Engle, L.W. Douglas, and K.E. Belk. 2013. Nutrient analysis of the Beef Alternative Merchandising cuts. *Meat Science.* 93: 733-745.
- Devis, F.K., J.R. Leke, J. Laihad, and C. Sarajar. 2016. Penggunaan tepung limbah labu kuning dalam ransum terhadap penampilan produksi ayam ras petelur. *Jurnal Zootek.* 36: 342–352.
- Dewi, R.K., M.H. Bintoro, dan Sudradjat. 2016a. Karakter morfologi dan potensi produksi beberapa aksesori sagu (*Metroxylon spp.*) di Kabupaten Sorong Selatan. *J. Agron. Indonesia.* 44(1): 91–97.
- Dewi, A.M., I.B. N. Swacita, and N.K. Suwiti. 2016b. The effect of muscle type and longer storage to the nutrition value of bali cattle. *Buletin Veteriner Udayana.* 8: 135–144.
- Dewi, A.M.P., M.Y. Kusumaningrum, D.N. Edowai, Y. Pranoto, dan P. Darmadji. 2017. Ekstraksi dan karakterisasi selulosa dari limbah ampas sagu. *Prosiding SNST ke-8.* Semarang, Jawa Tengah.
- Dewi, E.N. 2017. Ekstraksi Pati dari Onggok Limbah Tapioka dengan Perlakuan Awal Sonikasi dan Metode Alkali. Tesis. Program Magister Bidang Keahlian Teknologi Proses, Jurusan Teknik Kimia, Fakultas Teknologi Industri, Institut Teknologi Sepuluh November, Surabaya.
- Dewrust, R.J., D.R. Davies, and R.J. Merry. 2000. Microbial protein supply from the rumen. *Anim. Feed Sci. Tech.* 85: 1–21.
- Dharmawan, N.S., I.G. Mahardika, N.N. Suryani, N.P.M. Andini dan A.K.S. Dewi. 2019. Parameter biokimia dan hematologi sapi Bali lepas sapih yang diberi ransum energi protein bertingkat. *Jurnal Veteriner.* 20(4): 558–565. DOI: 10.19087/jveteriner.2019.20.4.558.
- Dijkstra, J., J.M. Forbes, and J. France. 2005. Quantitative aspects of ruminant digestion and metabolism. 2<sup>nd</sup> ed. CABI Publishing. Edited by J. Dijkstra, J. M. Forbes, and J. France. ISBN: 0851998143. 1 – 10.
- Dijkstraa, J., J.L. Ellis, E. Kebreab, A.B. Strathe, S. López, J. France, and A. Banninke. 2012. Ruminant pH regulation and nutritional consequences of low pH. *Animal Feed Science and Technology.* 172: 22–33. DOI: 10.1016/j.anifeedsci.2011.12.005.

- Dijkstra, J., S. van Gastelen, K. Dieho, K. Nichols, and A. Bannink. 2020. Review: Rumen sensors: data and interpretation for key rumen metabolic processes. *Animal* 14(S1): s176–s186. DOI: 10.1017/S1751731119003112.
- Diki, R. 2008. Pengaruh heat stress terhadap performa sapi potong. Prosiding Seminar Nasional Sapi Potong. Palu.
- Dioksa, I.M.R., I.M. Mudita, dan A.A.P.P. Wibawa. 2015. Metabolit rumen sapi Bali yang diberikan ransum terfermentasi dengan inokulan yang diproduksi dari cairan rumen sapi Bali dan rayap. *Journal Peternakan Tropika*. 3(2): 386–40.
- Dokovic, R., Z. Ilic, V. Kurcubic, V. Doskovic, and B. Jasovic. 2010. Blood biochemical parameters and enzyme activity in beef cattle. *Acta Agric. Serb.* XV(29): 47–54.
- Doornenbal, H., A.K.W. Tong and N.L. Murray. 1988. Reference values of blood parameters in beef cattle of different ages and stages of lactation. *Can J Vet Res* 52: 99–105.
- Doyle, P.T., C. Devendra, and G.R. Pearce. 1986. Rice straw as a feed for ruminants. International Development Program of Australia Universities and colleges Ltd, Canberra. 57–77.
- Drackley, J.K. 2023. Effects of blood sample collection and preparation methods on concentrations of glucose and nonesterified fatty acids in dairy cattle. *JDS Communications*, 4. DOI: 10.3168/jdsc.2022-0355.
- Duckett, S.K., J.P.S. Neel, J.P. Fontenot, and W.M. Clapham. 2009. Effects of winter stocker growth rate and finishing system on: III. Tissue proximate, fatty acid, vitamin, and cholesterol content. *J. Anim. Sci.* 87: 2961–2970.
- Dunier, L., L. Jin, B. Smiley, M. Qi, W. Rutherford, Y. Wang, and T. McAllister. 2015. Impact of adding *Saccharomyces* strains on fermentation, aerobic stability, nutritive value, and select lactobacilli population in corn silage<sup>1</sup>. *J. Anim. Sci.* 93. DOI: 10.2527/jas.2014-8287.
- ECAN. 1986. Laboratory evaluation of farm grown forage. Expert Committee on Animal Nutrition In: Proc. Third ECAN Workshop. Winnipeg, Man., Agriculture Canada: 24–27.
- Ehara, H. 2015. Origin, Dispersal and Distribution. In: The sago palm: the food and environment challenges of the 21<sup>st</sup> century. The Society of Sago Palm Studies, Kyoto, Kyoto University Press, pp 1–30.
- Elghandour, M.M.Y., J.C.V. Chagoyan, A.Z.M. Salem, A.E. Kholif, J.S.M. Castaneda, L.M. Camacho, and M.A. Cerrillo-Soto. 2014. Effects of *saccharomyces cerevisiae* at direct addition or pre incubation on *in vitro* gas production kinetics and degradability of four fibrous feeds. *Ital J Anim Sci.* 13: 295–301. DOI: 10.4081/ijas.2014.3075.
- Elihasridas, M. Zain, R.W.S. Ningrat, Erpomen, E.M. Putri, and M. Makmur. 2023. *In vitro* nutrient digestibility and ruminal fermentation characteristics of ammoniated and fermented treatment of soaked and unsoaked *Cymbopogon nardus* waste. *International Journal of*

Veterinary Science. 12(3): 395–400. DOI:  
10.47278/journal.ijvs/2022.204.

- Elitok, B. 2012. Reference values for hematological and biochemical parameters in Saanen goats breeding in Afyonkarahisar Province. *Kocatepe Vet J.* 5(1): 7–11.
- Elliott, R.C. and W.D.C. Reed. 1964. Studies of protein requirements of ruminants. *Brit. J. Nutr.* 18: 519.
- Emkani, M., B. Oliete, and R. Saurel. 2022. Effect of lactic acid fermentation on legume protein Properties, a Review. *Fermentation.* 8(6). <https://doi.org/10.3390/fermentation8060244>.
- Enami, H.R. 2011. A review of using canola/rapeseed meal in aquaculture feeding. *JFAS.* 6(1): 22–36. DOI.10.3923/jfas.2011.22.36.
- Endres, M.I. and K. Schwartzkopf-Genswein. 2018. Overview of cattle production systems. *Advances in Cattle Welfare.* 1–26. DOI:10.1016/b978-0-08-100938-3.00001-2.
- Engle, T.E., V. Fellner, and J.W. Spears. 2001. Copper status, serum cholesterol, and milk fatty acid profile in Holstein cows fed varying concentrations of copper. *J Dairy Sci.* 84: 2308–2313.
- Eniolorunda, E. Fashina, and Aro. 2009. Adaptive physiological response to load time stress during transportation of cattle in Nigeria. *Journal of Archive Zootechnology.* 58(222): 223–230.
- Ensminger, M.E. 1991. *Animal Science.* 9<sup>th</sup> Ed. International. Publisher Inc., Illinois.
- Erdman, R.A. 1988. Dietary buffering requirement of lactating dairy cows. A Review. *J. Dairy Sci.* 71: 3246.
- Fahey, G.C. and L.L. Berger. 1988. Carbohydrate Nutrition of Ruminants. In: *The Ruminant Animal Digestive Physiology and Nutrition*, Church, D.C (ed). Prentice Hall, New Jersey. 269 – 295.
- Failla, M.L., T. Huo, and S.K. Thakkar. 2008. *In vitro* screening of relative bioaccessibility of carotenoids from foods. *Asia Pac. J. Clin. Nutr.* 17(Suppl1): 200–203.
- Fatonah, A.F., R. Priyanto, H. Nuraini, dan E.L. Aditia. 2023. Produktivitas dan nilai ternak sapi lokal serta kerbau di Pasar Tradisional. *Jurnal Agripet.* 23(1): 16–24.
- Favero, R., I.Y. Mizubuti, R.C. Gomes, E.L.A. Ribeiro, E.S. Pereira, O.P.P. Prado-Calixto, F.L. Massaro Júnior, and A.P.S. Santos. 2018. Relationships between residual feed intake and *feedlot* performance, profitability, and carcass traits in Brahman cattle. *Arq. Bras. Med. Vet. Zootec.* 70(2): 525–534.
- Ferreira, A.A., G. Maranatha, dan Y.U.L. Sobang. 2022. Pengaruh pemberian pakan komplit berbahan dasar lamtoro dan silase terhadap kadar kualitas darah sapi Bali jantan penggemukan. *Jurnal Peternakan Lahan Kering.* 4(3): 2303–2309.

- Fikar, S. dan D. Ruhyadi. 2010. Buku Pintar Beternak dan Berbisnis Sapi Potong. PT Agromedia Pustaka, Jakarta.
- Firdausi, A., T. Susilowati, M. Nasich, dan Kuswati. 2012. Pertambahan bobot badan harian sapi Brahman Cross pada bobot badan dan frame size yang berbeda. *Jurnal Ternak Tropika*. 13(1): 48–62.
- Firkins, J. L., Z. Yu, and M. Morrison. 2007. Ruminant nitrogen metabolism: Perspectives for integration of microbiology and nutrition for dairy. *J. Dairy Sci.* 90: E1–E16. DOI: 10.3168/jds.2006-518.
- Fisher, A.B. and S.S. Fong. 2014. Lignin biodegradation and industrial implications (Review). *AIMS Bioengineering*. 1(2): 92–112.
- Fitri, C.A. 2002. Perbandingan karkas dari beberapa bangsa sapi. *Agripet*. 3(1): 43–49.
- Flach M. 1997. Sago Palm. *Metroxylon sago Rottb.* Promoting the conservation and used of underutilized and neglected corps. 13. IPGRI. Rome, Italy.
- Flach, M. 2005. A simple growth model for sago palm. Molat ambuturus and it's implications for cultivation. Abstracts of the Eight International Sago Symposium in Jayapura, Indonesia. Japan Society for The Promotion Science.
- Forbes, J. M. 2007. Voluntary Food Intake and Diet Selection in Farm Animal. 2<sup>nd</sup> Ed. University of Leeds. London.
- Fortin, A., J.T. Reid, A.N. Maiga, D.W. Si, and G.H. Wellington. 1981. Effect of energy intake level and influence of breed and sex on the physical composio of the carcass of cattle. *J. Anim. Sci.* 51(2): 331–339.
- Frandsen, R.D., W.L. Wilke, and A.D. Fails. 2009. Anatomy and Physiology of Farm Animals, 7th ed. John Wiley & Sons, Iowa, USA.
- Gallo, A., F. Fancello, F. Ghilardelli, S. Zara, F. Foldi, and M. Spanghero. 2021. Effects of several lactic acid bacteria inoculants on fermentation and mycotoxins in corn silage. *Anim Feed Sci Technol.* 277. DOI: 10.1016/j.anifeedsci.2021.114962.
- Galyean, M.L. 1996. Protein levels in beef cattle finishing diets: industry application, university research, and systems results. *Journal of Animal Science*. 74(11): 2860. DOI: 10.2527/1996.74112860x.
- Geishauser, T., N. Linhart, A. Neidl, and A. Reimann. 2012. Factors associated with ruminal pH at herd level. *Journal of Dairy Sciece*. 95(8): 4556–4567. DOI: 10.3168/jds.2012-5380.
- Getahun, D., T. Alemneh, D. Akebereg, M. Getabalew, and D. Zewdie. 2019. Urea metabolism and recycling in ruminants. *Biomed J Sci & Tech Res*. 20(1): 14790–14796. DOI: 10.26717/BJSTR.2019.20.003401.
- Gillespie, R.J. 2006. Modern Livestock and Poultry Production. Delmar Publishers Inc. Unites State of America.
- Ginting, S.P. 2005. Sinkronisasi degradasi protein dan energi dalam rumen untuk memaksimalkan produksi protein mikroba. *Wartazoa*. 15(1): 1-10.



- Ginting, N. and E. Pase. 2018. Effect of incubation time of sago (*metroxylon sago*) waste by local microorganism "ginta" on ph, crude protein, and crude fiber content. IOP Conf. Series: Earth and Environmental Science. 130: 012022. DOI: 10.1088/1755-1315/130/1/012022.
- Gomes, R.C., S.L. Silva, M.E. Carvalho, F.M. Rezende, L.F.B. Pinto, M.H.A. Santana, T.R. Stella, F.V. Meirelles, P. Rossi Júnior, P.R. Leme, and J.B.S. Ferraz. 2013. Protein synthesis and degradation gene SNPs related to feed intake, feed efficiency, growth, and ultrasound carcass traits in Nellore cattle. J. Gen. and Mol. Res. 12: 2923–2936.
- Goopy, J.P and R.S. Hegarty. 2004. Repeatability of methane production in cattle fed concentrate and forage diets. J. Anim. Feed Sci. 13: 75–78.
- Green, J.C., J.P. Meyer, A.M. Williams, E.M. Newsom, D.H. Keisler, and M.C. Lucy. 2012. Pregnancy development from day 28 to 42 of gestation in postpartum Holstein cows that were either milked (lactating) or not milked (not lactating) after calving. Reproduction. 143: 699–711.
- Gregory, N.G. dan T. Drandin. 1998. Animal Welfare and Meat Science. CABI Publishing, New York, N.Y.
- Grum, D.E., J.K. Drackley, L.R. Hansen and J.D. Cremin. 1996. Production, digestion and hepatic metabolism of dairy cows fed increased energy from fat or concentrate. J. Dairy Sci. 79: 1836–1840.
- Grunwaldt, E.G., J.C. Guevara, O.R. Esteves, A. Vicente, H. Rousselle, D. Alcuten, D. Aguerregaray, dan C.R. Stasi. 2005. Biochemical and haematological measurements in beef cattle in Mendoza plain rangelands (Argentina). Trop. Anim. Health Pro. 37: 527–540.
- Guedon, L., J. Saumande, F. Dupron, C. Couquet, and B. Desbals. 1999. Serum cholesterol and triglycerides in postpartum beef cows and their relationship to the resumption of ovulation. Theriogenology. 51(7): 1405–1415.
- Guerrero, A., M.V. Valero, M.M. Campo, and C. Sanudo. 2013. Some factors that affect ruminant meat quality: from the farm to the fork. Review. Maringá, V. 35(4): 335–347. DOI: 10.4025/actascianimsci.v35i4.21756.
- Gunawan. 2008. Petunjuk Pemeliharaan Sapi Brahman Cross. BPTU Sembawa, Direktorat Jenderal Peternakan dan Kesehatan Hewan, Palembang.
- Hadi, P.U. dan N. Ilham. 2000. Peluang Pengembangan Usaha Pembibitan Ternak Sapi Potong di Indonesia dalam rangka Swasembada Daging. PSE, Bogor.
- Hadiano, I. 2020. Kajian Penggunaan Sinamaldehyd Kulit Kayu Manis (*Cinnamomum burmanni* Ness ex Bl.) untuk Proteksi Protein Pakan secara *In vitro*. Tesis. Pascasarjana. Fakultas Peternakan. Universitas Gadjah Mada. Yogyakarta.
- Hafid, H.H., dan R. Priyanto. 2006. Pengaruh konformasi *butt shape* terhadap karakteristik karkas sapi Brahman Cross pada beberapa klasifikasi jenis kelamin. Media Peternakan. 29(3): 162–168.

- Hall, M.B. dan G.B. Huntington. 2008. Nutrient Synchrony: Sound in Theory, Elusive in Practice. *J Anim Sci.* 86(E. Suppl.): E287-E292.
- Hall, J.B. and S. Silver. 2009. Digestive System of the Cow. Virginia Cooperative Extension. Publication 400-010. 1-4.
- Hamdani, M.D.I., A. Husni, M.T. Fajar, dan Sulastri. 2018. Perbandingan performa kuantitatif sapi Brahman Cross di peternakan rakyat dengan di perusahaan komersial pada umur 18-24 bulan. *Jurnal Ilmu dan Teknologi Peternakan Tropis*, 5(3): 25–30.
- Hammond, A.C., E.J. Bowers, W.E. Kunkle, P.C. Genho, S.A. Moore, C.E. Crosby, and K.H. Ramsay. 1994. Use of blood urea nitrogen concentration to determine time and level of protein supplementation in wintering cows. *The Professional Animal Scientist*, 10(1):24–31. DOI:10.15232/s1080-7446(15)31923-9.
- Hammond, A.C. 2006. Update on BUN and MUN as a Guide for Protein Supplementation in Cattle. US Department of Agriculture, Florida.
- Hansen, S.L., J.W. Spears, K.E. Lloyd, and C.S. Whisnant. 2006. Growth, reproductive performance, and manganese status of heifers fed varying concentrations of manganese. *Journal of Animal Science*. 84(12): 3375–3380. DOI: 10.2527/jas.2005-667.
- Hapsari, S.S., Suryahadi, and H.A. Sukria. 2016. Improvement on the nutritive quality of napier grass silage through inoculation of *Lactobacillus plantarum* and formic acid. *Media Peternak*. 39(2): 125–133. DOI: 10.5398/medpet.2016.39.2.125.
- Hardjosubroto, W. 1994. Aplikasi Pemulia Biakan Ternak di Lapangan. PT Gramedia Widiasarana Indonesia, Jakarta.
- Harmon, D.L., R.M. Yamka, and N.A. Elam. 2004. Factors affecting intestinal starch digestion in ruminants: A review. *Canadian Journal of Animal Science*. 8(3): 309–318. DOI: 10.4141/A03-077.
- Hartadi, H., S. Reksohadiprodjo, and A.D. Tillman. 2005. Indonesian Feed Composition Tables. Gadjah Mada University Press, Yogyakarta.
- Hartati, Sumadi, dan T. Hartatik. 2009. Identifikasi karakteristik genetik sapi Peranakan Ongole di peternakan rakyat. *Buletin Peternakan*. 33(2): 64–73.
- Harun, A.Y. and K. Sali. 2019. Factors affecting rumen microbial protein synthesis: A review. *Vet Med Open J.* 4(1): 27–35. DOI:10.17140/VMOJ-4–133.
- Haryanto, B. 2009. Inovasi teknologi pakan ternak dalam sistem integrasi tanaman-ternak bebas limbah mendukung upaya peningkatan produksi daging. *Jurnal Pengembangan Inovasi Pertanian*. 2(3): 163–176.
- Hashaider, P. 2007. How To Raise Cattle. USA. Voyageur Press.
- Hasnudi, N. Ginting, U. Hasanah, dan P. Patriani. 2019. Pengelolaan Ternak Sapi Potong. CV. Anugerah Pangeran Jaya, Medan.

- Hau, D.K., N.G.F. Katipana, J. Nulik, A. Pohan, O.T. Lailogo, and C. Liem. 2004. Pengaruh probiotik terhadap retensi nitrogen dan energi serta pertumbuhan ternak sapi Bali Timor jantan. Pros. Seminar Nasional Teknologi Peternakan dan Veteriner. pp.4-5. Bogor .
- Hau, D.K., Nenobais, Mariana, J. Nulik, and N.G. Katipana, 2005. Pengaruh probiotik terhadap kemampuan cerna mikroba rumen sapi Bali. Seminar Nasional Teknologi Peternakan dan Veteriner. pp. 171-180.
- Hauser, H., and G. Poupart. 2005. Lipid structure. Page 1-51 In The Structure of Biological Membranes, 2<sup>nd</sup> ed. P. L. Yeagle, ed. CRC Press, Boca Raton, FL.
- Hawari, H. and Chin FY. 1985. Palmbeef from PKC. Farmers Guidance No. 1, Dept. Vet. Services Malaysia. (MY).
- Herdian, H., L. Istiqomah, A. Febrisiantosa, dan D. Setiabudi. 011. Pengaruh penambahan daun *Morinda citrifolia* sebagai sumber saponin terhadap karakteristik fermentasi, defaunasi protozoa, produksi Gas dan metana cairan rumen secara *in vitro*. JITV. 16(2): 98-103.
- Hernández, J., C. Castillo, J. Méndez, V. Pereira, P. Vázquez, M. López Alonso, O. Vilariño, and J.L. Benedito. 2011. The influence of chemical form on the effects of supplementary malate on serum metabolites and enzymes in finishing bull calves. Livestock Science Volume, 137(1–3): 260–263.
- Hernando, D., D. Septinova, dan K. Adhianto. 2015. Kadar air dan total mikroba pada daging sapi di tempat pemotongan hewan (TPH) Bandar Lampung. Jurnal Ilmiah Peternakan Terpadu, 3(1): 61–67.
- Herviyanto, D., Kuswati, H. Nugroho dan T. Susilawati. 2015. Weight and length of Brahman Cross steer carcass at different butt shape. <https://fapet.ub.ac.id/wp-content/uploads/2015/04/BOBOT-DAN-PANJANG-KARKAS-SAPI-BRAHMAN-CROSS-STEER-PADA-BUTT-SHAPE-BERBEDA.pdf>.
- Hess, B.W., S.L. Lake, E.J. Scholljegerdes, T.R. Weston, V. Nayigihugu, J.D.C. Molee, and G.E. Mosss. 2005. Nutritional controls of beef cow reproduction. J. Anim. Sci. 83: 90–106.
- Hidayah, N. 2016. Pemanfaatan senyawa metabolit sekunder tanaman (tanin dan saponin) dalam mengurangi emisi metan ternak ruminansia. Jurnal Sain Peternakan Indonesia. 11(2): 89-98.
- Hidayat, M.A., Kuswati, dan T. Susilawati. 2015. Pengaruh lama istirahat terhadap karakteristik karkas dan kualitas daging sapi Brahman Cross steer. J. Ilmu-Ilmu Peternakan. 25(2): 71–79.
- Hilakore, M.A., Suryadi., K. Wiryaman dan D. Mangunwijaya. 2013. Peningkatan kadar protein putak melalui fermentasi oleh kapang *Trichoderma Reesei*. Jurnal Veteriner. 1411–8327.
- Holmes, J.H.G. and L.J. Lambourne. 1970. The relation between plasma free fatty acid concentration and the digestible energy intake of cattle. Resmrch in Veterinary Science. 11: 27-36.

- Houghton, D.R., R.N. Smith, and H.O.W. Eggins. 1987. *Biodeterioration* 7<sup>th</sup> Edition, Elsevier, Appl. Sci London and New York.
- Hristov, A. N., M. Vander Pol, M. Agle, S. Zaman, C. Schneider, P. Ndegwa, V.K. Vadella, K. Johnson, K.J. Shingfield., and S.K.R. Karnati. 2009. Effect of lauric acid and coconut oil on ruminal fermentation, digestion, ammonia losses from manure, and milk fatty Acid composition in lactating cows. *J. Dairy Sci.* 92(11): 5561–5582.
- Hu, C., L. Liu, and S. Yang. 2012. Protein enrichment, cellulase production and *in vitro* digestion improvement of pangolagrass with solid state fermentation. *J. Microbiol. Immunol. Infect.* 45(1): 7–14.
- Hu, Z., H. Niu, Q. Tong, J. Chang, J. Yu, S. Li, S. Zhang, and D. Ma. 2020. The microbiota dynamics of alfalfa silage during ensiling and after air exposure, and the metabolomics after air exposure are Affected by *Lactobacillus casei* and cellulase Addition. *Front. Microbiol.* 11: 519121. DOI: 10.3389/fmicb.2020.519121.
- Hua, D., W.H. Hendriks, B. Xiong, and W.F. Pellikaan. 2022. Starch and cellulose degradation in the rumen and applications of metagenomics on ruminal microorganisms. *Animals.* 12: 3020. DOI: 10.3390/ani12213020.
- Huff-Loneragan, E. (n.d.). 2010. *Chemistry and Biochemistry of Meat. Handbook of Meat Processing*, 3–24. DOI: 10.1002/9780813820897.ch1.
- Hume, I.D. 1982. *Digestion and Protein Microbalism in a Course Manual in Nutrition and Growth.* Australian Universities. Australian Vice Chancellors Committee. Sidney.
- Husain, F., E.E. Rahmawati, dan W.S. Nugroho. 2021. Estimasi kadar air daging sapi berdasarkan luas area jejak air daging. *Jurnal Sain Veteriner.* 39(2): 178–184. DOI: 10.22146/jsv.62386.
- Hutchinson, I.A., A.A. Hennessy, S.M. Waters, R.J. Dewhurst, A.C.O. Evans, P. Lonergan P, and S.T. Butler. 2012. Effect of supplementation with different fat sources on the mechanisms involved in reproductive performance in lactating dairy cattle. *Theriogenology.* 78(1): 12–27.
- Ibrahim, R.M., D.E. Goll, J.A. Marchello, G.C. Duff, V.F. Thompson, S.W. Mares, and H.A. Ahmad. 2008. Effect of two dietary concentrate levels on tenderness, calpain and calpastatin activities, and carcass merit in Waguli and Brahman steers. *J Anim Sci.* 86(6): 1426-1433.
- Ikhlas, R., D. Kurnia dan P. Anwar. 2020. Hubungan Panjang badan dan Panjang kelangkang dengan persentase karkas sapi Brahman Cross (BX) jantan di rumah potong hewan kota Pekanbaru. *Jurnal of Animan Center.* 2(2): 19–22.
- Ili, M.E., H.D.J. Lalel dan A.E. Manu. 2016. Pengaruh aras energi pakan dan skor kondisi tubuh terhadap produksi dan kualitas fisik daging ternak sapi Bali betina afkir. *Jurnal Peternakan Indonesia.* 18(1): 1–12.
- Indrayati, S., Y.M. Naru, Periadnadi dan Nurmiati. 2017. Pemanfaatan ampas sagu (*Metroxylon Sagu Rottboel.*) hasil fermentasi *Trichoderma harzianum* rifai dan penambahan mikroflora alami pencernaan ayam

- broiler dalam pembuatan pakan ayam konsentrat berprobiotik. Jurnal Bibiet 2(2): 68-74.
- Irsyammawati, A., S. Chuzaemi, dan Hartutik. 2011. Penggunaan silase pakan lengkap berbasis batang tebu terhadap konsumsi, retensi N, estimasi sintesis protein mikroba rumen dan performan sapi PFH jantan. JIIIPB. 21(1): 6–15.
- James, O. 1980. History and development of zebu cattle in the united states. J. Anim Sci. 50(6).
- Jamhari. 1995. Karakteristik fisik dan komposisi kimia daging sapi Brahman Cross yang dipotong pada dua macam bobot potong dan umur. Buletin Peternakan, 19.
- Jatkauskas, J. and V. Vrotniaken. 2007. Effect of *L-plantarum*, *Pediococcus acidilactici*, *Enterococcus faecium* and *L. lactis* microbial supplementation of grass silage on the fermentation characteristics in the rumen of dairy cows. Vet Zootec. 40: 29–34.
- Jayanegara, A. and A. Sofyan. 2008. Determination of some forage tannery activity *in vitro* using 'Hohenheim Gas Test' with polyethylene glycol as a determinant. Med. Pet. 31: 44–52.
- Jorritsma, R., M.L. César, J.T. Hermans, C.L. Kruitwagen, P.L. Vos, T.A. Kruip. 2004. Effects of Non-esterified fatty acids on bovine granulosa cells and developmental potential of oocytes *in vitro*. Anim. Reprod. Sci. 81: 225–235.
- Kallau, N.H.G. 2014. Evaluation of microbiological and organoleptic of beef cattle se'i with treatment of liquid smoke. Jurnal Kajian Veteriner. 2(1): 65–77.
- Kamra, D.N. 2005. Rumen microbial ecosystem. Current Science. 89(1): 124–135.
- Kandasamy, S., B. Dananjeyan, and K. Krisnamurthy. 2013. Potential of continuous and intermittent aeration for sago wastewater treatment. The Ecoscan. An International Biannual Journal of Environmental Sciences. 7(3&4): 129–132.
- Kandeepan, G., S. Biswas and R.S. Rajkumar. 2009. Buffalo as A Potential Food Animal. Int.J. Livestock Production. 1(1): 001–005.
- Kang, S. and M. Wanapat. 2013. Using plant source as a buffering agent to manipulating rumen fermentation in an *in vitro* gas production system. Asian Australas. J. Anim. Sci. 26: 1424–1436.
- Kang, S., M. Wanapat, and A. Cherdthorng. 2014. Effect of banana flower powder supplementation as a rumen buffer on rumen fermentation efficiency and nutrient digestibility in dairy steers fed a high-concentrate diet. Anim. Feed Sci. 196: 32–41.
- Karasov, W.H. and A.E. Douglas. 2013. Comparative digestive physiology. Compr Physiol. 3(2): 741–783. DOI: 10.1002/cphy.c110054.
- Karolyi, D., M. Đikić, K. Salajpal, V.Č. Čurik, and I. Jurić. 2006. Carcass traits of baby beef Simmental cattle. Originalni Znanstveni Rad. 7: 346–350.



- Keane, M.G. 2011. Ranking of sire breeds and beef cross breeding of dairy and beef cows. Teagasc. Grange Beef Research Centre. Occasional Series No. 9.
- Kearl, L.C. 1982. Nutrient Requirments of Ruminants in Developing Countries. International Feedstuff Institute Utah Agricultural Experiment Station, Utah State University, Logan, Utah, U.S.A.
- Keidane, D., and E. Birgele. 2003. The efficacy of feed on the intra ruminal and intra abomasal pH dynamics in goats. Vet. ir Zootech. 22(44): 58–61.
- Kendall C, C. Leonardi, P.C. Hoffman, and D.K. Combs. 2009. Intake and milk production of cows fed diets that differed in dietary neutral detergent fiber and neutral detergent fiber digestibility. J Dairy Sci. 92(1): 313–323.
- Kendran, S., I.M. Damriyasa, N.S. Dharmawan, I.B.K. Ardana, dan L.D. Anggreni. 2012. Profil kimia klinik darah sapi Bali. Jurnal Veteriner. 13(4): 410–415.
- Keshan, J. and U.B. Singh. 1980. realtionship between nitrogen intake and excretion in cattle and buffaloes fed different fodders. Indian, J. Anim. Sci. 50: 128–130.
- Khalid, M.F., M.A. Shahzad, M. Sarwar, A.U. Rehman, M. Sharif, and N. Mukhtar. 2011. Probiotics and lamb performance: a review. AfrJ Agric Res. 6(23): 5198–5203.
- Khairunnisa, S., N. Hilmia, S. Novelina, D. Rahmat, dan M.F. Ulum. 2019. Ultrasound Imaging to Estimate Carcass Quality of Pasundan Cattle Based on Body Condition Score. Laporan Penelitian. Fakultas Kedokteran Hewan, Fakultas Kedokteran Hewan, IPB University, Bogor, Indonesia.
- Khasrad, Sarbaini, Arfa`I, dan Rusdimansyah. 2016. Perbandingan kualitas kimia (kadar air, kadar protein dan kadar lemak) otot biceps femoris pada beberapa bangsa sapi. Seminar Nasional Inovasi IPTEKS Perguruan Tinggi Untuk Meningkatkan Kesejahteraan Masyarakat. 366–371.
- Khasrad, Sarbaini, Arfa`I, and Rusdimansyah. 2017. Effect of cattle breeds on the meat quality of longissimus dorsi muscles. Pak J Nutr. 16: 164–167.
- Kim, Y.H.B., M. Frandsen, and K. Rosenvold. 2011. Effect of ageing prior to freezing on colour stability of ovine longissimus muscle. Meat Science. 88(3): 332–337. DOI: 10.1016/j.meatsci.2010.12.020.
- Kim, S.C., A.T. Adesogan, dan J.H. Shin. 2012. Effects of dietary addition of wormwood (*Artemisia Montana Pampan*) silage on growth performance, carcass characteristics and muscle fatty acid profiles of beef cattle. Animal Feed Science and Technology. 177: 15–22.
- Kiran M., B.M. Naveena, K.S. Reddy, M. Shashikumar, V.R. Reddy, V.V. Kulkarni, S. Rapole, and T.H. More. 2015. Musle-specific variation in Buffalo (*Bubalus Bubalis*) meat texture: biochemical, ultrastructural and proteome charaterization. J. Texture studies. 46: 254–261. DOI: 10.1111/jtxs.12123.

- Koknaroglu, H., D.D. Loy, D.E. Wilson, M.P. Hoffman, and J.D. Lawrence. 2005. Factors affecting beef cattle performance and profitability. *The Professional Animal Scientist*. 21: 286 – 296.
- Komar. 1984. *Tehnologi Pengolahan Jerami Padi sebagai Makanan Ternak*. Cetakan ke-1. Yayasan Dian Grabuta Indonesia.
- Kondo, M., K. Shimizu, A. Jayanegara, T. Mishima, H. Matsui, S. Karita, M. Goto, and T. Fujihara. 2015. Changes in nutrient composition and *in vitro* ruminal fermentation of total mixed ration silage stored at different temperatures and periods. *Journal of the Science of Food and Agriculture*. 96(4): 1175–1180. DOI: 10.1002/jsfa.7200
- Kozloski, G. V., C.J. Härter, F. Hentz, S.C. de Ávila, T. Orlandi, and C.M. Stefanello. 2012. Intake, digestibility and nutrients supply to wethers fed ryegrass and intraruminally infused with levels of *Acacia mearnsii* tannin extract. *Small Rumin. Res.* 106(2-3): 125–130.
- Krause, D.O., S.E. Denman, R.I. Mackie, M. Morrison, A.L. Rae, G.T. Attwood, and C.S. McSweeney. 2003. Opportunities to improve fiber degradation in the rumen: Microbiology, ecology, and genomics. *FEMS Microbiol Rev.* 27(5): 663–693. DOI: 10.1016/S0168-6445(03)00072-X.
- Kumar, M., V. Kumar, D. Roy, R. Kushwara, and S. Vaiswani. 2014. Application of herbal feed additives in animal nutrition-a review. *International Journal of Livestock Research*. 4(9): 1–8. DOI: 10.5455/ijlr.20141205105218.
- Kung, L. and R. Shaver. 2001. Interpretation and use of silage fermentation analysis reports. *Focus Forage*. 3(13): 1–5.
- Kung, L., R.D. Shaver, R.J. Grant, and R. J. Schmidt. 2018. Silage review: Interpretation of chemical, microbial, and organoleptic components of silages. *J Dairy Sci.* 101(5): 4020–4033. DOI: 10.3168/jds.2017-13909.
- Kuntoro, B., R.R.A. Maheswari, dan H. Nurain. 2013. Mutu fisik dan mikrobiologi daging sapi asal rumah potong hewan (RPH) kota pekanbaru. *J Peter* 10(1): 1–8.
- Kustantinah, I.S.A. 2012. *Pengukuran Kualitas Pakan Sapi*. PT. Citra Aji Parama. Yogyakarta.
- Kusuma, G.P.A.W., K.A. Nocianitri, dan I.D.P.K. Pratiwi. 2020. Pengaruh lama fermentasi terhadap karakteristik fermented rice drink sebagai minuman probiotik dengan isolat *Lactobacillus sp.*F213. *Jurnal Itepa*. 9(2): 181–192.
- Kuswati. 2014. *Karakteristik Karkas Dan Kualitas Daging Sapi Hasil Penggemukan Dengan Penambahan Carcass Modifier Pada Lama Penggemukan dan Jenis Kelamin Berbeda*. Disertasi Doktor. Universitas Brawijaya, Malang.
- Kuswati, Kusmartono, T. Susilawati, D. Rosyidi, dan A. Agus. 2014. Carcas characteristics of Brahman Crossbreed cattle in Indonesia *feedlot*. *J. Agricultural and Veterinary Sciences*. 7: 19–24.

- Kuswati, A. Muhaimin, W.A. Septian, and T. Susilawati. 2022. Carcass and wholesalecut production of Brahman Cross (BX) heifer. *Jurnal Ilmu dan Teknologi Hasil Ternak (JITEK)*. 17(3): 207–215. DOI: 10.21776/ub.jitek.2022.017.03.7.
- Lai, J.C., W.A.W.A. Rahmana, and W.Y. Toh. 2013. Characterisation of sago pith waste and its composites. *Industrial Crops and Products*. 45: 319–326. [Http://dx.doi.org/10.1016/j.indcrop.2012.12.046](http://dx.doi.org/10.1016/j.indcrop.2012.12.046).
- Lambe, N.R., D.W. Ross, E.A. Navajas, J.J. Hyslop, N. Prieto, C. Craigie, L. Bunger, G. Simm, and R. Roehe. 2010. The prediction of carcass composition and tissue distribution in beef cattle using ultrasound scanning at the start and/or end of the finishing period. *Livestock Science*. 131:193–202.
- Lamid, M. 2010. VFA concentration and acetate, propionate, butyrate molar proporsions rumen of ongole grade cattle with ammoniation rice straw, soybean Straw and rice straw. *Veterinaria Medika*. 3(3): 165 – 168.
- Landete, J.M., J.A. Curiel, H. Rodri'guez, B. de las Rivas, and R. Mun'oz. 2008. Study of the inhibitory activity of phenolic compounds found in olive products and their degradation by *Lactobacillus plantarum* strains. *Food Chem*. 107: 320–326. DOI: 10.1016/j.foodchem.2007.08.043.
- Lani, N., A. Husaini, N.S. Ngieng, K.S. Lee, K.A.A. Rahim, H.A. Roslan, and Y. Esa. 2021. Solid substrate fermentation of sago waste and its evaluation as feed ingredient for red Hybrid Tilapia. *Malays. Appl. Biol*. 50(1): 85–94.
- Lardy, G., V. Anderson, C. Dahlen, and Z. Carlson. 2022. Alternative Feeds for Ruminants. NDSU Extension, North Dakota.
- Laporte-Uribe, J.A. 2019. Rumen CO<sub>2</sub> species equilibrium might influence performance and be a factor in the pathogenesis of subacute ruminal acidosis. *Transl. Anim. Sci*. 3: 1081–1098. DOI: 10.1093/tas/txz144
- Lara, E.C., F.C. Basso, F.B. de Assis, F.A. Souza, T.T. Berchielli, and R.A. Reis. 2015. Changes in the nutritive value and aerobic stability of corn silages inoculated with *Bacillus subtilis* alone or combined with *Lactobacillus plantarum*. *Animal Production Science*. 56(11). DOI: 10.1071/AN14686.
- Lasley, J.F. 1981. Beef cattle Production. Englewoord Cliffs, New Jersey.
- Latimer. K.S., J.R. Duncan, E.A. Mahafrey, and K.W. Phrasse. 2011. Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology. 5<sup>th</sup> ed. Iowa State Press. Iowa.
- Laven, R.A. and S.B. Drew. 1999. Dietary protein and the reproductiv performance of cow. *Veterinary Record*, 145: 687–695.
- Lawrence, T.E., R.L. Farrow., B.L. Zollinger, and K.S. Spivey. 2008. Technical note: The United States Departement of Agricultural Beef Yield Grade. *J.Anim.Sci*. 86: 1434–1438.
- Lawrie, R.A. 2003. Ilmu Daging. Penerjemah: Aminuddin Parakkasi. Penerbit Universitas Indonesia Press, Jakarta.

- Lawries, R.A. 2017. Lawrie's Meat Science. Eighth Edition. Wood Head Publishing. United Kingdom.
- Lee, M.R.F., R.J. Merry, D.R. Davies, J.M. Moorby, M.O. Humphreys, M.K. Theodorou, J.C. MacRae, and N.D. Scollan. 2003. Effect of increasing availability of water-soluble carbohydrates on *in vitro* rumen fermentation. *Animal Feed Science and Technology* 104: 59–70. DOI: 10.1016/S0377-8401(02)00319-X.
- Leroy, J.L., T. Vanholder, J.R. Delanghe, G. Opsomer, A. Van Soom, P.E. Bols, J. Dewulf, A. de Kruif. 2004. Metabolic changes in follicular fluid of the dominant follicle in high-yielding dairy cows early post partum. *Theriogenology*. 62: 1131–1143.
- Lesmana, A., N. Iriyanti, and T. Widiyastuti. 2020. NDF and ADF levels of cocoa pod husk gradually fermented using *Trichoderma viride* and *Saccharomyces cerevisiae*. *JITP*. 8(2): 57–63.
- Li, M.M., S. Ghimire, B.A. Wenner, R.A. Kohn, J.L. Firkins, B. Gill, M.D. Hanigan. 2022. Effects of acetate, propionate, and pH on volatile fatty acid thermodynamics in continuous cultures of ruminal contents. *Journal of Dairy Science*. 105(11): 8879–8897. DOI: 10.3168/jds.2022-22084.
- Li, P., Y.M. Liu, Y. Zhang, M. Panjang, Y. Guo, Z. Wang, X. Li, C. Zhang, X. Li, J. Dia, and G. Liu. 2013. Pengaruh asam lemak non-esterifikasi terhadap gen terkait metabolisme asam lemak pada hepatosit anak sapi yang dibiakkan secara *in vitro*. *Fisiologi dan Biokimia Seluler*. 32(5): 1509–1516. DOI: 10.1159/000356588.
- Liang, J.B., M. Matsumoto, and B.A. Young. 1994. Purine derivative excretion and ruminal microbial yield in Malaysian cattle and swamp buffalo. *Anim. Feed Sci. Technol.* 47: 189–199. DOI: 10.1016/0377-8401(94)90123-6.
- Lila, Z., N. Mohammed, T. Yasui, Y. Kurokawa, S. Kanda, and H. Itabashi. 2004. Effects of a twin strain of *Saccharomyces cerevisiae* live cells on mixed ruminal microorganism fermentation *in vitro*. *J Anim Sci*. 82(6): 1847–1854. DOI: 10.2527/2004.8261847x.
- Lim, L.W.K., H.H. Chung, H. Hussain, and K. Bujang. 2019. Sago palm (*Metroxylon sagu Rottb.*): now and beyond. *Pertan. J. Trop. Agric. Sci.* 42(2): 435-451.
- Lisitsyn, A.B., and K. Kozyrev. 2016. Researching of meat and fat colour and marbling in beef theory and practice of meat processing. The V.M. Gorbатов All-Russian Meat Research Institute, Moscow. DOI: 10.21323/2414-438X-2016-1-4-51-56.
- Liu, L., R. Zhang, Y. Deng, Y. Zhang, J. Xiao, F. Huang, W. Wen, and M. Zhang. 2017. Fermentation and complex enzyme hydrolysis enhance total phenolics and antioxidant activity of aqueous solution from rice bran pretreated by steaming with  $\alpha$ -amylase. *Food Chem.* 221: 636–643. DOI: 10.1016/j.foodchem.2016.11.126.
- Liu, S., M. Yuan, K. Kang, Z. Wang, B. Xue, G. Tian, H. Zou, A.M. Shah, X. Zhang, P. Yu, H. Wang and Q. Peng. 2021. Effects of dry yeast

supplementation on growth performance, rumen fermentation characteristics, slaughter performance and microbial communities in beef cattle. *Animal Biotechnology*. 1–11. DOI: 10.1080/10495398.2021.1878204.

Liyama, K. 2000. Structural characteristic of cell walls of forage grasses, Their nutritional evaluation for ruminant. *Proceedings of Japanese Society for Rumen Metabolism and Physiology*. Miyasaki. DOI: 10.5713/ajas.2001.862.

Louet, J.F., C. Le May, J.P. Pegorier, J.F. Decaux, and J. Girard. 2001. Regulation of liver carnitine palmitoyltransferase I gene expression by hormones and fatty acids. *Biochem Soc Trans* 29: 310–316.

Luan, S.E., P.K. Tahuk dan F.G. Bira. 2020. Profil glukosa dan urea darah sapi Bali jantan yang digemukkan dengan pakan komplit yang mengandung level protein kasar berbeda. *JAS* 5(4): 67–69. DOI: 10.32938/ja.v5i4.1048

Lubis DA. 1992. Ilmu Makanan Ternak. Cetakan Ulang. PT Pembangunan, Jakarta.

Luo, J., X. Sun, B.P. Cormack, and J.D. Boeke. 2018. Karyotype engineering by chromosome fusion leads to reproductive isolation in yeast. *Nature* 560: 392–6. DOI: 10.1038/s41586-018-0374-x.

Ma, Y., M.Z. Khan, Y. Liu, J. Xiao, X. Chen, S. Ji, Z. Cao, and S.Li. 2021. Analysis of nutrient composition, rumen degradation characteristics, and feeding value of chinese rye grass, barley grass, and naked oat straw. *Animals*. 11: 2486. DOI: 10.3390/ani11092486.

Machmüller, A., C.R. Soliva, and M. Kreuzer. 2003. Effect of coconut oil and defaunation treatment on methanogenesis in sheep. *Reprod. Nutr.Dev.* 43: 41–55.

Macrae, A.I., Whitaker, D.A., Burrough, E., Dowell, A., dan Kelly, J.M. 2006. Use of metabolic profile for the assessment of dietary adequacy in UK dairy herds. *Veterinary Record*. 159: 655–661.

Maggioni, D., J.A. Marques., P.P. Rotta, and Perroto, D. 2010. Animal performance and meat quality of crossbred young bull. *Meat. Sci.* 127: 176–182.

Maherawati, R.B. Lestari, dan Haryadi. 2011. Karakteristik pati dari batang sagu Kalimantan Barat pada tahap pertumbuhan yang berbeda. *Agritech*. 31(1): 9 – 13.

Mahyuddin, P. 2004. Compensatory growth in ruminants. *Animal Production*. 6(2): 125–135.

Mäkelä M., S. Galkin A. Hatakka, and T. Lundell. 2002. Production of organic acids and oxalate decarboxylase in lignin-degrading white rot fungi. *Enzyme Microb. Technol.* 30: 542–549.

Makkar, H.P.S. 2005. Use of nuclear and related technique to develop simple tannin assays for predicting and improving the safety and efficiency of



feeding ruminant on tanniniferous tree foliage: achievements, result implication and future research. *Anim. Feed Sci. Technol.* 122: 3–12.

Mancini, R.A. and R. Ramanathan. 2008. Sodium lactate influences myoglobin redox stability *in vitro*. *Meat Science.* 78(4): 529–532. DOI: 10.1016/j.meatsci.2007.07.010.

Manendar, R. 2010. Pengolahan limbah cair Rumah Potong Hewan (RPH) dengan metode fotokatalitik TiO<sub>2</sub>: pengaruh waktu kontak terhadap kualitas BOD<sub>5</sub>, COD, dan pH Efluen. IPB.

Manivanh, N., T.R. Preston and N.T. Thuy. 2016. Protein enrichment of cassava (*Manihot esculenta crantz*) root by fermentation with yeast, urea, and di-ammonium phosphate. *Livest Res Rural Dev.* 28(12). <http://www.lrrd.org/lrrd28/12/noup28222.html>.

Manurung, L. 2008. Analisis Ekonomi Uji Ransum Berbasis Pelepah Daun Sawit, Lumpur Sawit dan Jerami Padi Fermentasi dengan *Phanerochate Chyso sporium* Pada Sapi Peranakan Ongole. Departemen Peternakan Fakultas Pertanian Universitas Sumatra Utara, Medan.

Mao, H.L., M.H. Long, J.K. Wang, J.X. Liu, and I. Yoon. 2014. Effects of *Saccharomyces cerevisiae* fermentation product on *in vitro* fermentation and microbial communities of low-quality forages and mixed diets. *J Anim Sci* 91: 3291–3298. DOI: 10.2527/jas.2012-5851.

Maranatha, G., S. Fattah, J. Nulik, U.R. Lole, Y. Umbu, L. Sobang, and F.D. Samba. 2021. Profil metabolit darah sapi Bali jantan yang diberikan pakan hasil integrasi rumput-legume-tanaman pangan di lahan kering Pulau Timor. *Journal of Tropical Animal and Veterinary Science.* 11(2): 118–124.

Marawali, H.H., S. Ratnawaty, D. Kana Hau, dan J. Nulik. 2004 Kajian perubahan bobot badan dan pendapatan sapi potong kondisi petani di Kabupaten Timor Tengah Utara, Nusa Tenggara Timur. *Seminar Nasional Teknologi Peternakan dan Veteriner.* 140–147.

Mariyono dan N.H. Krishna. 2009. Pemanfaatan dan keterbatasan hasil ikutan pertanian serta strategi pemberian pakan berbasis limbah pertanian untuk sapi potong. *Wartazoa.* 19(1): 31–42.

Martaguri, I., Mirnawati dan H. Muis. 2011. Peningkatan kualitas ampas sagu melalui fermentasi sebagai bahan pakan ternak. *Jurnal Peternakan.* 8(1): 38–43.

Martawidjaja, M., B. Setiadi, dan S.S. Sitorus. 1999. Pengaruh tingkat protein–energi ransum terhadap kinerja produksi kambing Kacang muda. *Jurnal Ilmu Ternak dan Veteriner.* 4(3): 167–172.

Martin, C., D.P. Morgavi, and M. Doreau. 2010. Methane mitigation in ruminants: from microbe to the farm scale. *Animal.* 4(3): 351–365. DOI: 10.1017/S1751731109990620.

Martins, S., S.I. Mussatto, M.G. Avila, M.J. Saenz, C.N. Aguilar, and J.A. Teixeira. 2011. Bioactive phenolic compounds: Production and extraction by solid-state fermentation. A review. *Biotechnol. Adv.* 29: 365–373. DOI: 10.1016/j.biotechadv.2011.01.008.

- Mathius, I.W. dan A.P. Sinurat. 2001. Pemanfaatan bahan pakan inkonvensional untuk ternak. *Wartazoa*. 11: 20–31.
- Mathius, W., A. Djajanegara dan M. Rangkuti. 1982. Pengaruh perbedaan jumlah suplemen dedak, jagung, dan bungkil kelapa terhadap daya cerna bahan kering pada domba. *Prosiding Seminar Penelitian Peternakan*, Bogor.
- Mausar, N.F.B. 2018. Performa dan Efisiensi Ransum Berbasis Bungkil Inti Sawit (BIS) sebagai Substitusi Konsentrat Komersial dalam Ransum Sapi Brahman Cross (BX). *Karya Tulis Ilmiah*. IPB, Bogor.
- Mayulu, H., N.R. Fauziah, M.I. Haris, M. Christiyanto, and Sunarso. 2018. Digestibility value and fermentation level of local feed-based ration for sheep. *Animal Production*. 20(2): 95–102.
- Mayulu, H. 2019. *Teknologi Pakan Ruminansia*. PT. Rajagrafindo Persada, Depok.
- Mayulu, M., F. Rahayu, M. Christiyanto, M.I. Haris, T.P. Daru, and S.N. Rahmatullah. 2020. Evaluation of digestibility value and rumen fermentation kinetic of goat's local feed based ration. *European Journal of Molecular & Clinical Medicine*. 07(08): 3703–3711.
- Mbewe, M.R., V.R. Hamandishe, V.E. Imbayarwo-Chikosi, and B. Masunda. 2014. Nitrogen balance and rumen microbial protein synthesis in goats fed diets containing soaked and roasted *Mucuna* bean (*Mucuna pruriens*). *Online J. Anim. Feed Res*. 4: 06–09.
- McAllister, T., K. Beauchemin, A. Alazzez, J. Baah, R. Teather, and K. Stanford. 2011. The use of direct fed microbials to mitigate pathogens and enhance production in cattle. *Can J Anim Sci*. 91(2): 193–211. DOI: 10.4141/cjas10047.
- McDonald, P., A.R. Henderson, and S.J.E. Heron. 1991. *The Biochemistry of Silage* 2<sup>nd</sup> ed. Chalcombe Publication, Marlow, Buks, UK.
- McDonald, P., R.A. Edwards, J.F.D. Greenhalgh, C.A. Morgan, L.A. Sinclair, and R.G. Wilkinson. 2010. *Animal Nutrition*. 7<sup>th</sup> Edition. Pearson. Harlow, London.
- McDonald, P., J.F.D. Greenhalgh, C.A. Morgan, R.A. Edwards, L.A. Sinclair, and R.G. Wilkinson. 2021. *Animal Nutrition*. 8<sup>th</sup> Edition. Pearson Higher Education, London, England.
- McIntyre, B. 2004. *Yield of Saleable Meat in Beef Cattle*. Farmnote. Departement of Agriculture. Government of Western Australia. State of Western Australia. No. 26.
- McKlerman, B. 2007. *Muscle Scoring Beef Cattle*. NSW Departmen of Primary Industries. State of New South Wales
- McNeill, S. and M.E. Van Elswyk. 2012. Red meat in global nutrition. *Meat Science*. 92(3): 166–173. DOI: 10.1016/j.meatsci.2012.03.014.
- Menke, K.H. and H. Steingass. 1988. Estimation of the energetic feed value obtained from chemical analysis and *in vitro* gas production using rumen fluid. *Journal Animal Research and Development* 28: 7–55.

- Meyer, D.J. and J.W. Harvey. 2004. Veterinary Laboratory Medicine: Interpretation and Diagnosis. Third edition. Saunders, USA.
- Miguel, J.A., J. Ciria, B. Asenjo, H. Pargas, and D. Colmenarez. 2011. Chemical composition of meat in castrated male Brahman cattle in Venezuela. *Journal of Life Sciences*. 5: 562–568.
- Miksai, I.R., C.L. Buckley, and R.H. Poppenga. 2004. Detection non-esterified (free) fatty acids in bovine serum: Comparative evaluation of thwo methods, *J.Vet. Diagn Invest*. 16: 139–144.
- Minish, G.L. and D.G. Fox. 1979. Beef Production dan Management. Reston. Publishing Co Inc A Prentice Hall. Co., Reston, Virginia.
- Miresan, V., C. Răducu, and G. Stetca. 2006. The effect of ruminal defaunation in establishing the role of the infusores in ruminal physiology. *Buletinul USAMV-CN*. 63: 88–92.
- Mirawati, G. Ciptaan and Ferawati. 2019. Improving the quality and nutrient content of palm kernel cake through fermentation with *Bacillus subtilis*. *Livest Res Rural Dev*. 31(7). <http://www.lrrd.org/lrrd31/7/mirna31098.html>.
- Mirwandono, E., M. Sitepu, T.H. Wahyuni, Hasnudi, N. Ginting, G.A.W. Siregar, and I. Sembiring. 2018. Nutrition quality test of fermented waste vegetables by bioactivator local microorganisms (MOL) and effective microorganism (EM4). *IOP Conf. Series: Earth and Environmental Science* 122:012127. DOI :10.1088/1755-1315/122/1/012127.
- Mitruka, B.M. and H.M. Rawnsley. 1977. Clinical biochemical and hematological reference values in normal experimental animals. Masson Publishing Co., New York, USA.
- Miura, H., T. Hashimoto, Y. Kawanishi, H. Kawauchi, R. Inoue, N. Shoji, K. Saito, M. Sekiya, Y. Saito, J. Yasuda, C. Yonezawa, T. Endo, H. Kasuya, Y. Suzuki, Y. Kobayashi and S. Koike. 2021. Identification of the core rumen bacterial taxa and their population dynamics during the fattening period in Japanese Black cattle. *Animal Science Journal*, 92(1): DOI: 10.1111/asj.13601.
- Mizrahi, I., R.J. Wallace, and S. Moraïs. 2021. The rumen microbiome: balancing food security and environmental impacts. *Nat Rev Microbiol*. 19: 553–566. DOI: 10.1038/s41579-021-00543-6.
- Mohebbi-Fani, M., A. Omid, A. Mirzaei, S. Nazifi, and Kh. Nowroozi. 2019. A field study on glucose, Non-esterified fatty acids, beta-hydroxybutyrate and thyroid hormones in dairy cows during the breeding period in Fars province, Iran. *Iran J Vet Res*. 20(1): 55–59.
- Moorthy, S.N. 2004. Tropical sources of starch. Dalam: Eliasson, A.C. (ed). *Starch in Food: Structure, Function, and Application*. CRC Press, Baco Raton, Florida.
- Morales, R., C. Folch, S. Irujo, N. Teuber, and C.E. Realini. 2012. Nutritional quality of beef produced in Chile from different production systems. *Chilean Journal of Agricultural Research*. 72: 80–86.

- Moran, J. 2005. Tropical Dairy Farming: Feeding Management for Small Holder Dairy Farmers in the Humid Tropics. Landlinks Press, Australia. DOI: 10.1071/9780643093133.
- Morgan, J.H.L., F.S. Pickering, and G.C. Everitt. 1969. Some factors affecting yellow fat colour in cattle. Proceedings of the New Zealand Society of Animal Production. 29: 164–175.
- Mounier L., H. Dubroeuq, S. Andanson, and I. Veissier. 2006. Variations in meat pH of beef bulls in relation to conditions of transfer to slaughter and previous history of the animals. J Anim Sci. 84: 1567–1576.
- Muchenje, V., A. Hugo, K. Dzama, M. Chimonyo, P. E. Strydom, and J.G. Raats. 2009. Cholesterol levels and fatty acid profiles of beef from three cattle breeds raised on natural pasture. J. Food Comp. Anal. 22(4): 354–358.
- Muela, E., P. Monge, C. Sañudo, M.M. Campo, and J.A. Beltrán. 2015. Meat quality of lamb frozen stored up to 21 months: Instrumental analyses on thawed meat during display. Meat Science. 102: 35–40. DOI: 10.1016/j.meatsci.2014.12.003.
- Muhsafaat, L., H.A. Sukria, dan Suryahadi. 2015. Kualitas protein dan komposisi asam amino ampas sagu hasil fermentasi *Aspergillus niger* dengan penambahan urea dan zeolit. JIPI. 20(2): 124–130.
- Mulyono, A.M.W., M.N. Cahyanto, Zuprizal, dan Z. Bachruddin. 2009. Fermentasi onggok menggunakan mutan *Trichoderma* untuk produksi selulase. Agritech. 29(2): 53–58.
- Munzarolah., C.M.S. Soedarsono, E. Lestari, Purbowati dan A. Purnomoadi. 2010. Parameter darah sapi Jawa yang diberikan pakan dengan tingkat protein pakan yang berbeda. Prodising Seminar Nasional Teknologi Peternakan dan Veteriner. Pusat Penelitian dan Pengembangan Peternakan, Bogor. Hal. 243-248.
- Murray, C.F., L.J. Fick., E.A. Pajor., H.W. Barkema, M.D. Jelinski., and M.C. Windeyer. 2016. Calf management practices and associations with herd-level morbidity and mortality on beef cow-calf operations. Animal. 10(3): 468–477.
- Musita, N. 2018. Study of Physicochemical Properties of Large Industry and Small Industry. Majalah Teknologi Agro Industri (Tegi) 10(1).
- Musrifah, N., R. Utomo, dan Soeparno. 2011. Pengaruh penggunaan tongkol jagung dalam complete feed dan suplementasi undergraded protein terhadap pertambahan bobot badan dan kualitas daging pada sapi Peranakan Ongole. Buletin Peternakan. 35(3): 1–9.
- Nagaraja, T.G., C.J. Newbold, C.J. Van Nevel, and D.I. Demeyer. 1997. Manipulation of ruminal fermentation. Pages 523-632 in The Rumen Microbial Ecosystem. P.N. Hobson and C.S. Stewart, ed. Chapman and Hall, London, UK.
- Nair, J., S. Xu, B. Smiley, H. Yang, T.A. McAllister, and Y. Wang. 2019. Effects of inoculation of corn silage with *Lactobacillus spp.* or *Saccharomyces cerevisiae* alone or in combination on silage fermentation

- characteristics, nutrient digestibility, and growth performance of growing beef cattle. *J Anim Sci.* 97(12): 4974–4986. DOI: 10.1093/jas/skz333.
- Nasrullah, H.I., I.G. Mahardika., dan N.N. Suryani. 2018. Keseimbangan protein dan pertumbuhan sapi Bali dara yang diberikan ransum dengan kandungan energi dan protein yang berbeda. *Jurnal Peternakan Tropical.* 6: 552–564.
- Nastis, A.S. and J.C. Malechek. 1988. Estimating digestibility of oak browse diets for goats by *in vitro* techniques. *J. Range Manage.* 41(3): 255–258.
- Natsir, A., Harfiah, M.Z. Mide, R. Islamiyati, dan A.R.P. Nugroho. 2015. Estimasi asupan protein mikroba pada ternak kambing yang mendapat pakan lengkap dengan kandungan protein berbeda. *Seminar Nasional Peternakan Berkelanjutan 7.* Bandung, Indonesia.
- Nawaan, S. 2006. Daya tahan panas pada sapi Peranakan Simmental, Peranakan Ongole, dan sapi Pesisir. *Jurnal Peternakan Indonesia.* 11 (2): 158–166.
- Nazarni, R., D. Purnama, S. Umar, and H. Eni. 2016. The effect of fermentation on total phenolic, flavonoid, and tannin content and its relation to antibacterial activity in jaruk tigarun (*Crataeva nurvala*, Buch HAM). *IFRJ.* 23: 309–315.
- Ndlovu, T., M. Chimonyo, A.I. Okoh, V. Muchenje, K. Dzama, and J.G. Raat. 2007. Assessing the nutritional status of beef cattle: Current practices and future prospects. *African J. Biotech.* 6:24: 2727–2734.
- Neath, K.E., A.N. Del Barrio, R.M. Lapitan, J.R.V. Herrera, L.C. Cruz, T. Fujihara, S. Muroya, K. Chikuni, M. Hirabayashi, dan Y. Kanai. 2007. Perbedaan keempukan dan penurunan pH antara daging kerbau dan daging sapi selama penuaan postmortem. *Ilmu Daging.* 75(3): 499–505. DOI: 10.1016/j.meatsci.2006.08.016
- Neno, M. 2018. Korelasi bobot potong terhadap produksi karkas ternak sapi Bali di RPH Kota Kefamenanu. *Journal of Animal Science* 3(4): 60–62.
- Newbold, C.J., and E. Ramos-Morales. 2020. Review: Ruminant microbiome and microbial metabolome: effects of diet and ruminant host. *Animal.* 14(S1): s78–s86. DOI: 10.1017/s1751731119003252.
- Ngadiyono, N. 1995. Pertumbuhan serta Sifat-Sifat Karkas dan Daging Sapi Sumba Ongole, Brahman Cross dan Australian Commercial Cross yang Dipelihara secara Intensif pada berbagai Bobot Potong. Disertasi. Program Pascasarjana IPB, Bogor.
- Ngadiyono, N. dan E. Baliarti. 2001. Laju pertumbuhan dan produksi karkas sapi Peranakan Ongole jantan dengan penambahan probiotik Starbio pada pakannya. *Media Peternakan.* 24 (2): 63–67.
- Ngadiyono, N., G. Murdjito, A. Agus, dan U. Supriyana. 2008. Kinerja produksi sapi Peranakan Ongole jantan dengan pemberian dua jenis konsentrat yang berbeda. *J. Indon. Trop. Anim. Agric.* 33.



- Nocek, J. E. And J. B. Russell. 1988. Protein and energy as an integrated system. Relationship of ruminal protein and carbohydrate availability to microbial synthesis and milk production. *J. Dairy Sci.* 77: 2070-2107.
- Nogo, R.P., R. Darma and S.A. Syaiful. 2020. The development of kacang goat based on the feed of Metroxylon sago pulp. *IOP Conf. Ser.: Earth Environ. Sci.* 473 012038. DOI 10.1088/1755-1315/473/1/012038.
- NRC. 2000. Nutrient Requirements of Beef Cattle – Update 2000. 7th ed. Natl. Acad. Press, Washington, DC.
- Nuernberg, K., D. Dannenberger, G. Nuernberg, K. Ender, J. Voigt, N.D. Scollan, and R.I. Richardson. 2005. Effect of a grass-based and a concentrate feeding system on meat quality characteristics and fatty acid composition of longissimus muscle in different cattle breeds. *Livestock Production Science.* 94(1-2): 137–147. DOI: 10.1016/j.livprodsci.2004.11.036.
- Nugroho, A., E. Efendi, dan T. Novaria. 2015 Pengolahan limbah padat tapioka menjadi etanol dengan menggunakan *Aspergillus niger*, *Bacillus licheniformis* dan *Saccharomyces cerevisiae*. *JTL.* 7(1): 17–23.
- Nuswantara, L.K., E. Pangestu, Sunarso, and M. Christiyanto. 2021. Digestibility, fermentability and in-vitro production of microbial protein on complete feed based on fermented palm frond. *Jurnal Agripet.* 21(2): 192–199.
- Nurwantoro, V.P. Bintoro, A.M. Legowo dan A. Purnomoadi. 2012. Pengaruh metode pemberian pakan terhadap kualitas spesifik daging. *Jurnal Aplikasi Teknologi Pangan.* 1(3): 54–58.
- Obregón-Cano, S., R. Moreno-Rojas, A.M. Jurado-Millán, M.E. Cartea-González, and A. De Haro-Bailón. 2019. Analysis of the acid detergent fibre content in turnip greens and turnip tops (*Brassica rapa* L. *SubSp. Rapa*) by means of near-infrared reflectance. *Foods.* 8(9): 1–15. DOI: 10.3390/foods8090364.
- Oetzel, G.R. 2004. Monitoring and testing dairy herds for metabolic disease. *Vet. Clin. North Am.: Food Anim. Pract.* 20: 651–674.
- Ogata, Katsuhiko. 2010. Modern Control Engineering. fifth edition. Prentice-Hall, Inc. New York.
- Oikawa, S. and N. Katoh. 2002. Decreases in serum apolipoprotein B-100 and A-I concentrations in cows with milk fever and downer cows. *Can. J. Vet. res.* 66(1): 31–34.
- Ominski, K.H., A.D. Kennedy, K.M. Wittenberg, and S.A. Moshtaghi Nia. 2002. Physiological and production responses to feeding schedule in lactating dairy cows exposed to short-term, moderate heat stress. *Journal Dairy Science.* 85: 730 – 737.
- Orellana, C., F. Pena., A. Gracia., J. Perea., J. Martos., V. Domenech, and R. Acero. 2009. Carcass Characteristics, Fatty Acid Composition, and Meat Quality of Criollo Argentino and Braford Steer Raised on Forage in a Semi-Tropical Region of Argentina. *Meat.Sci.* 81: 57–64.

- Ørskov, E.R. 1970. Nitrogen Utilization by the Young Ruminant, page 20 In: Proc. Of the 4<sup>th</sup> Nutr. Conf. Manuf. H. Swan and D. Lewis (ed), J. and A Churchil, United Kingdom.
- Ørskov, E.R. 1977. Capacity for digestion and effect of composition of absorbed nutrients on animal metabolism. J. Anim. Sci. 45(3): 600 – 608. DOI: 10.2527/jas1977.453600x.
- Ørskov, E.R. 1986. Starch digestion and utilization in ruminants. Journal of Animal Science. 63(5): 1624–1633. DOI: 10.2527/jas1986.6351624x
- Ørskov, E.R. 1992. Protein Nutrition in Ruminants. Academic Press. Inc. San Diego, London.
- Ørskov, E. R. 1998. Feed evaluation with emphasis on fibrous roughages and fluctuating supply of nutrients: a review. Small Rumin. Res. 28(1): 1–8.
- Osman, M.A. 2011. Effect of traditional fermentation process on the nutrient and antinutrient contents of pearl millet during preparation of Lohoh. Journal of the Saudi Society of Agric. Sci. 10: 1–6.
- Othman, N.B., D. Roblain, N. Chammen, P. Thonart, and M. Hamdi. 2009. Antioxidant phenolic compounds loss during the fermentation of Chetoui olives. Food Chem. 116: 662–669. DOI: 10.1016/j.foodchem.2009.02.084.
- Overton, T.R. and M.R. Waldron. 2004. Nutritional Management of Transition Dairy Cows: Strategies to Optimize Metabolic Health. Journal of Dairy Science. 87: E105–E119.
- Owens, F.N. and M. Basalan. 2016. Ruminant Fermentation. Pages 63-102 in Rumenology. Millen, D., D. Beni, M. Arrigoni, Lauritano, R. Pacheco. Springer, Cham.
- Padang dan Irmawati. 2007. Influence of sex and duration in feeding to carcass weight and percentage of local goat. J. Agrisistem. 3: 13–20.
- Palmer, B., R.J. Jones, E. Wina, and B. Tangendjaja. 2000. The effect of sample drying conditions on estimates of condensed tannin and fibre content, dry matter digestibility, nitrogen digestibility and PEG binding of *Caliandra calothyrsus*. J. Anim. Feed Sci. Technol. 87: 29–40.
- Pantjawidjaja, S.P. Pongsapan, dan F.K. Tandilinting. 1984. Penggunaan berbagai tingkat ampas sagu dalam ransum sapi Peranakan Ongole yang sedang tumbuh. Ilmu Peternakan. 1: 163–166.
- Parakkasi, A. 1999. Ilmu Nutrisi dan Makanan Ternak. Catatan Pertama. Penerbit UIP, Jakarta.
- Pargiyanti. 2019. Optimasi waktu ekstraksi lemak dengan metode soxhlet menggunakan perangkat alat mikro soxhlet. Indonesian Journal of Laboratory. 1(2): 29–35.
- Parissi, Z.M., T.G. Papachristaou, and A.S. Nastis. 2005. Effect of drying method on estimated nutritive value of browse species using an *in vitro* gas production technique. J. Anim. Feed Sci. Technol. 123-124: 119–128.

- Park, C., J. Lee, J. Li, and J. Lee. 2019. Enhanced production of carboxymethylcellulase by recombinant *Escherichia coli* strain from rice bran with shifts in optimal conditions of aeration rate and agitation speed on a pilot-scale. *Appl. Sci.* 9: 4083. DOI:10.3390/app9194083.
- Partama, I.B.G. 2013. *Nutrisi dan Pakan Ternak Ruminansia*. Udayana University Press, Denpasar.
- Patel and Shreya. 2018. Role of rumen protozoa: metabolic and fibrolytic. *Advances in Biotechnology & Microbiology*. 10(4). DOI: 10.19080/aibm.2018.10.555793.
- Paterson, A. 1989. Biodegradation of Lignin and Cellulosic Materials. In: *Animal Production and Health Division, FAO. Biotechnology for Livestock Production*. Plenum Press. p 245 – 259. New York and London.
- Pederson C. 1971. *Microbiology of Food Fermentation*. Connecticut. The Avi Publ.
- Pengpeng, W. and Z. Tan. 2013. Ammonia assimilation in rumen bacteria: A review. *Animal Biotechnology*. 24(2): 107–128. DOI: 10.1080/10495398.2012.756402.
- Peterson, H.S., R.R. Frahm and E.L. Walters. 2007. Comparison of *feedlot* performance and carcass traits of Charolais and Brahman Sired three-breed cross calves. *Animal Science Report*. [https://extension.okstate.edu/programs/beef-extension/research-reports/site-files/documents/1979/rr79\\_37.pdf](https://extension.okstate.edu/programs/beef-extension/research-reports/site-files/documents/1979/rr79_37.pdf) (Diakses tanggal 4 Oktober 2023).
- Phillips, C.J.C. 2010. *Principles of Cattle Production*. 2<sup>nd</sup> edition. Cambridge University Press, Cambridge
- Phoneyaphon, V., N. Manivanh and T.R. Preston. 2016. Effect of fermentation system on protein enrichment of cassava (*Manihot esculenta*) root. *Livest Res Rural Dev.* 28(10). <http://www.lrrd.org/lrrd28/10/vanh28175.html>.
- [PIA] Primary Industries Agriculture. 2004. "Opportunity Lot Feeding of Beef Cattle Chapter 6: The Feedlot Ration." Government of New South Wales. Accessed January 18, 2020. <http://www.dpi.nsw.gov.au/agriculture/livestock/beef/feed/publications/lotfeeding/ration>
- Pitono, C.P., H. Nugroho, Kuswati, dan T. Susilawati. 2015. Performan of steer red and white Brahman Cross in finisher phase. Fakultas Peternakan, Universitas Brawijaya, Malang. <https://fapet.ub.ac.id/wp-content/uploads/2015/04/PERFORMAN-SAPI-BRAHMAN-CROSS-STEER-WARNA-MERAH-DAN-PUTIH-PADA-FASE-FINISHER.pdf>
- Piwonka E.J. and J.L. Firkins. 1996. Effect of glucose fermentation on fiber digestion by ruminal microorganisms *in vitro*. *J Dairy Sci.* 79(12): 2 196–206. DOI: 10.3168/jds.S0022-0302(96)76596-7.
- Polii, D.N.Y., M.R. Waani, dan A.F. Pendong. 2020. Kecernaan protein kasar dan lemak kasar pada sapi perah peranakan FH (Friesian Holstein) yang diberi pakan lengkap berbasis tebon jagung. *Zootec* 40(2): 482–

492.

- Poncet, C., B. Michalet-Doreau, T. McAllister, and D. Rémond. 1995. Dietary compounds escaping rumen digestion. In *Recent developments in the nutrition of herbivores*. pp. 167 – 204. Clermont Ferrand.
- Pond, W.G., Church, D.C., Pond, K.R., and Schoknet, P.A. 2005. *Basic Animal Nutrition and Feeding*. 5<sup>th</sup> revised edition. John Willey and Sons Inc. New York.
- Porto-Neto, L.R., A. Reverter, K.C. Prayaga, E.K.F. Chan, D.J. Johnston, R.J. Hawken, G. Fordyce, J.F. Garcia, T.S. Sonstegard, S. Bolormaa, M.E. Goddard, H.M. Burrow, J.M. Henshall, S.A. Lehnert, and W. Barendse. 2014. The genetic architecture of climatic adaptation of tropical cattle. *Plos One*. 9(11): e113284.
- Prabowo, S., Rusman dan Panjono. 2012. Variabel penduga bobot karkas sapi Simmental-Peranakan Ongole jantan hidup. *Buletin Peternakan*. 36: 95–102.
- Pradana, A.P.I., W. Busono, dan S. Maylinda. 2015. Karakteristik sapi Madura betina berdasarkan ketinggian tempat di Kecamatan Galis dan Kadur Kabupaten Pamekasan. *J. Ternak Tropika*. 16(2): 64–72.
- Prasetyo, H., M.Ch Padaga, dan M.E. Sawitri. 2013. Kajian kualitas fisiko kimia daging sapi di pasar Kota Malang. *Jurnal Ilmu dan Teknologi Hasil Ternak*. 8(2): 1–8.
- Pratama, A. Gilang, S. Nurachma, dan A. Sarwestri. 2015. Hubungan Antara Bobot Potong Dengan Yield Grade Domba (*Ovis Aries*) Garut Jantan Yearling. *Fakultas Peternakan Universitas Padjadjaran*.
- Prawirokusumo, S. 1994. *Ilmu Gizi Komparatif*. BPFE-UGM, Yogyakarta.
- Preston, T. R. 1995. *Tropical Animal Feeding, A Manual for Research Worker*. FAO. United Nation, paper 126. Rome.
- Preston, T.R. and R.A. Leng. 1987. *Matching Ruminant Production Systems with Available Resources in the Tropic and Sub-Tropics*. Penambul Books, Armidale, Australia, pp. 265.
- Preston, R.L., F. Byers and K.R. Stevens. 1978. Estrogenic activity and growth stimulation in steers fed varying protein levels. *J. Anim. Sci*. 46: 541–546.
- Priyanto, R., dan H. Hafid. 2023. The potency of local beef cattle: growth performance, carcass productivity and beef quality. *Jurnal Ilmu dan Teknologi Peternakan Tropis*. 10(2): 297–304. DOI: 10.33772/jitro.v10i2.28917.
- Priyanto, T., Y. Marsono, A. Murdiati, dan D.W. Marseno. 2017. Isolasi dan karakterisasi sifat pati kacang hijau (*Vigna radiata L.*) beberapa varietas lokal Indonesia. *Agritech*. 37(2): 192-198. DOI: 10.22146/agritech.10659
- Priyanto R., A.M. Fuah, E.L. Aditia, M. Baihaqi, dan M. Ismail. 2015. Improving productivity and meat quality of local beef cattle through fattening on cereals based feed with different energy levels. *JUPI*. 20(2): 108–14. DOI: 10.18343/jupi.20.2.108

- Priyanto, R., D. Kurniawan and S.B. Adam. 2009. Carcass and beef characteristic from brahman cross steers fattened in *feedlot* prepared for traditional market. The 1<sup>st</sup> International Seminar on Animal Industry, 320-323.
- Priyanto, R., E.R. Johnson, and D.G. Taylor. 1999. The economic importance of genotype in steers fed pasture or lucerne hay and prepared for the Australian and Japanese beef markets. *NZ J Agric Res.* 42: 343–404.
- Purbowati, E. A., Purnomoadi, Lestari dan Kamiyatun. 2011. Karakteristik karkas sapi Jawa (Studi kasus di RPH Brebes, Jawa Tengah). Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner.
- Purchas, R.W., T.W. Knight, and J.R. Busboom. 2005. The effect of production system and age on concentrations of fatty acids in intramuscular fat of the longissimus and triceps brachii muscles of Angus-cross *heifers*. *Meat Science.* 70(4): 597–603. DOI: 10.1016/j.meatsci.2004.12.020.
- Purwani, E., Y. Widaningrum, R. Thahir, and Muslich. 2006. Effect of heat moisture treatment of sago starch on its noodle quality. *Indonesian Journal of Agricultural Science.* 7(1): 8–14.
- Putra, D., L.M. Yusiati, and R. Utomo. 2016. Estimation of rumen microbial protein synthesis based on purine derivatives in the urine using spot sampling technique On bligon and kejobong goats. *Buletin Peternakan.* 40(3): 178–186.
- Putra, N.G.W., D.N. Ramadani, A. Ardiansyah, F. Syaifudin, R.I. Yulinar, dan H. Khasanah. 2022. Review: Strategi pencegahan dan penanganan gangguan metabolis pada ternak ruminansia. *JPI.* 24(2): 150-159. DOI: 10.25077/jpi.24.2.150-159.2022.
- Putri, P.W., Surahmanto, dan J. Achmadi. 2020. Kandungan neutral fibre (NDF), acid detergent fibre (ADF), hemiselulosa, lignin dan selulosa onggok yang difermentasi *Trichoderma reesei* dengan suplementasi N, S, P. *Bulletin of Applied Animal Research.* 2(1): 33–37. DOI: 10.36423/baar.v2i1.227.
- Qiao, G.H., A.S. Shan, N. Ma, Q.Q. Ma, and Z.W. Sun. 2009. Effects of supplemental bacillus cultures on rumen fermentation and milk yield in Chinese Holstein cows. *J. Anim. Physiol Anim Nutr.* 94: 429–436.
- Quang, D.V., N.X. Ba, P.T. Doyle, D.V. Hai, P.A. Lane, and A.E. Malau-Aduli, N.H. Van and D. Parsons. 2015. Effect of concentrate supplementation on nutrient digestibility and growth of Brahman crossbred cattle fed a basal diet of grass and rice straw. *Journal of Animal Science and Technology,* 57:35. DOI: 10.1186/s40781-015-0068-y.
- Radostits, O.N., D.C. Blood, and C.C. Gay. 2007. *Veterinary Medicine. A Textbook of 394 the Diseases of Cattle, Sheep, Goats and Horses.* 8<sup>th</sup> ed., London.
- Raes, K., S. de Smet, and D. Demeyer. 2001. Effect of double-muscling in Belgium Blue Young bulls on the intramuscular fatty acid composition with emphasis on conjugated linoleic acid and polyunsaturated fatty acids. *Anim. Sci.* 73: 253. DOI: 10.1017/S1357729800058227.



- Raes, K., A. Balcean, P. Dirink, A.D. Winne, E. Clayes, D. Demeyer, and S.D. Smet. 2003. Meat quality, fatty acid composition and flavor analysis in Belgian retail beef. *Meat Sci.* 65: 1237–1246.
- Rahayu, V.R., R.G. Ariani, dan Ikhsan. 2017. Laporan Praktikum Biokimia Klinis, Kadar Glukosa Darah. Departemen Biokimia, Fakultas Matematika, Ilmu pengetahuan Alam, Institut Pertanian Bogor. Bogor.
- Rahmat, M., Patang, dan M. Rais. 2019. Uji pengeringan biji jagung (*Zea mays sp.*) menggunakan alat pengering biji-bijian tipe rak (*tray dryer*). *Jurnal Pendidikan Teknologi Pertanian.* 5: S222–S229.
- Rahmat, D. dan R. Wiradimadja. 2011. Pendugaan kadar kolesterol daging dan telur berdasarkan kadar kolesterol darah pada puyuh Jepang. *Jurnal Ilmu Ternak.* 11(1): 35–38.
- Ralahalu, T.N., Kartiarso, dan A. Parakkasi. 2011. Kolesterol plasma dan pertumbuhan tikus putih (*Sprague Dowley*) yang diberi ampas sagu dan limbah udang dengan level berbeda. *Forum Pascasarjana.* 34(4): 267–280.
- Rasyid, T.H., Y. Kusumawaty, and S. Hadi. 2020. The utilization of sago waste: prospect and challenges. *IOP Conf. Series: Earth and Environmental Science.* (415) 012023. DOI: 10.1088/1755-1315/415/1/012023.
- Rashid, M.M., K.S. Huque, M.A. Hoque, N.R.Sarker, and A.K.F.H. Bhuiyan. 2015. Effect of concentrate to roughage ratio on cost effective growth performance of Brahman Crossbred calves. *Journal of Agricultural Science and Technology* A5: 286-295. DOI: 10.17265/2161-6256/2015.04.007.
- Ravindran, V. 2013. Feed enzymes: The science, practice, and metabolic realities. *J. Appl. Poult. Res.* 22: 628–636. DOI: 10.3382/japr.2013-00739.
- Rey, M., F. Enjalbert, and V. Monteils. 2012. Establishment of ruminal enzyme activities and fermentation capacity in dairy calves from birth through weaning. *J. Dairy Sci.* 95(3): 1500–1512.
- Reynold, C.K. 1995. Quantitative Aspects of Liver Metabolism in Ruminant. In : Engelhards, W.V.S. Leonhard – Marek, G. Breves, D. Giesecke (Eds.), *Ruminant Physiology : Digestion, Metabolism, Growth and Reproduction.* Ferdinand Enke Verlag.
- Rhee, K.S., T.R. Dutson, G.C. Smith, R.L. Hostetler, and R. Reiser. 1982. Cholesterol content of raw and cooked beef longissimus muscles with different degrees of marbling. *J. Food Sci.* 41: 718. DOI: 10.1111/j.1365-2621.1982.tb12698.x.
- Rianto E, E. Lindasari, dan E. Purbowati. 2006. Pertumbuhan dan komponen fisik karkas domba ekor tipis jantan yang mendapat dedak padi dengan aras yang berbeda. *J Produksi ternak.* 8(1): 28–33.
- Rianza, R., D. Rusman, dan W. Tanwiriah. 2019. Penggunaan ampas sagu fermentasi sebagai pakan ayam kampung super fase starter. *Jurnal Ilmu Ternak.* 19(1): 36–44.

- Risano, A.Y.E. dan I.M. Gandidi. 2014. Water hammer press untuk pengurangan kadar air komoditas onggok. *Jurnal Mechanical*. 5(1): 26–31.
- Rizal, A., H. Nuraini, R. Priyanto, dan Muladno. 2014. Produktivitas karkas dan daging dengan teknik penanganan karkas yang berbeda di beberapa RPH. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*. 02(1): 201–206.
- Robinson, P. H. 2002. Yeast products for growing and lactating dairy cattle: impact on rumen fermentation and performance. *Dairy Rev*. 9: 1–4.
- Roche, J.F. 2006. The effect of nutritional management of the dairy cow on reproductive efficiency. *Animal Reproduction Science*. 96(3–4): 282–296. DOI: 10.1016/j.anireprosci.2006.08.007.
- Rodriguez, H., J.A. Curiel, J.M. Landete, B. Rivas, F.L. Felipe, C. Gómez Cordovés, J.M. Manche-o, and R. Mu-oz. 2009. Food phenolics and lactic acid bacteria. *International Journal of Food Microbiology*. 132: 79–90. DOI: 10.1016/j.ijfoodmicro.2009.03.025.
- Rosli, M.I., M.A.N. Abdul, S.T. Mohd, and P.C. Lee. 2018. Simulation of a fluidized bed dryer for the drying of sago waste. *Energies*. 11(1): 2383. DOI:10.3390/en11092383.
- Rosyidi, D., A. Susilo, dan I. Wiretno. 2010. Pengaruh bangsa sapi terhadap kualitas fisik dan kimiawi daging. *Jurnal Ilmu dan Teknologi Hasil Ternak*. 5: 11–17.
- Roubies, N., N. Panousis, A. Fytianou, P.D Katsoulos, N. Giadinis, and H. Karatzias. 2006. Effects of age and reproductive stage on certain serum biochemical parameters of chios sheep under greek rearing conditions. *J. Vet. Med. A Physiol. Pathol. Clin. Med*. 53(6): 277–281.
- Roviki, R., Kuswati, H. Nugroho dan Susilawati. 2015. Carcass Production of Brahman Cross steer with the difference of frame size. Universitas Brawijaya, Malang. <https://fapet.ub.ac.id/wp-content/uploads/2015/04/PRODUKSI-KARKAS-SAPI-BRAHMAN-CROSSSTEER-PADA-FRAME-SIZE-YANG-BERBEDA.pdf>.
- Ruddle, K.D.Johnson, P.K.Townsend, and J.D.Rees.1978. Palm Sago A Tropical Startch From Marginal Lands. *An East-WestCenter Book*, Honolulu.
- Ruddle, K. 1979. The Geographical Distribution of Sago Producing Palms. *National Museum of Etnology*. 572 – 594.
- Rusdi. 2006. *Dinamika Protein Pada Ruminansia*. Tadulako University Press, Palu.
- Rush, I.G. 2009. Rumen physiology for the rancher. *Proceedings, The Range Beef Cow Symposium XXI*, Casper, WY.
- Rusman, Soeparno, Setiyono, and A. Suzuki. 2003. Characteristics of Biceps femoris and Longissimus thoracis muscles of five cattle breeds grown in a *feedlot* system. *Anim. Sci. J*. 74: 59–65. DOI: 10.1046/j.1344-3941.2003.00087.x.

- Russell, J.B. and D.B. Wilson. 1996. Why are ruminal cellulolytic bacteria unable to digest cellulose at low pH? *J Dairy Sci.* 79(8): 1503–1509. DOI: 10.3168/jds.S0022-0302(96)76510-4.
- Ryu, D.D.Y. 1989. Enhancement of Nutritional value of Cellulosic Feed Resources by Pretreatment and Bioconversion. In. *Biotechnology for Livestock Production*, Plenum Press. New York. 223–243.
- Sadh, P.K., D. Surekha, and S.D. Joginder. 2018. Agro-industrial wastes and their utilization using solid state fermentation: a review. *Bioresources and Bioprocessing*. 5: 1. DOI: 10.1186/s40643-017-0187-z.
- Saepudin, A., L. Khotijah and S. Suharti. 2016. Konsumsi dan pencernaan nutrisi sapi potong yang diberi ransum mengandung kulit polong kedelai. *Buletin Makanan Ternak*, 103(1): 1–10.
- Saidin, M. 2000. Kandungan Kolesterol Dalam Berbagai Bahan Makanan Hewani. *Buletin. Pusat Penelitian dan Pengembangan Gizi, Badan Litbangkes, Depkes RI*.
- Samadi, S. Wajizah, dan Y. Usman. 2015. *In vitro* study of fermented complete feed bu using sago residues as main source diet. *Animal Production*. 17(3): 129–137.
- Sami, A.S, C. Augustini, and F.J. Schwarz. 2004. Effects of feeding intensity and time on feed on performance, carcass characteristics and meat quality of Simmental bulls. *Meat Sci.* 67: 195–201.
- Sanan, M. 2018. Pengaruh variasi pakan sumber energi terhadap PBBH, konsumsi dan konversi ransum kambing kacang jantan. *J A S.* 3(4): 58–59.
- Sanders, J.O. 1980. History and development of Zebu cattle in the United States. *Journal of Animal Science.* 50(6): 1188–1200. DOI: 10.2527/jas1980.5061188x.
- Sangadji, I. 2019. Kualitas nutrisi ampas sagu hasil fermentasi jamur tiram putih (*Pleurotus ostreatus*) dengan waktu panen yang berbeda. *Agrinimal*. 7(2): 69–76.
- Sangadji, I., J. Salamena, dan C. Patty. 2016. Kualitas nutrisi ampas sagu hasil biofermentasi jamur tiram putih (*Pleurotus ostreatus*) dengan waktu inkubasi dan dosis urea yang berbeda. *Seminar Nasional Peternakan 2, Fakultas Peternakan, Universitas Hasanuddin, Makassar*.
- Sangadji, I., A. Parakkasi, K.G. Wiryawan dan B. Haryanto. 2008. *Jurnal Ilmu Ternak*. 8(1): 31–34.
- Samodra, E.P. dan H. Cahyono. 2010. Kualitas fisik daging sapi Peranakan Ongole dengan pemberian asam askorbat dan penyimpanan pada suhu 50C. *Sains Peternakan*. 8(1): 26–31.
- Sanlier, N., B.G. Busra, and C.S. Aybuke. 2017. Health benefits of fermented foods. *Crit Rev Food Sci Nutr.* 25: 1–21. DOI: 10.1080/10408398.2017.1383355.
- Santosa, U. 2001. *Tata Laksana Pemeliharaan Ternak Sapi*. Penebar Sawadaya. Jakarta.

- Santoso, B., B.Tj. Hariadi, H. Manik, dan H. Abubakar. 2009. Kualitas rumput unggul tropika hasil ensilase dengan bakteri asam laktat dari ekstrak rumput terfermentasi. *Media Peternakan*. 32(2): 137–144.
- Santoso, A.D. 2017. Potensi dan kendala pengembangan sagu sebagai bahan pakan, pangan, energi dan kelestarian lingkungan di Indonesia. *JRL*. 10(2): 51–57.
- Sarasati T., dan K.K. Agustina. 2015. Kualitas daging sapi Wagyu dan daging sapi Bali yang disimpan pada Suhu -19°C. *Indonesia Medicus Veterinus*. 4(3): 178–185.
- Sari, I.P., L.K. Nuswantara, dan J. Achmadi. 2019. Pengaruh suplementasi karbohidrat mudah larut yang berbeda dalam pakan berbasis jerami padi amoniasi terhadap degradabilitas ruminal *in vitro*. *Jurnal Sain Peternakan Indonesia*. 14(2): 161-170.
- Sari, R.W.W., N. Jamarun, Elihasridas, and G. Yanti. 2021. In-vitro rument liquid characteristics (pH, VFA, and NH<sub>3</sub>) from sugar cane top fermented with different levels of *phanerochaete chrysosporium*. *Advances in Biological Sciences Research*. 13. DOI: 10.2991/absr.k.210609.031.
- Sarıçiçek, B.Z., B. Yıldırım, Z. Kocabaş and E.O. Demir. 2016. Effect of storage time on nutrient composition and euality parameters of corn silage. *Turkish J Agric - Food Sci Technol*. 4(11): 934–939. DOI: 10.24925/turjaf.v4i11.934-939.746.
- Sartori, E.D., M.E.A. Canozzi, D. Zago, Ê.R. Prates, J.P. Velho, and J.O.J. Barcellos. 2017. The effect of live yeast supplementation on beef cattle performance: A systematic review and metaanalysis. *J. Agric. Sci*. 9: 21–37. DOI: 10.5539/jas.v9n4p21.
- Sastrapradjaya and J.P. Mogen. 1976. Present uses and Future Development of *Metroxylon Sagu* in Indonesia. In *Sago*. Gpp 112–117. Proc. of First International Sago Symposium, Kuching, Malaysia.
- Sawyer, J.T., J.K. Apple, and Z.B. Johnson. 2008. The impact of lactic acid concentration and sodium chloride on pH, water-holding capacity and cooked color of injection-enhanced darkcutting beef. *Meat Science* 79: 317–325. DOI: 10.1016/j.meatsci.2007.10.016.
- Sawyer, J.T., J.K. Apple, Z.B. Johnson, R.T. Baublits, and J.W.S. Yancey. 2009. Fresh and cooked color of dark-cutting beef can be altered by post-rigor enhancement with lactic acid. *Meat Sci*. 83: 263–270. DOI: 10.1016/j.meatsci.2009.05.008.
- Scaglia, G., PAS, J.P. Fontenot, PAS, W.S. Swecker Jr., B.A. Corl., S.K. Duckett, PAS, H.T. Boland, R. Smith, and A.O. Abaye. 2012. Performance, carcass, and meat characteristics of beef steers finished on 2 different forages or on a high-concentrate diet. *The Professional Animal Scientist*. 28: 194 – 203.
- Schuilting, D.L. 2009. Growth and Development of True Sago Palm (*Metroxylon sagu Rottboll*): With Special Reference to Accumulation of Starch in The Trunk: A Study on Morphology, Genetic, Variation and Ecophysiology,

and Their Implication for Cultivation. Dissertation. Wageningen (NL): Wageningen University. ISBN: 9789085858546-259.

- Seepaul, R., B. Macoon, K.R. Reddy, and W.B. Evans. 2016. First harvest timing and nitrogen application rate effects on chemical composition and ethanol yield of switchgrass. *Crop Forage Turfgrass Manage*, Vol. 2. DOI: 10.2134/cftm2015.0163.
- Sen, B. and R.R. Suttar. 2012. Mesophilic fermentative hydrogen production from sago starch-processing wastewater using enriched mixed cultures. *International journal of hydrogen energy*. 37: 15588–15597.
- Senjaya, O.T., T. Dhalika, A. Budiman, I. Hernaman, dan Mansyur. 2010. Pengaruh lama penyimpanan dan aditif dalam pembuatan silase terhadap kandungan NDF dan ADF silase rumput gajah. *Jurnal Ilmu Ternak*. 10(2): 85–89.
- Serli, F. Syadik dan Marhayani. 2022. Kandungan protein dan serat kasar ampas sagu dengan metode biologi sebagai alternatif pakan berkualitas untuk ternak ruminansia. *Jago Tolis*. 2(3): 56-60. DOI: 10.56630/jago.v2i3.236.
- Setiawan, S.Y., I.B.N. Swacita dan I.K. Suada. 2017. Kualitas daging sapi di Rumah Potong Hewan Pesanggaran ditinjau dari uji pH dan daya ikat air. *Buletin Veteriner Udayana*. 9(1): 16-21. DOI: 10.21531/bulvet.2017.9.1.16.
- Setiyono, A.H.A. Kusuma, dan Rusman. 2017. Pengaruh bangsa, umur, jenis kelamin terhadap kualitas daging sapi potong di Daerah Istimewa Yogyakarta. *Buletin Peternakan*. 41: 176–186.
- Shiddiq, S., Y. Usman, dan S. Wajizah. 2017. Evaluasi kualitas nutrisi jerami padi yang difermentasi menggunakan Saus Burger Pakan (SBP®). *Jurnal Ilmiah Mahasiswa Pertanian*. 2(4). DOI: 10.17969/jimfp.v2i4.5591.
- Shiddieqy, M. Ikh., N. Pratiwi, and B.D.P. Soewandi. 2019. Utilization of molecular marker to improve cattle carcass quality in Indonesia. *Wartazoa*. 29(4): 193–204. DOI: 10.14334/wartazoa.v29i4.2009.
- Shurtleff, W. and A. Aoyagi. 2001. *The Book of Tempeh: A Cultured Soyfood*. Ten Speed Press. Barkeley, California.
- Siddque, M.A.B., N.R. Sarker, M.A. Hamid, M. N. Amin, and M. Sultana. 2015. Growth performance, feed conversion ratio and economics of production of native and Crossbred (Local × Holstein Friesian) Bulls for fattening under different improved feeding. *Journal of Agricultural Science and Technology*, A(5): 770-781. DOI: 10.17265/2161-6256/2015.09.008.
- Silanikov, N. 2000. Effects of heat stress on the welfare of extensively managed domestic ruminants. *Livestock Production Science*. 67: 1–18. DOI: 10.1016/s0301-6226(00)00162-7.
- Simanihuruk, K dan J. Sirait. 2017. Silase ampas sagu menggunakan tiga bahan aditif sebagai pakan basal kambing Boerka fase pertumbuhan. *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*. DOI: 10.14334/Pros.Semnas.TPV-2017-p.341-351.



- Simanihuruk, K., A. Chaniago dan J. Sirait. 2011. Silase ampas sagu sebagai pakan dasar pada kambing kacang sedang tumbuh. Seminar Nasional Teknologi Peternakan dan Veteriner. 542-550.
- Simsek, O. dan S. Arian. 2015. Effect of cholesterol, FSH, and LH on steroidogenic activity of cat granulosa cells cultured *in vitro*. *Animal Reproduction*, 12(4): 931–938.
- Sinaga, M.O.A., N.L.P. Sriyani, dan I.G. Suarta. Kualitas organoleptik daging sapi Bali yang dilayukan dengan lama waktu yang berbeda. *Majalah Ilmiah Peternakan*. 24(2): 77-81.
- Singhal, R.S., J.F. Kennedy, S.M. Gopalakrishnan, A. Kaczmarek, C.J. Knill, and P.F. Akmar. 2008. Industrial production, processing, and utilization of sago palm-derived products. *Carbohydrate Polymers*. 72(1): 1–20.
- Simsek, O. dan S. Arian. 2015. Effect of cholesterol, FSH, and LH on steroidogenic activity of cat granulosa cells cultured *in vitro*. *Animal Reproduction*, 12(4): 931–938.
- Siregar, S.B. 2003. Ransum Ternak Ruminansia. Penebar Swadaya. Jakarta.
- Sirohi, S.K., P.K. Choudhury, S.S. Dagar, A.K. Puniya, and D. Singh. 2013. Isolation, characterization and fibre degradation potential of anaerobic rumen fungi from cattle. *Ann Microbiol*. 63: 1187–1194. DOI: 10.1007/s13213-012-0577-6
- Sisriyenni, D., A. Simanjuntak, dan T. Adelina. 2017. Potensi dan penggunaan limbah sagu fermentasi sebagai pakan sapi di Kabupaten Pulau Meranti. *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*. 125–131. DOI: 10.14334/Pros.Semnast.PTV-2017-p.125-131.
- Smith, T., J.D. Domingue, J.C. Paschal, D.E. Tranke, T.D. Bidner, and D. Whipple. 2007. Genetic parameter for growth and carcass traits of Brahman steer. *J. Anim. Sci*. 85: 1377–1384.
- Snyman, L.D. and H.W. Joubert. 1996. Effect of maturity stage and method of preservation on the yield and quality of forage sorghum. *Anim. Feed Sci. Technol*. 57: 63–73. DOI: 10.1016/0377-8401(95)00846-2.
- Sodiq, A. dan M. Budiono. 2012. Produktivitas Sapi Potong pada Kelompok Tani Ternak di Pedesaan. *J. Agripet*. 12(1): 28–33.
- Sodikin, A., Erwanto, dan K. Adhianto. 2016. Pengaruh penambahan multi nutrient sauce pada ransum terhadap pertambahan bobot badan harian sapi potong. *Jurnal Ilmiah Peternakan Terpadu*. 4(3): 199-203.
- Soebagyo, Y., N. Ngadiyono, dan Z. Bachrudin. 2000. Pengaruh lama penggemukan terhadap pertambahan bobot badan harian dan komposisi asam lemak daging sapi Brahman Cross. *Animal Production*. 2(1): 33–39.
- Soeharsono. 2010. Fisiologi Ternak Fenomena, Nomena Dasar, Fungsi, dan Interaksi Organ pada Hewan. Penerbit Widya Padjajaran. Bandung
- Soeharsono, A.M., E. Hernawan., L. Adriani, and K.A. Kamil. 2011. Fisiologi Ternak: Fenomena dan Nomena Dasar, Fungsi, dan Interaksi Organ pada Hewan. Penerbit : Widya Padjajaran, Bandung.

- Soeparno. 2011. Ilmu Nutrisi dan Gizi Daging. Cetakan pertama. Gadjah Mada University Press. Yogyakarta
- Soeparno. 2015. Ilmu dan Teknologi Daging. Cetakan keenam. Gadjah Mada University Press. Yogyakarta
- Soeprapto, H. 2005. Keragaan produksi sapi Brahman Cross kastrasi yang diberi pakan konsentrat mengandung bungkil biji kapok. *Animal Production*. 7(3): 189–193.
- Song, X., D. Cornforth, D. Whittier, and X. Luo. 2015. Nitrite spray treatment to promote red color stability of vacuum packaged beef. *Meat Science*. 99: 8–17. DOI :10.1016/j.meatsci.2014.08.003.
- Stanton, W.R. 1993. Perspectives on and future prospects for the sago palm. *Sago Palm*. 1: 2–7.
- Steel, R.G.D. and J.H. Torrie. 2017. Prinsip dan Prosedur Statistika. Penerjemah Bambang Sumantri. Gramedia Pustaka, Jakarta, Indonesia.
- Stelzleni, A.M. and D.D. Johnson. 2008. Effect of days on concentrate feed on sensory off-flavor score, off-flavor descriptor and fatty acid profiles for selected muscles from cull beef cows. *Meat Science*. 79(2): 382–393. DOI: 10.1016/j.meatsci.2007.10.023.
- Stephens, T.P., G.H. Longeregan, E. Karunasena, and M.M. Brashears. 2007. Reduction of *Escherichia coli* O157 and *Salmonella* in feces and on hides of *feedlot* cattle using various doses of a direct-fed microbial. *J. Food Prot.* 70: 2386–2391. DOI: 10.4315/0362-028X-70.10.2386.
- Stephen, P.H. and J.G. Ronald. 2012. Factors and Feeds for Supplementing Beef Cows. *AgriLife Communications and Marketing*, The Texas A&M University System.
- Suebu, Y., H.R.R. Tanjung and Suharno. 2020. Sago pulp fermentation as an alternative feed to increase growth in Kampung chicken weight. *Buletin Anatomi dan Fisiologi*. 5(1): 1–7.
- Sugesti, M., Kuswati, dan A. Susilo. 2022. Characteristics carcass of steer and bull of white Brahman Crossbred cattle at different age. *Jurnal Ilmu dan Teknologi Peternakan Tropis*. 9(2): 412–41. DOI: 10.33772/jitro.v9i2.22615.
- Sumadi dan Soeparno. 1991. Produksi karkas faktor *yield grade* dan kualitas daging dari tiga bangsa sapi yang dipelihara secara *feedlot*. Dalam: Seminar Nasional Hasil-Hasil Penelitian Perguruan Tinggi. Tanggal 21 - 24 Januari 1991. Pusdiklat Depdikbud Sawangan, Bogor.
- Sumardiono, S., D.W.N. Aditya, R.A. farel and I. Pudjihastuti. 2018. Livestock Feed Production from Sago Solid Waste by Pretreatment and Anaerobic Fermentation Process. *MATEC Web of Conferences* 156, 03044. DOI: 10.1051/mateconf/201815603044.
- Sumiana, I.K., J. Ekasari, D. Jusadi, and M. Setiawati. 2020. Utilization of fermented sago pulp as a source of carbohydrate in feed for Nile tilapia

- Oreochromis niloticus. Jurnal Akuakultur Indonesia. 19(2): 106–117. DOI: 10.19027/jai.19.2.106-117.
- Supriyati. 2003. Onggok terfermentasi dan pemanfaatannya dalam ransum ayam ras pedaging. Jurnal Ilmu Ternak dan Veteriner. 8(3): 146–150.
- Suryadi, U. 2003. Karakteristik karkas dan daging sapi Brahman Cross hasil penggemukan pada berbagai bobot potong. Buletin Peternakan. 27(2): 46–54.
- Suryana. 2009. Pengembangan usaha ternak sapi potong berorientasi agribisnis dengan pola kemitraan. Jurnal Litbang Pertanian. 28 (1): 29–37.
- Suryani, A.T., Panjono, dan A. Agus. 2014a. Efek penggunaan peptide-G® sebagai aditif pakan pengganti  $\beta$ -adrenergic agonist terhadap kinerja pertumbuhan dan kualitas karkas sapi Brahman Cross. Buletin Peternakan. 38(2): 101–108.
- Suryani, N.N, I.K.M. Budiasa, dan I.P.A Astawa. 2014b. Fermentasi rumen dan sintesis protein mikroba kambing Peranakan Ettawa yang diberi pakan dengan komposisi hijauan beragam dan level konsentrat berbeda. Majalah Ilmiah Peternakan. 17(2): 56–60. DOI: 10.24843/mip.2014.v17.i02.p04.
- Suryanto, E., Bulkaini, Soeparno, dan I.W. Karda. 2017. Kualitas karkas, marbling, kolesterol, daging dan komponen non karkas sapi Bali yang diberi pakan buah kakao fermentasi. Buletin Peternakan. 41(1): 72–78.
- Suryapratama, W. and F.M. Suhartati. 2012. Increasing rumen microbial protein synthesis with additional dietary substrate of *Saccharomyces cerevisiae* and soybean oil. Animal Production. 14(3): 155–159.
- Susila, T.G.O. dan I.B.G. Partama. 2012. Penggunaan nitrogen pada sapi Bali penggemukan yang diberi ransum berbasis jerami padi dengan amoniasi urea dan suplementasi mineral. Jurusan Nutrisi dan Makanan Ternak, Fakultas Peternakan, Universitas Udayana. Laporan Penelitian. <http://ojs.unud.ac.id/index.php/mip/article/download/1677/991>.
- Sutton, J.D., M.S. Dhanoa, S.V. Morant, J. France, D.J. Napper, and E. Schuller. 2003. Rates of production of acetate, propionate, and butyrate in the rumen of lactating dairy cows given normal and low-roughage diets. Journal of Dairy Science. 86(11): 3620–3633. DOI: 10.3168/jds.S0022-0302(03)73968-X.
- Suwandyastuti dan E.A. Rimbawanto. 2012. Penggunaan onggok sebagai sumber energi dalam ransum sapi perah. Agripet. 12(1): 1–6.
- Suwasono, P., A. Purnomoadi dan S. Dartosukarno. 2013. kadar hematokrit, glukosa dan urea darah sapi jawa yang diberi pakan konsentrat dengan tingkat yang berbeda. Animal Agriculture Journal. 2(4):37–44.
- Suwiti, N.K., I.P. Suastika, I.B.N. Swacita, dan I.N.K. Besung. 2015. Studi histologi dan histomorfometri daging sapi Bali dan Wagyu. Jurnal Veteriner. 16(3): 432-438.

- Suwiti, N.K., N.Y.C. Susilawati, I.B.N. Swacita. 2017. Karakteristik fisik daging sapi Bali dan Wagyu. *Buletin Veteriner Udayana*. 9(2): 125-131. DOI: 10.21531/bulvet.2017.9.2.125
- Swenson, M.J. 1977. *Physiological Properties and Celluler and Chemical Constituent of Btood*. tn *Duke's Physiologi of Domestic Animal*. Comstock Cornell University Press, Ithaca and London.
- Syadik, F., Satria, and Youlandari. 2022. The protein and crude fiber content of sago (*Metroxylon sago*) dregs through chemical method as alternative ruminant feed. *Jurnal Sains dan Teknologi Peternakan*. 3(2): 49–54.
- Syafutri, M.I. 2015. Functional and pasta properties of Bangka sago starch. *SAGU* 14(1): 1–5.
- Syahrir, S., K.G. Wiryawan, A. Parakkasi dan M. Winugroho. 2010. Profil darah sapi potong yang mendapat tepung daun murbei menyubstitusi konsentrat pakan. *JITP*. 1(1): 12–18.
- Syakir, M., M.H. Bintoro, dan H. Agusta. 2009. Pengaruh ampas sagu dan kompos terhadap produktivitas lada perdu. *Jurnal Penelitian Tanaman Industri*. 15: 168–173.
- Syamsi, A.N., Harwanto, H.S. Widodo, and Y. Subagyo. 2022. Macronutrient digestibilities and enzyme activities in rumen fluid supplemented by protein-energy synchronized index-based rations. *Buletin Peternakan*. 46(2): 77 – 83. DOI: 10.21059/buletinpeternak.v46i2.73881.
- Tahuk, P.K., A.A. Dethan, dan S. Sio. 2017. Profil glukosa dan urea darah sapi Bali jantan pada penggemukan dengan hijauan (*Greenlot Fattening*) di Peternakan Rakyat. *Agripet*. 17(2): 104–111. DOI: <https://doi.org/10.17969/agripet.v17i2.8114>.
- Tahuk, P.K., S.P.S. Budhi, Panjono, and E. Baliarti. 2018. Carcass and meat characteristics of male Bali cattle in Indonesian smallholder farms fed ration with different protein levels. *Tropical Animal Science Journal*. 41(3): 215–223. DOI: <https://doi.org/10.5398/tasj.2018.41.3.215>.
- Tahuk, P.K., A.A. Dethan, and S. Sio. 2020. Meat and fat colors characteristics of male Bali cattle fattened with green feed in smallholder farms. *Journal of Tropical Animal Science and Technology*. 2(2): 17–25. DOI: <https://doi.org/10.5713/ajas.17.0166>.
- Tahuk, P.K., A.A. Dethan, dan S. Sio. 2021. Konsumsi dan pencernaan bahan kering, bahan organik dan protein kasar sapi Bali jantan yang digemukkan di peternakan rakyat. *Journal of Tropical Animal Science and Technology*. 3(1): 21–35.
- Tait, C.A., M.R. L'Abbe', P.M. Smich, and L.C. Roe. 2017. The association between food insecurity and incident type 2 diabetes in Canada: a population-based cohort study. *PLoS One* 13: e0195962. DOI: 10.1371/journal.pone.0195962.
- Tampoebolon, B.I.M. 2009. Kajian perbedaan aras dan lama pemeraman fermentasi ampas sagu dengan *Aspergillus niger* terhadap kandungan protein kasar dan serat kasar. Seminar Nasional Kebangkitan Peternakan. Fakultas Peternakan Universitas Diponegoro. Semarang.

- Tannenbaum SR, Coney CL, Demain, Haverberg L. 1978. Non Photosynthetic Singel Cell Protein. In: Khilberg M, Scrimshaw NS, Wang DIC, editors. Protein Resources and Technology. Status and Research Needs. Connecticut. The Avi Publ.
- Tasse, A.M. dan F.A. Auza 2014. Konsentrasi asam lemak tidak teresterifikasi (*Non-esterified fatty acid*, NEFA), albumin, kalsium dan fosfor dalam plasma sebagai indikator status nutrisi sapi perah laktasi. JITRO. 1(1): 70–78.
- Tenda, E., H. Mangindaan, dan J. Kumaunang. 2003. Eksplorasi jenis-jenis sagu potensial di Sulawesi Tenggara. Prosiding Seminar Sagu untuk Ketahanan Pangan. Balai Penelitian Tanaman Kelapa dan Palma lain. Manado (Vol. 6).
- Thaariq, S.M.H. 2017. Pengaruh pakan hijauan dan konsentrat terhadap daya cerna pada sapi Aceh jantan. Genta Mulia. 3(2): 78–89.
- Thiasari, N., E. Indawan, S.U. Lestari, dan P. Sasongko. 2019. Teknologi Tepat Guna: Pembuatan Silase dan Hay dari Brankasan Ubi Jalar. Delta Pijar Khatulistiwa, 154 hal, Sidoarjo.
- Thuy Hang, L.T. and T.R. Preston. 2019. Effect on nutritive value of cassava (*Manihot esculenta* Crantz) stems of ensiling them with urea. Livest Res Rural Dev. 31(6). <http://www.lrrd.org/lrrd31/6/thuyh31092.html>.
- Tilley, J.M.A and R.A. Terry. 1963. A Two stage technique for the *in vitro* digestion of forage crops. Grass and Forage Science. 18(2). 104–111. DOI: 10.1111/j.1365-2494.1963.tb00335.x.
- Tillman, D.A., S. Reksohadiprodjo, H. Hartadi, S. Prawirokusumo, dan S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Cetakan ke enam. Gadjah Mada University Press. Yogyakarta. 422 hal.
- Tiro, B.M.W., P.A. Beding, and Y. Baliadi. 2018. The utilization of sago waste as cattle feed. IOP Conf. Series: Environ Earth Sci. 119: 012028. DOI: 10.1088/1755-1315/119/1/012038.
- Tineu, I. dan E.B. Singkawijaya. 2019. Potensi pemanfaatan dan pengolahan limbah industri rumah tangga tepung tapioka di Tasikmalaya. Proshiding Seminar Nasional Geografi Universitas Muhammadiyah, Surakarta. ISBN: 978-602-361-243-7. 117–126.
- Tirta, W.W.K.P., N. Indrianti, dan R. Ekafitri. 2013. Potensi tanaman sagu (*Metroxylon* sp.) dalam mendukung ketahanan pangan di Indonesia. Pangan. 22(1): 61–76.
- Tobía, C., E. Villalobos, A. Rojas, H. Soto and K.J. Moore. 2008. Nutritional value of soybean (*Glycine max* L. Merr.) silage fermented with molasses and inoculated with *Lactobacillus brevis* 3. Livest Res Rural Dev. 20(7). <http://www.lrrd.org/lrrd20/7/tobi20106.html>.
- Toharmat, T., E. Nursasih, R. Nazilah, N. Hotimah, T.Q. Noerzihad, N.A. Sigit, dan Y. Retnani. 2006. Sifat fisik pakan kaya serat dan pengaruhnya terhadap konsumsi dan pencernaan nutrisi ransum pada kambing. Med Pet. 29(3): 146–154.



- Tsegaye, S. dan H. Ebrahim. 2018. Benefits of farm animals genetic adaptation: a review. *European Journal of Experimental Biology*. 8: 4–22. DOI: 10.21767/2248-9215.100063.
- Tucker, C.B., D.M. Weary, and D. Fraser. 2005. Influence of neck-rail placement on free-stall preference, use, and cleanliness. *J. Dairy Sci.* 88: 2730–2737. DOI: 10.3168/jds.S0022-0302(05)72952-0.
- Tulalo, M.A. dan H. Novarianto. 2013. Keragaman fenotipik dan korelasi antara karakter vegetatif dengan produksi pati sagu Selat Panjang, Meranti. *B. Palma*. 14(1): 28–33.
- Turk, R., D. Juretic, D. Geres, N. Turk, B. Rekic, V. Simeon-Rudolf and A. Svetina. 2004. Serum paraoxonase activity and lipid parameters in the early post partum period of dairy cows. *Research in Veterinary Science*. 76: 57–61.
- Turner, R.G. and L. Willerman. 1977. Sex differences in was item performance. *Journal of Clinical Psychology*. 33(3): 795–797. DOI: 10.1002/1097-4679(197707)33:3<795::aid-jclp2270330342>3.0.co;2-t.
- Umar, M., B. Kurnadi, E. Rianto, E. Pangestu and A. purnomoadi. 2015. The effect of energy level of feeding on daily gain, blood glucose and urea on Madura cattle. *J. Indonesian Trop. Anim. Agric.* 40(3): 159–166.
- Ungerfeld, E.M. 2020. Metabolic hydrogen flows in rumen fermentation: Principles and possibilities of interventions. *Front. Microbiol.* 11: 589. DOI: 10.3389/fmicb.2020.00589.
- USDA Handbooks. 1989. Nutritive Value of Foods. Home and Garden Bulletin. Washington DC. Government Printing Office.
- Usmiati S. dan H. Setiyanto. 2008. Penampilan karkas dan komponen karkas ternak ruminansia kecil. *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*. Balai Besar Penelitian dan Pengembangan Pascapanen Pertanian, Bogor. Hlm: 371-380.
- Utama, C.S., Zuprizal, C. Hanim, dan Wihandoyo. 2019. Pengaruh lama pemanasan terhadap kualitas kimia *wheat pollard* yang berpotensi sebagai prebiotik. *Jurnal Aplikasi Teknologi Pangan*. 8(3): 113–122.
- Utomo, R. dan M. Soejono. 1987. Pengaruh ukuran partikel pakan terhadap pencernaan. *Buletin Peternakan*. 11(1): 5–6.
- Utomo, R. 1996. Pengaruh aras urea dalam ransum terhadap kinerja sapi Bali. *Buletin Peternakan*. 20(2): 124–133.
- Utomo, R. 2004. Review hasil-hasil penelitian pakan sapi potong. *Wartazoa*. 14(3): 116 – 124.
- Utomo, R. 2012. *Evaluasi Pakan dengan Metode Noninvasif*. PT. Citra Aji Parama. Yogyakarta.
- Valente, T.N.P., E.S. Lima, W.B.R. Santos, A.S. Cesário, C.J. Tavares, Í.L. Fernandes, and M.A.M. Freitas. 2016. Ruminant microorganism consideration and protein used in the metabolism of the ruminants: A review. *African Journal of Microbiology Research*, 10(14): 456–464. DOI: 10.5897/AJMR2016.7627.

- Valli, V., A.M.G mez-Caravaca, M.D. Nunzio, F. Danesi, M.F. Caboni, and A. Bordoni. 2012. Sugar cane and sugar beet molasses, antioxidant-rich alternatives to refined sugar. *J. Agric. Food Chem.* 60: 12508–12515.
- Van der Waaij, K.O.L. 2014. *Animal Breeding and Genetics for BCs Students. Textbook Animal Breeding.* Wageningen University and Research Centre, the Netherlands.
- Van Soest, P. J. 1977. Plant fiber and its role in herbivora nutrition. *The Cornell Veterinarian.* 67(3): 307–326.
- Van Soest, P.J. 1994. *Nutritional Ecology of The Ruminant.* 2<sup>nd</sup> ed. Comstock Publishing Associates a Division of Cornell University Press. Ithaca and London. DOI: 10.7591/9781501732355.
- Vázquez-Mosquera, J.M., A. Fernandez-Novo, E. de Mercado, M. Vázquez-Gómez, J.C. Gardon, J.L. Pesántez-Pacheco, Á.Revilla-Ruiz, R. Patrón-Collantes, M.L. Pérez-Solana, A. Villagrà, D. Martínez, F. Sebastián, S.S. Pérez-Garnelo, and S. Astiz. 2023. Beef nutritional characteristics, fat profile and blood metabolic markers from purebred Wagyu, Crossbred Wagyu and Crossbred European steers raised on a fattening farm in Spain. *Animals.* 13: 864. DOI: 10.3390/ani13050864.
- Vera, R.R, P. English, K. Vargas, I. Briones. 2009. Lipid profile of commercial beef cuts from grazing, suckling calves. *Grasas Y Aceites* 60, 482–489.
- Verite, R., and J.L. Peyraud. 1989. Protein: the PDI system. In: Jarrige, R., Ed. , *Ruminant Nutrition: Recommended Allowances and Feed Tables.* John Libbey Eurotext, London and Paris. 33 – 48.
- Vidyana, I.N.A., S.Y.S. Tantalo, dan Liman. 2014. Survei sifat fisik dan kandungan nutrisi onggok terhadap metode pengeringan yang berbeda di dua Kabupaten Provinsi Lampung. *J. Ilmiah Peternakan Terpadu.* 2(2): 58–62.
- Vitale, M., M. Pérez-Juan, E. Lloret, J. Arnau, and C.E. Realini. 2014. Effect of aging time in vacuum on tenderness, and color and lipid stability of beef from mature cows during display in high oxygen atmosphere package. *Meat Science.* 96(1): 270–277. DOI: 10.1016/j.meatsci.2013.07.027.
- Voet, D., J. G. Voet, and C. W. Pratt. 2006. *Fundamentals of Biochemistry - Life at the Molecular Level.* 2<sup>nd</sup> ed. John Wiley and Sons Inc., New York, NY.
- Wahjuni, R.S. and R. Bijanti. 2006. Uji efek sampling formula pakan komplit terhadap fungsi hati dan ginjal pedet sapi Friesian Holstein. *Media Kedokteran Hewan,* 22(3): 174–179.
- Wang, Y. and T.A. McAllister. 2002. Rumen microbes, enzymes and feed digestion-A review. *Asian-Aust. J. Anim. Sci.* 15(11): 1659–1676.
- Wardono, H. P., A. Agus, A. Astuti, N. Ngadiyono and B. Suhartanto. 2021. Potential of sago hampas for ruminants feed. In: *E3S Web Conf.* 306. DOI: 10.1051/e3sconf/202130605012.
- Wardono, H. P., A. Agus, A. Astuti, N. Ngadiyono and B. Suhartanto. 2022. The effect of fermentation time on the nutritional of sago hampas. *Proc 9th Int Semin Trop Anim Prod (ISTAP 2021).* DOI:

10.2991/absr.k.220207.020.

- Wathes, D.C., Z. Cheng, M.A. Fenwick, R. Fitzpatrick, and J. Patton. 2011. Influence of energy balance on the somatotrophic axis and metalloproteinase expression in the endometrium of the postpartum dairy cow. *Reproduction*. 141: 269–281.
- Weatherby, D. and S. Ferguson. 2002. *Blood Chemistry and CBC Analysis Clinical Laboratory Testing from a Functional Perspective*. Bear Mountain Publishing, United State of America.
- West, J.W. 2003. Effects of Heat-Stress on Production in Dairy Cattle. *Journal Dairy Science*. 86: 2131–2144.
- Weglarz, A. 2010. Meat quality defined based on pH and colour depending on cattle category and slaughter season. *Czech J. Anim. Sci.* 55(12): 548–556.
- Widodo, Y., A. Qisthon, dan Liman. 2011. Optimalisasi pemanfaatan onggok melalui pengolahan biologis terhadap parameter rumen dan pencernaan zat-zat makanan sapi. *Jurnal Penelitian Pertanian Terapan*, 11(3): 137–142.
- Widyobroto, B.P. 1992. Pengaruh aras konsentrat dalam ransum terhadap pencernaan dan sintesis N mikroba di dalam rumen pada sapi perah produksi tinggi. *Buletin Peternakan*. Edisi Khusus, 241–249.
- Widyobroto, B.P., S.P.S. Budhi, and A. Agus. 2008. Effect of undegraded protein and energy level on intake and digestibility of nutrient and blood metabolite in dairy cows. *Animal Production*. 10(2): 96 – 101.
- Wijayanti, D.K., C. Lestari, dan M.T. Mulyanto. 2012. Pengaruh overliming pada pembuatan etanol dari limbah pabrik tepung tapioka (onggok) dengan hidrolisis asam dan enzim. *J. Teknik POMITS*. 1(1): 1–3.
- Williamson, G. dan W.J.A. Payne. 1993. *Pengantar Peternakan di Daerah Tropis*. Cetakan pertama. Edisi ketiga. Universitas Gajah Mada Press. Yogyakarta.
- Winarno, F.G. 2004. *Kimia Pangan dan Gizi*. Cet. 11 p. 245, ISBN: GM 21284.013. PT Gramedia Pustaka Utama, Jakarta.
- Wisner-Pedersen, J. 1971. *The Science of Meat and Meat Products*. Editor: Amer. Meat Inst. Found. Reinhold Publishing Co., New York. Hal. 212
- Wiyatna, M.F. 2007. Perbandingan indeks perdagangan sapi-sapi Indonesia (sapi Bali, Madura, dan PO) dengan sapi Australian Commercial Cross (ACC). *Jurnal Ilmu Ternak*. 7(1): 22–25.
- Wizna, A. Hafil, R. Yose, D. Abdi, and K. Putu. 2008. Improving the quality of sago pith and rumen content mixture as poultry feed through fermentation by *Bacillus amyloliquefaciens*. *Pak J Nutr*. 7(2): 249–254. DOI: 10.3923/pjn.2008.249.254.
- Wolin, M.J. 1960. A theoretical rumen fermentation balance. *Journal of Dairy Science*. 43(10): 1452–1459. DOI: 10.3168/jds.s0022-0302(60)90348-9.

- Wulandari, S., A. Agus, M. Soejono, dan M.N. Cahyanto. 2014. Nilai cerna dan biodegradasi theobromin pod kakao dengan perlakuan fermentasi menggunakan inoculum multi mikroba. *Agritech*. 34(2): 160 – 169.
- Wurlina, M. Hariadi, I. Mustofa, dan D.K. Meles. 2018. Penggemukan sapi menggunakan pakan tanpa hijauan (*complete feed*) dan tape jerami serta *growth promotor* strategi pencapaian swasembada daging. *Jurnal Layanan Masyarakat Universitas Airlangga*. 02(2): 63–68.
- Wyness, L., E. Weichselbaum, A. O'Connor, E.B. Williams, B. Benelam, H. Riley, and S. Stanner. 2011. Red meat in the diet: an update. *Nutrition Bulletin*. 36(1): 34 – 77. DOI: 10.1111/j.1467-3010.2010.01871.x.
- Yamamoto, Y., K. Omori, F.S. Jong, A. Miyazaki, and T. Yoshida. 2007. Estimate of annual starch productivity in sago palm, a case study at Tebing Tinggi Island, Riau, Indonesia. Paper presenteda 9 Int. Sago Symp., Leyte, Philippines.
- Yamin, M., S. Rahayu, dan A. Ma'ani. 2013. Kesejahteraan domba akibat pencukuran: tingkah laku domba sebelum, saat dan setelah pencukuran bulu. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*. 1(1): 15–18.
- Yang, W. 2017. Factors affecting rumen fermentation using batch culture technique. *Fermentation Processes*. DOI:10.5772/64207
- Yani, A. dan B.P. Purwanto. 2006. Pengaruh iklim mikro terhadap respons fisiologis sapi peranakan fries holland dan modivikasi lingkungan untuk meningkatkan produktivitasnya. *Jurnal Media Peternakan*. 29(1): 35–46.
- Yanti, H., Hidayati dan Elfawati. 2008. Kualitas daging sapi dengan kemasan plastik PE (polyethylen) dan plastik PP (Polypropylen) di pasar Arengka kota Pekanbaru. *J. Peternakan*. 5(1): 22–27.
- Yanuartono, A. Nururrozi, S. Indarjulianto, H. Purnamaningsih, dan S. Rahardjo. 2018. Urea: Manfaat pada ruminansia. *Jurnal Ilmu-Ilmu Peternakan*. 28(1): 10–34. DOI: 10.21776/ub.jiip.2018.028.01.02.
- Yanuartono, A. Nururrozi, S. Indarjulianto, dan H. Purnamaningsih. 2019. Peran protozoa pada pencernaan ruminansia dan dampak terhadap lingkungan. *J. Ternak Tropika*. 20(1): 16–28.
- Yo, B. 2000. Sifat Fisik dan Kimia sapi Brahman Cross, Angus dan Murray Grey. *Media Veteriner* 7(2): 9–11.
- Yuliasih, I., T.T. Irawadi, I. Sailah, H. Pranamuda, K. Setyowati, dan T.C. Sunarti. 2007. Pengaruh proses fraksinasi pati sagu terhadap karakteristik fraksi amilosanya. *Jurnal Teknologi Industri Pertanian*. 17(1): 29–36.
- Yulistiani, F., Saripudin, L. Maulani, W.S. Ramdhayani, W. Wibisono, dan A.R. Permanasari. 2019. Fructose syrup production from tapioka solid waste (onggok) by using enzymatic hydrolysis in various pH and isomerization process. *Journal of Physics: Conference Series* 1295 012032.
- Yusiati, L.M. 2005. Pengembangan Metode Estimasi Sintesis Protein Mikroba Rumen Menggunakan Ekskresi Derivat Purin dalam Urin Berbagai

Ternak Ruminansia Indonesia. Disertasi. Fakultas Peternakan, Universitas Gadjah Mada, Yogyakarta.

- Young, O.A., S.X. Zhang, M.M. Farouk, and C. Podmore. 2005. Effects of pH adjustment with phosphates on attributes and functionalities of normal and high pH beef. *Meat Science*. 70(1): 133–139. DOI: 10.1016/j.meatsci.2004.12.018.
- Yusuf, M.A., M. Romli, Suprihatin, and E. Wiloso. 2018. An environmental impact analysis of semi - mechanical extraction process of sago starch: life cycle assessment (LCA) perspective. *IOP Conf. Series: Environ Earth Sci*. 147: 012–036. DOI: 10.1088/1755-1315/147/1/012036.
- Zahro, S.F., K.A. Fitrah, S.A. Prakoso, dan L. Purnamasari. 2021. Pengaruh pelayuan terhadap daya simpan dan keempukan daging. *JPI*. 23(3): 235–239. DOI: 10.25077/jpi.23.3.235-239.2021.
- Zajulie, M.I., M. Nasich, T. Susilawati, dan Kuswati. 2015. Distribusi komponen karkas sapi Brahman Cross (BX) hasil penggemukan pada umur pemotongan yang berbeda. *J. Ilmu-Ilmu Peternakan*. 25(1): 24–34.
- Zhao, X.H., S. Zhou, L.B. Bao, X.Z. Song, K.H. Ouyang, L.J. Xu, Ke Pan, C.J. Liu and M.R. Qu. 2018. Response of rumen bacterial diversity and fermentation parameters in beef cattle to diets containing supplemental daidzein. *Italian Journal of Animal Science*. 17:3: 643–649. DOI: 10.1080/1828051X.2017.1404943.
- Zhu, F. 2019. Recent advances in modifications and applications of sago starch. *Food Hydrocolloids*. 96: 412–423. DOI: 10.1016/j.foodhyd.2019.05.035.
- Zubaili, Y. Usman dan S. Wajizah. 2017. Evaluasi pencernaan in vitro pakan komplit fermentasi berbahan dasar ampas sagu dengan lama pemeraman berbeda. *Jurnal Ilmiah Mahasiswa Pertanian Unsyiah*. 2(2):350-358.
- Zulkarnain, D., A.M. Tasse, dan Rahman. 2013. Ransum Hidrolisat Ayam Broiler dan Petelur Berbasis Sumber Daya Pakan Lokal Sulawesi Tenggara. Laporan Penelitian Hibah Bersaing. Lembaga Penelitian dan Pengabdian Kepada Masyarakat. Universitas Halu Oleo. Kendari.