

## DAFTAR PUSTAKA

- Abbaszadeh, G., Dhillon, M.K., Srivastava, C. and Gautam, R.D., 2011. Effect of climatic factors on bioefficacy of biopesticides in insect pest management. *Biopestic. Int*, 7(1): 1-14.
- Abbott, W. S. (1925). A Method of Computing the Effectiveness of an Insecticide. *J. Econ. Entomol*, 18: 265-267.
- Adria dan Idris, H. 1996. Aspek biologis hama daun *Attacus atlas* pada tanaman alang-alang. *J. penel tan inds*. III(2): 37-42.
- Alfazairy, A. A., Alfy, H., Zarif, G. and Karam, H. H., 2014. *Lepidium sativum* L. Seeds as a Multifunctional Adjuvant with a Nucleopolyhedrovirus-or *Bacillus thuringiensis*-based Biopreparation. *Egyptian Journal of Biological Pest Control*, 24(1): 101-112.
- Alwandri, H., Sukirno, S., and Sumarmi, S. 2022. Atlas moth (*Attacus atlas* Linnaeus, 1758) silk sericin protein: the effect of extraction methods and storage time on its content. *Biogenesis: Jurnal Ilmiah Biologi*. 10(1): 7–15.
- Ameliya, V. F. 2020. Efektivitas Ekstrak Kokon Sutera Liar (*Attacus atlas* Linnaeus, 1767) sebagai Ultraviolet Protektan terhadap *Bacillus thuringiensis* Pengendali *Spodoptera litura* (Fabricius, 1775) di Laboratorium. *Skripsi*. Program Studi Biologi. Fakultas Biologi, Universitas Gadjah Mada. Sleman.
- Anggraeni, I., Lelana, N.E. and Ismanto, A., 2019. Serangga Hama Terkini Yang Menyerang Tanaman Sengon (*Falcatoria moluccana* (Miq.) Berneby & JW Grimes) dan Jabon (*Neolamarckia cadamba* (Roxb.) Bosser). *Jurnal Sains Natural Universitas Nusa Bangsa*, 9(2): 47-56.
- Anni, I.A., Saptiningsih, E. and Haryanti, S., 2013. Pengaruh naungan terhadap pertumbuhan dan produksi tanaman bawang daun (*Allium fistulosum* L.) di Bandung, Jawa Tengah. *Jurnal Akademika Biologi*, 2(3), pp.31-40.
- Asril, M., Lismaini, L., Ginting, M.S., Suryanti, E., Wahidah, W., Wati, C., Aksan, M. and Joeniarti, E., 2022. *Pengelolaan Hama Terpadu*. Medan: Yayasan Kita Menulis.
- Awan, A. 2007. Domestikasi ulat sutera liar *Attacus atlas* (Lepidoptera : Saturniidae) dalam usaha meningkatkan persuteraan nasional. *Disertasi*. Program Studi Sains Veteriner SPS. Institut Pertanian Bogor, Bogor.
- Bahagiawati, A. 2002. Penggunaan *Bacillus thuringiensis* sebagai bioinsektisida. *Buletin Agrobio*, 5(1): 21-28.
- Baskoro, A., Fuah, A. M., and Ekastuti, D. R. 2011. Karakteristik kulit kokon segar ulat sutera liar (*Attacus atlas*) dari perkebunan teh di daerah

Purwakarta. *Jurnal Peternakan Indonesia (Indonesian Journal of Animal Science)*, 13(3): 171-182.

- Batubara, R. Afifuddin, D. 2016. Pengendalian hama ulat grayak (*Spodoptera litura*) pada tanaman tembakau Deli (*Nicotiana tabacum*) dengan pestisida nabati dari kulit kayu midi (*Melia azedarach*). *Biofarmasi*. 14(1):33-37
- Beegle, C. C., Yamamoto, T. Invitation paper (C.P. Alexander Fund): history of *Bacillus thuringiensis* Berliner research and development. *Can Entomol* 1992;124:587–616.
- Behle RW, McGuire MR, Shasha BS. Effects of sunlight and simulated rain on the residual activity of *Bacillus thuringiensis* formulations. *J Econ Entomol* 1997;90:1506–16.
- Bernhard, K., and Urtz, R. 1993 *Production of Bacillus thuringiensis for Experiment and Commercial Use*. In: *Bacillus thuringiensis*, an Environmental Biopesticide: Theory and Practice. John Walley & Sons. Bristol.
- Binawati, D.K. and Amilah, S., 2013. Effect of cherry leaf (*Muntinga calabura*) bioinsecticides extract towards mortality of worm soil (*Agrotis ipsilon*) and armyworm (*Spodoptera exigua*) on plant leek (*Allium fistolum*). *Wahana*, 61(2):51-57.
- Brar, S. K., Verma, M., Tyagi, R. D., and Valéro, J. R. 2006. Recent advances in downstream processing and formulations of *Bacillus thuringiensis* based biopesticides. *Process biochemistry*, 41(2): 323-342.
- Bull, D. L., Ridgway, R.L., House, V. S. and Pryor, N. W. 1976. Improved formulations of the *Heliothis* nuclear polyhedrosis virus. *J. Econ. Entomol.*, 69:731-736.
- CABI. 2022. *Spodoptera litura*. <https://www.cabi.org/isc/datasheet/44520#totaxonomicTree>. Diakses tanggal 21 Maret 2022, jam 13.00 WIB.
- Chongjun, Y., Bing, L. and Fusheng, C., 2016. Extraction of sericin and its application in cosmetics. *Animal Husbandry and Feed Science*, 8(4): 223-225.
- Cohen, E., H. Rozen, T. Joseph, S. Braun, L. Margulies. 1991. Photoprotection of *Bacillus thuringiensis kurstaki* from ultraviolet irradiation. *Journal of Invertebrate Pathology* 57(3): 343-351.
- Cress, D., 1990. *Factors Affecting Pesticide Behavior and Breakdown*, Kansas State University.
- Delorme, R., Fournier, D., Chaufaux, J., Cuany, A., Bride, J.M., Auge, D. and Berge, J.B., 1988. Esterase metabolism and reduced penetration are causes of resistance to deltamethrin in *Spodoptera exigua* HUB

(Noctuidea; Lepidoptera). *Pesticide Biochemistry and Physiology*, 32(3): 240-246.

- Devi, R., Deori, M., and Devi, D. 2011. Evaluation of antioxidant activities of silk protein sericin secreted by silkworm *Antheraea assamensis* (Lepidoptera: Saturniidae). *Journal of Pharmacy Research*, 4(12): 4688-4691.
- Eka, R. S. P., Moerfiah., and Triastinurmiatiningsih. 2018. Potensi Ekstrak Daun Karuk (*Piper sarmentosum*) sebagai Insektisida Pengendali Ulat Grayak (*Spodoptera litura*). *Ekologia : Jurnal Ilmiah Ilmu Dasar dan Lingkungan Hidup*, 18(2):55-62.
- El-Sharkawey, A. Z., M. Ragaei, M. M. Sabbour, A. A. Afaf, H. A.A. Mohamed, R. Samy. 2009. Laboratory evaluation of antioxidants as UV-protectants for *Bacillus thuringiensis* against potato tuber moth larvae. *Australian Journal of Basic and Applied Sciences*, 3(2): 358-370.
- Endrawati, Y. C., and Fuah, A. M. 2012. Morfometri kokon *Attacus atlas*. *Jurnal Peternakan Indonesia*, 14 (1): 337-342.
- Fabiani, C., Pizzichini, M., Spadoni, M., and Zeddita, G. 1996. Treatment of waste water from silk degumming processes for protein recovery and water reuse. *Desalination*, 105(1-2): 1-9.
- Ferro DN, Slocombe AC, Mercier CT. Colorado potato beetle (Coleoptera: Chrysomelidae): residual mortality and artificial weathering of formulated *Bacillus thuringiensis* subsp. *tenebrionis*. *J Econ Entomol* 1997;90:574-82.
- Fiuza, L. M., Polanczyk, R. A., and Crickmore, N. 2017. *Bacillus thuringiensis* and *Lysinibacillus sphaericus*: Characterization and use in the field of biocontrol. Springer International Publishing. Switzerland.
- GBIF. 2023. *Attacus atlas* (Linnaeus, 1758). <https://www.gbif.org/species/5124716>. Diakses tanggal 26 Mei 2023, jam 14.00 WIB.
- Harmileni, H., Wijaya, K., Pratomo, B., Hardianingsih, S. and Fachrial, E. 2019. February. Uji efektivitas daun lamtoro (*Leucaena Leucocephala* Lam.) sebagai bioinsektisida dalam pengendalian hama ulat api (*Setothosea Asigna* v. Eecke). *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS)*, 1(1):177-181.
- Hasnah, H., Husni, H. and Fardhisa, A., 2012. Pengaruh ekstrak rimpang jeringau (*Acorus calamus* L.) terhadap mortalitas ulat grayak *Spodoptera litura* F. *Jurnal Floratek*, 7(2):.115-124.
- Ignoffo CM. Environmental factors affecting persistence of entomopathogens. *Florida Entomol* 1992;75:516-25. Borror, D. J., C. A. Tripelhorn and N. F. Jhonson. 1992. *Pengenalan Pelajaran Serangga (Terjemahan)*. Edisi keenam. Gadjah Mada University Press, Yogyakarta.

- Ignoffo, C. M., and Garcia, C. 1978. UV-photoinactivation of cells and spores of *Bacillus thuringiensis* and effects of peroxidase on inactivation. *Environmental Entomology*, 7(2): 270-272.
- ITIS. 2022. *Report : Spodoptera litura*. [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=941218#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=941218#null) . Diakses tanggal 21 Maret 2022, jam 14.00 WIB.
- ITIS. 2023. *Report : Allium fistulosum*. [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=185463#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=185463#null). Diakses tanggal 26 Mei 2023, jam 14.00 WIB.
- Jayati, R. D., Lestari, F. and Betharia, R. 2020. Pengaruh insektisida nabati ekstrak daun kenikir (*Cosmos Caudatus*) terhadap mortalitas ulat grayak (*Spodoptera Litura*) pada daun bawang (*Allium Fistulosum*). *BIOEDUSAINS: Jurnal Pendidikan Biologi dan Sains*, 3(1): 66-74.
- Jayati, R.D., Lestari, F. and Betharia, R., 2020. Pengaruh Pestisida Nabati Ekstrak Daun Kenikir (*Cosmos Caudatus*) Terhadap Mortalitas Ulat Grayak (*Spodoptera litura*) Pada Daun Bawang (*Allium Fistulosum*). *BIOEDUSAINS: Jurnal Pendidikan Biologi dan Sains*, 3(1): 66-74.
- Kalshoven, L. G. E., 1981. *The Pest of Crops in Indonesia*. Revised and Tranlated By P.A. Van der laan. P.T. Ichtar Baru-Van Hoeve. Jakarta.
- Khetan, S.K., 2001, Microbial pest control. Maecell Dekker, Inc. USA.
- Kumar, J. P., Alam, S., Jain, A.K., Ansari, K.M. and Mandal, B. B. 2018. Protective activity of silk sericin against UV radiation-induced skin damage by downregulating oxidative stress. *ACS Applied Bio Materials*, 1(6): 2120-2132.
- Kumar, J.P. and Mandal, B.B. 2019. The inhibitory effect of silk sericin against ultraviolet-induced melanogenesis and its potential use in cosmeceutics as an anti-hyperpigmentation compound. *Photochemical & Photobiological Sciences*, 18: 2497-2508.
- Kumar, P., Kamle, M., Borah, R., Mahato, D.K. and Sharma, B., 2021. *Bacillus thuringiensis* as microbial biopesticide: uses and application for sustainable agriculture. *Egyptian Journal of Biological Pest Control*, 31(1):1-7.
- Kunz, R. I, Brancalhão, R. M., Ribeiro, L. D., and Natali, M. R. 2016. Silkworm sericin: properties and biomedical applications. *BioMed research international*. 2016: 1-9.
- Laude, S. and Tambing, Y., 2010. Pertumbuhan dan hasil bawang daun (*Allium fistulosum* L.) pada berbagai dosis pupuk kandang ayam. *Agroland: Jurnal Ilmu-ilmu Pertanian*, 17(2): 144-148

- Lengai, G. M., Muthomi, J.W., and Mbega, E.R. 2020. Phytochemical activity and role of botanical pesticides in pest management for sustainable agricultural crop production. *Scientific African*, 7, p.e00239.
- Mafazah, A., and Zulaika, E., 2017. Potensi *Bacillus thuringiensis* dari Tanah Perkebunan Batu Malang sebagai Bioinsektisida terhadap Larva *Spodoptera litura* F. *Jurnal Sains dan Seni ITS*, 6(2): E99-E104.
- Maghsoudi S., and Jalali, E. 2017. Noble UV protective agent for *Bacillus thuringiensis* based on a combination of graphene oxide and olive oil. *Sci Rep*, 7:1–6.
- Marwoto and Suharsono. 2008. Strategi dan komponen teknologi pengendalian ulat grayak (*Spodoptera litura* Fabricius) pada tanaman kedelai. *Jurnal Penelitian dan Pengembangan Pertanian*, 27(4): 131-136.
- Moekasan, T. K. 1998. Status resistensi ulat bawang, *Spodoptera exigua* Hubn. Strain Brebes terhadap beberapa Jenis Insektisida. *J.Hort.* 7(4): 913-918.
- Moekasan, T. K., Setiawati, W., Hasan, F., Runa, R. and Somantri, A. 2013. Penetapan ambang pengendalian *Spodoptera exigua* pada tanaman bawang merah menggunakan feromonoid seks. *Jurnal Hortikultura*, 23(1): 80-90.
- Nettleton, D. 2014. Chapter 6: *Commercial Data Mining Processing, Analysis and Modeling for Predictive Analytics Projects*. USA: Elsevier.
- Ningrum, A.D. and Sumarmi, S., 2020, September. The extract of tea leaves (*Camellia sinensis* (L.) Kuntze) as protectant of *Bacillus thuringiensis* var. *kurstaki* against ultraviolet light for control of armyworm (*Spodoptera litura* Fab.) larvae. *AIP Conference Proceedings* (Vol. 2260, No. 1, p. 030022). AIP Publishing LLC.
- Ningtyas, N.S., Rahmatullah, R., Wiranto, A.S.P., Sa'adah, N.S.S., Alwandri, H., Salsabila, T.P., Adi, H., and Sukirno, S. 2023. *Attacus atlas* (L.) sericin extract as an effective UV Protectant of *Bacillus thuringiensis* serotype *kurstaki* for controlling *Spodoptera litura* (Fab.). *Journal of Tropical Biodiversity and Biotechnology*, 8(1): 74633.
- Noma, T., Colunga-Garcia, M., Brewer, M., Landis, J., Gooch, A. and Philip, M., 2010. Oriental leafworm *Spodoptera litura*. Michigan State University's invasive species factsheets. *Michigan State University IPM program and M. Philip of Michigan Departement of Agriculture*.
- Nuraida, N., Hariani, F. and Jumairoh, S., 2021. Efektivitas Ekstrak Serai Wangi terhadap Mortalitas Ulat Grayak (*Spodoptera litura*) pada Tanaman Kubis (*Brassica oleracea*) di Laboratorium. *Jurnal Agrofolium*, 1(1):.26-34.
- Nuraida, N., Hariani, F., and Jumairoh, S. 2021. Efektivitas ekstrak serai wangi terhadap mortalitas ulat grayak (*Spodoptera litura*) pada tanaman kubis (*Brassica oleracea*) di laboratorium. *Jurnal Agrofolium*, 1(1): 26-34.



- Pamungkas, O. S. 2017. Bahaya paparan insektisida terhadap kesehatan manusia. *BIOEDUKASI: Jurnal Biologi dan Pembelajarannya*, 14(1): 27-31.
- Pedersen, A., Dedes, J., Gauthier, D., and van Frankenhuyzen, K. 1997. Sublethal effects of *Bacillus thuringiensis* on the spruce budworm, *Choristoneura fumiferana*. *Entomologia Experimentalis et Applicata*, 83(3): 253-262.
- Peigler, R. S. 1989. *A Revision of The Indo-Australian Genus Attacus*. California: The Lepidoptera Research Fondation. Inc.
- Peigler, RS. 1989. *A Revision of The Indo-Australian Genus Attacus*. California: The Lepidoptera Research Fondation. Inc.
- Perez, J., Bond, C., Buhl, K., and Stone, D. 2015. *Bacillus thuringiensis* (Bt) General Fact Sheet. <http://npic.orst.edu/factsheets/btgen.html>. Diakses tanggal 22 Mei 2023, jam 15.00 WIB.
- Poszgay, M., P. Fast, H. Kaplan, P. R. Carey. 1987. The effect of sunlight on the protein crystals from *Bacillus thuringiensis* var. *kurstaki* HD1 and NRD12: A Raman spectroscopic study. *Journal of Invertebrate Pathology*, 50(3): 246-253.
- Prabaningrum, L. and Moekasan, T. K. 2016. Pengaruh pH Air Pelarut dan Umur Larutan Semprot terhadap Efikasi Insektisida pada Tanaman Kentang (Effect of Solvent Water pH and the Age of Spray Solution on the Efficacy of Pesticide in Potatoes). *Journal Hortikultutal*, 26(1): 113-120.
- Pratiwi, K, Y. A. Trisyono, E. Martono. 2016. The effect of *Bacillus thuringiensis* toxin Cry1A.105 and Cry2Ab2 on the survival of the non-target pest, *Spodoptera litura*. *Jurnal Perlindungan Tanaman Indonesia*, 20(1):7-14.
- Pusztai, M., Fast, P., Gringorten, L., Kaplan, H., Lessard, T. and Carey, P.R. 1991. The mechanism of sunlight-mediated inactivation of *Bacillus thuringiensis* crystals. *Biochemical journal*, 273(1): 43-47.
- Qibtiah, M. and Astuti, P., 2016. Pertumbuhan dan Hasil Tanaman Bawang Daun (*Allium fistulosum* l.) pada Pemotongan Bibit Anakan dan Pemberian Pupuk Kandang Sapi dengan Sistem Vertikultur. *Agrifor: Jurnal Ilmu Pertanian dan Kehutanan*, 15(2): 249-258.
- Ragaei M. Studies on the effect of *Bacillus thuringiensis* on the greasy cutworm *Agrotis ypsilon* (Rott.). PhD Thesis. University of Cairo; 1990.
- Rakshit, A., Meena, V., Abhilash, P., Sarma, B., H.B. Singh, H., Fraceto, L., Parihar, M., and Singh, A. 2022. *Biopesticides : Volume 2: Advances in Bio-Inoculants*. Elsevier Inc. Duxford.
- Ramaiah, M., and Maheswari, T. U. 2018. Biology studies of tobacco caterpillar, *Spodoptera litura* Fabricius. *Journal of Entomology and Zoology Studies*, 6(5): 2284-2289.
- Ratnawati, E. Rahyani, E., and Rahayu, S. 1996. Formulasi Bioinsektisida dari Bakteri *Bacillus thuringiensis*. *Buletin Penelitian*. 18(1):1-8

- Rosas-García, N. M. 2009. Biopesticide production from *Bacillus thuringiensis*: an environmentally friendly alternative. *Recent Patents on biotechnology*, 3(1): 28-36.
- Rusdy, A., 2009. Efektivitas ekstrak nimba dalam pengendalian ulat grayak (*Spodoptera litura* F.) pada tanaman selada. *Jurnal Floratek*, 4(1), :41-54.
- Sa'diyah, N.A., Purwani, K.I. and Wijayanti, L., 2013. Pengaruh ekstrak daun bintaro (*Cerbera odollam*) terhadap perkembangan ulat grayak (*Spodoptera litura* F.). *Jurnal Sains dan Seni ITS*, 2(2): .E111-E115.
- Salaki, C. L., Tarore, D., and Manengkey, G., 2013. Prospek pemanfaatan bioinsektisida bakteri entomopatogenik isolat lokal sebagai agen pengendali hayati hama tanaman sayuran. *Eugenia*, 19(1): 1-7.
- Saleem, M., Hussain, D., Ghouse, G., Abbas, M. and Fisher, S. W. 2016. Monitoring of insecticide resistance in *Spodoptera litura* (Lepidoptera: Noctuidae) from four districts of Punjab, Pakistan to conventional and new chemistry insecticides. *Crop Protection*, 79: 177-184.
- Sanahuja, G., Banakar, R., Twyman, R. M., Capell, T., and Christou, P. 2011. *Bacillus thuringiensis*: a century of research, development and commercial applications. *Plant Biotechnol Journal*, 9: 283-300.
- Sanchis, V., Gohar, M., Chaufaux, J., Arantes, O., Meier, A., Agaisse, H., Cayley, J., and Lereclus, D. 1999. Development and field performance of a broad-spectrum nonviable asporogenic recombinant strain of *Bacillus thuringiensis* with greater potency and UV resistance. *Applied and Environmental Microbiology*, 65(9): 4032-4039.
- Sansinenea, E. 2012. *Bacillus thuringiensis biotechnology*. Springer. Dordrecht.
- Savopoulou-Soultani, M., Stavridis, D. G., Vassiliou, A., Stafilidis, J. E., and Iraklidis, I. 1994. Response of *Lobesia botrana* (Lepidoptera: Tortricidae) to Levels of Sugar and Protein in Artificial Diets. *Journal of Economic Entomology*, 87(1): 84-90.
- Schünemann, R., Knaak, N. and Fiuza, L.M., 2014. Mode of action and specificity of *Bacillus thuringiensis* toxins in the control of caterpillars and stink bugs in soybean culture. *International Scholarly Research Notices*, 2014: 1-12.
- Selvaraj, S., Adiroubane, D., Ramesh, V., and Narayanan, A. L. 2010. Impact of ecological factors on incidence and development of tobacco cutworm, *Spodoptera litura* Fabricius on cotton. *Journal of biopesticides*. 3(1):43.
- Septian, R. D., Afifah, L., Surjana, T., Saputro, N. W., and Enri, U. 2021. Identifikasi dan Efektivitas Berbagai Teknik Pengendalian Hama Baru Ulat Grayak *Spodoptera frugiperda* JE Smith pada Tanaman Jagung berbasis PHT-Biointensif. *Jurnal Ilmu Pertanian Indonesia*, 26(4): 521-529.

- Silva, V.R., M. Ribani, M.L. Gimenes, A.P. Scheer. 2012. High molecular weight sericin obtained by high temperature and ultrafiltration process. *SciVerse ScienceDirect* 42 : 833-841.
- Siregar, F., Wiranto, A.S.P., Suparmin, S., Sumarmi, S., Purwanto, H., Sudaryadi, I., Soesilohadi, R.H. and Aldawood, A.S. 2020. Synergism of Turmeric, Moringa, Clove, and Red Betel Extracts with *Bacillus thuringiensis* var. *kurstaki* Berl. against Taro Caterpillar (*Spodoptera litura* Fab.)(Lepidoptera: Noctuidae) at the Laboratory Scale. *Berkala Ilmiah Biologi*, 13(3): 36-42.
- Smith, I. M., McNamara. D. G., Scott, P. R., and Holderness, M. (eds). 1997. *Spodoptera littoralis* and *Spodoptera litura*. In: Quarantine Pests for Europe, 2nd Edition. CAB International, Wallingford, Oxon, UK. pp. 518–525.
- Sukirno, S., Atmojo, W. T., Perdhana, D. I. P. W., Haekal, M., and Aldawood, A. S. 2022a. Coconut shell and straw charcoals to protect *Bacillus thuringiensis* against ultraviolet B and sunlight to control tobacco armyworm, *Spodoptera litura* (Fabricius, 1775)(Lepidoptera: Noctuidae). *Serangga*, 27(3): 106-118.
- Sukirno, S., Lukmawati, D., Hanum, S. S. L., Ameliya, V. F., Sumarmi, S., Purwanto, H., Suparmin, S., Sudaryadi, I., Soesilohadi, R.C., and Aldawood, A. S. 2021. The effectiveness of *Samia ricini* Drury (Lepidoptera: Saturniidae) and *Attacus atlas* L. (Lepidoptera: Saturniidae) cocoon extracts as ultraviolet protectants of *Bacillus thuringiensis* for controlling *Spodoptera litura* Fab. (Lepidoptera: Noctuidae). *International Journal of Tropical Insect Science*, 42(1): 255-260.
- Sukirno, S., Prasetya, B.A.A., Pandu, A.S., Sumarmi, S., Purwanto, H., Sudaryadi, I., Suparmin, S. and Soesilohadi, R.H. 2022b. Effectivity of *Spodoptera littoralis* Nucleopolyhedrovirus (*SpliMNPV*) and Natural Additives Mixtures against *Spodoptera litura* Fab.(Lepidoptera: Noctuidae) on Cabbage Plants. *Journal of Tropical Biodiversity and Biotechnology*, 7(2): 71134.
- Sukirno, S., Priana, A.M., & Nayula, R.E.S., 2017, Effectiveness of dragon fruit extracts as UV protectant *Bacillus thuringiensis* cabbage caterpillar pest controller (*Crocicidolomia binotalis*). Scientific reports of students and lecturer collaborative research. Faculty of Biology Universitas Gadjah Mada. Yogyakarta
- Sumarmi, S., Arlinda, M. and Sukirno, S. 2020. The effectiveness of red spinach (*Amaranthus tricolor* L.) and green spinach (*Amaranthus hybridus* L.) extracts for *Bacillus thuringiensis* var. *kurstaki* protectant against UVB radiation for the control of armyworm (*Spodoptera litura* Fab.). *J Trop Biodiv Biotechnol*, 5 (2): 143-148.
- Suwarno, S., Maridi, M. and Sari, D. P. 2015. Uji Toksisitas Isolat Kristal Protein *Bacillus thuringiensis* (Bt) sebagai Agen Pengendali Hama Terpadu



Wereng Hijau (*Nepotettix virescens*) Vektor Penyakit Tungro sebagai Upaya Peningkatan Ketahanan Pangan Nasional. *Bioedukasi: Jurnal Pendidikan Biologi*, 8(1): 16-19.

- Syahroni, M.N.G. and Haryadi, N.T., 2019. Uji Efektivitas Konsentrasi *Spodoptera litura*–Nuclear Polyhedrosis Virus (SINPV) JTM 97C Formulasi Bubuk Terhadap Larva *Spodoptera litura* Fabricius (Lepidoptera: Noctuidae) Pada Tanaman Kedelai. *Jurnal Pengendalian Hayati*, 2(2): 46-52.
- Tampubolon, D. Y. Yuswani, P. Fatimah, A. Fatiani, M. 2013. Uji Patogenitas *Bacillus thuringiensis* dan *Metarhizium anisopliae* terhadap mortalitas *Spodoptera litura* Fabr (Lepidoptera:Noctuidae) di Laboratorium. *Jurnal Online Agroekoteknologi*. 1(3): 783-793.
- Tampubolon, D. Y., Pangestiningih, Y., Zahara, F. and Manik, F. 2013. Uji patogenisitas *Bacillus thuringiensis* dan *Metarhizium anisopliae* terhadap mortalitas *Spodoptera litura* Fabr (Lepidoptera: Noctuidae) di laboratorium. *Jurnal Agroekoteknologi Universitas Sumatera Utara*, 1(3): 783-793.
- Tarigan, A., Sumarmi S., and Sukirno. 2020. Effectiveness of aloe (*Aloe vera* L.) as a protectant of *Bacillus thuringiensis* var *kurstaki* against ultraviolet light and biological control agent of *Spodoptera litura* Fab. AIP Conf Proc 2260:030003. AIP Publishing LLC.
- Vajri, I. Y., Trizelia, T., and Rahma, H. R. H. 2021. Potensi rizobakteri dalam mengendalikan hama *Crocidolomia pavonana* F. (Lepidoptera: Crambidae) pada tanaman kubis. *Jurnal Ilmu Pertanian*, 24(1): 7-16.
- Wang, X., Lou, L. and Su, J. 2019. Prevalence and stability of insecticide resistances in field population of *Spodoptera litura* (Lepidoptera: Noctuidae) from Huizhou, Guangdong Province, China. *Journal of Asia-Pacific Entomology*, 22(3): 728-732.
- Wibowo, C. I. 2017. Efektivitas *Bacillus thuringiensis* dalam Pengendalian Larva Nyamuk Anopheles sp. *Majalah Ilmiah Biologi BIOSFERA: A Scientific Journal*, 34(1): 39-46.
- Widiawati, H., Sukirno, S., Sumarmi, S., Purwanto, H., Soesilohadi, R.H. and Sudaryadi, I., 2022, May. UV protectant ability of *Attacus atlas* L.(Lepidoptera: Saturniidae) sericin extract to increase nucleopolyhedrovirus effectiveness against Beet army worm, *Spodoptera exigua* (Hübner)(Lepidoptera: Noctuidae). In *7th International Conference on Biological Science (ICBS 2021)* (pp. 82-89). Atlantis Press.
- Yuliana, A., Rinaldi, R. A., Rahayuningsih, N., and Gustaman, F. 2021. Effectiveness of *Musa x paradisiaca* L. Leaves' Ethanol Extract Granule Larvicide against *Aedes aegypti* Larvae. *ASPIRATOR*, 13(01): 69-78.

Zulfiana, D., Krishanti, N. P. R. A., Wikantyo, B., and Zulfitri, A. 2017. Bakteri Entomopatogen Sebagai Agen biokontrol terhadap larva *Spodoptera litura* (f.). *Berita Biologi*, 16(1): 13-21.