

DAFTAR PUSTAKA

- A'yunin, Q., Rauf, A. dan Harahap, I.S., 2019. Perilaku kunjungan dan efisiensi penyerbukan *Heterotrigona itama* (Cockerell) dan *Tetragonula laeviceps* (Smith) (Hymenoptera: Apidae) pada labu siam. *Jurnal Ilmu Pertanian Indonesia*, 24(3), pp.247-257.
- Abrol, D. P., Gorka, A.K., Ansari, M.J., Al-Ghamadi, A. and Al-Kahtanic, S., 2019. Impact of insect pollinators on yield and fruit quality of strawberry. *Saudi Journal of Biological Sciences*, 26(3), pp.524-530.
- Agus, A., Agussalim, Umami, N. and Budisatria, I.G.S., 2019. Effect of different beehives size and daily activity of stingless bee *Tetragonula laeviceps* on bee-pollen production. *Buletin Peternakan*, 43(4), pp.242-246.
- Al-Abbadi, S.Y., 2010. Open pollination efficiency on field-grown tomato compared with isolated under similar condition. *Sarhad Journal Agricultural*, 26(3), pp.361-364.
- Amano, K., Nemoto, T. and Heard, T., 2000. What are stingless bees, and why and how to use them as crop pollinator?. *A Review JARQ*, 34(3), pp.183-190.
- Asmini, Atmowidi, T. dan Kahono, S., 2016. *Peranan lebah Trigona spp. (Apidae: Melliponinae) dalam penyerbukan dan pembentukan biji tanaman sawi (Brassica Rapa L.: Brassicaceae)*, Bandung: Pascasarjana Institut Pertanian Bogor.
- Atmowidi, T., Buchori, D., Manuwoto, S., Suryobroto, B. dan Hidayat P., 2007. Diversity of pollinator insects in relation to seed set of mustard (*Brassica rapa* L.: Cruciferae). *Hayati Journal of Biosciences*, 14(4), pp.155-161.
- Basari, N., Ramli, S.N. and Khairi, N.S.M., 2018. Food reward and distance influence the foraging pattern of stingless bee, *Heterotrigona itama*. *Insects*, 9(4), pp.1-10.
- Bhowmik, B., Mitra, B. and Bhadra, K., 2014. Diversity of insect pollinators and their effect on the crop yield of *Brassica juncea* L., NPJ-93, from Southern West Bengal. *International Journal of Recent Scientific Research*, 5(6), pp.1207-1213.

- Chakrabarty, S.K., Chandrashekar, U.S., Manjunath, P., Yadaf, J.B. Singh, N.J. and Dadlani, M., 2011. Protogyny and self-incompatibility in Indian mustard (*Brassica juncea* (L.) Czern & Coss) - a new tool for hybrid development. *Indian Journal of Genetics and Plant Breeding*, 7(2), pp.170-173.
- Chidi, O.H. and Odo, P.E., 2017. *Meliponiculture for sustainable economy*. Abraka, Delta State University Faculty of Science International Conference.
- Chouvillon, M.J., Walter, C.M., Blows, E.M., Czaczkes, T.J., Alton, T.L. and Ratniek, L.W., 2015. Busy bees: variations in insect-flower visiting rates across multiple plant species.. *Psyche*, 2(14), pp.1-7.
- Chuttong, B., Chanbang, Y., Sringarm, K. and Burgett, M., 2016. Physicochemical profiles of stingless bee (Apidae: Meliponini) honey from South East Asia (Thailand). *Food Chemistry*, 192(6), pp.149-155.
- Deepika, N., Girish, S., Kiran, T., Deepika, S. and Paramjeet, S., 2018. Pollination studies in strawberry. *International Journal of Agricultural Science*, 10(7), p.5227–5230.
- Depra, M., Dalaqua, G.C.G., Freitas, L. and Gaglianone, M.C., 2014. Pollination deficit in open-field tomato crops (*Solanum lycopersicon* L., Solanaceae). *Journal Poll Ecol*, 12(1), pp.1-8.
- Devi, M., Sharma, H.K., Rana, K. and Mehta, D.K., 2017. Studies of flower biology and pollination in mustard (*Brassica juncea* L.). *International Journal of science and Nature*, 8(1), pp.35-39.
- Devi, M., Sharma, H.K., Rana, K. and Mehta, D.K., 2017. Diversity of insect pollinators in reference to seed set of mustard (*Brassica juncea* L.). *International Journal Current Microbiology and Application Sciences*, 6(7), pp.2131-2144.
- Dudareva, N. and Pichersky, E., 2006. *Biology of floral scent*. London: Taylor and Francis.
- Elbgami, T., Kunin, W.E., Hughes, W.O.H. and Biesmeijer, J.C., 2014. The effect of proximity to a honeybee apiary on bumblebee colony fitness, development, and performance. *Apidologie*, 45(2), pp.504-513.

- Engel, M. S., Kahoni, S. and Peggie, D., 2018. A key to the genera and subgenera of stingless bees in Indonesia (Hymenoptera: Apidae). *Treubia*, 45(12), pp.65-84.
- Fahem, M., Aslam, M. and Razaq, M., 2004. Pollination ecology with special reference to insect a review. *Journal Res Sci*, 4(2), pp.395-409.
- Figueiredo-Mecca, G., Bego, L.R. and Nascimento, F.S., 2013. Foraging behavior of *Scaptotrigona depilis* (Hymenoptera, Apidae, Meliponini) and its relationship with temporal and abiotic factors. *Sociobiology*, 60(3), pp.277-282.
- Garibaldi, L. A., Charvalheiro, L.G., Leonhardt, S.D., Aizen, M.A., Blaauw, B.R., Isaacs, R., Kuhlmann, M., Kleijn, D., Kellin, A.M., Kremen, C., Morandin, L., Scheper, J. and Winfree, R., 2014. From research to action: anchoring crop yield through wild pollinators. *Frontiers in Ecology and the Environment*, Volume 12, pp.439-447.
- Gojmerac, W.L., 1983. *Bees, beekeeping, honey and pollination*. Connecticut: AVI Publishing.
- Grüter, C. and Ratnieks, F.L., 2011. Flower constancy in insect pollinators adaptive foraging behaviour or cognitive limitation?. *Communicative Integrative Biology*, 4(6), pp.633-636.
- Hamid, S.A., Salleh, M.S., Thevan, K. and Hashim, N.A., 2016. Distribution and morphometrical variations of stingless bees (Apidae: Meliponini) in urban and forest areas of Penang Island, Malaysia. *Journal of Tropical Resources and Sustainable Science*, 4(9), pp.1-5.
- Hoehn, P., Tschardtke, T., Tylianakis, J.M. and Steffan-Dewenter, I., 2010. *Functional group diversity of bee pollinators increases crop yield*. s.l., The Royal Society, Biological Science.
- Huda, A. N., Salmah, M.R.C., Hassan, A.A., Hamdan A. and Razak, M.N.A, 2015. Pollination services of mango flower pollination. *Journal of Insect Science*, 15(1), pp.113-120.
- Hudewenz, A. and Klein, A.M., 2013. Competition between honey bees and wild bees and the role of nesting resources in a nature reserve. *Journal Insect Conservation*, 17(2), p.1275–1283.

- Hudewenz, A. and Klein, A.M., 2015. Red mason bees cannot compete with honey bees for floral resources in a cage experiment. *J. Insect Conserv*, 17(5), p.1275–1283.
- Jaapar, M.F., Jajuli, R., Mispan, M.R. and Ghani, I.A., 2018. *Foraging behavior of stingless bee Heterotrigona itama (Cockerell, 1918) (Hymenoptera : Apidae : Meliponini)*. Malang, AIP Publishing.
- Kaluza, B.F., Wallace, H., Heard, T.A., Klein, A. and Leonhard. S.D., 2016. Urban gardens promote bee foraging over natural habitats and plantations. *Ecology and Evolution*, 6(5), pp.1304-1316.
- Kelly, N., Farisya, M.S.N., Kumara, T.K. and Marcela, P., 2014. Species diversity and external nest characteristics of stingless bees in Meliponiculture. *Tropical Agricultural Science*, 37(3), pp.293-298.
- Klein, A.M., Dewenter, A.S. and Tschardt, T., 2004. Foraging trip duration and density of megachilid bees, eumenid wasps and pompilid wasps in tropical agroforestry systems. *Journal Animal Ecol*, 73(1), pp.517-525.
- Koukkari, W. and Sothorn, R., 2006. *Introducing biological rhythms*. St. Paul: Springer.
- Kumar, D., Sharma, V. and Bharti, U., 2015. Mapping of medicinal flora as honey bee forage. *Journal of Entomology and Zoology Studies*, 3(6), pp.235-238.
- Kumar, M.S., Singh, A.J.A.R. and Alagumuthu, G., 2012. Traditional beekeeping of stingless bee (*Trigona* sp.) by kani tribes of Western Ghats, Tamil Nadu, India. *Indian Journal of Traditional Knowledge*, 11(2), pp.342-345.
- Kunjwal, N., Kumar, Y. and Khan, M.S., 2014. Flower-visiting insect pollinators of brown mustard, *Brassica juncea* (L.) Czern and Cross and their foraging behaviour under caged and open pollination. *African Journal of Agricultural Research*, 9(16), pp.1278-1286.
- Li, Y.R., Wang, Z.W., Yu, Z.R. and Corlett, R.T., 2021. Species diversity, morphometrics, and nesting biology of Chinese stingless bees (Hymenoptera, Apidae, Meliponini). *Apidologie*, 52(3), pp.1239-1255.
- MacInnis, G. and Forrest, J.R.K., 2019. Pollination by wild bees yields larger strawberries than pollination by honey bees. *Journal of Applied Ecology*, 56(3), pp.824-832.

- Mangku, I.G.P., Udayana, I.G.B., Hidalgo, H.A., Nicolas, A.R. and Fresnido, M.B., 2023. Development strategy and existing qualities of honeybee in beekeepers group Badung Regency-Bali. *Journal of Agriculture and Crops*, 9(3), pp.365-371.
- Mariyana, A.I. dan Naim, M., 2016. Potensi pemanfaatan lebah (*Trigona* sp.) pada penyerbukan terhadap produksi wijen. *Jurnal Pertanian Berkelanjutan*, 4(3).
- Mensah, B. and Kudom, A., 2011. Foraging dynamics and pollination efficiency of *Apis mellifera* and *Xylocopa olivacea* on *Luffa aegyptiaca* mill (Cucurbitaceae) in Southern Gana. *Journal of Pollination Ecology*, 4(5), pp.34-38.
- Mohr, H. and Schopfer, P., 1995. *Plant physiology*. Berlin: Springer-Verlag.
- Nascimento, D. and Nascimento, F., 2012. Extreme effects of season on the foraging activities and colony productivity of a stingless bee (*Meliponaasilvei* Moure) in Northeast Brazil. *Psyche*, 5(3), pp.1-6.
- Ngantung, J.A.B., Rondonuwu, J.J. dan Kawulusan, R.I., 2018. Respon tanaman sawi hijau (*Brassica juncea* L.) terhadap pemberian pupuk organik dan anorganik di Kelurahan Rurukan Kecamatan Tomohon Timur. *Eugenia*, 24(1), pp.44-51.
- Nielsen, A., Reitan, T., Rinvoll, A.W. and Brysting, A.K., 2017. Effects of competition and climate on a crop pollinator community. *Agriculture, Ecosystems & Environment*, 246(13), pp.253-260.
- Novita, Saepudin, R. dan Sutriyono, 2013. Analisis morfometrik lebah madu pekerja *Apis cerana* budidaya pada dua ketinggian tempat yang berbeda. *Jurnal Sains Peternakan Indonesia*, 8(1), pp.41-56.
- Nunes-Silva, P., Hilario, S.D., Filho, P.D.S.S. and Imperatriz-Fonseca, V.L., 2010. Foraging activity in *Plebeia remota*, a stingless bees species, is influenced by the reproductive state of a colony. *Psyche*, 16(3), pp.1-17.
- Ollerton, J., 2017. Pollinator diversity: distribution, ecological function, and conservation. *Annual Review of Ecology, Evolution, and Systematics*, 48(2), pp.353-376.
- Oronje, M.L., Hagen, M., Gikungu, M., Kesina, M. and Kraemer, M., 2012. Pollinator diversity, behavior and limitation on yield of karela (*Momordica*

charantia L. Cucurbitaceae) in Western Kenya. *African Journal of Agricultural Research*, 7(11), pp.1629-1638.

O'Toole, C. and Raw, A., 1991. *Bees of the world*. London: Blandford.

Paini, D.R., 2004. Impact of the introduced honey bee (*Apis mellifera*) (Hymenoptera: Apidae) on native bees: a review. *Austral Ecology*, 29(8), pp.399-407.

Pangestika, N.W., Atmowidi, T. and Kahono, S., 2017. Pollen load and flower constancy of three species of stingless bees (Hymenoptera, Apidae, Meliponinae). *Tropical Life Sciences Research*, 28(2), pp.177-186.

Pearce, A.M., O'Neill, K.M., Miller, R.S. and Blodgett, S., 2012. Diversity of flower-visiting bees and their pollen loads on a wildflower seed farm in Montana. *Journal of the Kansas Entomological Society*, 85(2), pp.97-108.

Polatto, L.P., Chaud-Netto, J. and Alves-Junior, V.V., 2014. Influence of abiotic factors and floral resource availability on daily foraging activity of bees. *Journal Insect Behaviour*, 27(17), pp.593-612.

Prasojo, F.A., Atmowidi, T. dan Prawasti, T.S., 2019. *Peranan lebah *Tetragonula laeviceps* (Apidae: Meliponinae) dalam penyerbukan tanaman stroberi (*Rosaceae: Fragaria x ananassa*)*, Bandung: Faculty of Mathematics and Natural Sciences.

Pribadi, A., 2021. Perbandingan uji budi daya lebah jenis *Heterotrigona itama* pada empat tipe vegetasi. *Jurnal Penelitian Hutan Tanaman*, 18(2), pp.93-108.

Putra, D.P., Dahelmi, Salmah, S. and Swasti, E., 2017. Daily flight activity of *Trigona laeviceps* and *T. minangkabau* in red pepper (*Capsicum annum* L.) plantations in low and high lands of West Sumatra. *International Journal of Applied Environment*, 12(8), pp.1497-1507.

Putra, N.S., Watiniasih, N.L. dan Suartini, M., 2016. Jenis lebah *Trigona* (Apidae: Meliponinae) pada ketinggian tempat berbeda di Bali. *Jurnal Simbiosis*, 4(1), pp.6-9.

Rakhmawati, K.P., Hasrati, E. dan Sumastuti, E., 2011. Analisis efisiensi usaha tani sawi caisim (*Brassica juncea* L.) studi kasus di kelompok tani agribisnis "Aspakusa Makmur" teras Kabupaten Boyolali. *Agromedia*, 29(2), pp.2-16.

- Roy, S., Gayen, A.K., Mitra, T.S. and Duttagupta, A., 2014. Diversity, foraging activities of the insect visitors of mustard (*Brassica juncea* Linnaeus) and their role in pollination in West Bergal. *Journal Zool*, 1(2), pp.7-12.
- Ruslan, W.A., Miswan, Eljonnahdi, Nurdiyah, Sataeal, M., Fitrallisan dan Fabri, 2015. Frekuensi kunjungan lebah *Apis cerana* dan *Trigona* sp. sebagai penyerbuk pada tanaman Brassica rapa. *Online Jurnal of Natural Science*, 4(1), pp.65-72.
- Sadam, B., Hariani, N. dan Fachmy, S., 2016. *Jenis lebah madu tanpa sengat (Stingless Bee) di Tanah Merah Samarinda*. Samarinda, FMIPA Universitas Mulawarman.
- Salim, H.M.W., Dzulkiply, A.D., Harrison, R.D., Fletcher, C., Kassim, A.R. and Potts, M.D., 2012. Stingless bee (Hymenoptera: Apidae: Meliponini) diversity in Dipterocarp forest reserves in Peninsular Malaysia. *The Raffles Bulletin of Zoology*, 60(1), pp.213-129.
- Samsudin, S.F., Mamat, M.R. and Hazmi, I.R., 2018. Taxonomic study on selected soecies of stingless bee (Hymnenoptera: Apidae: Meliponini) in Peninsular Malaysia. *Serangga*, 23(2), pp.203-258.
- Shavit, O., Dafni, A. and Ne'eman, G., 2009. Competition between honeybees (*Apis mellifera*) and native solitary bees in the mediterranean region of Israel—implications for conservation. *Israel Journal of Plant Sciences*, 57(8), pp.171-183.
- Smith, D.R., 2012. Key to workers of Indo-Malayan stingless bees. *For Use in the Stingless Bees Workshop*, 1(1), pp.1-42.
- Stein, K. and Hensen, I., 2011. Potential pollinators and robbers: a study of the floral visitors of *Heliconia angusta* (Heliconiaceae) and their behaviour. *J Poll Ecol*, 4(6), pp.39-47.
- Streinzer, M., Huber, W. and Spaethe, J., 2016. Body size limits dim-light foraging activity in stingless bees (Apidae: Meliponini). *Journal of Comparative Physiology. A, Neuroethology, Sensory, Neural, and Behavioral Physiology*, 202(9), pp.643-655.
- Subedi, N. and Subedi, I.P., 2019. Pollinator insects and their impact on crop yield of mustard in Kusma, Parbat, Nepal. *Journal of Institute of Science and Technology*, 24(2), pp.68-75.

- Suriawanto, N., 2016. *Keanekaragaman dan tempat bersarang lebah tak bersengat (Hymenoptera: Apidae) di Sulawesi Tengah*, Bogor: Pascasarjana IPB.
- Vidal, M.D.G., Jong, D.D., Wien, H.C. and Morse, R.A., 2010. Pollination and fruit set in pumpkin (*Cucurbita pepo*) by honey bees. *Revista Brasileira de Botanica*, Volume 33, pp.107-113.
- Vossler, F.G., Blettler, D.C., Fagúndez, G.A. and Dalmazzo, M., 2018. Stingless bees as potential pollinators in agroecosystems in Argentina: inferences from pot-pollen studies in natural environments. *Pot-Pollen in Stingless Bee Melittology*, pp.155-175.
- Widhiono, I. dan Sudiana, E., 2015. Keragaman serangga penyerbuk dan hubungannya dengan warna bunga pada tanaman pertanian. *Biospecies*, 8(2), pp.43-50.
- Widowati, R., 2013. Pollen substitute pengganti serbuk sari alami bagi lebah madu. *Journal WIDYA Kesehatan dan Lingkungan*, 1(1), pp.31-36.
- Wulandari, A.P., 2015. *Peran lebah Trigona laeviceps Smith (Hymenoptera: Apidae) dalam produksi biji kailan (Brassica oleracea var. Alboglabra)*. Bogor: Institut Pertanian Bogor.
- Wulandari, A.P., Atmowidi, T. dan Kahono, S., 2017. Peranan lebah *Trigona laeviceps* (Hymenoptera: Apidae) dalam produksi biji kailan (*Brassica oleracea* var. alboglabra). *Jurnal Agron Indonesia*, 45(2), pp.196-203.
- Yao, Y., Bera, S., Wang, Y. and Li, C., 2006. Nectar and pollen sources for honeybee (*Apis cerana cerana* Fabr.) in Qinglan mangrove area, Hainan Island, China. *Journal Integrative plant Bio*, 48(11), pp.1266-1273.
- Yustia, I.P.J., Rauf, A. and Maryana, N., 2017. Ritme aktivitas penerbangan harian *Tetragonula laeviceps* (Smith) (Hymenoptera: Apidae) di Bogor. *Jurnal Entomologi Indonesia*, 14(3), pp.117-125.
- Zaki, M. and Razak, A., 2018. Pollen profile by stingless bee (*Heterotrigona itama*) reared in rubber smallholding environment at Tepoh, Terengganu. *Malaysian Journal of Microscopy*, 14(2), pp.115-123.