DAFTAR PUSTAKA

Abeygunawardena, H., and C. M. B. Dematawewa. 2004. Pre-pubertal and postpartum anestrus in tropical Zebu cattle. Anim. Reprod. Sci. 82-83: 373-387.

Aboozar, M., dan F. Niazi. 2013. Effects of Rumen Undegradable Protein on Productive Performance and N Balance of Holstein Cows in Early Post-Partum Period. Iranian J. Appl. Anim. Sci. 3(4): 657-665.

Aller, J. F., S. S. Callejas, and R. H. Alberio. 2013. Biochemical and steroid concentrations in follicular fluid andblood plasma in different follicular waves of the estrous cyclefrom normal and superovulated beef cows. Anim. Reprod. Sci. 142: 113– 120

Anderson, L. P., J. A. Paterson, R. P. Ansotegui, M. Cecava, and W. Schmutz. 2001. The effects of degradable and undegradable intake protein on the performance of lactating first-calf heifers. J. Anim. Sci. 79: 2224-2232.

Anonim. 2006. Body Condition Scoring Your Cow Herd. Available at: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/beef8822. Alberta-Agriculture, Food, and Rural Development. Accession date: October 25th 2015.

AOAC. 2005. Official Method of Association of Official Analytical Chemist. 12th Edition. Published by Association of Official Analytical Chemist. Benjamin Franklin Station. Washington D.C.

Astuti, M. 2007. Pengantar Ilmu Statistik untuk Peternakan dan Kesehatan Hewan. Binasti Publisher. Bogor. pp 116-120.

Astuti, P. 2015. Endokrinologi Veteriner. Gadjah Mada University Press. Yogyakarta. pp 120, 121.

Bach, A., S. Calsamiglia, and M. D. Stern. 2005. Nitrogen metabolism in the rumen. J. Dairy Sci. 88 (E.Suppl.): E9-E21.

Barnwell, C.V., P.W. Farin, C.S. Whisnant, J.E. Alexander, and C.E. Farin. 2015. Maternal serum progesterone concentration and early conceptus development of bovine embryos produced in vivo or in vitro. Domestic Animal Endocrinology 52: 75–81.

Baruselli, P.S., E.L. Reis, M.O. Marques, L.F. Nasser, G.A. Bó. 2004. The use of hormonal treatments to improve reproductive performance of anestrous beef cattle in tropical climates. Anim. Reprod. Sci. 82–83: 479–486.

Berardinelli, J. G., J. Weng, P. J. Burfening, and R. Adair. 2001. Effect of excess degradable intake protein on early embryonic development, ovarian steroids, and blood urea nitrogen on day 2, 3, 4, and 5 of the estrous cycle in mature ewes. J. Anim. Sci. 79: 193-199.

Bleach, E. C. L., R. G. Glencross, S. A. Feist, N. P. Groome, P. G. Knight. 2001. Plasma inhibin-A in heifers: relationship with follicle dynamics, gonadotropins, and steroids during the estrous cycle and after treatment with bovine follicular fluid. Biol. Reprod. 64: 743–752.

Bó, G.A., P.S. Baruselli, M.F. Martinez. 2003. Pattern and manipulation of follicular development in *Bos indicus* cattle. Anim. Reprod. Sci. 78: 307–326.

Boland, M. P., P. Lonergan, dan D. O'Callaghan. 2001. Effect of nutrition on endocrine parameters, ovarian physiology, and oocyte and embryo development. Theriogenology 55: 1323-1340.

Bormann, J.M., L.R. Totir, S.D. Kachman, R.L. Fernando, and D.E. Wilson. 2006. Pregnancy rate and first-service conception rate in Angus heifers. J. Anim. Sci. 84: 2022-2025.

Bridges, G. A., M. L. Mussard, L. A. Helser, M. L. Day. 2014. Comparison of follicular dynamics and hormone concentrations between the 7-day and 5-day CO-Synch + CIDR program in primiparous beef cows. Theriogenology 81: 632–638.

Budhi, S. P. S., L. M. Yusiati, and B. P. Widyobroto. 1998. Estimating rumen microbial protein supply for indigenous ruminants using nuclear and purine excretion techniques in Indonesia. In: H.P.S. Makkar and X.B. Chen (Eds.). Proceedings of the Second Research Coordination Meeting of a Coordinated Research Project (Phase 1). Coordinated Research Project, Vienna.

Chedrese, P. J. 2009. Reproductive Endocrinology: A Molecular Approach. Springer Science+Business Media. pp 148-149.

Chen, S., P. Paengkoun, and X. Xia. 2011. Effects of dietary crude protein and undegradable intake protein on nitrogen utilization and growth performance of growing Thai-indigenous beef cattle. SAADC. pp 436-440.

Cronje, P. 2000. Ruminant Physiology: Digestion, Metabolism, Growth and Reproduction. CAB International. London, UK. pp 3-21.

Cummins, S. B., P. Lonergan, A. C. O. Evans, and S. T. Butler. 2012. Genetic merit for fertility traits in Holstein cows: II. Ovarian follicular and corpus luteum dynamics, reproductive hormones, and estrus behavior. J. Dairy Sci. 95 :3698–3710.

Cunningham, J. G. and B. G. Klein. 2007. Textbook of Veterinary Physiology Fourth Edition. Saunders Elsevier. pp 410-428, 470-478.

Cutullic, E., L. Delaby, D. Causeur, G. Michel, and C. Disenhaus. 2009. Hierarchy of factors affecting behavioural signs used for oestrus detection of Holstein and Normande dairy cows in a seasonal calving system. Anim. Reprod. Sci. 113: 22–37.

Das, L. K., S. S. Kundu, D. Kumar, and C. Datt. 2014. Metabolizable protein systems in ruminant nutrition: A review. Veterinary World *7*(8): 622-629.

Dijkstra, J., J.L. Ellis , E. Kebreab, A.B. Strathe, S. López, J. France, A. Bannink. 2012. Ruminal pH regulation and nutritional consequences of low pH. J. Anim. Feed Sci. Tech. 172: 22-33.

Diskin, M. G., D. R. Mackey, J. F. Roche, and J. M. Sreenan. 2003. Effect of nutrition and metabolic status on circulating hormones and ovarian follicle development in cattle. Anim. Reprod. Sci. 78: 345-370.

Dorsey, B. R., R. Kasimanickam, W.D. Whittier, R.L. Nebel, M.L. Wahlberg, J.B. Hall. 2011. Effect of time from estrus to AI on pregnancy rates in estrous synchronized beef heifers. Anim. Reprod. Sci. 127: 1– 6.

DuPonte, M. W. 2007. The Basics of Heat (Estrus) Detection in Cattle. Livestock Management LM-15. College of Tropical Agriculture and Human Resources (CTAHR).

Encinias, A. M., G. P. Lardy, J. L. Leupp, H. B. Encinias, L. P. Reynolds, and J. S. Caton. 2005. Efficacy of using a combination of rendered protein products as an undegradable intake protein supplement for lactating winter-calving cows fed bromegrass hay. J. Anim. Sci. 83: 187-195.

Engel, C. L. 2007. Effect of dried corn distillers grains plus solubles compared to soybean hulls, in late gestation heifer diets, on animal and reproductive performance. Thesis. Animal Science, South Dakota State University.

Feradis. 2010. Reproduksi Ternak. Alfabeta, Bandung. p 114.

Flis, S. A., and M. A. Wattiaux. 2005. Effects of Parity and Supply of Rumen-Degraded and Undegraded Protein on Production and Nitrogen Balance in Holsteins. J. Dairy Sci. 88: 2096–2106.

Forde, N., M. E. Beltman, P. Lonergan, M. Diskin, J. F. Roche, dan M. A. Crowe. 2011. Oestrous cycles in *Bos taurus* cattle. Anim. Reprod. Sci. 124: 163-169.

Frandson, R. D., W. L. Wilke, and A. D. Fails. 2009. Anatomy and Physiology of Farm Animals 7th Ed. Wiley-Blackwell, A John Wiley & Sons, Inc., Publication. USA. pp 417, 436.

Galina, C. S., and A. Orihuela. 2007. The detection of estrus in cattle raised under tropical conditions: What we know and what we need to know. Hormones and Behavior 52: 32–38.

Gath, V. P., M. A. Crowe, D. O'Callaghan, M. P. Boland, P. Duffy, P. Lonergan, and F. J. Mulligan. 2012. Effect of diet type on establishment of pregnancy and embryo development in beef heifers. Anim. Reprod. Sci. 133: 139-145.

Gunn, P. J., J.P.Schoonmaker , R.P.Lemenager, G.A.Bridges. 2014. Feeding excess crude protein to gestating and lactating beef heifers: Impact on parturition, milk composition, ovarian function, reproductive efficiency and pre-weaning progeny growth. J. Livest. Sci. 167: 435-448.

Hartadi, H., S. Reksohadiprodjo, S. Lebdosukojo, dan A. D. Tillman. 2005. Tabel-Tabel dari Komposisi Bahan Makanan Ternak untuk Indonesia. Gadjah Mada University Press. p 12.

Herlihy, M. M., M. A. Crowe, M. G. Diskin, and S. T. Butler. 2012. Effects of synchronization treatments on ovarian follicular dynamics, corpus luteum growth, and circulating steroid hormone concentrations in lactating dairy cows. J. Dairy Sci. 95 :743–754.

Jabbar, M. A., I. B. Marghazani, T. N. Pasha, A. Khalique, and M. Abdullah. 2013. Effect of protein supplements of varying ruminal degradability on nutrients intake, digestibility, nitrogen balance and body condition score in early lactating Nili-Ravi buffaloes. J. Anim Plant Sci. 23 (1 Suppl.): 108-112.

Jahani-Moghadam, M., E. Mahjoubi, H. Amanlou, and S. Mohammadi. 2014. Effects of supplementing xylose-treated soybean meal or untreated corn gluten meal to lactating dairy cows. Iranian Journal of Applied Animal Science 4(3): 485-491.

Kane, K. K., K. W. Creighton, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and D. E. Hawkins. 2002. Effects of varying levels of undegradable intake protein on endocrine and metabolic function of young post-partum beef cows. Theriogenology 57: 2179-2191.

Kane, K. K., D. E. Hawkins, G. D. Pulsipher, D. J. Denniston, C. R. Krehbiel, M. G. Thomas, M. K. Petersen, D. M. Hallford, M. D. Remmenga, A. J. Roberts, and D. H. Keisler. 2004. Effect of increasing levels of undegradable intake protein on metabolic and endocrine factors in estrous cycling beef heifers. J. Anim. Sci. 82: 283-291.

Kementan-BPS. 2011. Rilis Hasil Awal PSPK 2011. Kementerian Pertanian-Badan Pusat Statistik. pp 1-13.

Koolman, J., K. H. Roehm. 2005. Color Atlas of Biochemistry 2nd Edition. Georg Thieme Verlag. Germany. p 374.

Kor, N. M. 2014. The effect of corpus luteum on hormonal composition of follicular fluid from different sized follicles and their relationship to serum concentrations in dairy cows. Asian Pac. J. Trop. Med. 7(Suppl 1): S282-S288.

Landaeta-Hernandez, A. J., J. V. Yelich, J. W. Lemaster, M. J. Fields, T. Tran, C. Chad , Jr. Chase, D. O. Rae, and P. J. Chemnoweth. 2002. Environmental, genetic and social factors affecting the expression of estrus in beef cows. Theriogenology 57: 1357–1370.

Lardy, G. P., D. C. Adams, T. J. Klopfenstein, and H. H. Patterson. 2004. Building beef cow nutritional programs with the 1996 NRC beef cattle requirements model. J. Anim.Sci. 82 E-Suppl: E83-92.

Larson, R. L. 2007. Heifer development: reproduction and nutrition. J. Vet. Clin. Food Anim. 23: 53-68.

Law, R. A., F. J. Young, D. C. Patterson, D. J. Kilpatrick, A. R. G. Wylie, and C. S. Mayne. 2009. Effect of dietary protein content on estrous behavior of dairy cows during early and mid lactation. J. Dairy Sci. 92: 1013-1022.

Layek, S. S., T. K. Mohanty, A. Kumaresan, K. Behera, and S. Chand. 2011. Behavioural signs of estrus and their relationship to time of ovulation in Zebu (Sahiwal) cattle. Anim. Reprod. Sci. 129: 140–145.

Layek, S. S., T. K. Mohanty, A. Kumaresan, K. Behera, S. Chand. 2013. Cervical mucus characteristics and periestrual hormone concentration in relation to ovulation time in Zebu (Sahiwal) cattle. Livest. Sci. 152: 273–281.

Lyimo, Z.C., M. Nielen, W. Ouweltjes, T. A. Kruip, F.J. Van Eerdenburg. 2000. Relationship among estradiol, cortisol and intensity of estrous behavior in dairy cattle. Theriogenology 53: 1783–1795.

Mathis, C. P., J. E. Sawyer, and R. Parker. 2002. Managing and Feeding Beef Cows Using Body Condition Scores. New Mexico State University.

Mayer, J. 2002. Tips for heat detection. Angus Journal. pp 111-113.

McDonald. 2003. McDonald's Veterinary Endocrinology and Reproduction 5th Ed. Lowa State Press. USA. pp 327, 309, 395-401.

Milad, I. S., C. Rymer, R. W. Radley. 2010. Effects of ammonia treatment and undegradable protein supplementation on nutrient digestion of sheep fed on wheat straw based diets. Archiva Zootechnica 13(1): 39-46.

Moallem, U., G. E. Dahl, E. K. Duffey, A. V. Capuco, D. L. Wood, K. R. McLeod, R. L. Baldwin, VI, and R. A. Erdman. 2004. Bovine Somatotropin and Rumen-Undegradable Protein Effects in Prepubertal Dairy Heifers: Effects on Body Composition and Organ and Tissue Weights. J. Dairy Sci. 87 (11): 3869–3880.

Mondal, M., C. Rajkhowa, and B. S. Prakash. 2006. Relationship of plasma estradiol-17β, total estrogen, and progesterone to estrus behavior in mithun (Bos frontalis) cows. Hormones and Behavior 49: 626–633.

Montiel, F., and C. Ahuja. 2005. Body condition and suckling as factors influencing the duration of postpartum anestrus in cattle: a review. Anim. Reprod. Sci. 85: 1–26.

Murray, R. K., D. K. Granner, P. A. Mayes, dan V. W. Rodwell. 2003. Harper's Illustrated Biochemistry 26th Edition. McGraw Hill Companies. USA. p 442.

Negussie, F., T. Kassa, and M. Tibbo. 2002. Behavioural and physical signs associated with oestrus and some aspects of reproductive performance in Fogera cows and heifers. Trop. Anim. Health Prod. 34: 319–328.

Noakes, D. E., T. J. Parkinson, dan G. C. W. England. 2001. Arthur's Veterinary Reproduction And Obstetrics. W. B. Saunders. pp 3-10.

NRC. 2000. Nutrient Requirements of Beef Cattle 7th Revised Ed. Nat. Acad. Press, Washington, D. C. pp 85-87, 102-103.

Robinson, P. H., J. M. Moorby, M. Arana, and T. Graham. 2004. Effect of feeding a high- or low-rumen escape protein supplement to dry Holstein cows and heifers within 3 weeks of calving on their productive and reproductive performance in the subsequent lactation. Anim. Feed Sci. Tech. 114: 43–57.

Robinson, J. J., C. J. Ashworth, J. A. Rooke, L. M. Mitchell, and T. G. McEvoy. 2006. Nutrition and fertility in ruminant livestock. Anim. Feed Sci. Tech. 126: 259-276.

Rochijan. 2014. Pengaruh Pemberian *Rumen Undegraded Protein* terhadap Produksi dan Reproduksi Sapi Perah. Tesis. Fakultas Peternakan Universitas Gadjah Mada, Yogyakarta.

Roelofs, J., F. López-Gatius, R. H. F. Hunter, F. J. C. M. van Eerdenburg, Ch. Hanzen. 2010. When is a cow in estrus? Clinical and practical aspects. Theriogenology 74: 327–344.

Rossi, J., and T. W. Wilson. 2006. Body Condition Scoring Beef Cows. The University of Georgia College of Agricultural and Environmental Sciences. Bulletin 1308.

Sartori, R., and C. M. Barros. 2011. Reproductive cycles in *Bos indicus* cattle. Anim. Reprod. Sci. 124: 244-250.

Sartori, R., L. U. Gimenes, P. L. J. Monteiro Jr, L. F. Melo, P. S. Baruselli, M. R. Bastos. 2016. Metabolic and endocrine differences between *Bos taurus* and *Bos indicus* females that impact the interaction of nutrition with reproduction. Theriogenology 86: 32–40.

Schwab, C. G. 2010. Balancing diets for amino acids: nutritional, environmental and financial implications. Tri-State Dairy Nutrition Conference. pp 1-13.

Scully, S., A. C. O. Evans, P. Duffy, and M. A. Crowe. 2014. Characterization of follicle and CL development in beef heifers using high resolution three-dimensional ultrasonography. Theriogenology 81: 407–418.

Setyowati, E. Y., U. Santosa, D. W. Lukman, U. H. Tanuwiria. 2011. Performa produksi sapi Brahman *Cross* yang diberi suplemen Se organik. Seminar Nasional Peternakan Berkelanjutan Ke-3. Fakultas Peternakan Universitas Padjajaran “Road to Green Farming”. ISBN: 978-602-95808-2-2. pp 674-679.

Siswanto, A. J., J. Susilo, A. Heni, dan B. Triwibowo. 2010. Kejadian hipofungsi ovaria pada sapi Brahman-cross di Kecamatan Sungai Lilin Kabupaten Musi Banyuasin Provinsi Sumatera Selatan. Laboratorium Patologi BPPV Regional III. pp 11-22.

Squires, E. J. 2010. Applied Animal Endocrinology. CABI. Cambridge University Press, Cambridge. pp 199, 202.

Stevenson, J. S., S. L. Pulley, and H. I. Mellieon Jr. 2012. Prostaglandin F2α and gonadotropin-releasing hormone administration improve progesterone status, luteal number, and proportion of ovular and anovular dairy cows with corpora lutea before a timed artificial insemination program. J. Dairy Sci. 95 :1831–1844.

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.

Syarifuddin, N.A. 2005. Laporan kegiatan aplikasi teknologi reproduksi ternak dan kesehatan ternak pada program pendayagunaan dan pengembangan iptek nuklir bidang peternakan di daerah Kalimantan Selatan tahun 2005. Fakultas Pertanian Universitas Lambung Mangkurat, Banjarbaru.

Syarifuddin, N.A. dan A. Wahdi. 2008. Perbaikan efisiensi reproduksi sapi induk Brahman *Cross* melalui percepatan berahi post partum dan penerapan teknologi Radioimmunoassay (RIA). Laporan Penelitian Hibah Pekerti, Dikti. Fakultas Pertanian Unlam, Banjarbaru.

Syarifuddin, N. A., dan A. Wahdi. 2011. Peningkatan reproduksi sapi induk Brahman *Cross* post partum dengan pemberian pakan suplemen multinutrient block plus medicated. Jurnal Ilmiah Aplikasi Isotop dan Radiasi. ISSN 1907-0322. pp 127-143.

Tamminga, S. 2006. The effect of the supply of rumen degradable protein and metabolisable protein on negative energy balance and fertility in dairy cows. Anim. Reprod. Sci. 96: 227-239.

Thatcher, W., J. E. P. Santos, C. R. Staples. 2011. Dietary manipulations to improve embryonic survival in cattle. Theriogenology 76: 1619–1631.

Van Eerdenburg, F. J., D. Karthaus, M. A. Taverne, I. Merics, and O. Szenci. 2002. The relationship between estrous behavioral score and time of ovulation in dairy cattle. J. Dairy Sci. 85: 1150–1156.

Van Knegsel, A. T. M., H. Vanden Brand, J. Dijkstra, W. M. Van Straalen, M. J. W. Heetkamp, S. Tamminga, and B. Kemp. 2007. Dietary energy source in dairy cows in early lactation: energy partitioning and milk composition. J. Dairy Sci. 90: 1467-1476.

Velazquez, M. A. 2015. Impact of maternal malnutrition during the periconceptional period on mammalian preimplantation embryo development. Domestic Animal Endocrinology 51: 27–45.

Waterman, R. C., J. E. Sawyer, C. P. Mathis, D. E. Hawkins, G. B. Donart, and M. K. Petersen. 2006. Effects of supplements that contain increasing amounts of metabolizable protein with or without Ca-propionate salt on postpartum interval and nutrient partitioning in young beef cows. J. Anim. Sci. 84: 433-446.

Wattiaux, M. A. 2016. Protein Metabolism in Dairy Cows. Available at: https://federated.kb.wisc.edu/images/group226/52745/5.ProteinMetabolisminDairyCows.pdf . Accession date March 16th 2016.

Wattiaux, M. A., and L. E. Armentano. 2016. Carbohydrate Metabolism in Dairy Cows. Available at: https://federated.kb.wisc.edu/images/group226/52745/3.CarbohydrateMetabolisminDairyCows.pdf . Accession date March 16th 2016.

Weems, C. W., Y. S. Weems, R. D. Randel. 2006. Prostaglandins and reproduction in female farm animals. The Veterinary Journal 171: 206–228.

Widyobroto B.P., S. Padmowijoto dan R. Utomo. 1995. In sacco degradation of five tropical grasses. J. Anim. Sci. 19: 45-55.

Widyobroto B.P., S. Padmowijoto, R. Utomo dan Kustantinah. 1997. Pengaruh perlakuan formaldehid pada bungkil kedelai terhadap degradasi protein dalam rumen dan kecernaan *undegraded protein* di intestinum. Prosiding Seminar Nasional II Ilmu Nutrisi dan Makanan Ternak, kerjasama Fakultas Peternakan Institut Pertanian Bogor dengan Asosiasi ilmu Nutrisi dan Makanan Ternak Indonesia. pp 33-34.

Widyobroto, B. P., S. P. S. Budhi, A. Agus, dan B. Santosa. 2002. Effect of rumen undegraded protein level on nutrient digestibility and rumen fermentation parameters of dairy cow. Buletin Peternakan 26 (4): 57-63.

Widyobroto, B. P., S. P. S. Budhi, dan A. Agus. 2007. Pengaruh aras *undegraded protein* dan energi terhadap kinetik fermentasi rumen dan sintesis protein mikrobia pada sapi. J. Indon. Trop. Anim. Agric. 32 (3): 194-200.

Widyobroto, B.P. 2013. Implementasi sistem penyusunan ransum sapi perah di indonesia berdasarkan protein tercerna di intestinum. Pidato Pengukuhan Guru Besar pada Fakultas Peternakan. Universitas Gadjah Mada. Yogyakarta.

Wiltbank, M. C., and J. R. Pursley. 2014. The cow as an induced ovulator: Timed AI after synchronization of ovulation. Theriogenology 81: 170–185.

Wulf, M., and K. H. Sudekum. 2005. Effects of chemically treated soybeans and expeller rapeseed meal on in vivo and in situ crude fat and crude protein disappearance from the rumen. Anim. Feed Sci. Tech. 118: 215–227.

Youngquist, R. S. and W. R. Threlfall. 2007. Current Therapy in Large Animal Theriogenology Second Edition. Saunders Elsevier. pp 263, 271, 294, 295, 452.

Yulistiani, D., N. Naufaliah, D. Kardaya, and Subandriyo. 2015. Nutrient digestibility and growth of five breeds of sheep under different levels of undegradable protein. JITV 20(1): 23-30.