

DAFTAR PUSTAKA

- Akhdiat, T., N. Widjaya, H. Permana, R. F. Christi, dan A. Suherna. 2021. Pengaruh pemberian premix dalam ransum terhadap produksi dan kualitas susu sapi perah Friesian Holstein. *Zootec* 41(2): 355-363.
- Andarwati, S., G. Gunawan, D. E. D. Setiyono, A. Rafi'i, F. T. Haryadi, S. Sudaryatno, dan H. Kusnadi. 2024. Pemberdayaan peternak melalui pelatihan pembuatan mineral block berbasis potensi lokal di Kecamatan Playen Kabupaten Gunungkidul. In *Prosiding Seminar Nasional Pembangunan dan Pendidikan Vokasi Pertanian* 5(1): 612-625.
- Bhanderi, B. M., A. Goswami, M. R. Garg, and S. Samanta. 2016. Study on minerals status of dairy cows and their supplementation through are specific mineral mixture in the state of Jharkhand. *Journal of Animal Science and Technology* 58(1):42.
- Dzidiya, M. B., I. H. Malgwi, H. D. Nyako, I. D. Mohammed, M. M. Yahya, and H. Y. Abbaya. 2015. Multi mineral block formulation and production using locally available feed ingredients in semi-arid region of Nigeria. *Journal of Agriculture and Veterinary Science* 8(7): 41-47.
- FAO. 2007. Feed supplementation blocks, urea-molasses multivitamin blocks: simple and effective feed supplement technology for ruminant agriculture. Food and Agriculture Organization. Roma.
- Furtado, D. A., T. B. D. S. Castro, J. P. Lopes Neto, R. A. Constantino, M. D. G. Cunha, and J. W. Do Nascimento. 2018. Physicalmechanical properties of multivitamin blocks with different binders for goats and sheep intake. *Revista Brasileira de Engenharia Agrícola e Ambiental* 22(8): 558-63.
- Haigh, R. and O. A. Sianaki. 2025. Traditional and advanced curing strategies for concrete materials: a systematic review of mechanical performance, sustainability, and future directions. *Applied Sciences* 15(20): 11055.
- Indah, A. S., I. G Permana, dan D. Despal. 2020. Model pendugaan total digestible nutrient (TDN) pada hijauan pakan tropis menggunakan komposisi nutrisi. *Sains Peternakan: Jurnal Penelitian Ilmu Peternakan* 18(1): 38-43.
- Insoongnorn, H., W. Srakaew, T. Prapaiwong, N. Suphrap, S. Potirahong, and C Wachirapakorn. 2021. Effect of mineral salt blocks containing sodium bicarbonate or selenium on ruminal pH, rumen fermentation and milk production and composition in crossbred dairy cows. *Veterinary Sciences* 8(12): 322.
- Ishola, T. A., R. A. Busari, O. T. Aiyewumi, and E. A. Alhassan. 2021. Development of a urea molasses multi-nutrient block machine for

- sustainable livestock production. *J. Res. Information Civil Engineer* 18(2): 4135-4148.
- Javier, M. and H. Martens. 2014. Calcium and magnesium physiology and nutrition in relation to the prevention of milk fever and tetany (Dietary management of macrominerals in preventing disease). *Veterinary Clinics of North America: Food Animal Practice* 30(3): 643- 670.
- Kearl, L. C. 1982. Nutrient Requirements Of Ruminants In Developing Countries. All Graduate Theses and Dissertations, Utah State University. Utah.
- Kikelomo, A. M. 2016. Preliminary physico-chemical investigation of local binding agents in mineral salt licks production for ruminants. *International Journal of Environment, Agriculture and Biotechnology* 1(4): 238626.
- Kumar, R., K. Singh, S. Chauhan, M. Verma, A. Verma, J. Singh, S. Srivastva, and P. Kumar. 2025. Trace minerals in growth, production and reproduction in farm animals: a review. *The Indian Journal of Animal Reproduction* 46(1): 1-12.
- Lavagna, L. and R. Nisticò. 2022. An insight into the chemistry of cement: a review. *Applied Sciences* 13(1): 203.
- Li, J., W. Liu, L. Li, W. Gu, X. Zhang, M. Hallquist, M. Tang, S. Wang, and X. Kong. 2021. Hygroscopicity of fresh and aged salt mixtures from saline lakes. *Atmosphere* 12(9): 1203.
- McDonald, P. R. A. E., R. A. Edwards, J. F. D. Greenhalgh, C. A. Morgan, L. A. Sinclair, R. G. Wilkinson, M. E. Greenhalgh, and M. S. Wilkinson 2010. *Animal Nutrition Seventh Edition*.
- McDowell, L. R. 1996. Feeding minerals to cattle on pasture. *Animal feed science and technology* 60(3-4): 247-271.
- Mobashar, M., M. T. Khan, M. Marjan, S. Ahmad, U. Farooq, M. F. Khalid, R. Mustafa, N. Khan, A. B. Sadiq, A. Shah, and A. A. A. Wareth. 2023. Urea molasses mineral block under various feeding systems improved nutrient digestibility, productive performance and blood biochemical profile of Yaks. *BMC Veterinary Research* 19(1): 149.
- Mutore, R., J. Madzimure, I. D. Mpofu, and C. Bangira. 2021. Binding Efficacy Of Clay Binders In Optimized Ash-Based Vitamin-Mineral Block Licks For Cattle.
- National Research Council (NRC). 1985. Nutrient Requirements Of Sheep. Vol. 5. National Academies Press. Washington DC.
- National Research Council (NRC). 2005. Mineral Tolerance Of Animals. National Academies Press. Washington DC.
- National Research Council (US). 2007. Nutrient Requirements Of Small

- Ruminants: Sheep, Goats, Cervids, And New World Camelids. Committee on Nutrient Requirements of Small Ruminants. Washington DC.
- Nikitin, E. A., D. Y. Pavkin, A. Y. Izmailov, and A. G. Aksenov. 2022. Assessing the homogeneity of forage mixtures using an rgb camera as exemplified by cattle rations. *Applied Sciences* 12(7): 3230.
- Nikoloric, T. B., S. Garcia, and A Chaves. 2024. EAP–Lick Blocks For Methane Mitigation And Production In Grazing Cattle.
- Nurhayatin, T. dan M. Puspitasari. 2017. Pengaruh cara pengolahan pati garut (*Maranta arundinacea*) sebagai binder dan lama penyimpanan terhadap kualitas fisik pellet ayam broiler. *Jurnal Ilmu Peternakan* 2(1): 32-40.
- Overton, T. R. and T. Yasui. 2014 Practical applications of trace minerals for daily cattle. *Journal of Animal Science* 92(2): 416-426.
- Pratama, H., A. Maharani, C. Citra, M. Binsanno, F. Arkhami, T. Azhari, A. Affandi, M. Rhandhasmara, dan A. Helmi. 2025. Upaya pemenuhan kebutuhan mineral hewan ternak ruminansia melalui pelatihan pembuatan mineral blok di Desa Girimulyo, Kecamatan Jatipurno, Wonogiri. *Jurnal Pusat Inovasi Masyarakat* 7(1): 34-46.
- Puspitasari, A. A., A. A. Arbanisa, A. E. F. Putri, N. S. Purnomo, P. Wulandari, R. A. Saputra, R. Hartono, R. H. Putri, S. T. Nugroho, dan P. Permatasari. 2025. Optimalisasi kesehatan dan produktivitas ternak melalui pembuatan suplemen ternak mineral blok di desa dayu. *Jurnal Intelek dan Cendikiawan Nusantara* 2(4): 6901-6906.
- Putra, E. A. dan O. Sjoftan. 2021. Evaluasi Kandungan Nutrisi, Tanin, dan Densitas Biji Asam (*Tamarindus indica*) Hasil Penggorengan sebagai Bahan Pakan Unggas. *Jurnal Peternakan Indonesia* 23(2): 144-150.
- Putri, A. C., M. I. Fariz, W. Oktaviani, A. T. Fitriani, K. A. Ritonga, A. P. Tulus, C. Theresia, B. M. A. Wijaya, dan I. Wijayanti. 2024. Inovasi pemenuhan nutrisi ternak: penyuluhan perawatan anak domba dan pembuatan mineral blok di Desa Pekasiran. *Jurnal Pusat Inovasi Masyarakat* 6(2): 100-111.
- Rahmawati, I., N. Widjaya, S. Nurjannah, S. Suryanah, dan H. Permana. 2024. Uji organoleptik, jamur, dan pH silase rumput pakchong yang diberi suplemen organik cair herbal. *Jurnal Ilmu Pertanian* 6(2): 112-119.
- Retnani, Y., N. N. Barkah, A. Saenab, dan Taryati. 2020. Teknologi pengolahan wafer pakan untuk meningkatkan produksi dan efisiensi pakan. *Wartazoa* 30(1): 37-50.
- Rizky, W. M. 2018. Evaluasi Fisik Dan Biologis Mineral Blok Berbasis Garam. Skripsi. Fakultas Peternakan, Universitas Gadjah Mada.

Yogyakarta.

- Romadhon, M. I. dan E. S. Romadhon. 2023. Analisis beton self compacted menggunakan semen PCC. *Jurnal Teknik Sipil-Arsitektur* 22(1): 103-112.
- Rowland, N. E. 2023. Neurobehavioral mechanisms of sodium appetite. *Nutrients* 15(3): 620
- Salem., H. B. and A. Nefzaoui. 2003. Feed blocks as alternative supplements for sheep and goat. *Small Ruminant Research* 49(3): 275-288.
- Salma. 2024. Kenali Gejala Ternak Kurang Mineral, Tim Ugm Kenalkan Cara Bikin Mineral Blok Sederhana. <https://ugm.ac.id/en/news/ugm-team-introduces-simple-mineral-block-production-to-address-mineral-deficiency-in-livestock/>. Diakses 22 Februari 2025 pukul 22.30 WIB.
- Sansoucy, R. 1995. New developments in the manufacture and utilization of multinutrient blocks. *Short Communications'. World Animal Review* 82(1).
- Santi, M. A., D. M. Sinaga, H. Suryani, V. R. Pertiwi, I. K. Hapsari, dan H. Rais. 2025. Penerapn teknologi inovatif herbal mineral blok (HMB) dalam rangka pemberdayaan peternak dan optimalisasi pakan kambing. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdi Terhadap Masyarakat)* 5(4): 181-185.
- Sasongkowati, R. 2014. *Bahaya Gula, Garam Dan Lemak*. Yogyakarta. Indoliterasi.
- Shan, H., P. Poredoš, Z. Chen, X. Yang, Z. Ye, Z. Hu, R. Wang, and S. C. Tan. 2024. Hygroscopic salt-embedded composite materials for sorption-based atmospheric water harvesting. *Nature Reviews Materials* 9(10): 699-721.
- Simanungkalit, G., J. Barwick, F. Cowley, R. Dobos, and R. Hegarty. 2021. A pilot study using accelerometers to characterise the licking behaviour of penned cattle at a mineral block supplement. *Animals*. 11(4): 1153.
- Singh, A. and R. S Chandel. 2021. Developments in feed block making. *Just Agriculture Newsletter* 2(1): 1-6.
- Suttle, N. F. 2022. *Mineral Nutrition of Livestock*. 5th Edition. GB: Cabi.
- Veran-Tissoires, S., M. Marcoux, and M. Prat. 2012. Discrete salt crystallization at the surface of a porous medium. *Physical review letters* 108(5): 054502.
- Vidya, B., M. Venkateshwarlu, D. Nagalakshmi, A. S. Chandra, V. C. Preetham, and N. N. Kumari. 2024. Evaluation of the physical characteristics of complete feed blocks containing different binders.

Asian Journal of Dairy and Food Research 43(2): 219-224.

Xie, Y., J. Xie, L. Bai, and J. Liu. 2023. Experimental study on the effect of salt on the water absorption characteristic of cement mortar. Journal of Building Engineering 73: 106693.

Yatoo, M. I., A. Saxena, P. M. Deepa, B. P. Habeab, S. Devi, R. S. Jatav, and U. Dimri. 2013. Role of trace elements in animals: a review. Veterinary world 6(12): 963.

Yunia, K. D. E. 2009. Uji kadar kalium iodat dan air dalam garam briket yang beredar di pasar tradisional di kota yogyakarta. Uji, 17–22.

Zhao, X., A. Degen, L. Hao, and S. Liu. 2022. Ruminant lick blocks, particularly in China: a review Sustainability 14(13): 7620.