

DAFTAR PUSTAKA

- Abd El-Aziz, S. M. M., Abd El-Salam, A. M. E., Salama, M. S., and Mahmoud, D. M. 2019. Effect of ultraviolet radiation on Original Activity Remaining of *Spodoptera littoralis* NPV against *S. littoralis* Boisd (Lepidoptera: Noctuidae). *Egyptian Journal of Chemistry*, 62, 173-178.
- Adang, M. J., Crickmore, N., and Jurat-Fuentes, J. L. 2014. Diversity of *Bacillus thuringiensis* crystal toxins and mechanism of action. *Advances in insect physiology*. Elsevier Ltd. United States. Pp. 39-87.
- Ali, P. and Younas, D. 2021. Understanding and interpreting regression analysis. *Evidence-Based Nursing*, 24(4): 116-118.
- Andesgur, I. 2019. Analisa kebijakan hukum lingkungan pengelolaan pestisida. *Jurnal Bestuur*, 7(2): 93-105.
- Animal Diversity. 2020. *Spodoptera litura*. https://animaldiversity.org/accounts/Spodoptera_litura/classification/. Diakses tanggal 17 Maret 2022, Jam 21.04.
- Bhatti, S. S., Ahmad, M., Yousaf, K., and Naeem, M. 2013. Pyrethroids and new chemistry insecticides mixtures against *Spodoptera litura* (Noctuidae: Lepidoptera) under laboratory conditions. *Asian Journal of Agriculture and Biology*, 1(2): 45-50.
- Binawati, D. K. dan 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 fistulosum*). *WAHANA*, 61(2): 51-57.
- CABI. 2022. *Bacillus thuringiensis* (Bt). <https://www.cabi.org/isc/datasheet/91843>. Diakses tanggal 17 Maret 2022, Jam 20.39.
- Endrawati, Y. C., Solihin, D. D., Suryani, A., dan Subyakto, S. 2017. Optimasi rendemen fibroin ulat sutera *Bombyx mori* L. dan *Attacus atlas* L. dengan response surface methodology. *AGRITECH*, 37(2): 205-214.
- Fadhullah, A. A., Hoesain, M., dan Haryadi, N. T. 2011. Aplikasi bioinsektisida untuk pengendalian hama *Spodoptera litura*, *Helicoverpa* spp., *Cyrtopeltis tenuis* pada tanaman tembakau. *Berkala Ilmiah Pertanian*, x(x): 1-6.
- Farhan, R. A. 2018. Perilaku dan mortalitas ulat bawang (*Spodoptera exigua* Hubner) pada berbagai konsentrasi ekstrak umbi gadung (*Dioscorea hispida* Dennst.). Universitas Hasanuddin, Makassar.
- Fera, A. R., Sumartono, G. H., dan Tini, E. W. 2019. Pertumbuhan dan hasil tanaman bawang daun (*Allium fistulosum* L.) pada jarak tanam dan pemotongan bibit yang berbeda. *Jurnal Penelitian Pertanian Terapan*, 19(1): 11-18.
- Finney, D. J. 1949. The adjustment for a natural response rate in probit analysis. *Annals of Applied Biology*, 36(2): 187-195.
- Firdaus, A. A., Nashiroh, P. K., dan Djuniadi. Hubungan nilai matematika dengan prestasi belajar pemrograman berorientasi objek pada siswa kelas XII jurusan RPL SMK Ibu Kartini Semarang. *Jurnal Nasional Pendidikan Teknik Informatika : JANAPATI*, 9(1): 32-45.
- ITIS. 2022. *Samia Cynthia* (Drury, 1773). https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=936212#null. Diakses tanggal 17 Maret 2022, Jam 20.30.

- Jayati, R. D., Lestari, F., dan 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.
- Kaur, J., Rajkhowa, R., Tsuzuki, T., Millington, K., Zhang, J., and Wang, X. 2013. Photoprotection by silk cocoons. *Biomacromolecules*, 14(10): 3660-3667.
- Konecka, E., Baranek, J., Hrycak, A., and Kaznowski, A. 2012. Insecticidal activity of *Bacillus thuringiensis* strains isolated from soil and water. *The Scientific World Journal*, 2012: 1-5.
- Krishanti, N. P. R. A., Wikantyo, B., Zulfitri, A., dan Zulfiana, D. 2017. Bakteri entomopatogen sebagai agen biocontrol terhadap larva *Spodoptera litura* (F.). *Berita Biologi*, 16(1): 13-21.
- Kurniawidjaja, L. M., Lestari, F., Tejamaya, M., dan Ramadhan, D. H. 2021. Konsep dasar toksikologi industri. Fakultas Kesehatan Masyarakat Universitas Indonesia. Indonesia. Pp. 175.
- Lantang, D. 2010. Toksisitas isolat lokal *Bacillus thuringiensis* (H-14) serta lama efektivitasnya di dalam air terhadap larva nyamuk *Anopheles farauti* Laveran. *Jurnal Biologi Papua*, 2(2): 53-56.
- Lantang, D. dan Runtuboi, D. Y. 2012. Karakterisasi bakteri *Bacillus thuringiensis* asal Hutan Lindung Uncen Jayapura, serta deteksi toksisitasnya terhadap larva nyamuk *Anopheles*. *Jurnal Biologi Papua*, 4(1): 19-24.
- Laude, S. dan Tambing, Y. 2010. Pertumbuhan dan hasil bawang daun (*Allium fistulosum* L.) pada berbagai dosis pupuk kandang ayam. *Jurnal Agroland*, 17(2): 144-148.
- Lee, J., Kiuchi, T., Kawamoto, M., Shimada, T., and Katsuma, S. 2018. Accumulation of uric acid in the epidermis forms the white integument of *Samia ricini* larvae. *PLOS ONE*, 13(10): 1-15.
- Liu, D., Jia, Z. Q., Peng, Y. C., Sheng, C. W., Tang, T., Xu, L., Han, Z. J., and Zhao, C. Q. 2018. Toxicity and sublethal effects of fluralaner on *Spodopteralitura* Fabricius (Lepidoptera: Noctuidae). *Pesticide Biochemistry and Physiology*, 152: 8-16.
- Mafazah, A. dan 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): 2337-3520.
- Miguel, G. A. and Álvarez-López, C. 2020. Extraction and antioxidant activity of sericin, a protein from silk. *Brazilian Journal of Food Technology*, 23: 1-14.
- Nair, K., Al-Thani, R., Al-Thani, D., Al-Yafei, F., Ahmed, T., and Jaoua, S. 2018. Diversity of *Bacillus thuringiensis* strains from Qatar as shown by crystal morphology, δ -endotoxins and cry gene content. *Frontiers in Microbiology*, 9: 1-10.
- Ningtyas, N. S., Rahmatullah, R., Wiranto, A. S. P., Sa'adah, N. S. S., Alwandri, H., Asma', A., 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): 1-9.
- Oregon DEQ. 2006. Guidance for evaluating residual pesticides on lands formerly used for agricultural production. Oregon Department of Environmental

Quality Land Quality Division. Oregon. Pp. 5.

- Palma, L., Muñoz, D., Berry, C., Murillo, J., and Caballero, P. *Bacillus thuringiensis* toxins: an overview of their biocidal activity. *Toxins*, 6(12): 3296-3325.
- Prabaningrum, L. dan Moekasan, T. K. 2022. Ulat grayak, *Spodoptera* spp.: hama polifag, bioekologi dan pengendaliannya. IAARD Press. Jakarta. Pp. 22-23.
- Pratiwi, K., Trisyono, Y. A., and Martono, E. 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.
- Pujiastuti, Y., Sari, J. K., Arsi, A., Gunawan, B. 2020. Dampak cahaya matahari terhadap toksisitas bioinsektisida berbahan aktif *Bacillus thuringiensis* pada mortalitas larva *Spodoptera litura* (Lepidoptera:Noctuidae). Prosiding Plant Protection Day dan Seminar Nasional 4, pp. 208-213.
- Qibtiah, M. dan Astuti, P. 2016. Pertumbuhan dan hasil tanaman bawang daun (*Allium fistulosum* L.) pada pemotongan bibit anakan dan pemberian pupuk kandang sapi dengan sistem vertikultur. *Jurnal AGRIFOR*, XV(2): 249-258
- 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.
- Ramzan, M., Asghar, M. Y., N., Ijaz, M., Abid, M., Sardar, M. U., Latif, M. A., Hassan, M., Akram, M. S., and Moharvi, M. Z. 2021. The life cycle of armyworm, *Spodoptera litura* (Noctuidae: Lepidoptera) destructive pest of cabbage. *Egyptian Academic Journal of Biological Sciences*, 14(2): 191-194.
- Reddy, N. and Aramwit, P. Sustainable uses of byproducts from silk processing, 1st ed. Wiley-VCH. German. Pp. 21.
- Roh, Yul, J., Choi, J. Y., Li, M. S., Jin, B. R., and Je, Y. H. 2007. *Bacillus thuringiensis* as a specific, safe, and effective tool for insect pest control. *Journal of Microbiology and Biotechnology*, 17(4): 547-559.
- Seo, S., Das, G., Shin, H., and Patra, J. K. 2023. Silk sericin protein materials: characteristics applications in food-sector industries. *International Journal of Molecular Sciences*, 24: 1-27.
- Shorey, H. H. and Hale, R. L. 1965. Mass rearing of the larvae of nine noctuid species on a simple artificial medium. *Journal of Economic Entomology*, 58(3): 522-524.
- Siregar, F., Wiranto, A. S. P., Suparmin, S., Sumarmi, S., Purwanto, H., Sudaryadi, I., Soesilohadi, R. C. H., Sukirno, S., dan Aldawood, A. S. 2022. Sinergi ekstrak kunyit, kelor, cengkeh, dan sirih merah dengan *Bacillus thuringiensis* var. *kurstaki* Berl.terhadap larva ulat grayak (*Spodoptera litura* Fab.) (Lepidoptera: Noctuidae) pada skala laboratorium. *Berkala Ilmiah Biologi*, 13(3): 36-42.
- Soenandar, Muanis, N. A., dan Ari, R. 2010. *Petunjuk praktis membuat pestisida organik*. Agromedia Pustaka. Jakarta.
- Sukirno, S., Tufail, M., Rasool, K. G., Salamouny, S. E., Sutanto, K. D., and Aldawood, S. 2018. The efficacy and persistence of *Spodoptera littoralis* Nucleopolyhedrovirus (*SpliMNPV*) applied in UV protectants against the

- beet armyworm, *Spodoptera exigua* (Hübner) (Lepidoptera: Noctuidae) under Saudi field conditions. *Pakistan Journal of Zoology*, 50(5): 1895-1902.
- Sukirno, S., Lukmawati, D., Hanum, S. S. L., Ameliya, V. F., Sumarmi, S., Purwanto, H., Suparmin, S., Sudaryadi, I., Soesilohadi, R. C. H., 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., Sumarmi, S., Soesilohadi, R. C. H., Sudaryadi, I., Purwanto, H., and Aldawood, A. S. 2023. The effects of ultraviolet B on the efficacy of *Bacillus thuringiensis* var. *kurstaki* formulations against tobacco armyworm, *Spodoptera litura* (Lepidoptera: Noctuidae). *HAYATI Journal of Biosciences*, 30(1): 17-27.
- 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.). *Journal of Tropical Biodiversity and Biotechnology*, 05(02): 143-148.
- Sutanto, K. D., Salamouny, S. E., Tufail, M., Rasool, K. G., Sukirno, S., Shepard, M., Shapiro, M., and Aldawood, S. 2017. Evaluation of natural additives to enhance the persistence of *Spodoptera littoralis* (Lepidoptera: Noctuidae) Nucleopolyhedrovirus (*SpliMNPV*) under field conditions in Saudi Arabia. *Journal of Economic Entomology*, 0(0): 1-7.
- 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 agenst of (*Spodoptera litura* Fab.). AIP Conference Proceedings 2260, 030003. Paper presented at The 6th International Conference on Biological Science ICBS 2019 (pp. 030003-1 – 030003-5).
- Tengkano, W. Dan Suharsono. 2005. Ulat grayak *Spodoptera litura* Fabricius (Lepidoptera: Noctuidae) pada tanaman kedelai dan pengendaliannya. *Buletin Palawija*, 1(10): 43-50.
- Tiryaki, O. dan Temur, C. 2010. The fate of pesticide in the environment. *Journal of Biological and Environment Sciences*, 4(10): 29-38.
- Wahyuni, F. S., Putri, I. N., dan Arisanti, D. 2017. Uji toksisitas subkronis fraksi etil asetat kulit buah asam kandis (*Garcinia cowa* Roxb.) terhadap fungsi hati dan ginjal mencit putih betina. *Jurnal Sains Farmasi dan Klinis*, 3(2): 202-212.
- Wibowo, C. I. 2017. Efektivitas *Bacillus thuringiensis* dalam pengendalian larva nyamuk *Anopheles* sp. *Biosfera*, 34(1): 39-46.
- Wijerathna-Yapa, A. 2017. Transgenic plants: resistance to abiotic and biotic stresses. *Journal of Agriculture and Environment for International Development*, 111(1): 245-275.
- World Health Organization. 1975. Manual on Practical Entomology in Malaria, Part II Methods and Techniques. The World Health Organization, Geneva.
- World Health Organization. 1999. Microbial Pest Control Agent *Bacillus thuringiensis*. The World Health Organization, Geneva. Pp. 19-27.



- Wulandari, W., Sukiya, dan Suhandoyo. 2013. Efek insektisida Decis terhadap mortalitas dan struktur histologis insang ikan nila merah “Lokal Cangkringan”. *Jurnal Sain Veteriner*, 31(2): 251-265.
- Zhang, L., Zhang, X., Zhang, Y., Wu, S., Gelbič, I., Xu, L., and Guan, X. 2016. A new formulation of *Bacillus thuringiensis*: UV protection and sustained release mosquito larvae studies. *Scientific Reports*, 6(1): 1-8.
- Zhou, B. and Wang, H. 2020. Structure and functions of cocoons constructed by eri silkworm. *Polymers*, 12(2701): 1-18.
- Zhou, B., Wang, H., Zhao, J., Chen, J., and Zhou, H. 2021. Study on structure and anti-UV properties of sericin cocoons. *AUTEX Research Journal*, 20: 1-7.