UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Adeniji, Y.A., R.P. Shepardson, and K.J. Harvatine. 2025. Increasing dietary palmitic and stearic acid decreases de novo synthesis of milk fatty acids in dairy cows based on modeling natural carbon isotope enrichment. J. Nutr.155:4023–4032.

Andrighetto, I., L. Serva, D. Fossaluzza, and G. Marchesini. 2023. Herd level yield gap analysis in a local scale dairy farming system: a practical approach to discriminate between nutritional and other constraining factors. Animals. 13(7):523.

Anzhany, D., Despal, T. Toharmat, N. Rofiah, N. Nuraina, A.N. Hamidah, and A. Cusiayuni. 2022. Identification of feeding pattern and their impact on milk fatty acid profiles from traditional dairy cows in Pangalengan Sub-district. IOP Conf. Ser.: Earth Environ. Sci.

Anzhany, D., T. Toharmat, D. Despal, A. Lozicki, and N. Rofiah. 2023. Nutrient and fatty acid composition of elephant and king grasses from different altitudes. IOP Conf. Ser.: Earth Environ. Sci.

AOAC. 2005. Official Methods of Analysis of AOAC International. 18th ed. Association of Official Analytical Chemists, Washington, D.C., USA. .

Atzori, A. S., C. Valsecchi, E. Manca, F. Masoero, A. Cannas, and A. Gallo. 2021. Assessment of feed and economic efficiency of dairy farms based on multivariate aggregation of partial indicators measured on field. J. Dairy Sci. 104(12):12679–12692.

Bach, A., M. Terré, and M. Vidal. 2020. Symposium review: Decomposing efficiency of milk production and maximizing profit. *J. Dairy Sci.*103(6):5709–5725.

Badan Pusat Statistik (BPS). 2025a. Populasi Sapi Perah menurut Provinsi (ekor), 2024. https://www.bps.go.id/id/statistics-table/2/NDcwIzI=/populasi-sapi-perah-menurut-provinsi.html. Diakses 1 November 2025.

Badan Pusat Statistik (BPS). 2025b. Produksi Susu Segar Menurut Provinsi (ton), 2024. https://www.bps.go.id/id/statistics-table/2/NDkzIzI=/produksi-susu-segar-menurut-provinsi.html. Diakses 1 November 2025.

Badan Pusat Statistik (BPS). 2025c. Populasi Ternak Menurut Kabupaten/Kota dan Jenis Ternak di Provinsi DI Yogyakarta (ekor), 2024. https://yogyakarta.bps.go.id/en/statistics-table/3/UzJWaVUxZHdWVGxwU1hSd1UxTXZlbmRITjA1Q2R6MDkjMw==/populasi-ternak-menurut-kabupaten-kota-dan-jenis-ternak-di-provinsi-di-yogyakarta--ekor---2022.html. Diakses 3 November 2025.

Badan Pusat Statistik (BPS). 2025d. Luas Panen, Produksi, dan Produktivitas Jagung menurut Provinsi, 2024. https://www.bps.go.id/id/statistics-

UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

table/2/MjIwNCMy/luas-panen--produksi--dan-produktivitas-jagung-menurut-provinsi.html. Diakses 8 November 2025.

Balehegn, M., A. Ayantunde, T. Amole, D. Njarui, B.D. Nkosi, F.L. Müller, R. Meeske, T.J. Tjelele, I.M. Malebana, O.R. Madibela, W.S. Boitumelo, B. Lukuyu, A. Weseh, E. Minani, and A.T. Adesogan. 2022. Forage conservation in sub-Saharan Africa: Review of experiences, challenges, and opportunities. Agron. J. 114(1):75–99.

Beltran, I.E., I. Calvache, R. Cofre, F. Salazar, J.P. Keim, A. Morales, R.G. Pulido, and M. Alfaro. 2021. Nitrogen intake and its partition on urine, dung and products of dairy and beef cattle in Chile. Agronomy. 12(1):15.

Benchaar, C., F. Hassanat, K.A. Beauchemin, D.R. Ouellet, H. Lapierre, and C. Côrtes. 2023. Effect of metabolizable protein supply on milk performance, ruminal fermentation, apparent total-tract digestibility, energy and nitrogen utilization, and enteric methane production of Ayrshire and Holstein cows. Animals. 13(3):832–845.

Benjamini, Y., and Y. Hochberg. 1995. Controlling the false discovery rate: a practical and powerful approach to multiple testing. J. R. Stat. Soc. Ser. B (Methodol.). 57(1):289–300.

Castro, M., R. Matson, D. Santschi, M. Marcondes, and T. DeVries. 2022. Association of housing and management practices with milk yield, milk composition, and fatty acid profile, predicted using Fourier transform mid-infrared spectroscopy, in farms with automated milking systems. J. Dairy Sci. 105(6):5097–5108.

Chen, Y., M. Hostens, M. Nielen, J. Ehrlich, and W. Steeneveld. 2022. Herd level economic comparison between the shape of the lactation curve and 305 d milk production. Front. Vet. Sci. 9:997962.

Christie, W.W., and X. Han. 2003. Preparation of derivatives of fatty acids. Lipid Anal. 3:217.

Correddu, F., A. Cesarani, C. Dimauro, G. Gaspa, and N.P.P. Macciotta. 2021. Principal component and multivariate factor analysis of detailed sheep milk fatty acid profile. J. Dairy Sci. 104(4):5079–5094.

Daley, V.L., L.E. Armentano, and M.D. Hanigan. 2022. Models to predict milk fat concentration and yield of lactating dairy cows: A meta-analysis. J. Dairy Sci. 105(10):8016–8035.

Despal, D.T.P. Manik, D. Evvyernie, and R. Zahera. 2022. The accuracy of several in vitro methods in estimating in vivo digestibility of the tropical dairy ration. IOP Conf. Ser.: Earth Environ. Sci.

Diepersloot, E.C., C. Heinzen, B.A. Saylor, and L.F. Ferraretto. 2022. Effect of cutting height, microbial inoculation, and storage length on fermentation

UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

profile and nutrient composition of whole-plant corn silage. Transl. Anim. Sci. 6(2):1–10.

Dimitrovska, G. 2021. Chemical composition of milk obtained from Holstein Friesian cows during first and second lactation. Int. J. Res. Rev. 8(6):382–386.

Dresch, A.P., K.E.G. Lipes, S.P. Tironi, O. Fogolari, G.M. Mibielli, J.P. Bender, and J.G. Teleken. 2025. Analysis of biomass yield and chemical composition of elephant grass at different growth stages. Res. Soc. Dev. 14(7):e9814749300.

Erenstein, O., M. Jaleta, K. Sonder, K. Mottaleb, and B.M. Prasanna. 2022. Global maize production, consumption and trade: trends and R&D implications. Food Secur. 14(5):1295–1319.

Fabjanowska, J., E. Kowalczuk-Vasilev, R. Klebaniuk, S. Milewski, and H. Gümüş. 2023. N-3 polyunsaturated fatty acids as a nutritional support of the reproductive and immune system of cattle—a review. Animals. 13(22):3589.

Fang, D., S. Hua, H. Chen, Z. Ji, D. Wang, et al. 2025. Producing high-quality and safe whole-plant quinoa silage through selecting variety and harvest time. BMC Plant Biol. 25(1):333.

Fernando, W.B., R.A. Abdulraheem, K.P. Kariyawasam, A.S. Samarasinghe, W.K.T. Fernando, H.A. Jayasundara, and L.C. Jayasinghe. 2025. Sorghum and Sorghum-Based Products: Nutritional Composition, Prebiotic Potential and Health Benefits in Gut Microbiota Interactions. Int. J. Food Sci. 2025:7084868.

Ferreira, M., R. Delagarde, and N. Edouard. 2023. Nitrogen balance in dairy cows fed low-nitrogen diets based on various proportions of fresh grass and maize silage. Animal. 17(10):100976.

Ferrero, E., F.M. Vaz, D. Cheillan, A. Brusco, and C. Marelli. 2025. The ELOVL proteins: Very and ultra long-chain fatty acids at the crossroads between metabolic and neurodegenerative disorders. Mol. Genet. Metab. 144(3):109050.

Fitriani, D., M. Ardiansyah, A. Kurniawati, Z. Bachruddin, and D.H.V. Paradhipta. 2024. Chemical and Physical Quality, Fermentation Characteristics, Aerobic Stability, and Ruminal Degradability of Sorghum Silage Inoculated with Lactiplantibacillus plantarum and Limosilactobacillus fermentum. Trop. Anim. Sci. J. 47(4):483–492.

Florit, E., A. Romanzin, V. Foletto, E. Piasentier, M. Corazzin, P. Berzaghi, and M. Bailoni. 2025. Sorghum silage and cover crop silage in diets for late-lactation cows: Effects on feed intake, digestibility, feeding behaviour, and milk yield. J. Anim. Feed Sci. 34(2):242–248.

UNIVERSITAS
GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Folch, J., M. Lees, and G.S. Stanley. 1957. A simple method for the isolation and purification of total lipides from animal tissues. J. Biol. Chem. 226(1):497–509.

Frizzarin, M., T.F. O'Callaghan, and D.P. Berry. 2025. Factors associated with the concentration of fatty acids in the milk from grazing dairy cows. J. Dairy Sci. 108(10):11186–11198.

Gaines, W.L. 1928. An efficiency formula for dairy cows. Science. 67:353–354.

Gallo, A., C. Valsecchi, M. Masseroni, A. Cannas, F. Ghilardelli, R. Colombini, and L.M. Crovetto. 2022. An observational study to verify the influence of different nutritional corn silage-based strategies on efficient use of dietary nutrients, faecal fermentation profile, and profitability in a cohort of intensive dairy farms. Ital. J. Anim. Sci. 21(1):228–243.

Garipoğlu, A.V., and T. Yıldız. 2025. Comparison of different mechanization practices used in haymaking. *Turk.* J. Agric. Food Sci. Technol. 13(4):1076–1082.

Granados-Niño, J.A., D.G. Reta-Sanchez, O.I. Santana, A. Reyes-González, E. Ochoa-Martínez, et al. 2021. Efecto de la altura de corte de sorgo a la cosecha sobre el rendimiento de forraje y el valor nutritivo del ensilaje. Rev. Mex. Cienc. Pecu. 12(3):958–968.

Gross, J.J. 2022. Limiting factors for milk production in dairy cows: perspectives from physiology and nutrition. J. Anim. Sci. 100(3):skac044.

Guo, Y., Z. Wei, Y. Zhang, and J. Cao. 2024. Research progress on the mechanism of milk fat synthesis in cows and the effect of conjugated linoleic acid on milk fat metabolism and its underlying mechanism: A Review. Animals. 14(2):204.

Hansen, N.P., T. Kristensen, M. Johansen, L. Wiking, N.A. Poulsen, K.L. Ingvartsen, and M. Johansen. 2022. Effects on feed intake, milk production, and methane emission in dairy cows fed silage or fresh grass with concentrate or fresh grass harvested at early or late maturity stage without concentrate. J. Dairy Sci. 105(10):8036–8053.

Heard, J.W., M.C. Hannah, C.K.M. Ho, and W.J. Wales. 2021. Predicting immediate marginal milk responses and evaluating the economics of two-variable input tactical feeding decisions in grazing dairy cows. Animals. 11(7):1920.

Hisham, M.B., A.M. Hashim, N. Mohd Hanafi, N. Abdul Rahman, N.E. Abdul Mutalib, and S.K. Md Isa. 2022. Bacterial communities associated with silage of different forage crops in Malaysian climate analysed using 16S amplicon metagenomics. Sci. Rep. 12(1):7107.

Jayanegara, A. 2013. Ruminal biohydrogenation pattern of polyunsaturated fatty acids. Wartazoa. 23:2007–2013.

UNIVERSITAS
GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Joseph, J., S. Tramberend, F. Kabi, G. Fischer, and T. Kahil. 2025. Sustainable intensification of fodder crop production can mitigate feed shortage and seasonality in East Africa. Environ. Dev. 54:101158.

Kementerian Koordinator Bidang Perekonomian. 2022. Dimulainya Pilot Project Pengembangan Sorgum Menandai Upaya Substitusi dan Diversifikasi dalam Penguatan Ketahanan Pangan (Siaran Pers No. HM.4.6/412/SET.M.EKON.3/08/2022). https://www.ekon.go.id/publikasi/detail/4419/dimulainya-pilot-project-pengembangan-sorgum-menandai-upaya-substitusi-dan-diversifikasi-dalam-penguatan-ketahanan-pangan. Diakses 8 November 2025.

Kharitonov, E. 2022. The processes of nutrition and metabolism affecting the biosynthesis of milk components and vitality of cows with high- and low-fat milk. Animals. 12(5):604.

Khosravi, M., Y. Rouzbehan, M. Rezaei, and J. Rezaei. 2018. Total replacement of corn silage with sorghum silage improves milk fatty acid profile and antioxidant capacity of Holstein dairy cows. J. Dairy Sci. 101(12):10953–10961.

Kobzhassarov, T.Zh., Ye.A. Simanchuk, and J. Miciński. 2025. Influence of various factors on the quality of silage harvested. Chem. Biol. Ser. 2(2025):117–125.

Kung, L., and J.T. Huber. 1983. Performance of High Producing Cows in Early Lactation Fed Protein of Varying Amounts, Sources, and Degradability. J. Dairy Sci. 66:227–234.

Kurbonov, M., and R. Khaitov. 2023. Sorghum as a substitute for corn in poultry feed. E3S Web Conf.:02025.

Kusumastuti, T.A., M.Z. Abidin, and R. Widiati. 2024. Total economic value of smallholder dairy farm in Java Island Indonesia. Int. J. Dairy Sci. 19(1):8–17.

Laboratorium Ilmu Ternak Perah dan Industri Persusuan UGM. 2024. Instruksi Kerja Metode Pengujian Susu dengan Lactoscan (IK. 01, ITPIP.LACTOSCAN.2024). Fakultas Peternakan, Universitas Gadjah Mada, Yogyakarta.

Lavery, A., and C.P. Ferris. 2021. Proxy measures and novel strategies for estimating nitrogen utilisation efficiency in dairy cattle. Animals. 11(2):343.

Li, J., K. Wu, J. Wu, C. Yang, B. Sun, et al. 2024. Effects of fresh corn stover to corn flour ratio on fermentation quality and bacterial community of mixed silage. Fermentation. 10(12):654.

Lima, J., W. Ingabire, R. Roehe, and R.J. Dewhurst. 2023. Estimating microbial protein synthesis in the rumen—can 'omics' methods provide new insights into a long-standing question?. Vet. Sci. 10(12):679.

UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Liman, L., S. Tantalo, M. Muhtarudin, W. Penta, K. Priscilla, and C.I. Sutrisna. 2023. Effect of substitution of corn (*Zea mays*) fodder with sorghum (*Sorghum bicolor* var. Numbu) fodder on nutrient digestibility and daily weight gain of beef cattle. J. Agric. Sci. 18(3):329–336.

Liu, K., Y. Zhang, G. Huang, N. Zheng, S. Zhao, Y. Wang, and J. Wang. 2022. Ruminal bacterial community is associated with the variations of total milk solid content in Holstein lactating cows. Anim. Nutr. 9:175–183.

Luo, Z., A.C. Evans, and D. Bu. 2025. Effects of corn silage, alfalfa hay, and oat-vetch mixed silage combinations on milk production, rumen fermentation, and nutrient digestibility in high-producing dairy cows. J. Dairy Sci. 108(7):6990–7001.

Lourenço, M., E. Ramos-Morales, and R.J. Wallace. 2010. The role of microbes in rumen lipolysis and biohydrogenation and their manipulation. Animal. 4:1008–1023.

Lv, X., L. Chen, C. Zhou, G. Zhang, J. Xie, Y. Wang, D. Zhu, and W. Shen. 2023. Application of different proportions of sweet sorghum silage as a substitute for corn silage in dairy cows. Food Sci. Nutr. 11(6):3575–3587.

Martínez, E.N., R. Muíño, J. Hernández Bermúdez, L. Díaz González, J.L. Benedito, et al. 2025. Milk fat depression in dairy cattle: etiology, prevention, and recovery approaches. Ruminants. 5(3):38–53.

Matamoros, C., F. Hao, Y. Tian, A.D. Patterson, and K.J. Harvatine. 2022. Interaction of sodium acetate supplementation and dietary fiber level on feeding behavior, digestibility, milk synthesis, and plasma metabolites. J. Dairy Sci. 105(11):8824–8838.

Mazwan, M.Z., L. Windiana, and M. Mandasari. 2021. Financial analysis of dairy cattle farming (Case Study in Pujon District, Malang Regency, Indonesia). Int. J. Manag. Stud. Res. 9(2):11–17.

Mohamed, H.I, E. M. Fawzi, A. Basit, Kaleemullah, R. Lone, et al. 2022. Sorghum: nutritional factors, bioactive compounds, pharmaceutical and application in food systems: A Review. Phyton. 91(7):1303–1325.

Muazam, A., S. Widyayanti, Kristamtini, and B.S. Daryono. 2024. The stepwise regression analysis method for estimating sorghum production in Karangmojo. IOP Conf. Ser.: Earth Environ. Sci.1377(1):012099.

National Research Council. 2001. Nutrient requirements of dairy cattle. 7th rev. ed. Washington, DC.

Nurye, M., and Y.Y. Mummed. 2023. Physiology and mechanism of milk fat globules secretion in dairy animals: A Review. Asian J. Dairy Food Res. 43(4):1–12.

UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ogodo, A. C., O.C. Ugbogu, R.A. Onyeagba, and H.C. Okereke. 2019. Microbiological quality, proximate composition and in vitro starch/protein digestibility of Sorghum bicolor flour fermented with lactic acid bacteria consortia. Chem. Biol. Technol. Agric. 6(1):1–9.

Okoye, C.O., Y. Wang, L. Gao, Y. Wu, X. Li, and Q. Liu. 2023. The performance of lactic acid bacteria in silage production: A review of modern biotechnology for silage improvement. Microbiol. Res. 266:127212.

Öten, M., and M. Köse. 2024. Determination of the effects on silage quality of different additives added to vetch-triticale silage mixture. Turk. J. Range Forage Sci. 5(1):1–11.

Palmquist, D. L., and K.J. Harvatine. 2020. Origin of fatty acids and influence of nutritional factors on milk fat. Adv. Dairy Chem. 2:33–66.

Pearson, K. 1895. VII. Note on regression and inheritance in the case of two parents. Proc. R. Soc. Lond. 58(347–352):240–242.

Piantoni, P., and M. VandeHaar. 2023. Symposium review: The impact of absorbed nutrients on energy partitioning throughout lactation. J. Dairy Sci. 106(3):2167–2180.

Powell, J.M., C.J.P. Gourley, C.A. Rotz, and D.M. Weaver. 2010. Nitrogen use efficiency: A potential performance indicator and policy tool for dairy farms. Environ. Sci. Policy. 13:217–228.

Priyono, P., R. Nurmalina, B. Burhanuddin, and N. Ilham. 2023. Impact of import restrictions policy on dairy supply and demand in Indonesia. Trop. Anim. Sci. J. 46(3):375–381.

Ratnaningtyas, F.A., L. Abdullah, and N. Rochmah Kumalasari. 2023. Comparation between maize and sorghum silage quality: A meta-analysis study (V.M.A. Nurgiartiningsih, J.J.-W. Lee, A.R. Alimon, W. Jantasin, E. Widodo, et al., editors). BIO Web Conf. 81:00009.

Razzaghi, A., M.H. Ghaffari, and D.E. Rico. 2023. The impact of environmental and nutritional stresses on milk fat synthesis in dairy cows. Domest. Anim. Endocrinol. 83:106784.

Riuzzi, G., H. Davis, I. Lanza, G. Butler, B. Contiero, et al. 2021. Multivariate modelling of milk fatty acid profile to discriminate the forages in dairy cows' ration. Sci. Rep. 11(1):23201.

Rodríguez-Bermúdez, R., R. Fouz, M. Rico, F. Camino, T.K. Souza, et al. 2023. Factors affecting fatty acid composition of holstein cow's milk. Animals. 13(4):574.

Sainz-Ramírez, A., A.A. Morales-Cruz, F. López-González, and C.M. Arriaga-Jordán. 2025. Cow performance and methane emissions from sorghum

UNIVERSITAS GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

silage diets in small-scale dairy systems of Central Mexico. Trop. Anim. Health Prod. 57(8):369.

Sanjayaranj, I., N. Lopez-Villalobos, H.T. Blair, P.W. Janssen, S.E. Holroyd, and O. Faqeerzada. 2022. Fatty acid composition of dairy milk: a case study comparing once- and twice-a-day milking of pasture-fed cows at different stages of lactation. Dairy. 3(1):174–189.

Sanjulián, L., S. Fernández-Rico, N. González-Rodríguez, A. Cepeda, J.M. Miranda, et al. 2025. The role of dairy in human nutrition: myths and realities. Nutrients. 17(4):646.

Santos, J.D.C. dos, E.P. Saraiva, S. Gonzaga Neto, C.A.S. Saraiva, A. da C. Pinheiro, et al. 2021. Feeding behavior of lactating dairy cattle fed sorghum-based diets and increasing levels of tannic acid. Agriculture. 11(2):172.

Setianto, N.A., Y. Subagyo, and Y.N. Wakhidati. 2026. System dynamic modelling for the development of smallholder dairy farming in Java Island, Indonesia. Syst. Res. Behav. Sci. 43(2):521–535.

Sharma, R., S. Sharma, M. Bhandari, H. Bobade, R.S. Sohu, and B. Singh. 2023. Characterization of bioprocessed white and red sorghum flours: Anti-nutritional and bioactive compounds, functional properties, molecular, and morphological features. J. Food Sci. 88(8):3287–3301.

Song, X., Y. Kang, L. Dai, S. Zhang, C. Wang, et al. 2024. A review of bioinformatics analysis and its digestibility of Sorghum bicolor Kafirins. J. Food Compos. Anal. 134:106595.

Sun, X., Y. Wang, X. Ma, S. Li, and W. Wang. 2022. Producing natural functional and low-carbon milk by regulating the diet of the cattle—The fatty acid associated rumen fermentation, biohydrogenation, and microorganism response. Front. Nutr. 9:955846.

Tadesse, A., D. Gebremichael, B. Hailay, F. Hailemariam, H. Hadgu, T. Tekle, Y. Hadgu, and L. Desta. 2024. The effect of season and agro-ecology on physicochemical properties of cow's raw milk in Central and North-Western Zone of Tigray, Ethiopia. Heliyon. 10(20):e39050.

Tafaj, M., V. Kolaneci, B. Junck, A. Maulbetsch, H. Steingass, and W. Drochner. 2005. Influence of fiber content and concentrate level on chewing activity, ruminal digestion, digesta passage rate and nutrient digestibility in dairy cows in late lactation. Asian-Australas. J. Anim. Sci. 18(8):1116–1124.

Tavernier, E., I.C. Gormley, L. Delaby, S. McParland, M. O'Donovan, et al. 2023. Cow-level factors associated with nitrogen utilization in grazing dairy cows using a cross-sectional analysis of a large database. J. Dairy Sci. 106(12):8871–8884.

UNIVERSITAS
GADJAH MADA
Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Thompson, L. U., C. L. Button, and D. J. Jenkins. 1987. Phytic acid and calcium affect the in vitro rate of navy bean starch digestion and blood glucose response in humans. Am. J. Clin. Nutr. 46(3):467–473.

Tian, Z., Y. Zhang, H. Zhang, Y. Sun, Y. Mao, et al. 2022. Transcriptional regulation of milk fat synthesis in dairy cattle. J. Funct. Foods. 96:105208.

Toharmat, T., D.E. Amirroenas, I.G. Permana, Despal, and R. Zahera. 2023. Pengaruh Suhu dan Kelembapan Pakan Sapi Perah. IPB Press, Bogor.

Tuovinen, O.H., S.I. Niemelä, and P.J. Rajala-Schultz. 2025. The role of microbes in ensiling. Microorganisms. 13(10):2237.

Umami, N., B.P. Widyobroto, D.H.V. Paradhipta, Z.A. Solekhah, and L.L. Nurjanah. 2023. Silage quality based on the physical and chemical of several napier grass varieties (*Pennisetum purpureum*) supplied with different levels of pollard. IOP Conf. Ser.: Earth Environ. Sci.

Urrutia, N.L., C. Muñoz, E.M. Ungerfeld, C. Cisterna, and K.J. Harvatine. 2025. Interaction between ruminal acetate infusion and diet fermentability on milk fat production in dairy cows. Animals. 15(13):1931.

Urrutia, O., J.A. Mendizabal, L. Alfonso, B. Soret, K. Insausti, J.I. Arana, and P. García-Jaramillo. 2020. Adipose tissue modification through feeding strategies and their implication on adipogenesis and adipose tissue metabolism in ruminants. Int. J. Mol. Sci. 21(9):3183.

Utomo, R. 2023. Konservasi Hijauan Pakan dan Peningkatan Kualitas Bahan Pakan Berserat Tinggi. Gadjah Mada University Press, Yogyakarta.

Van Houtert, M. F. J. 1993. The production and metabolism of volatile fatty acids by ruminants fed roughages: A review. Anim. Feed Sci. Technol.43:189–225.

Vargas-Bello-Pérez, E., L.E. Robles-Jimenez, R. Ayala-Hernández, J. Romero-Bernal, N. Pescador-Salas, et al. 2020. Effects of calcium soaps from palm, canola and safflower oils on dry matter intake, nutrient digestibility, milk production, and milk composition in dairy goats. Animals. 10(10):1728.

Wang, B., W. Xiong, and Y. Guo. 2024. Dhurrin in Sorghum: Biosynthesis, Regulation, Biological Function and Challenges for Animal Production. Plants. 13(16):2291.

Wang, X., H. Zhu, W. Zhang, Y. Zhang, P. Zhao, et al. 2022. Triglyceride and fatty acid composition of ruminants milk, human milk, and infant formulae. J. Food Compos. Anal.106:104327.

Widodo, S., W.M. Indriatama, Y.N. Anggraeny, M.M. Sholikin, A. Jayanegara, and T. Wahyono. 2025. Forage biomass and nutrient quality in brown midrib (BMR) compared to conventional sorghum: A meta-analysis approach. J. Adv. Vet. Anim. Res. 12(1):157–168.

UNIVERSITAS
GADJAH MADA
**Pengaruh Silase Sorgum dan Jagung Terhadap Kecernaan Nutrien dan Komposisi Asam Lemak Susu Sapi
Perah di Peternakan Rakyat Kabupaten Sleman, Yogyakarta**
FADILLA YUSNITA NINGRUM, Prof. Dr. Ir. Budi Prasetyo Widyobroto, DESS., DEA., IPU., ASEAN Eng.; Dr. Ir. Muhs
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Widyobroto, B.P., Rochijan, and R. Asih. 2024. Ransum Sapi Perah Berwawasan Lingkungan. Gadjah Mada University Press, Yogyakarta.

Wu, X., S. Huang, J. Huang, P. Peng, Y. Liu, Z. Shen, F. He, and J. Wang. 2021. Identification of the potential role of the rumen microbiome in milk protein and fat synthesis in dairy cows using metagenomic sequencing. Animals. 11(5):1247.

Yang, Y., G. Ferreira, B. Corl, and B. Campbell. 2019. Production performance, nutrient digestibility, and milk fatty acid profile of lactating dairy cows fed corn silage- or sorghum silage-based diets with and without xylanase supplementation. J. Dairy Sci. 102(3):2266–2274.

Yildiz, S. 2023. Silage quality, nutrient content and relative feed value of urea and molasses added sweet maize [*Zea mays* (L.) saccharata Sturt.] silage. Indian J. Anim. Res. 58(9):1–6.

Yu, Y., R. Fu, C. Jin, H. Gao, L. Han, H. Wang, and H. Huo. 2024. Regulation of milk fat synthesis: key genes and microbial functions. Microorganisms. 12(11):2302.

Zeleke, A.W., N.J. Dimonaco, K. Lawther, A. Lavery, C. Ferris, T.R. Coyne, and P. Lalor. 2025. Reducing crude protein content in the diet of lactating dairy cows improved nitrogen-use-efficiency and reduced N excretion in urine, whilst having no obvious effects on the rumen microbiome. J. Anim. Sci. Biotechnol. 16(1):113.

Zhang, F.Y. S.B. Wu, Q.S. Liu. 2016. Main internal factors of influencing sorghum feeding value and its countermeasures. Chin. J. Anim. Nutr. 28:1–8.

Zhang, J., P. Li, X. Yang, and L. Wang. 2025a. The antinutritional factors and technological processing of sorghum and its application in pig production. Animals. 15(3):328

Zhang, S., J. Wang, S. Lu, A.S. Chaudhry, D. Tarla, H. Khanaki, I.H. Raja, and A. Shan. 2024. Effects of sweet and forege sorghum silages compared to maize silage without additional grain supplement on lactation performance and digestibility of lactating dairy cows. Animals. 14:1702.

Zhang, X., X. Liang, and Y. Zhang. 2025b. Advancements in the research and application of whole-plant maize silage for feeding purposes. Animals. 15(13):1922.

Zhong, H., J. Zhou, M. Abdelrahman, H. Xu, Z. Wu, Y. Wang, and B. Zhu. 2021. The Effect of lignin composition on ruminal fiber fractions degradation from different roughage sources in Water Buffalo (Bubalus bubalis). Agriculture. 11(10): 1015.