UNIVERSITAS
GADJAH MADA
Pengaruh Senyawa Volatil Tumbuhan Amaranthus sp. terhadap Respons Olfaktori Imago Spodoptera exigua (Lepidoptera: Noctuidae)
Kania Kanawijaya, Prof. Dr. Ir. Witjaksono, M. Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Akotsen-Mensah, C., B. R. Blaauw, M. J. Rivera, C. Rodriguez-Saona, and A. L. Nielsen. 2021. Behavioral response of *Halyomorpha halys* (Hemiptera: Pentatomidae) and its egg parasitoid *Trissolcus japonicus* (Hymenoptera: Scelionidae) to host plant odors. Frontiers in Ecology and Evolution 9(1): 1-11.

Bawa, S. A., P. C. Gregg, A. P. Del Socorro, T. Burey, and K. S. Powell. 2026. Identification of volatile organic compounds in three host plants of Australian cane beetles. Biochemical Systematics and Ecology 125(1): 1-7.

Boro, S., B. Bharadwaj, B. Unni, A. K. Rai, and M. Bhattacharjee. 2023. Phytochemical analysis and identification of bio-active compounds in ethanolic leaf extract of *Amaranthus spinosus*. Research Journal of Pharmacy and Technology 16(8): 3685-3690.

Candano, R. N., W. N. De Panis, M. V. Navasero, and M. M. Navasero. 2020. Host plants of *Spodoptera exigua* (Hübner)(Lepidoptera: Noctuidae) in the Philippines and inventory of world records. The Philippine Entomologist 34(1): 1-20.

Chen, Y., L. Qiang, L. Min, W. Xingji, X. Ling, C. L. Juan, and, Q. B. Rui. 2016. EAG and behavioral responses of *Chlorophorus diadema* to six volatiles from *Caragana kroshinskii*. Chinese Journal of Applied Entomology 53(3): 632-641.

Cho, W., U. Heberlein, and F. W. Wolf. 2004. Habituation of an odorant-induced startle response in Drosophila. Genes, Brain and Behavior 3(3): 127-137.

Chowdary, L. R.., G. V. Kumar, S. Bharathi, O. Sarada, Y. Nagaraju, K. M. Chandrashekara, and G. N. Harish. 2024. Off-season survival and life history of beet armyworm, *Spodoptera exigua* (Hubner) on various host plants. Scientific Reports 14(1): 1-13.

Daly, K. C., L. A. Carrell, and E. Mwilaria. 2007. Detection versus perception: physiological and behavioral analysis of olfactory sensitivity in the moth (*Manduca sexta*). Behavioral Neuroscience 121(4): 794.

Dethier, V. G., B. L. Browne and C. N. Smith. 1960. The designation of chemicals in terms of the responses they elicit from insects. Journal of Economic Entomology 53(1): 134-136.

Deutsch, F. and S. Kecskeméti. 2025. The interplay of olfaction and vision in host plant selection by *Anthrenus verbasci*. Scientific Reports 15(1): 1-18.

Dong, Y., D. Chen, S. Zhou, Z. Mao, and J. Fan. 2024. Identification of attractants from three host plants and how to improve attractiveness of plant volatiles for *Monochamus saltuarius*. Plants 13(13): 1-16.

Dudareva, N., F. Negre, D. A. Nagegowda, and I. Orlova. 2006. Plant volatiles: recent advances and future perspectives. Critical Reviews in Plant Sciences 25(5): 417-440.

El-Ghany, N. M. A. 2019. Semiochemicals for controlling insect pests. Journal of Plant Protection Research 59(1): 1-11.

Feng, H., C. Gou, D. Aimaiti, P. Sun, L. Wang, and H. Hao. 2022. Plant volatile organic compounds attractive to *Lygus pratensis*. Open life sciences 17(1): 362-371.

Fuentes-Lopez, K., J. Olivero-Verbel, and K. Caballero-Gallardo. 2025. Aromatic plant–insect dynamics: Molecular insights for advancing pest control strategies. Journal of Pest Science 98: 2501-2517.

UNIVERSITAS
GADJAH MADA
Pengaruh Senyawa Volatil Tumbuhan Amaranthus sp. terhadap Respons Olfaktori Imago Spodoptera exigua (Lepidoptera: Noctuidae)
Kania Kanawijaya, Prof. Dr. Ir. Witjaksono, M. Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Gargiulo, S., M. Ruocco, F. Loreto, L. Faino, and M. M. Monti. 2025. Volatile organic compounds in *Solanum lycopersicum* leaves and their roles in plant protection. Horticulture Research 12(10): 1-15.

Ge, Y., Z. Zhang, P. Gao, W. Liang, J. Long, and J. Zhu. 2026. Functional characterization of odorant binding proteins involved in detection of host plant volatiles from the moringa pest *Noorda blitealis*. Insect Biochemistry and Molecular Biology 192(1): 1-12.

He, W., X. Zhao, S. Ge, and K. Wu. 2021. Food attractants for field population monitoring of *Spodoptera exigua* (Hübner). Crop Protection 145: 1-7.

Hidrayani, H., N. Nurbailis, F. Yeni, dan Z. Ikhsan. 2024. Interactive effects of rhizobacteria for managing *Spodoptera exigua* on shallot plants (*Allium cepa* Linnaeus) under field conditions. Jurnal Proteksi Tanaman 8(1): 12-20.

Huang, B., Z. Shi, and Y. Hou. 2014. Host selection behavior and the fecundity of *Plutella xylostella* (Lepidoptera: Plutellidae) on multiple host plants. Journal of Insect Science 14(1): 251.

Ilkhomjonovich, Z. I. and Y. S. Khasanbaevna. 2021. Food spectrum of the beet armyworm (*Spodoptera exigua* (Hübner, 1808) (Lepidoptera, Noctuidae) in rainfed agriculture of the fergana valley. *E*uropean Journal of Humanities and Educational Advancements *2*(7): 36-40.

Jacob, V., R. Tibère, and S. Nibouche. 2021. Few sensory cues differentiate host and dead-end trap plant for the sugarcane spotted borer *Chilo sacchariphagus* (Lepidoptera: Crambidae). Journal of Chemical Ecology 47(2): 153-166.

Komala, G., R. R. Manda, and D. Seram. 2021. Role of semiochemicals in integrated pest management. International Journal of Entomology Research 6(2): 247-253.

Kumar, J., B. Paul, and S. M. Nebapure. 2019. Electrophysiological response of *Dysdercus cingulatus* (Fabricius)(Hemiptera: Pyrrhocoridae) to cotton plant extracts and other host related compounds. Proceedings of the National Academy of Sciences, India Section B: Biological Sciences 89(3): 793-800.

Kumbhakar, S., S. Das, and A. Barik. 2023. Epicuticular wax chemicals of *Lablab purpureus subsp. bengalensis* influence short-range attraction and oviposition responses in *Aphis craccivora* and *Aphis gossypii*. Bulletin of Entomological Research 113(6): 794-807.

Lavanya, T., S. Monica, and R. Kavitha. 2020. Analysis of bioactive compounds from *Amaranthus hybridus* stem by Gas Chromatography and Mass Spectroscopy. International Journal of Advanve Research 8(4): 317-322.

Li, L., J. Cao, Z. Cai, and J. Chen. 2025. Plant volatile organic compounds attractive to *Monolepta signata* (Olivier). Insects 16(12): 1-17.

Liu, Z., M. Wang, M. Wu, X. Li, H. Liu, N. Niu, S. Li, and L. Chen. 2023. Volatile organic compounds (VOCs) from plants: From release to detection. TrAC Trends in Analytical Chemistry 158: 1-8.

Luker, H. A. 2024. A critical review of current laboratory methods used to evaluate mosquito repellents. Frontiers in Insect Science 4: 1-14.

Lv, J. Y., Z. J. Meng, Y. N. Deng, C. W. Zhang, M. M. Tao, and S. C. Yan. 2024. Active volatile components of the preferred hosts are potential attractants to *Hyphantria cunea* adults. Pesticide Biochemistry and Physiology 202: 1-12.

Ma, H. T., L. H. Zhou, H. Tan, X. Z. Xiu, J. Y. Wang, and X. Y. Wang. 2024. Population dynamics and seasonal migration patterns of *Spodoptera exigua* in northern China based on 11 years of monitoring data. PeerJ 12: 1-20.

UNIVERSITAS
GADJAH MADA
Pengaruh Senyawa Volatil Tumbuhan Amaranthus sp. terhadap Respons Olfaktori Imago Spodoptera exigua (Lepidoptera: Noctuidae)
Kania Kanawijaya, Prof. Dr. Ir. Witjaksono, M. Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Maharjan, R., J. Ahn, and H. Yi. 2022. Interactive effects of temperature and plant host on the development parameters of *Spodoptera exigua* (Hübner)(Lepidoptera: Noctuidae). Insects 13(8): 1-25.

Makhlouf, L., K. El-Fakhouri, S. A. Kemal, A. Aasfar, I. M. Kadmiri, and M. El-Bouhssini. 2024. Advances in analytical techniques for assessing volatile organic compounds in pulse crops: a comprehensive review. Frontiers in Horticulture 3: 1-12.

Makhlouf, L., K. El-Fakhouri, S. A. Kemal, A. Aasfar, I. M. Kadmiri, and M. El-Bouhssini. 2024. Potential of volatile organic compounds in the management of insect pests and diseases of food legumes: a comprehensive review. Frontiers in Plant Science 15: 1-18.

Mardani-Talaei, M., G. Nouri-Ganbalani, B. Naseri, and M. Hassanpour. 2014. Life history studies of the beet armyworm, *Spodoptera exigua* (Hübner)(Lepidoptera: Noctuidae) on 10 corn hybrids. Journal of the Entomological Research Society 16(1): 9-18.

Mehta, V., C. S. Jayaram, R. Koranga, and N. Negi. 2021. Developmental biology of *Spodoptera exigua* (Hubner)(Lepidoptera: Noctuidae) on tomato under mid hills (sub-humid) conditions of India. Biological Forum 13(13): 10-15.

Menouillard, M., A. Blanchet, and G. A. Desurmont. 2025. Olfactory preferences of the allium leafminer, an emerging pest in North America: comparison of three experimental bioassays. Journal of Economic Entomology 118(5): 2301-2308.

Miller, J. R., P. Y. Siegert, F. A. Amimo, and E. D. Walker. 2009. Designation of chemicals in terms of the locomotor responses they elicit from insects: an update of Dethier *et al*. (1960). Journal of Economic Entomology 102(6), 2056-2060.

Mu, D., L. Cui, J. Ge, M. X. Wang, L. F. Liu, X. P. Yu, Q. H. Zhang, and B. Y. Han. 2012. Behavioral responses for evaluating the attractiveness of specific tea shoot volatiles to the tea green leafhopper, *Empoaca vitis*. Insect Science 19(2): 229-238.

Mukherjee, A., N. Sarkar, and A. Barik. 2013. Alkanes in flower surface waxes of Momordica cochinchinensis influence attraction to *Aulacophora foveicollis* Lucas (Coleoptera: Chrysomelidae). Neotropical Entomology 42(4): 366-371.

Navasero, M. M., M. V. Navasero, R. N. Candano, and W. N. De Panis, W. N. 2019. Comparative life history, fecundity, and survival of *Spodoptera exigua* (Hübner)(Lepidoptera: Noctuidae) on *Allium cepa* L. and other host plants in the Philippines. The Philippine Entomologist 33(1): 75-86.

Nigg, H. N., S. E. Simpson, R. A. Schumann, E. Exteberria, and E. B. Jang. 2002. Kairomones for the management of *Anastrepha* spp. fruit flies. Proceedings of the 6th International Symposium on Fruit Flies of Economic Importance, Stellenbosch, 6–10 May 2002.

Park, S. J., A. Sharma, and H. J. Lee. 2020. A review of recent studies on the antioxidant activities of a third-millennium food: *Amaranthus* spp. Antioxidants 9(12): 1-22.

Parmar, D., S. Verma, D. Sharma, and E. Singh. 2024. Semiochemical based integrated livestock pest control. Tropical Animal Health and Production 56(2): 1-13.

Pincebourde, S. and J. Ngao. 2021. The impact of phloem feeding insects on leaf ecophysiology varies with leaf age. Frontiers in Plant Science 12: 1-11.

Qian, Q., J. Cui, Y. Miao, X. Xu, H. Gao, H. Xu, Z. Lu, and P. Zhu. 2024. The plant volatile-sensing mechanism of insects and its utilization. Plants 13(2): 1-13.

UNIVERSITAS
GADJAH MADA
Pengaruh Senyawa Volatil Tumbuhan Amaranthus sp. terhadap Respons Olfaktori Imago Spodoptera exigua (Lepidoptera: Noctuidae)
Kania Kanawijaya, Prof. Dr. Ir. Witjaksono, M. Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Roberts, J. M., B. J. Clunie, S. R. Leather, W. E. Harris, and T. W. Pope. 2023. Scents and sensibility: best practice in insect olfactometer bioassays. Entomologia Experimentalis et Applicata 171(11): 808-820.

Sarkar, N., A. Mukherjee, and A. Barik. 2013. Long-chain alkanes: allelochemicals for host location by the insect pest, *Epilachna dodecastigma* (Coleoptera: Coccinellidae). Applied Entomology and Zoology 48(2): 171-179.

Satiman, U., dan M. Taulu. 2023. Biological characterization of insect pests *Spodoptera exigua* Hubner origin North Sulawesi. Indonesian Biodiversity Journal 4(1): 18-25.

Sfara, V., G. Mougabure-Cueto, E. N. Zerba, and R. A. Alzogaray. 2011. Adaptation of the repellency response to DEET in *Rhodnius prolixus*. Journal of Insect Physiology 57(10): 1431-1436.

Siregar, A. Z., S. Suputa, L. T. Puspasari, and A. H. A. Majid. 2026. Detection of *Spodoptera exigua* (Hübner) larval infestation on leeks and shallots: a case study in North Tapanuli and Karo, North Sumatra, Indonesia. Journal of Applied Agricultural Science and Technology 10(1): 159-169.

Soumia, P. S., V. Karuppaiah, V. Mahajan, and M. Singh. 2020. Beet Armyworm *Spodoptera exigua*: emerging threat to onion production. National Academy Science Letters 43(5): 473-476.

Supartha, I. W., I. W. Susila, I. K. Sumiartha, A. Rauf, L. B. D. C. Cruz, I. K. W. Yudha, I. W. E. K. Utama, dan P. A. Wiradana. 2022. Preference, population development, and molecular characteristics of *Spodoptera exigua* (Lepidoptera: Noctuidae) on shallot cultivars: A field trial scale. Biodiversitas Journal of Biological Diversity 23(2): 783-792.

Syahputra, B. S., dan T. Y. Ginting. 2024. The effect of soursop and betel leaf extracts as organic pesticides in pest control of *Spodoptera exigua* (Lepidoptera: Noctuidiae) on onion (*Alium ascalonicum* L.) cultivation. Jurnal Pembelajaran dan Biologi Nukleus 10(1): 254-265.

Tholl, D., W. Boland, A. Hansel, F. Loreto, U.S. Röse, and J. P. Schnitzler. 2006. Practical approaches to plant volatile analysis. The Plant Journal 45(4): 540-560.

Wahua, C. and J. Nwikiri. 2021. Comparative chemotaxonomic investigations on *Amaranthus* hybridus l. and *Amaranthus spinosus* L. Scientia Africana 20(1): 91-100.

Waisundara, V. Y. 2020. *Nutritional Value of Amaranth*. BoD–Books on Demand, London.

Wang, X., Q. Feng, X. Zhou, H. Zhang, S. Wu, and K. Wu. 2024. Seasonal migratory activity of the beet armyworm *Spodoptera exigua* (Hübner) in the tropical area of China. Insects 15(12): 1-12.

Witjaksono, W., Y. A. Trisyono, H. R. Tanjung, dan Z. Azzahra. 2024. Population dynamic and pheromone use for early monitoring of *Spodoptera exigua* Hübner (Lepidoptera: Noctuidae) in Indonesia. Jurnal Hama dan Penyakit Tumbuhan Tropika 24(1): 91-97.

Yang, S. H., M. Z. Yin, H. H. Yang, J. Z. An, Y. N. Zhang, and X. M. Li. 2025. Screening of attractants for male *Spodoptera frugiperda* based on the interaction between odorant-binding protein 20 and host volatiles. Journal of Agricultural and Food Chemistry 73(31): 19353-19363.

Zhang J., C. Salcedo, Y. Fang, R. Zhang, and Z. Zhang. 2012. An overlooked component:(Z)-9-tetradecenal as a sex pheromone in *Helicoverpa armigera*. Journal of Insect Physiology 58: 1-8.

UNIVERSITAS
GADJAH MADA
Pengaruh Senyawa Volatil Tumbuhan Amaranthus sp. terhadap Respons Olfaktori Imago Spodoptera exigua (Lepidoptera: Noctuidae)
Kania Kanawijaya, Prof. Dr. Ir. Witjaksono, M. Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhao, Q., C. Liu, S. Xie, G. Chen, X. Yang, Y. Xu, F. Yang, and Y. Li. 2025. Host selection behavior of *Spodoptera exigua* (Lepidoptera: Noctuidae, Hübner, 1808) in response to *Rosmarinus officinalis* (Lamiales: Lamiaceae, Linnaeus, 1753) volatiles. Arthropod-Plant Interactions 19(1): 18.