

DAFTAR PUSTAKA

- Abdou, A. R., E. Y. Eid, A. M. El Essawy, A. M. Fayed, H. G. Helal, & H. M. El Shaer. 2011. Effect of feeding different sources of energy on performance of goats fed saltbush in Sinai. *J. American Sci.*7(1):1040-1050.
- Addleman, K. & F. Archibald. 1993. Kraft pulp bleaching and delignification by dikaryons and monokaryon of *Trametes versicolor*. *Applied and Environmental Microbiology*.59(1):266-273.
- Adriani., L dan Mushawwir. A. 2009. Kadar glukosa darah, laktosa dan produksi susu sapi perah pada berbagai tingkat suplementasi mineral makro. *J.Indon.Trop.Anim.Agric.*34(2):88–95.
- Akbar, S. A. 2001. Pengaruh pemberian serat sawit yang diamoniasi dengan NaOH dan difermentasi dengan *Aspergillus niger* terhadap pencernaan ternak domba. *Jurnal Peternakan dan Lingkungan*. Edisi Khusus April 2001.
- Akhtar M, Blanchette RA, Kirk TK. 1997. Fungal delignification and biomechanical pulping of wood. *Adv Biochem Engineer Biotechnol* 57:159-195.
- Alexopoulos C.J., Mims C.W., Blackwell M. 1996. *Introductory Mycology*. Ed. Ke-4. New York: John Willey and Sons Inc.
- Ali.A.I.M., S. Sandi., Riswandi., A. Imsya., A. Prabowo and N. Rofiq. 2015. Evaluation of Yeast Supplementation with Urea-Molasses in Rice Straw-Based Diets on *in vitro* Ruminal Fermentation. *Pakistan Journal of Nutrition*. 14(12): 988-993.
- Alimon, A.R., 2005. The nutritive value of palm kernel cake for animal feeds. *Palm Oil Developments*, vol. 40. Malaysian Palm Oil Board, Kuala Lumpur, Malaysia, pp.12–14.
- Alwi, M., W.Suryapratama., FM. Suhartati. 2013. Sugarcane baggase fermentation using *Phanerochaete chrysosporium* as effort to increase rumen fermentation products *In Vitro*. *Jurnal Ilmiah Peternakan*.1(2):479–487.
- Ananda S, Sastry VRB, Musalia LM, Agrawal DK. 1996. Growth rate and nutrient efficiency of growing goats fed urea ammoniated neem (*Azadirachtu indim*) seed kernel meal as protein supplement. *Small Rumin Res* 22:205–212.

- AOAC. 1990. Official Methods of Analysis. 15th edition. Association of Official Analytical Chemists. Association of Official Analytical Chemists, Washington, D.C.
- Apriyantono., A. D. Fardiaz., N. L. Puspitasari., Sedarmawati dan S. Budiyanon.
1987. Analisis Pangan. Pusat Antar Universitas Institut Pertanian Bogor, Bogor.
- ARC, 1980. Nutrient requirement of livestock. Tech. Rev. by an ARC Working Party. Commonwealth Agricultural Bureaux, London, pp. 121-181.
- Aregheore EM. 2004. Nutritive value of sweet potato (*Ipomea batatas* (L) Lam) forage as goat feed : voluntary intake, growth and digestibility of mixed rations of sweet potato and batiti grass (*Ischaemum aristatum* var. *indicum*). Small Rumin. Res.51:235–241.
- Aregheore EM. 2006. Utilization of concentrate supplements containing varying levels of copra cake (*Cocos nucifera*) by growing goats fed a basal diet of napier grass (*Pennisetum purpureum*). Small Rumin Res 64:87–93.
- Arora SP.1995. Pencernaan Mikroba pada Ruminansia. Murwani R, penterjemah : Srigandono B, editor. Yogyakarta : Gadjah Mada University Press. Terjemahan dari Microbial Digestion in Ruminants. Hlm 9–13.
- Asleson CM, Asleson JC, Malandra E, Johnson S, Berman J. 2000. Filamentous Growth of *Saccharomyces cerevisiae* Is Regulated by Manganese. Fungal Gen Biol. 30:155-162.
- Badarina. I., D. Evvyernie., T. Toharmat., E. N. Herliyana & L. K. Darusman. 2013. Nutritive value of coffee husk fermented with *Pleurotus ostreatus* as ruminant feed. Media Peternakan. 36(1).58–63.
- Bal, M. A and D. Ozturk. 2006. Effect of sulfur containing supplements on ruminal fermentation and microbial protein synthesis. Research Journal of Animal and Veterinary Sciences. 1(1):33–36.
- Balch, C.C. and R.C. Campling. 1962. Regulation of voluntary feed intake in ruminants. Nutrition Abstract & review.32: 669.
- Baldrin P. 2003. Interaction of heavy metal with *white-rot fungi*. Enzyme Microbial Technol 32:78-91.
- Baldwin, R. L. and M. J. Allison. 1983. Rumen metabolism. J.Anim. Sci.57:2209-2215.

- Baldwin, R.L. and S.C. Denham, 1979. Quantitative and dynamic aspects of nitrogen metabolism in rumen: a modelling analysis. *J. Anim. Sci.*, 49: 1631-1637.
- Ballgees, A., Atta Ellman, A. M. A Fadal Elsseed and A.M Salih. 2009. Effects of *Albazia Lebbeck* or wheat bran supplementation on intake, digestibility and rumen fermentation of ammoniated baggase. *Journal of Applied Science Research*.5(8):1002–1006.
- Bannink, A., France, J., López, S., Gerrits, W.J.J., Kebreab, E., Tamminga, S., and Dijkstra, J.. 2008. Modelling the implications of feeding strategy on rumen fermentation and functioning of the rumen wall. *Anim. Feed Sci. Technol.* 143:3–26.
- Batubara, L. P. 2003. Potensi integrasi peternakan dengan perkebunan kelapa sawit sebagai simpul agribisnis ruminan. *Wartazoa* 13(3):83–91.
- Batubara, L.P., S.P. Ginting, K. Simanihuruk, J. Sianipar dan A. Tarigan. 2003. Pemanfaatan limbah dan hasil ikutan perkebunan kelapa sawit sebagai ransum kambing potong. *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*. Bogor, 29-30 September 2003. Puslitbang Peternakan. Bogor. hlm. 106-109.
- Baumann, T. A., Lardy, G. P., Caton, J. S and Anderson, V. L. 2004. Effect of energy source and ruminally degradable protein addition on performance of lactating beef cows and digestion characteristics of steer. *J. Anim. Sci.* 82: 2667–2678.
- Beever, D. E. 1993. Rumen Function. In : *Quantitative Aspects of Ruminant Digestion and Metabolism*. J. M. Forbes dan J. France (Editors). CAB International, Wallingfors, P. 187-218.
- Blanchette RA, Cease KR, Abad AR. 1991. An evaluation of different forms of deterioration found in archaeological wood. *Int Biodeter* 28:3–22.
- Blanchette RA. 1984. Screening Wood Decayed by White Rot Fungi for Preferential Lignin Degradation. *Appl Environ Microbiol.* 48:647-653
- Bonnarme. P and T. W. Jeffries. 1990. Mn(II) regulation of lignin peroxidases and manganese-dependent peroxidases from lignin-degrading white rot fungi. *Appl Environ Microbiol.* 56(1): 210–217.

- Boomithan, K . Reddy,CA.1992. Fungal Degradation of Lignin. Di dalam Arora D.K Elander, RP. Mukerji KG. Editor Hand book of Applied Mycology. Vol 4. Fungal Biotechnology. New york : Marcell Dekker.
- Bravo, D., D. Sanvant, C. Bogaert and F. Meschy. 2003. Quantitative aspects of phosphorus absorption in ruminant. *Reprods. Nutr. Dev.* 43:271–284. INRA. EDP. Sciences.
- Broda P, Birch PRJ, Brooks PR, Sims PFG. 1996. Lignocellulose degradation by *Phanerochaete chrysosporium* : gene families and gene expression for a complex process. *Molecul Microbiol.*19:923–932.
- Brown, J.A., Glenn, J.K., Gold, M.H., 1990. Manganese regulates expression of manganese peroxidase by *Phanerochaete chrysosporium*. *J. Bacteriol.* 172, 3125–3130.
- Cakra, O., I. G. I., I. G. M Suwena dan N. M. S Sukmawati. 2005. Konsumsi dan koefisien cerna nutrisi pada kambing Peranakan Ettawah (PE) yang diberikan pakan konsentrat ditambah soda kue (*Sodium Bikarbonat*). *Majalah Ilmiah Peternakan.* 8(3):76–80.
- Campling RC. Lean IJ. 1983. Food characteristics that limit voluntary intake. Di dalam Rock JAF, Thomas PC, editor. *Nutritional Physiology of Farm Animal.* London : Longman.
- Casey JP. 1980. *Pulp and Paper Chemistry and Chemical Technology. Third Edition* , Vol. I. John Wiley and Sons, New York.
- Chahal PS, Chahal DS. 1998. Lignocellulosic waste : biological conversion. Di dalam : Martin AM, editor. *Bioconversion of Waste Materials to Industrial Products.* Ed ke -2. London. ; Blackie Acad Prof. pp 376-422.
- Chang HC, Bumpus JA. 2001. Inhibition of lignin peroxidase-mediated oxidation activity by ethylenediamine tetra acetic and N-N-N'-N'tetrametylenediamine. *Proc Natl Sci. Coun* 25(1):26–33.
- Chesworth J. 1992. *Ruminant Nutrition.* London : MacMillan. Hlm 88–100.
- Chiba, L.I. 2009. *Animal Nutrition Handbook. Second Revision.* URL:
- Chobtang J., K. Intharak and A. Isuwan. 2009. Effects of dietary crude protein levels on nutrient digestibility and growth performance of Thai indigenous male goats. *J. Sci. Technol.*31:591–596.

- Chung. K. R. 2003. Involvement of calcium/calmodulin signaling in cercosporiumtoxin biosynthesis by *Cercospora nicotienae*. *Appl Environ Microbiol.*69:1187–1196.
- Church, D.C. 1988. *The Ruminant Animal Digestive Physiology and Nutrition*. Prentice Hall, Englewood Cliff, New York.
- Coleman SW, Moore JE. 2003. Feed quality and animal performance. *Field Crops Res* 84:17–29.
- Crawford, R.L. 1981. *Lignin Biodegradation and Transformation*. NewYork: John Wiley and Sons.
- Crueger, W and Crueger A. 1984. *Biotechnology : A Textbook of Industrial Microbiology*. Sinauer Associates. Inc. Sunderland.
- Czerkawski, J.W. 1986. *An introduction to Rumen Studies*. Pergamon. Oxford.
- Dashban M, Scraft H, Qin W. 2009. Fungal bioconversion of lignocellulosic residues: Opportunities and perspective. *Int J Biol Sci* 5(6):578-595.
- Datta, A., A. Bettermann, and T. K. Kirk. 1991. Identification of a specific manganese peroxidase among ligninolytic enzymes secreted by *Phanerochaete chrysosporium* during wood decay. *Appl. Environ. Microbiol.* 57:1453-1460.
- Davies, H. L. 1982. *Nutrition and Growth Manual*. Australia Univeristy International Development Press. Australia.
- de Koker TH, Nakasone KK, Haarhof J. Burdsall Jr. HH, Janse BJH. 2003. Phylogenetic relationship of the genus *Phanerochaete* inferred from the internal transcribed spacer region. *Mycol Res.* 107:1032-1040.
- Deacon. J. 2005. White Rot Fungi. helios.bto.ed.ac.uk/bto/fungal/biology/woodrots.html.
- Devendra C. and R. A. Leng. 2011. Feed resources for animals in Asia : Issues, strategies for use, intensification and integration for increases productivity. *Asian-Aust. J. Anim. Sci.* 24(3):303–321.
- Devendra C., Burn. M., 1994. *Produksi Kambing di daerah Tropis*. Penerbit IPB. Bogor.

- Dias, R.S., E. Kebreab, D. M. S. S. Vitti, A. P. Roque, I. C. S. Bueno and J. France. 2006. A revised model for studying phosphorus and calcium kinetics in growing sheep. *J. Anim. Sci.* 84:2787-2794.
- Doloksaribu, M., S. Elieser., F. Mahmilia dan F. A. Pamungkas. 2005. Produktivitas kambing kacang pada kondisi di kandang: 1. Bobot lahir, bobot sapih, Jumlah anak sekelahiran dan daya hidup Anak prasapih. Seminar Nasional Teknologi Peternakan dan Veteriner. Hal 581–585.
- Dougharty, R.W., R.G. Allen, W. Burroughs., N.L. Jacobson, and A.D. Mc Gillard. 1965. *Physiology of Digestion in The Ruminants*. Washington, Butterworths.
- Dozoretz, C.G., N. Rothschild, and Y. Hadar. 1993. Overproduction of lignin Peroxidase by *Phanerochaete chrysosporium* BKM-F1767. *Applied and Environmental Microbiology*. 59(6):1919-1926.
- Durant, M and Komisarczuk. 1988. Influence of mayor mineral on rumen microbiota. *Journal of Nutrition*.118(2):249-260.
- Elihasridas. 2012. Respon suplementasi mineral Zink (zn) terhadap pencernaan in-vitro ransum tongkol jagung amoniasi. *Jurnal Peternakan* 9(2):9–14.
- Enari, T. M. 1983. Microbial cellulases. In : Forgart, W. F. (Ed). *Microbial Enzymes and Biotechnology*. Applied Science. London. pp 183-223.
- Erdman, R.A., 1988. Dietary buffering requirements of lactating dairy cows. A Review. *J. Dairy Sci.* 71:3246-3246.
- Eriksson K EL, Blanchette R A, Ander P. 1990. *Microbial and enzymatic degradation of wood components*. Berlin : Springer-Verlag.
- Eriksson, K.E., 1993. Where do we stand and where are we going? Lignin biodegradation and practical utilization. *J. Biotechnol.* 30,149–158.
- Erwanto, 1995. *Optimalisasi Sistem Fermentasi Rumen melalui Suplementasi Sulfur, Defaunasi, Reduksi Emisi Metan dan Stimulasi Pertumbuhan Mikroba pada Ternak Ruminansia*. Disertasi. Program Pascasarjana. IPB. Bogor.
- Esminger, M. L. 1990. *Feed and Nutrition*. 2nd Edition. The Esminger Publ. Co., California.

- Fadilah,. S. Distantina,. E. K. Artati dan A. Jumari. 2008. Biodelignifikasi batang jagung dengan jamur pelapuk putih *Phanerochaete chrysosporium*. *Ekuilibrum* 7(1):7–11.
- Faison, B. D., and T. K. Kirk. 1985. Factors involved in the regulation of a ligninase activity in *Phanerochaete chrysosporium*. *Appl. Environ. Microbiol.* 49:299-304.
- Fakhri,S., Adrizal, Nelson dan Akmal. 2011. Aplikasi teknologi pelleting pelepah sawit sebagai pakan ternak di sentra peternakan kambing PE Kecamatan Bajubang Kabupaten Batanghari. *Jurnal Pengabdian pada Masyarakat.* 52:37–45.
- Fariani, A., A. Abrar dan G. Muslim. 2013. Kecernaan pelepah sawit fermentasi dalam Complete Feed Block (CFB) untuk sapi potong. *Jurnal Lahan Sub optimal.* 2(2):129–136.
- Fariani, A., A. Abrar, G. Muslim and L. Warly. 2015. Supplementation of fermented palm press fibre on digestibility of rice straw and rumen bacteria profile. *Pakistan Journal of Nutrition.*14(2):80-83.
- Farrell, R. L., K. E. Murtagh, M. Tien, M. D. Mozuch, and T. K. Kirk. 1989. Physical and enzymatic properties of lignin peroxidase isoenzymes from *Phanerochaete chrysosporium*. *Enzyme Microb. Technol.*11:322-328.
- Faverdin P, Boumant R, Ingvarsten KL. 1995. Control and prediction of feed intake in ruminants. Di dalam Journet M, Grenet E, Farce MH, Theriez M, Demarquilly C, editor. *Recent Development in the Nutrition of Hervibores. Proceeding of Fourth International Sysmposium on the Nutrition of Hervibores.* Clemont-Ferrand,11–15 Sept 1995. Paris : INRA. Hlm 95– 119.
- Febrina, D., Novirman, J., Mardiyati, Z., Khasrad and Rini, M. 2014. Biological delignification by *Phanerochaete chrysosporium* with addition of mineral Mn and its effect on nutrient content of oil palm frond. The 16th AAAP Animal Science Congress November 10-14, 2014. Yogyakarta. Indonesia. pp 1.723–1.726.
- Fedele V, Claps S, Rubinoa R, Calandrellia M, Pillab AM. 2002. Effect of free choice and traditional feeding system on goat feeding behaviour and intake. *Livest Prod Sci.* 74:19–31.

- Feng. C. L., G. M. Zeng., D. L. Huang., S. Hu., M. H. Zhao., C.Lai., C. Huang., Z. Wei., N. J. Li. 2011. Effect of ligninolytic enzymes on lignin degradation and carbon utilization during lignocellulosic waste composting. *Process Biochemistry*. 46:1515–1520.
- Fengel D, Wegener G. 1989. *Wood Chemistry Ultra Structure Reaction*. Walter De Grueter, New York.
- Fiorentinia G, JD Messanaa, PHM Diana, RA Reisa, RC Canesina, AV Piresb, TT Berchielli. 2013. Digestibility, fermentation and rumen microbiota of crossbred heifers fed diets with different soybean oil availabilities in the rumen. *Animal Feed Science and Technology*. 181:26–34.
- Forbes J. M, and R. W. Mayes. 2002. Food choice. In : Freer M, Dove H. editor. *Sheep Nutrition*. Collingwood: CABI Publishing. Hlm 51–69.
- Foss Analytical. 2006. Fibertec™ M.6 1020 / 1021. User Manual 1000 1537 / Rev 3. Foss Analytical A.B. Sweden.
- France, J. and Dijkstra, J. 2005. Volatile Fatty Acid Productions. In: *Quantitative Aspect of Ruminant Digestion and Metabolism*. 2nd Ed. CAB. International, Cambridge, USA.
- France. J. and R.C. Siddons. 1993. Volatile fatty acids production. In quantitative aspect of ruminant digestion and metabolism. Ed. J.M. Forbes and J. France. CAB Internasional.
- Genther. O. N. , and S. L. Hansen. 2014. Effect of dietary trace mineral supplementation and a multi-element trace mineral injection on shipping response and growth performance of beef cattle. *J. Anim. Sci.*21:2522-2530.
- Georgievskii, V., B. N. Annenkov and V. T. Samokhin. 1981. *Mineral Nutrition of Animal*. Butter Worth. London.
- Ginting, S. P. 2005. Sinkronisasi degradasi protein dan energi dalam rumen untuk memaksimalkan produksi protein mikroba. *Wartazoa*. 15(1):71–76.
- Ginting, S.P., L. P. Batubara, A. Tarigan, R. Krisnan dan Junjungan. 2004. Pemanfaatan limbah pengolahan sayur lobak (*Raphanus sativus*) sebagai pakan kambing. Pros. Sem. Nas. Teknologi Peternakan dan Veteriner. Bogor 4 – 5 Agustus. Puslitbangnak. Hlm 421–426.

- Glenn, J. K., M. A. Morgan, M. B. Mayfield, M. Kuwahara, and M. H. Gold. 1983. An extracellular H₂O-requiring enzyme preparation involved in lignin biodegradation by the white rot *basidiomycete Phanerochaete chrysosporium*. *Biochem. Biophys. Res. Commun.* 114:1077-1083.
- Gold. M.H and Alic. M. 1993. Molecular biology of the lignin-degrading *Basidiomycete Phanerochaete chrysosporium*. *Mikrobiol Rev.* 57:605–622.
- Gong CS, Tsao GT. 1981. *Cellulase and biosynthesis regulation. Didalam Perlman, D. (ed). Annual Report on Fermentation Process.* Academic Press, New York.
- Goodrich, R. D and J. E. Garret. 1986. Sulfur in Livestock Nutrition. In L Sulfur in Agriculture. M.A. Tabatabai. (Editor). P. 101-108.
- Grace, N. D., JR Rovnce, S.O Knowless and J. Lee. 1997. Changing dietary intake and the Cu status of grazing lambs. *New Zealand J. Agr. Res.*40(3): 329–334.
- Griffin, D H.1994. *Fungal Phsiology* New york Willey –Liss. pp 458.
- Guillen F, Martinez AT, Martinez MJ. 1992. Substrate specificity and properties of the aryl alcohol oxidase from the ligninolytic fungus *Pleurotus eryngii*. *Eur J Biochem.* 209:603–11.
- Gulati, S.K., J.R.Ashes, G.L.R. Gordon and M.W .Philips. 1985. Possible contribution of rumen fungi to fiber digestion in sheep. *Proc. Nutr. Csoc Aust.*10.
- Gutierrez A, Caramelo L, Prieto A, Martinez MJ, Martinez AT. 1994. An isaldehyde production and aryl alcohol oxidase and dehydrogenase activities in ligninolytic fungi of the genus *Pleurotus*. *Appl Environ Microbiol* 60: 1783–1788.
- Haenlei, G. 2002. *Feeding Goats for Improved Milk dan Meat Production.* Department of Animal and Food Sciences University of Delaware, USA.
- Hammel, KE 1996. Extracellular free radical biochemistry of ligninolytic fungi. *New J. Chem* 20:195–198.
- Hammel, KE. 1997. Fungal Degradation of Lignin di dalam. Cadish G, Giller KE, editor. *Driven by Nature : Plant Litter Quality and Decompostion.* London:CAB International. Hlm 33–45.

- Hattaka A, 1994. Lignin-modifying enzymes from selected white rot fungi : production and role in lignin degradation. *FEMS Microbiol Rev.* 13:125–135.
- Have Rt, Teunissen PJM. 2001. Oxidative mechanisms involved in lignin degradation by white-rot fungi. *Chem Rev.* 11:3397-414.
- Hendriks ATWM, Zeeman G. 2009. Pretreatment to enhance the digestibility of lignocelulosic biomass. *Bioresour Technol.* 100:10–18.
- Hendritomo, H.I. 1995. Efektivitas jamur Colombia Unidentified Lignophilic Hymenomyces (CULH) dalam mendegradasi lignoselulosa kayu albasia (*Albizia falcataria* L. Fosberg) pada berbagai sumber nitrogen dan konsentrasi Mn^{2+} yang dipersiapkan untuk proses biopulp. Tesis. Institut Teknologi Bandung. Bandung.
- Highley T.I, and T.K Kirk. 1979. Mechanisms of Wood Decay and The Unique Features of Heartrots. *Symposium on Wood Decay J.* 69:1151–1157.
- Higuchi, T. 1990. Lignin biochemistry: biosynthesis and biodegradation. *Wood Sci. Technol.* 24:23-63.
- Hogan, J. 1996. Ruminant Nutrition and Production in The Tropics and Subtropics. Australian Centre for International Agricultural Research, Canberra. 47p.
- Holzbaumer, E. L. F., A. Andrawis, and M. Tien. 1991. Molecular biology of lignin peroxidase from *Phanerochaete chrysosporium*, p. 197-223. In S. A. Leong, and R. M. Berka (ed.), *Molecular industrial mycology*. Marcel Dekker, Inc., New York.
- Howard R. L, Abotsi E, van Rensburg ELJ, Howard S. 2003a. Lignocellulose biotechnology : issues of bioconversion and enzyme production. *Afr J Biotechnol.* 2:602–619.
- Howard RL, Masoko P. Abotsi E. 2003b. Enzyme activity of *Phanerochaete chrysosporium* cellobiohydrolase (CBHI.1) expressed as heterologous protein from *Escherichia coli*. *Afr J Biotechnol.* 2:296–300.
- Hungate, I. D., 1996. *The Rumen and Its Microbes*. Academic Press. London.
- Iconomou, D., K. Kandylis, C. Israilides and P. Nikokyris. 1998. Protein enhancement of sugar beet pulp by fermentation and estimation of protein degradability in the rumen of sheep. *Small Rum. Res.* 27:55–61.

- Imsya, A., E.B. Laconi., K.G. Wiryawan & Y. Widyastuty. 2013a. Identification of phenolic compounds and its antioxidant activity from lignin and palm oil frond fermented with *Phanerochaete chrysosporium*. Proceedings of the 4th International Conference on Sustainable Animal Agriculture for Developing Countries (SAADC 2013) 27–31 July 2013. Lanzhou University Lanzhou, China. pp 310-312.
- Imsya. A., E. B. Laconi., K. G. Wiryawan & Y. Widyastuti. 2013b. *In vitro* digestibility of ration containing different level of palm oil frond fermented with *Phanerochaete chrysosporium*. Media Peternakan. 36(2):131-136.
- Imsya. A. 2013. Hasil Biodegradasi Lignoselulosa Pelepah Sawit (*Elacis queneensis*) oleh *Phanerochaete chrysosporium* sebagai Antioksidan dan Bahan Pakan Ternak. Disertasi. Sekolah Pascasarjana. Institut Pertanian Bogor. Bogor.
- Jackson, S. L. And I. B. Heath. 1993. Roles of calcium ions in hyphal tip growth. Microbiol Rev.57:367-382.
- Jacobsen, S.E., Wyman, C.E. 2000. Cellulose and hemicellulose hydrolysis models for application to current and novel pretreatment processes. Appl Biochem Biotechnol 84:81–96.
- Jager A, Croan S, Kirk TK. 1985. Production of ligninase and degradation of lignin in agitated submerged cultures of *Phanerochaete chrysosporium*. Appl. Environ Microbiol. 50:1274-1278.
- Jellison, J. J. Connolly., B. Goodell., B. Doyle., B. Illman., F. Feteke and A. Ostrofsky. 1997. The role of the cation in the biodegradation of wood by the brown rot fungi. Int. Biodeter. Biodegr. 39:165-179.
- Judoamidjojo R.M., Sa'id E G dan L. Hartoto. 1989. Biokonversi. PAU Bioteknologi IPB. Bogor.
- Kamalidin., A. Agus., I. G. Suparta. Budisatria. 2012. Performa domba yang diberi complete feed kulit buah kakao terfermentasi. Buletin Peternakan. 3(3):162–168.
- Kamra, D.N. 2005. Rumen microbial ecosystem. Special Section: Microbial Diversity. Current Science. 89(1):124-135.
- Kapich, A.N., Prior, B.A., Botha, A., Galkin, S., Lundell, T., Hatakka, A., 2004. Effect of lignocellulose-containing submerged cultures of *Phanerochaete chrysosporium* ME-446. Enzyme Microbial. Technol.34.187–195.

- Karcher, E. L., M. M. Pickett, G. A. Varga and S. S. Donkin. 2007. Effect of dietary carbohydrate and monensin on expression of gluconeogenic enzymes in liver of transition dairy cows. *J. Anim. Sci.* 85:690-699.
- Karsli, M.A. and J. R. Russell. 2001. Effect of some dietary factors on ruminal microbial protein synthesis. *J. Veterinary and Animal Science.* 25:681-685.
- Katongole, C. B., E. N. Sabiiti, F. B. Bareeba, & I. Ledin. 2009. Performance of growing indigenous goat fed diet based on urban market crops wastes. *Trop. Anim. Health Prod.* 41:329–336.
- Kawamoto, H., Mohamed, W.Z., Sukur, N.I.M., Ali, M.S.M., Islam, Y., Oshio, S., 2001. Palatability, digestibility, and voluntary intake of processed oil palm fronds in cattle. *Japan Agric. Res. Quart.* 35,195–200.
- Keidane, D. and E. Birgele. 2003. The efficacy of feed on the intra ruminal and intra abomasal pH dynamics in goats. *Veterinarija IR Zootechnica.* 22:55-61.
- Keller F, Hamilton J, Nguyen Q. 2003. Microbial pretreatment of biomass. *Appl Biochem Biotechnol.*105:27–41.
- Kementerian Pertanian. 2014. *Statistik Pertanian 2014*. Sutiyoerini S, Waryanto B, editor. Jakarta (ID): Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian. Jakarta.
- Kennedy, P. M, J. B. Lowry, & I. I. Conlan. 2000. Phospat rather than surfactant accounts for the main contribution to enhanced fibre digestibility resulting from treatment with boiling neutral detergent. *Anim. Feed Sci. Tech.* 86: 170:177.
- Kerem Z Hadar Y. 1997. The role of manganese in enhanced lignin degradation by *Pleurotus ostreatus*. *Biological Symposium, Atlanta.* TAPPI Press.
- Kerem Z, Hadar Y. 1995. Effect of manganese on preferential degradation by *Pleurotus ostreatus* versus *Phanerochaete chrysosporium*. *Appl Environ Microbiol.* 58:1121–1127.
- Kerem. Z., Friesem. D, and Hadar. Y. 1992. Lignocellulose Degradation during Solid-State Fermentation : *Pleurotus ostreatus* versus *Phanerochaete chrysosporium*. *Applied and Environmental Microbiology.*58(4):1121-1127.
- Kersten P, Cullen D. 2007. Extracellular oxidative systems of the lignin-degrading Basidiomycete *Phanerochaete chrysosporium*. *Forest Gen Biol.* 44:77-87.

- Kiran, D. and T. Mutsvangwa. 2009. Nitrogen utilization in growing lambs fed oscillating dietary protein concentration. *Anim. Feed Sci. Technol.* 152: 33- 41.
- Kirk, T. K., M. Tien, S. Croan, K. E. Murtagh, and R. L. Farrell. 1986. Production of multiple ligninases by *Phanerochaete chrysosporium*. *Enzyme Microb. Technol.* 8:27-32.
- Kirk, T.K., Schultz, E., Connors, W.J., Zeikus, J.G., 1978. Influence of culture parameters on lignin metabolism by *Phanerochaete chrysosporium*. *Arch. Microbiol.* 117. 277–285.
- Kirk. K.T and Cullen. 1998. Enzymology and Molecular Genetics of Wood Degradation by White-Rot Fungi *Environmentally Friendly Technologies for the Pulp and Paper Industry*. Di dalam *Environmentally Friendly Technologies for the Pulp and Paper Industry*, edited by Raymond A. Young and Masood Akhtar ISBN 0-471-15770-8 © 1998 John Wiley & Sons, Inc.
- Kirk. KT and Chang H. M. 1990. *Biotechnology in pulp and paper manufacture*. New York. Butterworth-Heinemann.
- Kogel–Kabner I. 2002. The macromolecular organic composition of plant and microbial residues as inputs to soil organic matter. *Soil Biol Biochem* 34: 139–162.
- Komisarczuk, S & M. Durand. 1991. Effect of Mineral on Microbial Metabolism and Ruminant Digestion. INRA. Publ. Versailles.
- Komisarczuk., S. M. Durand., P.H, Beaumatin., G. Hannequart. 1987. Effects of Phosphorus deficiency on rumen microbial activity associated with the solid and phases of a fermentor. *Reprod. Nutr. Develop.* 27(5):907–919.
- Kondo M, Kita K, Yokota H. 2004. Feeding value to goats of whole-crop oat ensiled with green tea waste. *Anim Feed Sci Technol.* 113:71–81.
- Kumar, A. G., G. Sekaran., S. Krisnamoorthy. 2006. Solid state fermentation of *Achras zapota* lignocellulose by *Phanerochaete chrysosporium*. *Bioresource Technology.* 97:1521-1528.
- Kuswandi., M. Martawidjaja., Z. Muhammad., B. Setiadi, dan D. B. Wiyono. 2000. Penggunaan N mudah tersedia pada pakan basal rumput lapangan pada kambing lepas sapih. *Jurnal Ilmu Ternak dan Veteriner.* 5(4): 219-223.

- Laconi EB. 1998. Peningkatan Kualitas Kakao Melalui Amoniasi dengan Urea dan Biofermentasi dengan Kapang *Phanerochaete chrysosporium* serta Penjabarannya dalam Formulasi Ransum [disertasi].Bogor : Program Pascasarjana Institut Pertanian Bogor.117 hlm.
- Lallo CHO. 1996. Feed intake and nutrition utilisation by growing goats fed by product based diets of different protein and energy levels. *Small Rumin Res* 22:193–204.
- Lee, B., A. L. Pometto III, A. Fratzke, and T. B. Bailey, Jr. 1991. Biodegradation of degradable plastic polyethylene by *Phanerochaete chrysosporium* and *Streptomyces* species. *Appl. Environ. Microbiol.* 57:678-685.
- Leisola, M. S. A., F. Meussdoerffer, R. Waldner, and A. Fiechter. 1985. Production and identification of extracellular oxidases of *Phanerochaete chrysosporium*. *J. Biotechnol.* 2:379-382.
- Leng, R. A. 1990. Factor affecting the utilization of “poor quality” forage by ruminants particularly under tropical condition. In Smith RH, edition : *Nutrition Research Review*, Vol 3. Cambridge University Press. USA.
- Leng, R. A. 1994. Quantitative ruminant nutritiona green science . *Aust. J. of Agric Resc.* 44:363380.
- Lestari,C.MS,R. Adiwinarti and Kusliyati. 2003. The utilization on conventional feed for finishing sheep. *J. Indon.Trop. Agric. special edition.* (October 2003).136-141.
- Lewis, R. M. & G. C. Emmans. 2010. Feed intake of sheep as affected by body weight, breed, sex, and feed composition. *J. Anim. Sci.* 88:467-480.
- Limura, Y. P. Hartikainen, K. Tatsumi. 1996. Dechlorination of tetrachloroguaiacol by laccase of white rot basidiomycete *Coriolus versicolor*. *Appl. Microbiol.Biotechnol.* 45:434-439.
- Linder, M. C. 1992. *Biokimia Nutrisi dan Metabolisme.* Universitas Indonesia Press. Jakarta.
- Little, D. A. 1986. The mineral content of ruminant feed and the potential for the mineral supplementation in South–East Asia with particular reference to Indonesia. R. M. Dixon Ed. IDP. Camberra.

- Liu, J.X, Susenbeth A, Sudekum KH. 2002. In vitro gas production measurements to evaluate interactions between untreated and chemically treated rice straws, grass hay, and mulberry leaves. *J. Anim.Sci.*80:517–524.
- Liyama, K. 2000. Structural Characteristics of Cell Walls of Forage Grasses; Their Nutritional Evaluation for Ruminant. Proceeding of Japanese Society for Rumen Metabolism and Physiology, Miyasaki.
- Lu CD, Kawas JR, Mahgoub OG. 2005. Fiber digestion and utilization in goats. *Small Rumin Res* 60 : 45 – 65.
- Lymar ES, Li B, Renganathan V. 1995. Purification and characterization of a cellulose binding β glucosidase from cellulose degrading culture of *Phanerochaete chrysosporium*. *Appl Environ Microbiol.* 61:2976–2980.
- Lynch, J.M., 1993. Substrate availability in the production of composts. In: Hoitink, H.A.J., Keener, H.M. (Eds.), *Science and Engineering of Composting: Design, Environmental, Microbiological and Utilization Aspects*. Renaissance Publications, Ohio, United States, pp. 24–35.
- Lynd LR, Weimer PJ, van Zyl WH, Pretorius IS. 2002. Microbial cellulose utilization : fundamentals and biotechnology. *Microbiol Mol Biol Rev.*66: 506–577.
- Mandal AB, Paul SS, Mandal GP, Kannan A, Pathak NN. 2005. Deriving nutrients requirement for growing Indian goats under tropical condition. *Small Rumin Res* 58:201–217.
- Mariani. R. 2014. Evaluasi pencernaan *in vitro* fermentasi pelepah sawit dengan kapang *Phanerochaete chrysosporium* yang disuplementasi dengan mineral Mn. Tesis. Program Pascasarjana. Universitas Andalas. Padang.
- Martawidjaja, M., B. Setiadi, dan Sorta. S. Sitorus. 1999. Pengaruh tingkat protein-energi ransum terhadap kinerja produksi kambing kacang muda. *Jurnal Ilmu Ternak dan Veteriner.*4(3):167–173.
- Martina, A., Yuli, N. & Sutisna, M. 2000. Pengaruh pH dan waktu inkubasi terhadap laju degradasi lignin kayu albasia (*Paraserianthes falcataria* (L.) Nielsen) dan indulin secara enzimatik oleh jamur *Phanerochaete chrysosporium* Burds. *Prosiding Semirata Bidang MIPA BKS-PTN Barat*. Pekanbaru, 25-27 Juni 2000.

- Martinez G., Larrondo N, Putman , N, Gelpke MDS, Huang K, Chapman J. 2004. Genome sequence of the lignocelluloses degrading fungus *P. chrysosporium* strain RP78. *Nature Biotechnol* 22:1–6.
- Martinez, A. T. 2002. Molecular biology and structure-function of lignin degradation heme-peroxidase. *Enzyme Microbiol. Technol.* 30:425-444.
- Martinez. A. T., Speranza M, Ruiz Duenas FJ, Ferreira P, Camarero S, Guillen F. 2005. Biodegradations of lignocellulosics : microbial, chemical and enzymes aspects of the fungal attack of lignin. *Int Microbiol.* 8:195–204.
- Mathius I W., Yulistiani D, Puastuti W, Martawidjaya M, 2001. Pengaruh pemberian campuran batang pisang dan bungkil kedele terhadap penampilan domba muda. *Jurnal Ilmu Ternak dan Veteriner.*6(3):141–147.
- Mathius, I. W., M. Martawidjaja, A. Wilson, dan T. Manurung. 1996. Studi strategi kebutuhan energiprotein untuk domba lokal: I. Fase pertumbuhan. *J. Ilmu Ternak Vet.* 2(2): 84-91.
- Mattjik. A. A., dan Sumertajaya. 2006. Perancangan Percobaan dengan Aplikasi SAS dan MINITAB. IPB Press. Bogor.
- May, R., Schroder, P. & Sandermann, H. 1997. Ex-situ process for treating PAH-contaminated soil with *Phanerochaete chrysosporium*. *Environmental Sci. & Technol.* 31: 2626-2633.
- Maynard, L. A., J. K. Loosli, H. F Hintz and R. G Warner. 1979. Animal Nutrition. 7th. Ed. Tata McGaw Hill Publishing Company Limited. New Delhi.
- Mc. Crady, E. 1991. The nature of lignin. *Alkaline Paper Advocate.* 4(4): 1-3.
- Mc. Donald, P., R. A. Edwards, J. F. D. Greenhalgh and C. A. Morgan. 2010. Animal Nutrition. 7th Edition. Longman. Scientific and Technical John Willey and Sons. Inc. New York.
- Mc. Donald. and RG, Franklin JN. 1969. Pulp and Paper Manufacture. Vol. I : *Tech. Pulping Wood.* Mc Graw Hill Book Company, New York.
- Mertens, D.R. 1994. Regulation of Forage Intake. *In: Forage Quality, Evaluation and Utilization.* American Society of Agronomy. FAHEY, JR, G.C., M. COLLINS, D.R. MERTENS and L.E. MOSER (Eds.). Crop Science Society of America, Soil Science Society of America, Madison, Wisconsin, USA. pp. 450-493.

- Michel, F. 1999. Wood Degradation. Ohio Agricultural Research and Development Center. (http://microbezoo.comtechlab.msu.edu/zoo/microbes/p_chryso.html).
- Muhktarudin dan Liman. 2006. Penentuan tingkat penggunaan mineral organik untuk memperbaiki bioproses rumen pada kambing secara *in vitro*. Jurnal Ilmu-Ilmu Peternakan Indonesia. 8(2):132-140.
- Munasik. 2007. Pengaruh umur pemotongan terhadap kualitas hijauan sorgum manis (*Shorgum bicolor* L. Moench) variets RGV. *Prosiding Seminar Nasional* : 248-253.
- Munier, F.F. 2012. Kajian fermentasi kulit buah kakao (*Theobroma cocoa* L.) menggunakan *Aspergillus spp.* terhadap pencernaan dan konsumsi pada Kambing Peranakan Etawah jantan. Disertasi. Universitas Gadjah Mada, Yogyakarta.
- Murdjito, G., I. G. S. Budisatria., Panjono., N. Ngadiyono dan E. Baliarti. 2011. Kinerja kambing bligon yang dipelihara peternak di desa Giri Sekar, Panggang, Gunungkidul. *Buletin Peternakan*.35(2): 86-95.
- Murni, R., Akmal dan Y. Okrisandi. 2012. Pemanfaatan kulit buah kakao yang difermentasi dengan kapang *Phanerochaete chrysosporium* sebagai pengganti hijauan dalam ransum ternak kambing. *Agrinak*. 2(1):6-10.
- Nagadi S, Herrero M, Jessop NS. 2000. The effect of fermentable nitrogen availability on *in vitro* gas production and degradability of NDF. *Animal Feed Sci technol*. 87:241-251.
- Nasution, S., F. Mahmalia. dan M. Doloksaribu. 2010. Pengaruh musim terhadap pertumbuhan kambing Kacang prasapah di stasiun percobaan loka penelitian kambing potong Sei Putih. *Seminar Nasional Teknologi Peternakan dan Veteriner*. Hlm. 621-625.
- National Research Council. [NRC] 1984. Nutrient Requirements of Beef Cattle (6th Ed.). National Academy Press, Washington, DC.
- National Research Council. [NRC]. 2001. Nutrients Requirements of Dairy Cattle Ed ke 7. Washington, DC; National Academic Press.
- National Research Council. [NRC]. 1981. Nutrient Requirements of Goats: Angora, Dairy and Meat Goats in Temperate and Tropical Countries. Washington, DC: National Academic Press. 99 p.

- Neggese, T., M. Rodehutschord, & E. Pfeffer. 2001. The effect of dietary crude protein level on intake, growth, protein retention and utilization of growing male Saanen kids. *Small Rumin. Res.* 39:243-251.
- Nelson. 2011. Degradasi bahan kering dan produksi asam lemak terbang in vitro pada kulit buah kakao fermentasi. *Jurnal Ilmiah Ilmu-Ilmu Peternakan.* Vol.XIV.No1.
- Nurhaita, N. Jamarun, L. Warly dan M. Zain. 2010. Digestibility of sheep ration containing ammoniated palm oil leaves supplemented with sulphur, phosphor, and cassava leaves. *Media Peternakan.* 33:144–149.
- Nurhaita., N. Jamarun., R. Saladin., A.L.Warly dan M. Zain. 2008. Efek suplementasi mineral sulfur dan pospor pada daun sawit amoniasi terhadap pencernaan zat makanan secara in vitro dan karakteristik cairan rumen. *J. Indo. Trop. Anim. Agric.* 33(1):51–58.
- Nurjannah. L. 2014. Delignifikasi Sekam Padi oleh Jamur Pelapuk Putih untuk Produksi Bioetanol dengan Teknik Amobilisasi Sel *Zymomonas mobilis*. Tesis. Sekolah Pascasarjana Institut Pertanian Bogor. Bogor.
- Ogimoto, K. and S. Imai, 1981. Atlas of Rumen Microbiology. Japan Scientific Societies Press. Tokyo pp: 201-221.
- Ohkuma, M., Yoshima M., Toru J and Toshiaki. K. 2001. Lignin degradations and role of white rot fungi : study of an efficient symbiotic system in fungus growing termites and its application to bioremediation. *RIKEN. Rev* 42:39–42.
- Okano K, Kitagaw M, Sasaki Y, Watanabe T. 2005. Conversion of Japanese red cedar (*cryptomeria japonica*) into a feed for ruminants by white rot *basiodiomyces*. *Anim Feed Sci Technol.* 120:235–243.
- Okano, K., Iida, Y., Samsuri, M., Prasetya, B., Usagawa, T., Watanabe, T., 2006. Comparison of in vitro digestibility and chemical composition among sugarcane bagasse treated by four white rot fungi. *Anim. Sci. J.* 77. 308–313.
- Ondiek, J.O., P.B. Ogore, E.K. Shakala and G.M. Kaburu, 2013. Feed intake, digestibility and performance of growing small East African goats offered maize (*Zea mays*) stover supplemented with *Balanites aegyptiaca* and *Acacia tortilis* leaf forages. *Basic Res. Agric. Sci. Rev.*, 2: 21-26.

- Onwuka, C. F. I and A. O. Akinsoyinu. 1989. Effect of elemental sulphur level on urea–nitrogen utilization by West African Dwarf Goats and Sheep. *Tropical Agriculture*. 66:158–160.
- Orskov, E. R., and Ryle., 1990. *Energy Nutrition in Ruminants*. Elsevier Applied Science. London and New York.
- Orskov. ER. 1992. *Protein Nutrition in Ruminants*. London : Academic Press.
- Orth, A.B., D.J. Royse, and M. Tien. 1993. Ubiquity of lignin peroxidase among various wood-degrading fungi. *Applied and Environmental Microbiology*. 59(12):4017-4023.
- Paengkoum, P., Liang, J.B., Jalan, Z.A., and Basery, M. 2006. Utilization of steam-treated oil palm fronds in Growing Saanen Goats: II. Supplementation with Energy and Urea. *Asian-Aust. J. Anim. Sci.* 19(11): 1623-1631.
- Paryad, A. and M. Rashidi, 2009. Effect of yeast (*Saccharomyces cerevisiae*) on apparent digestibility and nitrogen retention of tomato pomace in sheep. *Pak. J. Nutr.*, 8: 273-278.
- Paul EA. 1992. Organic Matter Decomposition. *Encyclopedia of Microbiology*, Vol.3. Academic Press. Inc.
- Pazla, R. 2015. Produktifitas Ternak Domba yang Diberi Ransum Komplit Berbasis Limbah Kakao Amoniasi yang Disuplementasi dengan *Saccharomyces sp* dan Mineral (Phosfor dan Sulfur). Tesis. Program Studi Ilmu Peternakan. Program Pascasarjana. Fakultas Peternakan. Universitas Andalas. Padang.
- Pearce, G. R. 1983. *The Utilization of Fibrous Agricultural Residu*. Australia. Government Publishing Service. Canberra.
- Perez, J., J. Munoz Dorado, T. de la Rubia, and Martinez. 2002. Biodegradation and-Biological Treatment of Cellulosa, Hemicellulosa and Lignin: an overview. *Int. microbiol.* 5: 53-56.
- Peters, J.P., Leedle, J.A.Z. and Paulissen, J.B. 1989. Factor affecting the *in vitro* production of volatile fatty acids by mixed bacterial populations from the bovine rumen. *J. Anim. Sci.* 67:1593-1602.
- Pond. W.G.D. Church and K.R. Pond. 1995. *Basic Animal Nutrition Feeding*. 4th Edition. Jhon willey and son. Inc., Newyork.

- Prasetyo,D., F.M. Suhartati dan W. Suryapratama. 2013. The ratio of cane top-bagasse fermented with *Phanerochaete chrysosporium*, it's effect to rumen fermented product. *Jurnal Ilmiah Peternakan*. 1(2):514–524.
- Prawoto, J.A., C.M.S. Lestari, dan E. Purbowati, 2001. Keragaan dan kinerja produksi domba lokal yang dipelihara secara intensif dengan memanfaatkan ampas tahu sebagai bahan pakan campuran. *Jurnal Pengembangan Peternakan Tropis*, Special Edition: 277-285 (April 2001).
- Preston, T. R and R. A. Leng. 1987. *Matching Ruminant Production System with Available Resources in The Tropics and Sub-tropics*. Penambui Books. Armidale.
- Puastuti, W. 2009. Manipulasi Bioproses dalam Rumen untuk Meningkatkan Penggunaan Pakan Berserat. *Wartazoa*. 19(4):180–186.
- Purba, A., S.P. Ginting, Z. Poeloengan, K. Simanihuruk dan Junjungan. 1997. Nilai nutrisi dan manfaat pelepah kelapa sawit sebagai pakan ternak. *J. Penelitian Kelapa Sawit*. 5(3): 161–170.
- Putra, S., N. N Suryani dan I. W. Subhagiana. 2009. Respon metabolit fermentasi rumen dan performans pertumbuhan kambing PE terhadap suplementasi konsentrat molamix. *J. Indon. Trop. Anim. Agric*. 34(2): 107–114.
- Rabinovich ML, Bolobova AV, Vasilchenko. 2004. Fungal decomposition of natural aromatic structure and xenobiotics : a review. *Appl Biochem Microbiol* 40:1–17.
- Rahayu, S. 2014. Bidelignifikasi pelepah sawit menggunakan kapang *Phanerochaete chrysosporium* yang disuplementasi mineral Ca dan evaluasi pencernaan secara *In Vitro*. Tesis. Program Pascasarjana. Universitas Andalas. Padang.
- Rayner A.D., and Boddy L.1988. *Fungal Decomposition of Wood. It's Biology and Ecology*. John Wiley dan Sons : Chichester. New York, Brisbane. Toronto. Singapore.
- Renganathan, V., K. Miki, and M. H. Gold. 1985. Multiple molecular forms of diarylpropane oxygenase, an HO₂- requiring, lignin-degrading enzyme from *Phanerochaete chrysosporium*. *Arch. Biochem. Biophys*. 241:304-314.
- Rodehutsord, M. Heuvers, H. Pfeffer, 2000. Effect of organic matter digestibility on obligatory faecal phosphour loss in lactating goats, determined from balance data. *Anim. Sci*. 70:561–568.

- Rothschild, N., Levkowitz, A., Hadar, Y., Dosoretz, C.G., 1999. Manganese deficiency can replace high oxygen levels needed for lignin peroxidase formation by *Phanerochaete chrysosporium*. *Appl. Environ. Microbiol.* 65, 483–488.
- Ruegger MJS, Tornisielo SMT, Bononi VLR, Capelari M. 2001. Cultivation of the edible mushroom *Oudemansiella canarii*. (JUNGH). Hohn. In lignocellulosic substrate. *Brazilian J Microbiol* 32:211-214.
- Ruiz-Duinas FJ, Martinez MJ, Martinez AT. 1999. Molecular characterization of a novel peroxidase isolated from the ligninolytic fungus *Pleurotus eryngii*. *Mol Microbiol.* 31:223–235.
- Rumetor, S. D., J. Jachja., R. Widjajakusuma., I. G Permana dan I. K Utama. 2008. Supplementasi daun bangun-bangun (*Coleus amboinicus Lour*) dan Zinc vitamin E untuk memperbaiki metabolisme dan produksi susu kambing Peranakan Ettawah. *JITV.*13(3):189-196.
- Sakinah, D. 2005. Kajian Supplementasi Probiotik Bermineral terhadap Produksi VFA, NH₃ dan Kecernaan Zat-zat Makanan pada Domba. Skripsi. Fakultas Peternakan IPB. Bogor.
- Sampurna, I. P. dan I. K. Suatha. 2010. Pertumbuhan alometri dimensi panjang dan lingkaran tubuh sapi Bali jantan. *Jurnal Veteriner.*11(1): 46-51.
- Sanchez, C. 2009. Lignocellulosic residues : biodegradation and bioconversion by fungi. *Biotechnol Advan* 27:185-194.
- Sartono, T.A., Nurwantoro, dan J. Achmadi. 2007. Fermentabilitas mikrobial rumen secara *in vitro* terhadap onggok yang difermentasikan dengan campuran ragi. *Prosiding Seminar Nasional AINI VI.* pp:350-355.
- Satter, L.D. and L.L. Slyter, 1974. Effect of ammonia concentration on rumen microbial protein production *in vitro*. *Br. J. Nutr. Anim. Sci.*, 32: 194-208.
- Sauvant D, Dijkstra J, Mertens D. 1995. Optimization of ruminal digestion : a modeling approach. Di dalam : Journet M, Grenet E, Farace MH, Theriez M, Demarquilly C, Editor. *Recent Development in the Nutrition of Herbivores. Proceeding of Fourth International Symposium on the nutrition of Herbivores, Clemont-Ferrand, 11-15 Sept 1995.* Paris: INRA. Hlm 143-165.

- Shem, M. N., Mtengeti, E. J., Luaga, M., Ichinohe, T. and Fujihara, T., 2003. Feeding value of wild Napier grass (*Pennisetum macrourum*) for cattle supplemented with protein and/or energy rich supplements. *Anim. Feed Sci. Technol.* 108:15–24.
- Shi J, Chinn MS, Sharma-Shivappa RR. 2008. Microbial pretreatment of cotton stalks by solid state cultivation of *Phanerochaete chrysosporium*. *Bioresour Technol.*99:6556–64.
- Shi J, Sharma-Shivappa RR, and Chinn MS. 2009. Microbial pretreatment of cotton stalks by submerged cultivation of *Phanerochaete chrysosporium*. *Bioresource Technology.* 100: 4388-4395.
- Shi J., G. M. Zeng., X. Z. Yuan., F. Dai., J. Liu and X. Hong Wu. 2006. The stimulatory effects of surfactants on composting of waste rich in cellulose. *World Journal of Microbiology and Biotechnology.* 22(11):1121–1127.
- Shrestha P, Rasmussen M, Khanal SK, Pometto AL, van Leeuwen J. 2008. Solid-substrate fermentation of corn fiber by *Phanerochaete chrysosporium* and subsequent fermentation of hydrolysate into ethanol. *J Agric Food Chem.* 56:3918–24.
- Shroeder, J. W. 2004. Forage Nutrition for Ruminants. NDSU. Extension Service.
- Silva, E.M., S.F. Martins and A.M.F. Milagres. 2008. Extraction of manganese peroxidase produced by *Lentinula edodes*. *Bioresource Technology.* 99: 2471–2475.
- Silverman-Gravila, L. B and R. R. Lwe. 2003. Calcium gradient dependence of *Neurospora crassa* hyphal growth. *Microbiology.* 149:2475-2485.
- Simanihuruk, K., J. Sianipar, L.P. Batubara, A. Tarigan, R. Hutasoit, M. Hutaaruk, Supriyatna, M. Situmorang dan Taryono. 2007. Pemanfaatan pelepah kelapa sawit sebagai pakan basal kambing kacang fase pertumbuhan. Laporan Akhir Kegiatan Penelitian. Loka Penelitian Kambing Potong. Sei Putih.
- Simanihuruk. K., Junjungan dan S.P. Ginting. 2008. Pemanfaatan silase pelepah kelapa sawit sebagai pakan basal kambing kacang fase pertumbuhan. Prosiding. Seminar Nasional Teknologi Peternakan dan Veteriner. Hal 446–455.

- Simanihuruk, K. 2009. Pemanfaatan kulit buah markisa (*Passiflora edulis* Sims f. *edulis* Deg) sebagai campuran pakan komplit kambing kacang fase pertumbuhan. *JITV*.14(1):36-44.
- Singh D. Chen S. 2008. The White-rot fungus *Phanerochaete chrysosporium* conditions for the production of lignin degrading enzymes. *Appl Microbiol Biotechnol*. 81:399–417.
- Singh, S. P dan Roymoulik S. K. 1993. Role of Biotechnology in The Pulp and Paper Industry : A. Review. Part 1 : Biopulping. *J. IPPTA*. 4(4):53–56.
- Sitorus, M. dan T. Sutardi. 1984. Kebutuhan kambing lokal akan energi dan protein. *Pros. Domba dan Kambing di Indonesia*. Pusat Penelitian dan Pengembangan Peternakan. Bogor. hal. 77-80.
- Slyter, L., L. W. Chaluppa, R. R. Oltjen and J. M. Weafer. 1986. Sulfur influences on rumen microorganism in vitro and in sheep and calves. *J. Anim Sci*.63:1949.
- Soeparno. 2009. Ilmu dan Teknologi Daging. Edisi ke-5. Gadjahmada Mada University Press, Yogyakarta.
- Soetan, K.O., C.O. Olaiya and O.E. Oyewole, 2010. The importance of mineral element for humans, domestic animals and plants: A review. *Afr. J. Food Sci*.4:200-222.
- Spanghero M, Boccalon S, Gracco L, Gruber L. 2003. NDF degradability of hays measured in situ and in vitro. *Anim Feed Sci Technol*. 104:201–208.
- Srebotnik, E., K.A. Jensen dan K.E. Hammel. 1994. Fungal degradation of recalcitrant nonphenolic lignin structure without lignin peroxidase. *Proc Natl Acad Sci* 91:12794-12797.
- Srinivasan, C. D' souza TM, Boominathan K. Reddy CA. 1995. Demonstration of laccase in the white-rot basidiocete *Phanerochaete chrysosporium* BKM-F-1767. *Appl. Environ Microbiol*.61: 4274-4277.
- Stern, M.D. and W.H. Hoover, 1979. Methods for determining and factors affecting rumen microbial protein synthesis: A review. *J. Anim. Sci*.49: 1590-1602.

- Stevani, J., M. Durand, R. Zanchi, P H Beaumatin & G. Hannequart. 2002. Effect of sulphate suplementaion of untreated and alkali treated wheat straws on ruminal fermentation and microbial protein sythesis an a semi continous fermentor. *Anim. Feed Sci Technol.* 36:287–301.
- Stewart, C.S. 1991. The Rumen Bacteria. *In: Rumen Microbial Metabolism and Rumen Digestion.* J.P. Jouany (Ed.). Institut National De La Recherchce Agronomique, Paris. p.15.
- Sudekum HK, Brusemeister F, Schroder, A, Stangassinger M. 2006. Effects of amount of intake and stage of forage maturity on urinary allantoin excretion and estimated microbial crude protein synthesis in the rumen of steers. *J.Anim.Physiol.Anim.Nutr.* 90:136–145.
- Suhartanto. B., R. Utomo., Kustantinah., I. G. S. Budisatria., L. M. Yusiati dan B. P. Widyobroto. 2014. Pengaruh penambahan formaldehid pada pembuatan *undegraded protein* dan tingkat suplementasinya pada pelet pakan lengkap terhadap Aktivitas mikrobia rumen secara *in vitro*. *Buletin Peternakan.* 38(3):141-149.
- Suhartati, F.M. 1997. Manfaat Air Belerang dalam Ransum Bagi Domba Muda. Disertasi. Program Pascasarjana. Institut Pertanian Bogor. Bogor.
- Suharti. S., D. A. Astuti., E. Wina and T. Toharmat. 2015. Digestibility, fermentation characteristic, protein microbial synthesis and growth performance of beef cattle fed high forage ration with lerak extract supplementation. *Pakistan Journal of Nutrition.* 14 (12): 885-891.
- Sumadi, N. Ngadiyono, dan Soeparno. 1991. Penampilan produksi sapi Fries Holland, Sumba Ongole dan Brahman Cross yang dipelihara secara *feedlot* (penggemukan). Prosiding, Seminar Pengembangan Peternakan dalam Menunjang Pembangunan Ekonomi Nasional. Fakultas Peternakan, Universitas Jendral Sudirman, Purwokerto. pp. 116-126.
- Sun, Y., Cheng, J., 2002. Hydrolysis of lignocellulosic materials for ethanol production: a review. *Bioresour. Technol.* 83, 1–11.
- Suparjo, K. G. Wiryawan, E. B. Laconi, D. Mangunwidjaja. 2011. Performa kambing yang diberi kulit buah kakao terfermentasi. *Media Peternakan.* hal 35–41.

- Suparjo. 2010. Peningkatan Kualitas Nutrisi Kulit Buah Kakao sebagai Pakan secara Bioproses dengan *Phanerochaete chrysosporium* yang Diperkaya dengan Ion Mn^{2+} dan Ca^{2+} . Disertasi Sekolah Pascasarjana. Institut Pertanian Bogor. Bogor.
- Suryadi, M. Afdal dan A. Latief . 2009. Pengaruh penggantian rumput dengan pelepah sawit ditinjau dari segi pencernaan dan fermentabilitas secara *in vitro* gas. Jurnal Ilmiah Ilmu-Ilmu Peternakan. 12(1):29–34.
- Sutardi T. 2001. Revitalisasi peternakan sapi perah melalui penggunaan ransum berbasis limbah perkebunan dan suplementasi mineral organik. Laporan Akhir RUT VIII. Institut Pertanian Bogor. Bogor.
- Sutardi, T. 1980. Ikhtisar Ruminologi. Bahan Penataran Kursus Peternakan Sapi Perah di Kayu Ambon, Lembang. BPPLP-Dit, Jend. Peternakan-FAO.
- Sutardi, T., E. B. Lakoni, I. G. Permana dan Despal. 1996. Potensi Limbah Perkebunan sebagai Bahan Baku Pakan Ternak. Paper disampaikan pada Pertemuan Tingkat Nasional: Penggalan Sumberdaya Perkebunan untuk Usaha Peternakan. Medan. 11–13 Nopember 1996.
- Sutherland, G.R.J., Aust, S.D., 1996. The effects of calcium on the thermal stability and activity of manganese peroxidase. Arch. Biochem. Biophys. 332:128–134.
- Suttle, N.F., 2010. Mineral Nutrition of Livestock. 4th Ed. Moredun Foundation, Pentland Science Park, Midlothian, UK.
- Suyitman, L. Warly, A. Rachmat and Dear R. Ramadhan. 2015. Effect of minerals S, P and cassava flour leaf supplemented with ammoniation palm leaves on the performance of beef cattle. Pakistan Journal of Nutrition. 14(12): 849-853.
- Suyitman, L. Warly and Evitayani. 2013. S and P mineral supplementation of ammoniated palm leaves as ruminant feed. Pakistan Journal of Nutrition. 12(10):903-906.
- Syawal, S., B. P. Purwanto dan I. G. Permana. 2013. Studi hubungan respon ukuran tubuh dan pemberian pakan terhadap pertumbuhan sapi pedet dan dara. JITP.2(3):175-188.

- Tafaj, M. Q. Zebeli, CH. Baes, H. Steingass and W.Drochner. 2007. A meta-analysis examining effects of particle size of total mixed rations on intake, rumen digestion and milk production in high-yielding dairy cows at early lactation. *Anim. Feed Sci. Technol.* 138:137–161.
- Tahuk, P.K., E. Baliarti dan H. Hartadi. 2008. Kinerja kambing Bligon pada penggemukan dengan level protein pakan berbeda. *Buletin Peternakan.* 32(2):121-135.
- Takano M, Nakamura M, Nishida A, Ishihara M. 2004. Manganase peroxidase from *Phanerochaete crassa* WD 1694. *Bull FFPRI* 3(1):7–13.
- Tamir, B. and G. Asefa. 2009. Effect of different forms of *Acacia saligna* leaves inclusion on feed intake, digestibility and body weight gain in lambs fed grass hay basal diet. *Anim Feed Sci. Technol.* 153:39-47.
- Tarigan, A., S. P. Ginting. 2011. Pengaruh taraf pemberian *Indigofera* sp terhadap konsumsi dan pencernaan pakan serta pertambahan bobot hidup kambing yang diberi rumput *Brachiaria ruziziensis*. *JITV.*16(1):25–32.
- Tien, M., and T. K. Kirk. 1983. Lignin-degrading enzyme from the hymenomycete *Phanerochaete chrysosporium* Burds. *Science.*221:661-663.
- Tien, M., and T. K. Kirk. 1984. Lignin-degrading enzyme from *Phanerochaete chrysosporium*: purification, characterization, and catalytic properties of a unique H₂O₂-requiring oxygenase. *Proc. Natl. Acad. Sci. USA* 81:2280-2284.
- Tien, M., Kirk, T.K., 1988. Lignin peroxidase of *Phanerochaete chrysosporium*. *Meth. Enzymol.* 161, 238–249.
- Tilley J. M and R. A Terry. 1969. A two stage technique for in vitro digestion of forage crops. *J. Br. Grassland Society.*18(2):104–111.
- Tillman, A. D., H. Hartadi, S. Reksohadiprojo, S. Prawirokusumo dan S. Lebdosukodjo. 1989. Ilmu Makanan Ternak Dasar. Gadjah mada University Press. Yogyakarta.
- Toharmat, T., E. Nursasih, R. Nazilah, R. Hotimah, T. Q. Noerzihad, N. A. Sigit & Y. Retnani. 2006. Sifat fisik pakan kaya serat dan pengaruhnya terhadap konsumsi dan pencernaan nutrien ransum pada kambing. *Med. Pet.* 29(3): 146–154.

- Tripathi, M.K., A.S.Mishra, A.K. Misra., S. Vaithyanathan., R. Prasad and R.C. Jakhmola. 2008. Selection of white-rot basidiomycetes for bioconversion of mustard (*Brassica campestris*) straw under solid-state fermentation into energy substrate for rumen micro-organism. *The Society for Applied Microbiology, Letters in Applied Microbiology*. 46. 364–370.
- Tsao GT, Ladisch M, Ladisch C, Hsu TA, Dale B, Chou T. 1978. *Fermentation substrat from cellulosic material*. Di dalam Perlman, D. dan G.T. Tsao (ed). Annual Report on Fermentation Process. Vol 2. Academic Press, New York.
- Tuomelo M, Vikman M. Hatakka A, Itavaara M. 2000. Biodegradation of lignin in a compost environment : a review. *Bioresour Technol*. 72:169–183.
- Tyler, H. D. and M. E. Ensminger. 2006. *Dairy Cattle Science* 4th Edition. Pearson Prentice Hall, New Jersey.
- Uhi, H. T., A. Parakkasi., B. Haryanto dan T. R. Wiradarya. 2005. Evaluation in vitro gelatinized sago, sources NPN, minerals Cobalt and Zinc on the system of sheep rumen. *Jurnal Ilmu Ternak*.5(2):53–57.
- Uhi, H.T., A. Parakkasi and B. Haryanto, 2006. Pengaruh suplementasi katalitik terhadap karakteristik dan populasi mikroba rumen domba. *Media Peternakan*. 29(1):20-26.
- Ürek, R. O., and Pazarlioğlu, N. K. 2005. Production and stimulation of manganese peroxidase by immobilized *Phanerochaete chrysosporium*. *Process Biochemistry*. 40:83–87.
- Utomo, B., S. Prawirodigdo, T. Sarjana dan Sudjatmogo. 2006. Performans pedet sapi perah dengan perlakuan induk saat masa akhir kebuntingan. Seminar Nasional Teknologi Peternakan dan Veteriner. Hlm 76-81.
- Van Soest, P.J., 1994. *Nutritional Ecology of The Ruminant*. Second Edition. Comstock Publishing Associates Cornell University Press. A Division of Ithaca and London.
- Wahyono, T., Kusumaningrum, Widiawati dan Suharyono. 2013. Penampilan produksi kambing Kacang jantan yang diberi pakan siap saji (PSS) berbasis silase tanaman jagung. Seminar Nasional Teknologi Peternakan dan Veteriner. Hlm. 363-367.
- Waldron, M.R., F.N. Schrick, J.D. Quigley, J.L. Klotz, A.M. Saxton and R.N. Heitmann, 2002. Volatile fatty acid metabolism by epithelial cells isolated from different areas of the ewe rumen. *J. Anim. Sci*. 80: 270-278.

- Wan C, Li Y. 2012. Fungal pretreatment of lignocellulosic biomass *Biotechnology Advances*.30:1447–1457.
- Weston R H. 2002. Constrains on feed intake by grazing sheep. Di dalam : Freer M, Dove H, Editor. *Sheep Nutrition. Cooling wood* : Cabi Publishinh. Hlm 27–50.
- Widiyanto, E. Pangestu, Surahmanto, V.D. Yuniarto, B.I.M. Tampoebolon and B.W.H.E. Prasetyono. 2015. Effect of mineral supplementation and introduction of *Setaria sphacelata* Grass and *Gliricidia sepium* legume on productivity of kacang goat at Serang River Basin Upland Area, Central Java, Indonesia. *Pakistan Journal of Nutrition*. 14 (8): 440-446.
- Widjaja, A., Ferry dan Musmariadi. 2004. Pengaruh berbagai konsentrasi mediator pada biodelignifikasi menggunakan enzim kasar lignin peroksidase. *Jurnal Teknik Kimia Indonesia*. 3(2):71–79.
- Widyobroto B.P. 1992. Pengaruh aras konsentrat dalam ransum terhadap pencernaan dan sinteses N mikroba dalam rumen sapi perah. *Buletin Peternakan UGM. Edisi Tambahan*.
- Winugroho dan S. Maryati.1999. Kecernaan daun kelapa sawit sebagai pakan ternak ruminansia. *Laporan Penelitian. Balai Penelitian Ternak. Ciawi-Bogor*.
- Wulandari, S., A. Agus., M. Soejono., M. N. Cahyanto dan R. Utomo. 2014. Performa produksi domba yang diberi complete feed fermentasi berbasis Pod kakao serta nilai nutrien tercernanya secara *in vivo*. *Buletin Peternakan*. 38(1): 42-50.
- Wuyep PA, Khan AU, Nok AJ. 2003. Production and regulation of lignin degrading enzymes from *Lentinus squarrosulus* (Mont) singer and *Psathyrellaatroumbonata* Pegler. *African J Biotechnol*. 2(11): 444-447.
- Yansari, T. A. T., R. valizadeh, A. Naserian, D. A. Christensen, P. Yu, & F. E. Shahroodi. 2004. Effects of alfalafa particle size and spesific gravity on chewing activity, digestibility and performance of Holstein dairy cows. *J. Dairy Sci*. 87:3912–3924.
- Yulistiani, D., W. Puastuti., E. Wina dan Supriati. 2012. Pengaruh berbagai pengolahan terhadap nilai nutrisi tongkol jagung : Komposisi kimia dan pencernaan *in vitro*. *Jurnal Ilmu Ternak dan Veteriner*.17(1):59-66.

- Zahari, M.W., Alimon, A.R., 2005. Use of palm kernel cake and oil palm by-products in compound feed. *Palm Oil Developments*, vol. 40. Malaysian Palm Oil Board, Kuala Lumpur, Malaysia, pp. 5–8.
- Zain, M. 1999. Substitusi Rumput dengan Sabut Sawit dalam Ransum Pertumbuhan Domba : Pengaruh Amoniasi, Defaunasi dan Supplementasi Analog Hidroksi Metionin serta Asam Amino Bercabang. Disertasi. Pascasarjana. Institut Pertanian Bogor. Bogor.
- Zain, M. N. Jamarun and Zulkarnaini. 2010a. Effect of phosphorus and sulfur supplementation in growing beef cattle diet based on rice straw ammoniated. *Asian Journal of Scientific Research*. 3(3):184-188.
- Zain, M., J. Rahman, Khasrad and Erpomen. 2015. *In vitro* fermentation characteristics of palm oil byproducts which is supplemented with growth factor rumen microbes. *Pakistan Journal of Nutrition*. 14 (9):625-628.
- Zain, M., J.Rahman and Khasrad. 2014. Effect of palm oil by products on in vitro fermentation and nutrient digestibility. *Animal Nutrition and Feed Technology*. 14:175-181.
- Zain, M., N. Jamarun & Nurhaita. 2010c. Effects of sulfur supplementation on in vitro fermentability rice straw. *Pakistan Journal of Nutrition*. 9:413–415.
- Zain, M., N. Jamarun and A. S. Tjakradidjaja. 2010b. Phosphorus Supplementation of Ammoniated Rice Straw on Rumen Fermentability, Syntesised Microbial Protein and Degradability in Vitro. *World Academy of Science, Engineering and Technology*. 4:5-21.
- Zain. M. 2007. Optimalisasi Bioproses dalam Rumen Melalui Supplementasi Mineral untuk Meningkatkan Produktivitas Ternak Ruminansia. Laporan Penelitian. Program Insentif Riset Dasar (Tahun I). Universitas Andalas. Padang.
- Zain. M. 2008. Optimalisasi Bioproses dalam Rumen Melalui Supplementasi Mineral untuk Meningkatkan Produktivitas Ternak Ruminansia. Laporan Penelitian. Program Insentif Riset Dasar. Universitas Andalas. Padang.
- Zamora, A. 2005. Carbohydrates-chemical structure. <http://www.scientificpsychic.com/fitness/carbohydrates2.html>.

Zeng G. M. Yu, Y. Cheng , D. Huang, J. Zhang, H. Huang, R. Jiang and Z. Yu. 2010. Effects of inoculan with *Phanerochaete chrysosporium* at various time points on enzyme activities during agricultural waste composting. Bioresour. Technol.101: 222-227.

Zhao, J., Koker, T.H., Janse, B.J.H., 1996. Comparative studies of lignin peroxidases and manganese-dependent peroxidases produced by selected white rot fungi in solid media. FEMS Microbiol. Lett.145.393–399.

Zhi, Z and H. Wang. 2013. White-rot fungal pretreatment of wheat straw with *Phanerochaete chrysosporium* for biohydrogen production: simultaneous saccharification and fermentation. Bioprocess Biosyst Eng.

