

DAFTAR PUSTAKA

- Abaya, G., Deneke, Y., M. Ahmed, W., & Desa, G. 2019. Review on Multiple Ovulation and Embryo Transfer Technology (MOET). *Biological Research*, 13(3), 103–113. <https://doi.org/10.5829/idosi.abr.2019.103.113>
- Afriani, T. 2017. *Superovulasi pada Ternak*. Andalas University Press.
- Afriani, T., Lismanto Syaiful, F., Eka Putra, D., & Purwati, E. 2018. Response of Superovulation by Using FSH (Follicle Stimulating Hormone) and Sex Determination of Embryos Using PCR in Pesisir Cows of West Sumatera. *Animal Production*, 20(1), 7–16.
- Ashari, M., Suhardiani, R. A., & Andriati, R. 2018. Analisis Efisiensi Reproduksi Domba Ekor Gemuk di Kabupaten Lombok Timur (Reproductive Efficiency Analysis of Sheep Fat Tail in East Lombok). *Jurnal Ilmu Dan Teknologi Peternakan Indonesia*, 4(1), 207–213.
- Balai Embrio Ternak (BET) Cipelang. 2022. *Standar operasional prosedur (SOP) Seksi Produksi dan Aplikasi (PA) Direktorat Jeneral Peternakan dan Kesehatan Hewan Kementerian Pertanian*.
- Bó, G. A., Cedeño, A., & Mapletoft, R. J. 2019. Strategies to Increment In Vivo and In Vitro Embryo Production and Transfer in Cattle. *Animal Reproduction*, 16(3), 411–422. <https://doi.org/10.21451/1984-3143-AR2019-0042>
- Bó, G. A., & Mapletoft, R. J. 2014. Historical Perspectives and Recent Research on Superovulation in Cattle. In *Theriogenology* (Vol. 81, Issue 1, pp. 38–48). <https://doi.org/10.1016/j.theriogenology.2013.09.020>
- Bó, G. A., & Mapletoft, R. J. 2020. Superstimulation of Ovarian Follicles in Cattle: Gonadotropin Treatment Protocols and FSH profiles. *Theriogenology*, 150, 353–359. <https://doi.org/10.1016/j.theriogenology.2020.02.001>
- Brasil, O. O., Moreira, N. H., Santos, G., Silva, B. D. M., Mariante, A. S., & Ramos, A. F. 2016. Superovulatory and Embryo Yielding in Sheep Using Increased Exposure Time to Progesterone Associated With A GNRH Agonist. *Small Ruminant Research*, 136, 54–58. <https://doi.org/10.1016/j.smallrumres.2016.01.005>
- Chumchai, R., Ratsiri, T., Ratchamak, R., Vongpralub, T., Boonkum, W., & Chankitisakul, V. 2021. Ovarian Responses and FSH Profiles at Superovulation With A Single Epidural Administration of Gonadotropin in the Thai-Holstein Crossbreed. *Animal Reproduction*, 18(3), 1–11. <https://doi.org/10.1590/1984-3143-AR2021-0053>
- Çizmeçi, Ü. S., & Güler, M. 2018. Superovulation in Cows: A Review. *Veterinary Science*, 2, 65–68. www.ijvets.com
- Cyndi, H.-C., Ana, R.-T., Salomón, V.-L., & Adrián, G.-S. 2023. Sincronización Del Estro Y Ovulación En Hembras Bovinas De Razas Cárnicas. Bases endocrinas y protocolos usados. *Abanico Veterinario*, 13, 1–37. <https://doi.org/10.21929/abavet2023.16>

- Damaris, C., Rosmayanti, A., Darojah, S., & Isnaini, N. (2023). Capability of Different Breeds of Donor Cattle to Produce Embryos at The Cipelang Livestock Embryo Center, Bogor, West Java. *Jurnal Kedokteran Hewan Indonesian Journal of Veterinary Sciences*, 17(1). <https://doi.org/10.21157/j.ked.hewan.v17i1.24673>
- Darlian, F., Wahjuningsih, S., Rosmayanti, A., Jodiansyah, S., Jalaludin, L. A., Setiawan, Y., & Susilawati, T. 2021. Respon Superovulasi Sapi Persilangan Belgian Blue dengan Metode yang Berbeda. *Jurnal Agripet*, 21(2), 178–186. <https://doi.org/10.17969/agripet.v21i2.20407>
- De Graaff, W., & Grimard, B. 2018. Progesterone-Releasing Devices For Cattle Estrus Induction and Synchronization: Device Optimization to Anticipate Shorter Treatment Durations and New Device Developments. *Theriogenology*, 112, 34–43. <https://doi.org/10.1016/j.theriogenology.2017.09.025>
- Demetrio, D., Demetrio, C., Oliveira, M., Reis, R., & Santos, R. 2022. From Oocyte to Calf: Practical Aspects of Bovine In Vitro Embryo Production. *Clinical Theriogenology*, 14(193).
- Djunaedi, M., Handarini, R., & Zamanti, D. D. 2018. Efektivitas Penyuntikan FSH Secara Subkutan dan Intramuskular Terhadap Respon Superovulasi Sapi Simental. *Peternakan Nusantara*, 4(1), 41–50.
- Faizah, H. M. S., Richard, F., Meena, P., Stanley, K. L., Amriana, H., Alhassany, A., Yadav, S. B., Marie, L., Crouch, B., Son, & Saipul, B. A. R. 2018. Multiple Ovulation Embryo Transfer (MOET) in Dairy Cattle in Gatton. *Malaysian Journal Of Veterinary Research*, 9(2), 109–116.
- Gordon, I. 2003. Laboratory Production of Cattle Embryos. In *Laboratory Production of Cattle Embryos*. CABI Publishing. <https://doi.org/10.1079/9780851996660.0079>
- Gutierrez-Reinoso, M. A., Escribano, E. H., Cabezas, I., Hugues, F., Parra, N. C., Zúniga, R., Sánchez, O., Toledo, J. R., & Garcia-Herreros, M. 2025. Superovulation of Dairy Cows Using Recombinant FSH (bscrFSH): Effect of The Number of FSH Applications on Ovarian Response, Hormone Profiles, and In Vivo Embryo Production. *Theriogenology*, 234, 42–50. <https://doi.org/10.1016/j.theriogenology.2024.12.002>
- Hapari, A. 2022. Tingkat Keberhasilan Transfer Embrio (TE) Berdasarkan Kegiatan Seleksi Resipien dan Pelaksanaan TE dari Tahun 2018 sampai dengan 2021 di Kabupaten Rokan Hulu. *Jurnal Sungkai*, 10(2), 38–52.
- Hardiyanto, D., Sumantri, C., Zamanti, D. 2016. Kualitas Embrio pada Sapi Simmental dan Limousin dengan Kadar Protein Pakan Berbeda. *Ilmu Produksi Dan Teknologi Hasil Peternakan*, 4(2), 319–324.
- Herrler, A., Elsaesser, F., Parvizi, N., & Niemann, H. 1991. Superovulation of Dairy Cows with Purified FSH Supplemented with Defined Amounts of LH. *Theriogenology*.
- Hopper, R. M. 2021. *Bovine Reproduction* (2nd edition). Wiley-Blackwell.
- Imron, M., Supriatna, I., Amrozi, A., & Setiadi, M. A. 2016. Respons Superovulasi Sapi Peranakan Ongole Terhadap Penyuntikan Tunggal Follicle Stimulating Hormone ke dalam Ruang Epidural. *Jurnal Veteriner*, 17(1), 78–87. <https://doi.org/10.19087/jveteriner.2016.17.1.78>

- Irma, Darodjah, S., Hilmia, N., Parlindungan, O., Rosmayanti, A., Siswanti, S. W., Jodiansyah, S., Fachruddin, D., Choiriyah, L., Sikin, Kurniati, W., & Sumantri, C. 2022. Produksi Embrio In Vivo Di Balai Embrio Ternak (BET) Cipelang dan Tren Perkembangan Embrio Transfer Global. *Jurnal Ilmiah Fillia Cendekia*, 7(1), 48–59. <https://doi.org/10.32503/fillia.v7i1.2338>
- Irma, Rasad, S. D., Hilmia, N., & Sumantri, C. 2023. Embryo Production and Development from Superovulated Donors in Double-Musclad Cattle and Their Crosses. *JITV*, 28(3). <https://doi.org/10.14334/jitv.v28.i3.3148>
- Ismirandy, A., Sonjaya, H., & Hasbi, H. 2020. The Outcome of in Vitro Embryo Transfer on Bali Cattle by Utilizing Fresh and Frozen Embryos. *International Journal of Sciences: Basic and Applied Research*, 50(1), 200–206. <http://gssrr.org/index.php?Journal=journalofbasicandapplied>
- Isnaini, N., Febrianty, S. A., Andri, F., Edwar, E., & Darlian, F. 2024. Effects of Age and Season on in vivo Embryo Production of Friesian Holstein Cows. *American Journal of Animal and Veterinary Sciences*, 19(1), 58–62. <https://doi.org/10.3844/ajavsp.2024.58.62>
- Jodiansyah, S., Imron, M., & Sumantri, C. 2013. Tingkat Respon Superovulasi dan Produksi Embrio In Vivo dengan Sinkronisasi CIDR (Controlled Internal Drug Releasing) Pada Sapi Donor Simmental. *Jurnal Ilmu Produksi Dan Teknologi Hasil Peternakan*, 01(3), 184–190.
- Kidie, H. A. 2019. Review on Growth and Development of Multiple Ovulation and Embryo Transfer Technology in Cattle. *World Scientific News*, 127(3), 191–211. www.worldscientificnews.com
- Liamanu, S., Rinny Ngangi, L., Turangan, S. H., & Manopo, J. H. 2018. Respon Ovarium Sapi Limousin dan Simmental Terhadap Induksi Follicle Stimulating Hormone. *Zootec*, 38(2), 396–406.
- Lollato, J. P. M., Souza, A. C. C., Silva, R. C. P., Marques, M. O., Crozara, A. S., Gonçalves, R. L., Cunha, L. S., Seneda, M. M., & Morotti, F. 2022. In vivo embryo production in bovine donors with low and high antral follicle counts superovulated with low and high FSH doses. *Livestock Science*, 262. <https://doi.org/10.1016/j.livsci.2022.104985>
- López-Gatiús, F. 2022. Revisiting the Timing of Insemination at Spontaneous Estrus in Dairy Cattle. *Animals*, 12(24), 1–8. <https://doi.org/10.3390/ani12243565>
- Lubis, A. F., Satyaningtjas, A. S., Lubis, O. P., Kurniati, W., & Boediono, A. 2021. Superovulation Response of Peranakan Ongole (PO) and Simmental Cows after FSH Stimulation in Multiple Ovulation and Embryo Transfer Program. *IOP Conference Series: Earth and Environmental Science*, 902(1). <https://doi.org/10.1088/1755-1315/902/1/012044>
- Maciel, G. S., Rodriguez, M. G. K., da Dilva, P. D. A., Nociti, R. P., Uscategui, R. A. R., Santos, V. J. C., Feliciano, M. A. R., Vicente, W. R. R., & Oliveira, M. E. F. 2017. Ovarian Superstimulation Treatment for Multiple Ovulation and Embryo Transfer Programs in Sheep. *Investigação*, 16(8), 30–36.
- Mahmood, K., Tahir, M. Z., Butt, M. A., Qureshi, S. M., & Riaz, A. 2021. GnRH or Estradiol Benzoate Combination with CIDR Improves In-Vivo Embryo

- Production in Bovines (*Bos indicus* and *Bos taurus*) Under Subtropics. *Peerj*, 9, 1–18. <https://doi.org/10.7717/peerj.12077>
- Mapletoft, R. J., Guerra, A. G., Dias, F. C. F., Singh, J., & Adams, G. P. 2015. In Vitro and In Vivo Embryo Production in Cattle Superstimulated with FSH for 7 Days. In *Anim. Reprod.*, v (Vol. 12, Issue 3).
- Marsico, T. V., de Camargo, J., Valente, R. S., & Sudano, M. J. 2019. Embryo Competence and Cryosurvival: Molecular and Cellular Features. *Animal Reproduction*, 16(3), 423–439. <https://doi.org/10.21451/1984-3143-AR2019-0072>
- Masuda, Y., Hasebe, R., Kuromi, Y., Hishinuma, M., Ohbayashi, T., & Nishimura, R. 2023. Hatchability Evaluation of Bovine IVF Embryos Using OCT-Based 3D Image Analysis. *Journal of Reproduction and Development*, 69(5), 239. <http://www.scj.go.jp/ja/info/kohyo/>
- Naranjo-Chacón, F., Montiel-Palacios, F., Canseco-Sedano, R., & Ahuja-Aguirre, C. 2019. Embryo Production in Middle-Aged and Mature *Bos Taurus* × *Bos Indicus* Cows Induced to Multiple Ovulation in A Tropical Environment. *Tropical Animal Health and Production*, 51(8), 2641–2644. <https://doi.org/10.1007/s11250-019-01975-2>
- Ningtias, P. I., Derthi Widhyari, S., & Wulansari, R. 2022. Konsentrasi Mineral Serum saat Produksi Embrio dan Hubungannya dengan Kualitas dan Kuantitas Embrio pada Sapi Peranakan Ongole. *Acta Veterinaria Indonesiana*, 10(2), 103–110. <http://www.journal.ipb.ac.id/indeks.php/actavetindones>
- Noakes, D. E., Parkinson, T. J., & England, G. C. W. 2019. *Veterinary Reproduction and Obstetrics* (10th edition). Elsevier.
- Nuryanto, L. B., Handarini, R., & Setiawan, Y. 2017. Estrus Response Holstein Friesian Cow Peranakan Who Injected Prostaglandin in Intramuscular and Intrauterine. *Peternakan Nusantara*, 3(2), 81–88. <https://core.ac.uk/download/pdf/228439293.pdf>.
- Patel, D., Haque, N., Patel, G., Chaudhari, A., Madhavatar, M., Bhalakiya, N., Jamnesha, N., & Patel, P. 2018. Implication of Embryo Transfer Technology in Livestock Productivity. *International Journal of Current Microbiology and Applied Sciences*, 7, 1498–1510. <http://www.ijcmas.com>
- Penitente-Filho, J. M. Auro, Jimenez, C. R. Odrigues, Zolini, A. M. Oreira, Carrascal, E., Azevedo, J. L. Uiza, Silveira, C. O. Liveira, Oliveira, F. A., & Torres, C. A. Alexandre A. 2015. Influence of Corpus Luteum and Ovarian Volume on The Number and Quality of Bovine Oocytes. *Animal Science Journal = Nihon Chikusan Gakkaihō*, 86(2), 148–152. <https://doi.org/10.1111/asj.12261>
- Ponsania, O., Sukria, H. A., Wijayanti, I., Risyahadi, S. T., Shiddieqy, M. I., Pusat,), Peternakan, R., Riset, B., Nasional, I., & Raya Jakarta-Bogor, J. 2023. Evaluasi Pengaruh Level Kandungan Protein dalam Pakan terhadap Respons Super Ovulasi: Kajian Meta-Analisis Evaluation of Protein Level Effect in Feed on Super Ovulation Response: A Meta-Analysis Study. *Jurnal Ilmu Nutrisi Dan Teknologi Pakan*, 21, 83–91. <https://doi.org/10.29244/jintp.21.2>

- Pranata, A., Kardaya, D., & Harsi, T. 2016. Effects of Feeding Concentrate With Different Levels of Protein Content on Superovulation Response in Simmental Cows. *Jurnal Peternakan Nusantara*, 2, 18–26.
- Ramos, A. F., Damiani, B., Silva, M., & Recursos, E. 2018. Hormonal Protocols in Small Ruminants. *Reproduction Biotechnology in Farm Animals*, 74, 618–626. [Www.avidscience.com](http://www.avidscience.com)
- Renaville, B., Comin, A., Fazzini, U., Marchini, E., Maiero, S., Marchi, V., & Prandi, A. 2007. Estrogen to Progesterone Ratio Affects Hormonal and Lipid Follicular Fluid Profiles in Dairy Cows. *Reproductive Medicine and Biology*, 6(1), 45–51. <https://doi.org/10.1111/j.1447-0578.2007.00164.x>
- Ridlo, M. R., Kim, E. H., Taweechaipaisankul, A., Lee, B. C., & Kim, G. A. 2021. Adiponectin Improves in Vitro Development of Cloned Porcine Embryos By Reducing Endoplasmic Reticulum Stress and Apoptosis. *Animals*, 11(2), 1–16. <https://doi.org/10.3390/ani11020473>
- Robbaani, M., Nurlayasari, I., & Wahjuningsih, S. 2024. Comparison of Embryo Production between Simmental and Limousin Cattle in Different Seasons at Cipelang Cattle Embryo Center. *Tarjih Tropical Livestock Journal*, 4(2), 95–106. <https://doi.org/10.47030/trolija.v4i2.865>
- Sartori, R., Spies, C., & Wiltbank, M. C. 2017. Effects of Dry Matter and Energy Intake on Quality of Oocytes and Embryos in Ruminants. *Reproduction, Fertility and Development*, 29(1), 58–65. <https://doi.org/10.1071/RD16395>
- Satrio, F. A., Wayan, N., Karja, K., Imron, M., Siswani, Y., Parlindungan, O., & Purwantara, B. 2018. *In Vivo Embryo Production at Cipelang Livestock Embryo Centre*. <https://doi.org/10.1016/j.cvfa.2016.01.018>
- Senger, P. L. 2005. *Pathways to Pregnancy & Parturition* (3rd edition). Current Conceptions. [Www.currentconceptions.com](http://www.currentconceptions.com)
- Setiawan, A., Dihansih, E., & Zamanti, D. 2017. Penggunaan Preparat Progesteron dan Hormon GnRH Dalam Penentuan Estrus pada Program Superovulasi Sapi Limosin. *Jurnal Pertanian*, 8(1), 7–15.
- Silva, L. O. E., Valenza, A., Alves, R. L. O. R., Silva, M. A. Da, Silva, T. J. B. Da, Motta, J. C. L., Drum, J. N., Madureira, G., de Souza, A. H., & Sartori, R. 2021. Progesterone Release Profile and Follicular Development in Holstein Cows Receiving Intravaginal Progesterone Devices. *Theriogenology*, 172, 207–215. <https://doi.org/10.1016/j.theriogenology.2021.07.001>
- Singh, N., Dhaliwal, G. S., Malik, V. S., Dadarwal, D., Honparkhe, M., Singhal, S., & Brar, P. S. 2015. Comparison of Follicular Dynamics, Superovulatory Response, and Embryo Recovery Between Estradiol Based and Conventional Superstimulation Protocol In Buffaloes (*Bubalus Bubalis*). *Veterinary World*, 8(8), 983–988. <https://doi.org/10.14202/vetworld.2015.983-988>
- Sirard, M. A. 2019. Folliculogenesis and Acquisition of Oocyte Competence in Cows. *Animal Reproduction*, 16(3), 449–454. <https://doi.org/10.21451/1984-3143-AR2019-0038>
- Subchan, F. A., Handarini, R., & Siswanti, S. W. 2016. Perbedaan Waktu Penyuntikan Hormon FSH Terhadap Respon Superovulasi Sapi Angus. *Jurnal Peternakan Nusantara*, 2(2), 159–166.
- Supriatna, Iman. 2018. *Transfer embrio pada ternak sapi*. SEAMEO BIOTROP.

- Tanmaela, P. B., Manopo, J. H., Th Lapijan, M. R., & Paputungan, U. 2019. Respon Ovarium Sapi Peranakan Ongole dan Sapi Limousin Terhadap Induksi Follicle Stimulating Hormone. *Zootec*, 39(2), 213–222.
- Tippenhauer, C. M., Plenio, J. L., Madureira, A., Heuwieser, W., & Borchardt, S. 2023. Timing of Artificial Insemination Using Sexed or Conventional Semen Based on Automated Activity Monitoring of Estrus in Holstein Heifers. *Animals*, 13(19). <https://doi.org/10.3390/ani13192994>
- Tjahjani, C. M. P., Herijanto, S., & Viasatika, Y. M. 2021. Skema Optimalisasi Respon Transfer Embrio Sapi: Analisis Deskriptif Manajemen Kelompok Ternak Donor dan Resipien. *Media Peternakan*, 22(2), 23–29.
- Valencia, J., Flores, M., Sánchez-Aldana, A., & Anta, E. 2004. Effect of PGF2 α Administration Before Uterine Flushing on Embryo Recovery Rate in Superovulated Cows and Heifers. *Revista Científica*, 14, 74–78.
- Wahjuningsih, S., Susilawati, T., Suyadi., Ihsan, M. N., Busono, W., Isnaini, N. dan, & Yekti, A. P. A. 2019. *Teknologi Reproduksi Ternak*. Malang: UB Press.
- Wahyuni, S., Fathurrahman, F., Adam, M., Syafruddin, Roslizawaty, Hasan, M., Melia, J., Dasrul, Isa, M., & Rosmaidar. 2024. The Effect of Superovulation Induction Using FSH on Increasing FSH and LH Concentrations in New Zealand White Rabbits. *Kedokteran Hewan*, 18(1), 23–26. <https://doi.org/10.21157/j.ked.hewan.v18i1.37513>
- Wiley, C. E. 2017. *Methods to Enhance Embryo Quality and Recovery Rates in Superovulated beef cows* [Lowa State University]. <https://lib.dr.iastate.edu/etd/15642>
- Yizengaw, L. 2017. Review on Estrus Synchronization and Its Application in Cattle International Journal of Advanced Research in Biological Sciences Review on Estrus Synchronization and Its Application in Cattle. *International Journal of Advanced Research in Biological Sciences*, 4(4), 67–76. <https://doi.org/10.22192/ijarbs.2017.04.04.010>