UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Daftar Pustaka

Adilah, N., & Hidayat, S. 2014. Keparahan penyakit daun keriting kuning dan pertumbuhan populasi kutukebul pada beberapa genotipe cabai. *Jurnal Fitopatologi Indonesia*, 10(6): 195–201. https://doi.org/10.14692/jfi.10.6.195

Aidawati, N. 2005. *Keanekaragaman Begomovirus pada Tomat dan Serangga Vektornya, Bemisia tabaci Gennadius (Hemiptera: Aleyrodidae): serta Pengujian Ketahanan Genotip Tomat Terhadap Strain Begomovirus*. Disertasi Doktoral. Sekolah Pascasarjana, Institut Pertanian Bogor.

Anderson, J. P., Lightfoot, D. A., & Cobbett, C. S. 2010. Genetic analysis of *Solanum* species using molecular markers. *Plant Genetics and Genomics*, 12(3): 45–59. https://doi.org/10.1007/s00122-009-1156-3

Annisa, R., Hidayat, S. H., & Jumanto. 2019. Identifikasi dan uji patogenisitas *Begomovirus* pada tanaman cabai di Bali. *Jurnal Fitopatologi Indonesia*, 15(3): 85–94. https://doi.org/10.14692/jfi.15.3.85

Ariningsih, E. 2022. Prospek dan tantangan pengembangan hortikultura Indonesia. *Analisis Kebijakan Pertanian*, 20(1): 1–15.

Ariningsih, E., Saliem, H. P., & Septanti, K. S. 2022. Kerugian Ekonomi dan Manajemen Pengendalian Serangan Lalat Buah pada Komoditas Hortikultura di Indonesia. *Forum Penelitian Agro Ekonomi*, 40(2): 71–89.

Arsanti, I. W., & Bohme, M. H. 2015. Assessing vegetable cropping patterns in upland areas of Indonesia. *Acta Horticulturae*, 1103: 37–42. https://doi.org/10.17660/ActaHortic.2015.1103.6

Atchison, B. A., Whitfeld, P. R., & Bottomley, W. 1976. Comparison of chloroplast DNAs by specific fragmentation with EcoRI endonuclease. *Molecular & General Genetics*, 148(3): 263–269. https://doi.org/10.1007/BF00332898

Aubriot, X., & Knapp, S. 2022. A revision of the “spiny solanums” (*Solanum* subgenus *Leptostemonum*). *PhytoKeys*, 198: 1–423. https://doi.org/10.3897/phytokeys.198.79514

Badan Ketahanan Pangan. 2021. *Laporan Konsumsi Pangan Indonesia 2020*. Kementerian Pertanian Republik Indonesia.

Badan Pusat Statistik. 2025. *Statistik Tanaman Hortikultura Indonesia 2025*. Badan Pusat Statistik Indonesia.

Baker, C. A., Jones, L., & Dey, K. K. 2013. *Bemisia tabaci* biotypes: Global distribution and impact on agriculture. *Journal of Economic Entomology*, 106(4): 1447–1455. https://doi.org/10.1603/EC12456

Beddows, I., Reddy, P. A., & Kloesges, T. 2017. Phylogenomic analysis of *Solanum* section *Lycopersicon* reveals a complex history of diversification and gene flow. *Molecular Phylogenetics and Evolution*, 110: 21–33. https://doi.org/10.1016/j.ympev.2017.02.008

UNIVERSITAS
GADJAH MADA
Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan Daerah Istimewa Yogyakarta
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

CABI. n.d. *Solanum tuberosum* (potato). In *CABI Compendium*. Diakses pada 5 Juni 2025, dari https://www.cabidigitallibrary.org/doi/full/10.1079/cabicompendium.50561

Cannon, C. H., Summers, M., Harting, J. R., & Kessler, P. J. A. 2007. Developing conservation priorities based on forest type, condition, and threats in a poorly known ecoregion: Sulawesi, Indonesia. Biotropica, 39(6), 747–759. https://doi.org/10.1111/j.1744-7429.2007.00323.x

Cardona, C., López-Avila, A., & Valarezco. 2005. Whiteflies as pests of annual crops in the tropical highlands of Latin America, Colombia and Ecuador. Dalam *Prosiding*, hlm. 274–284.

Chowda-Reddy, R. V., Kirankumar, M., Seal, S. E., Muniyappa, V., Valand, G. B., Govindappa, M. R., & Colvin, J. 2012. *Bemisia tabaci* phylogenetic groups in India and the relative transmission efficacy of Tomato leaf curl Bangalore virus by an indigenous and an exotic population. *Journal of Integrative Agriculture*, 11(2): 235–248.

De Barro, P. J., Liu, S. S., Boykin, L. M., & Dinsdale, A. B. 2011. *Bemisia tabaci*: A statement of species status. *Annual Review of Entomology*, 56(1): 1–19. https://doi.org/10.1146/annurev-ento-112408-085504

Dharmayanti, N. L. P. I. 2011. Filogenetika molekuler: Metode taksonomi organisme berdasarkan sejarah evolusi. *Wartazoa*, 21(1): 1–10.

Díaz-Parra, D. G., García-Casillas, L. A., Velasco-Ramírez, S. F., Guevara-Martínez, S. J., Zamudio-Ojeda, A., Zúñiga-Mayo, V. M., Rodríguez-Guzmán, E., Melchor-González, A., Lomelí-Rosales, D. A., & Velázquez-Juárez, G. 2025. *Role of metal-based nanoparticles in Capsicum spp. plants*. **ACS Omega, 10**(11), 10756–10768. https://doi.org/10.1021/acsomega.4c11102

Ditjen Hortikultura. 2020. *Rencana Strategis Kementerian Pertanian 2020–2024*. Kementerian Pertanian Republik Indonesia.

Duaja, M. A. 2012. Karakteristik dan potensi tanah aluvial di dataran rendah untuk pertanian. *Jurnal Geologi dan Lingkungan*, 9(2): 123–134.

Eischeid, L. 2020. The water towers of the world high mountains are in trouble. *National Geographic Magazine*. Diakses pada 20 April 2025.

European and Mediterranean Plant Protection Organization (EPPO). 2026. *Bemisia tabaci (BEMITA): EPPO Global Database*. Diakses pada 26 Mei 2026. https://gd.eppo.int/taxon/BEMITA

Fauziah, N., & Hartono, S. 2020. *Identifikasi Spesies Virus Anggota Genus Begomovirus pada Lahan Campuran Tanaman Famili Solanaceae*. Skripsi Sarjana. Universitas Gadjah Mada.

Febria, D. 2015. *Karakterisasi Virus Penyebab Penyakit Tanaman Cabai (Capsicum sp.) pada Tiga Kondisi Geografis*. Tesis Magister. Universitas Gadjah Mada, Yogyakarta.

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Fiallo-Olivé, E., & Navas-Castillo, J. 2023. *Begomovirus*es: What is the secret(s) of their success? *Trends in Plant Science*, 28(7): 715–727.

Fiallo-Olivé, E., Lett, J.-M., Martin, D. P., Roumagnac, P., Varsani, A., Zerbini, F. M., & Navas-Castillo, J. 2020. *Begomovirus* evolution and disease management. *Advances in Virus Research*, 107: 1–47. https://doi.org/10.1016/bs.aivir.2020.06.001

Frodin, D. G. 2004. History and concepts of big plant genera. *Taxon*, 53(3): 753–776. https://doi.org/10.2307/4135449

Ghosh, S., & Ghanim, M. 2021. Factors determining transmission of persistent viruses by *Bemisia tabaci* and emergence of new virus–vector relationships. *Viruses*, 13(9): 1808.

Hannum, M., & Aceh, S. 2019. Gejala dan dampak infeksi *Begomovirus* pada tanaman cabai di Indonesia. *Agrikultura*, 30(2): 45–52.

Hartono, S., Natsuaki, T., Haruki, S., Atharahi, H., & Okuda, S. 2003. Yellowing disease of tomatoes caused by Tomato infectious chlorosis virus newly recognized in Japan. *Journal of General Plant Pathology*, 69(1): 61–64.

Hermanto, R., Murti, R. H., Hartono, S., Purwantoro, A., Wijonarko, A., Mulyantoro, M., *et al.* 2024. Viral complexity of tomatoes yellow mosaic and leaf curl diseases in lowland and highland areas. *Journal of Phytopathology*, 172(3): e13326.

Hill, T. A., Ashrafi, H., Reyes-Chin-Wo, S., Yao, J., Stoffel, K., Truco, M. J., & Van Deynze, A. 2013. Characterization of *Capsicum annuum* genetic diversity and population structure based on parallel polymorphism discovery with a 30K unigene Pepper GeneChip. *PLoS ONE*, 8(2): e56200. https://doi.org/10.1371/journal.pone.0056200

Horowitz, A. R., & Ishaaya, I. 2014. Dynamics of biotypes B and Q of the whitefly *Bemisia tabaci* and its impact on insecticide resistance. *Pest Management Science*, 70(10): 1568–1572.

Horowitz, A. R., Antignus, Y., & Gerling, D. 2011. Management of *Bemisia tabaci* whiteflies. Dalam W. M. O. Thompson (Ed.), *The Whitefly, Bemisia tabaci (Homoptera: Aleyrodidae) Interaction with Geminivirus-Infected Host Plants* (hlm. 293–322). Springer.

Hull, R. 2022. *Plant Virology* (6th ed.). Academic Press.

Integrated Taxonomic Information System. 2025. *Nicotiana tabacum* L. Diakses pada 26 Oktober 2025, dari https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=30568#null

Iskandar, I. 2011. Performans reproduksi sapi PO pada dataran tinggi dan dataran rendah di Provinsi Jambi. *Jurnal Ilmiah Ilmu Peternakan*, 14(1): 51–61.

Istiawan, N. D., & Kastono, D. 2019. Pengaruh ketinggian tempat tumbuh terhadap

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

hasil dan kualitas minyak cengkih (*Syzygium aromaticum* (L.) Merr. & Perry.) di Kecamatan Samigaluh, Kulon Progo. *Vegetalika*, 8(1): 27–41.

Jones, D. R. 2003. Plant viruses transmitted by whiteflies. *European Journal of Plant Pathology*, 109(3): 195–219.

Kementerian Pertanian Republik Indonesia (Upland Project). 2023. *Keunggulan dataran tinggi bagi pertanian dan peternakan*. Diakses pada 19 September 2025.

Kementerian Pertanian Republik Indonesia. 2012. *Peraturan Menteri Pertanian Nomor 56/Permentan/OT.140/9/2012 tentang Pedoman Penanganan Pascapanen Tembakau*. Diakses pada 27 Oktober 2025.

Kenyon, L., Tsai, W. S., Shih, S. L., & Lee, L. M. 2014. Emergence and diversity of *Begomovirus*es infecting solanaceous crops in East and Southeast Asia. *Virus Research*, 186: 104–113. https://doi.org/10.1016/j.virusres.2013.12.026

Khan, M. M., Fan, Z. Y., O'Neill Rothenberg, D., Peng, J., Hafeez, M., Chen, X. Y., *et al.* 2021. Phototoxicity of ultraviolet-A against the whitefly *Bemisia tabaci* and its compatibility with an entomopathogenic fungus and whitefly parasitoid. *Oxidative Medicine and Cellular Longevity*, 2021: 2060288.

Kintasari, T., Septariani, D. W. N., Sulandari, S., & Hidayat, S. H. 2014. Tomato yellow leaf curl Kanchanaburi virus penyebab penyakit mosaik kuning pada tanaman terung di Jawa. *Jurnal Fitopatologi Indonesia*.

Knapp, S., Vorontsova, M. S., & Prohens, J. 2013. Wild relatives of the eggplant (*Solanum melongena* L.: Solanaceae): New understanding of species names in a complex group. *PLoS ONE*, 8(2): e57039. https://doi.org/10.1371/journal.pone.0057039

Koeda, S., Kesumawati, E., Tanaka, Y., Hosokawa, M., Doi, M., & Kitajima, A. 2016. Mixed infection of *Begomovirus*es on pepper plants at northern Sumatra, Indonesia. *Tropical Agriculture and Development*, 60(2): 59–64.

Kusumaningrum, D., Hidayat, S. H., & Hartono, S. 2015. Infeksi ganda *Begomovirus* pada tanaman tomat di Magelang. *Jurnal Fitopatologi Indonesia*, 11(1): 1–8. https://doi.org/10.14692/jfi.11.1.1

Kusumaningrum, F., Hartono, S., Sulandari, S., & Somowiyarjo, S. 2015. Infeksi ganda *Begomovirus* pada tanaman tomat di Kabupaten Magelang, Jawa Tengah. *Jurnal Perlindungan Tanaman Indonesia*, 19(2): 60–64.

Kwak, H.-R., Kim, M.-K., Lee, Y.-J., Seo, J.-K., Kim, J.-S., Kim, K.-H., & Choi, H.-S. 2022. Transmission properties of Tomato yellow leaf curl virus by *Bemisia tabaci* MED (Hemiptera: Aleyrodidae). *Journal of Asia-Pacific Entomology*, 25(1): 101857. https://doi.org/10.1016/j.aspen.2021.101857

Liu, J., Li, M., Li, J. M., Huang, C. J., Zhou, X. P., Xu, F. C., & Liu, S. S. 2010. Viral infection of tobacco plants improves performance of *Bemisia tabaci* but more so for an invasive than for an indigenous biotype of the whitefly. *Journal of Zhejiang University-SCIENCE B*, 11(1): 30–40.

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Lobin, K. K., Jaunky, V. C., & Taleb-Hossenkhan, N. 2022. A meta-analysis of climatic conditions and whitefly *Bemisia tabaci* population: Implications for tomato yellow leaf curl disease. *Journal of Basic and Applied Zoology*, 83: 57.

Luan, J. B., Jing, X., Ke-Ke, L., Zalucki, M. P., & Liu, S. S. 2012. Species exclusion between an invasive and an indigenous whitefly on host plants with differential levels of suitability. *Journal of Integrative Agriculture*, 11(2): 215–224.

Macleod, A., Head, J., & Gaunt, A. 2022. The global spread of *Bemisia tabaci* MED and MEAM1: Current distributions and future projections. *Pest Management Science*, 78(1): 12–25. https://doi.org/10.1002/ps.6590

Maldonado Machado da Cruz, V. H., Santos, R. A., Silva, M. A., Macedo, M. A., **et al.** 2026. Tomato secondary metabolites as natural regulators of *Bemisia tabaci* behavior and performance: Current applicability and prospects. *Frontiers in Plant Science*, **16**: 1704832.

Mangal, M., Srivastava, A., Sharma, R., & Kalia, P. 2017. Conservation and dispersion of genes conferring resistance to tomato *Begomovirus*es between tomato and pepper genomes. *Frontiers in Plant Science*, 8: 1803.

Matsubayashi, M. 1981. Phylogenetic relationships in the potato and its related species. *Japanese Journal of Breeding*, 31(1): 1–19. https://doi.org/10.1270/jsbbs1951.31.1

Maulana Yusuf. 2019. *Deteksi Begomovirus Isolat Tembakau Klaten dan Pengelolaannya Menggunakan Zat Pengatur Tumbuh*. Skripsi Sarjana. Universitas Gadjah Mada, Yogyakarta.

More, P., Baraiya, B. M., Agarwal, P. K., & Agarwal, P. 2022. Geminiviruses infecting tomato: Genetic diversity, distribution, natural and genetically engineered resistance. Dalam R. K. Gaur, P. Sharma, & H. Czosnek (Eds.). *Geminivirus: Detection, Diagnosis and Management* (hlm. 611–627). Academic Press.

Nakazato, T., Warren, D. L., & Moyle, L. C. 2010. Ecological and geographic modes of species divergence in wild tomatoes. *American Journal of Botany*, 97(4): 680–693. https://doi.org/10.3732/ajb.0900216

National Center for Biotechnology Information. n.d. *Taxonomy Browser: Capsicum*. Diakses pada 6 Juni 2025, dari https://pubchem.ncbi.nlm.nih.gov/taxonomy/Capsicum

Naveed, H., Islam, W., Jafir, M., Andoh, V., Chen, L., & Chen, K. 2023. A review of interactions between plants and whitefly-transmitted *Begomovirus*es. *Plants*, 12(21): 3677. https://doi.org/10.3390/plants12213677

Neriya, Y., Izumi, R., Wilisiani, F., Hartono, S., *et al.* 2020. Complete genome sequence of a Pepper yellow leaf curl Indonesia virus isolated from tomato in Bali, Indonesia. *Microbiology Resource Announcements*, 9.

Nurenik, N., & Rastono, A. 2025. Molecular diversity of Pepper yellow leaf curl Indonesia virus (PepYLCIV): The cause of yellow leaf curl disease in chili pepper (*Capsicum frutescens*) in Tuban Regency, East Java, Indonesia. *Jurnal*

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Perlindungan Tanaman Indonesia, 29(1): 55–61. https://doi.org/10.22146/jpti.99401

Olmstead, R. G., Bohs, L., Migid, H. A., Santiago-Valentin, E., Garcia, V. F., & Collier, S. M. 2008. A molecular phylogeny of the Solanaceae. *Taxon*, 57(4): 1159–1181.

Pagán, I., & García-Arenal, F. 2020. Tolerance to plant pathogens: Theory and experimental evidence. *International Journal of Molecular Sciences*, 21(22): 8425. https://doi.org/10.3390/ijms21228419

Pease, J. B., Haak, D. C., Hahn, M. W., & Kelly, S. 2016. The complete chloroplast genome sequence of *Helianthus annuus* (sunflower): Gene content, organization, and comparative analysis. *Genome Biology and Evolution*, 8(1): 1–13. https://doi.org/10.1093/gbe/evv243

Perring, T. M. 2001. The *Bemisia tabaci* species complex. *Crop Protection*, 20(9): 725–737.

Pickersgill, B. 2017. The domestication of chili peppers. Dalam P. J. Ucko & G. W. Dimbleby (Eds.), *The Domestication and Exploitation of Plants and Animals* (hlm. 443–450). Routledge.

Poudel, H., Sanciangco, M., Kaeppler, S. M., Buell, C. R., & Casler, M. D. 2019. Genomic prediction for winter survival of lowland switchgrass in the northern USA. *G3: Genes, Genomes, Genetics*, 9(4): 1187–1196. https://doi.org/10.1534/g3.119.400094

Prasetya, E. 2018. *Metode Multiplex RT-PCR untuk Deteksi Simultan Crinivirus dan Begomovirus pada Tanaman Tomat*. Tesis Magister. Universitas Gadjah Mada.

Purwantara, S. 2018. Studi temperatur udara terkini di wilayah Jawa Tengah dan DI Yogyakarta. *Geomedia*, 13(1).

Purwoko, R. R. 2016. *Keragaman Begomovirus yang Berasosiasi dengan Bemisia tabaci (Gennadius) (Hemiptera: Aleyrodidae) di Jawa*. Tesis Magister. Universitas Gadjah Mada.

Qureshi, M. A., Lal, A., Rehman, N. M. S., Vo, T. T. B., Sanjaya, G. N. P. W., Ho, P. T., *et al.* 2022. Emergence of Asian endemic *Begomovirus*es as a pandemic threat. *Frontiers in Plant Science*, 13: 970941. https://doi.org/10.3389/fpls.2022.970941

Rimbaud, L., Fabre, F., & Moury, B. 2015. The evolution of plant virus resistance in a crop: Interplay between host, virus, and management strategies. *Evolutionary Applications*, 8(1): 71–87. https://doi.org/10.1111/eva.12211

Santosa, E., Suganda, T., & Millati, R. 2018. Prospek pengembangan florikultura Indonesia. *Jurnal Hortikultura Indonesia*, 9(1): 1–12.

Santoso, T. J., Hidayat, S. H., Herman, M., & Sudarsono. 2015. Aplikasi teknik Polymerase Chain Reaction (PCR) menggunakan primer degenerate dan

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

spesifik gen AV1 untuk mendeteksi *Begomovirus* pada tomat (*Lycopersicon esculentum* Mill.). *Jurnal Hortikultura Indonesia*, 4: 140–149.

Selangga, D. G. W., & Listihani, L. 2021. Molecular identification of Pepper yellow leaf curl Indonesia virus on chili pepper in Nusa Penida Island. *Jurnal Hama dan Penyakit Tumbuhan Tropika*, 21: 97–102.

Serra, C., McKenzie, C. L., & Osborne, L. 2019. Update on cryptic species or biotypes of the *Bemisia tabaci* (Gennadius) whitefly complex in the Dominican Republic. Dalam *Proceedings of the 55th Annual Meeting of the Caribbean Food Crops Society*. Bávaro, La Altagracia, Dominican Republic.

Shah, M. M. R., & Liu, T. X. 2013. Feeding experience of *Bemisia tabaci* (Hemiptera: Aleyrodidae) affects their performance on different host plants. *PLoS ONE*, 8(10): e77368.

Shakeel, M. T., Amer, M. A., Al-Saleh, M. A., Ashfaq, M., & Haq, M. I. 2016. Changes in chlorophyll, phenols, sugars and mineral contents of cucumber plants infected with cucumber mosaic virus. *Journal of Phytopathology and Pest Management*, 3(1): 1–11.

Sidik, E. A. 2017. *Karakterisasi Molekuler Infeksi Begomovirus pada Famili Solanaceae dan Leguminosae di Jawa Timur*. Tesis Magister. Universitas Gadjah Mada, Yogyakarta.

Sidik, E. A., Hartono, S., Sulandari, S., Lukman, R., Afifuddin, A., Wahyudin, D., & Santoso, H. B. 2023. Molecular detection of Pepper yellow leaf curl virus, Tomato leaf curl virus, Tomato yellow leaf curl virus, and Mungbean yellow mosaic virus on eggplant, tomato, and pepper at different altitudes in East Java, Indonesia. Dalam *IOP Conference Series: Earth and Environmental Science*, 1230(1): 012117.

Simanjuntak, M., & Hartono, S. 2020. Peran virus dalam pengendalian hayati serangga hama. *Jurnal Entomologi Indonesia*, 17(1): 1–12. https://doi.org/10.5994/jei.17.1.1

Sulandari, S. 2006. *Identifikasi dan Karakterisasi Molekuler Virus Penyebab Penyakit Kuning pada Tanaman Tomat*. Disertasi Doktoral. Institut Pertanian Bogor.

Sulandari, S., Suseno, R., Hidayat, S. H., Harjosudarmo, J., & Sosromarsono, S. 2006. Deteksi dan kajian kisaran inang virus penyebab penyakit daun keriting kuning cabai. *HAYATI Journal of Biosciences*, 13(1): 1–6.

Suma, P., & Rapisarda, C. 2022. *Bemisia tabaci (Hemiptera: Aleyrodidae): What relationships with and morpho-physiological effects on the plants it develops on? Insects*, 13(4): 351.

Sutrawati, M., Nadrawati, N., Djamilah, D., & Aulia, E. 2023. Deteksi dan identifikasi *Begomovirus* pada tembakau yang ditanam tumpang sari dengan tanaman cabai. *Agrikultura*, 34(3): 369–374.

UNIVERSITAS
GADJAH MADA
**Kompleksitas Begomovirus pada Solanaceae dataran tinggi dan dataran rendah, wilayah Jawa tengah dan
Daerah Istimewa Yogyakarta**
ALYAH SHUFA, Prof. Dr. Ir. Sedyo Hartono, M.P.; Dr. Ir. Arman Wijonarko, M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Suwarto, Y. O., & Hermawati, S. 2014. *Top 15 Tanaman Perkebunan*. Penebar Swadaya.

Ulinnuha, Z., & Syarifah, R. N. K. 2021. Insidensi penyakit daun keriting kuning beberapa varietas cabai pada berbagai tingkat toleransi terhadap intensitas cahaya rendah. *AGROSCRIPT: Journal of Applied Agricultural Sciences*, 3(2): 78–89.

USDA National Institute of Food and Agriculture. 2026. *Definition of Specialty Crop*. Diakses pada 25 Mei 2026.

Ustiatik, R. 2023, 15 November. Pemanfaatan keanekaragaman hayati setempat untuk pertanian konservasi di lahan miring dataran tinggi Desa Wonokitri, Pasuruan. Fakultas Pertanian, Universitas Brawijaya. Diakses pada 8 Oktober 2025.

Vavilov, N. I. 1951. *The Origin, Variation, Immunity and Breeding of Cultivated Plants* (K. S. Chester, Trans.). Chronica Botanica.

Velzen, R., & Etienne, R. S. 2015. The role of plant viruses in vector behavior and evolution. *Current Opinion in Virology*, 15: 79–84. https://doi.org/10.1016/j.coviro.2015.08.005

Wahyono, A., Murti, R. H., Hartono, S., Nuringtyas, T. R., Wijonarko, A., Mulyantoro, M., *et al.* 2023. Current status and complexity of three *Begomovirus* species in pepper plants in lowlands and highlands in Java Island, Indonesia. *Viruses*, 15(6): 1278. https://doi.org/10.3390/v15061278

Wang, X. M., Zhao, G. Q., Chen, J., Jing, F. Z., Li, L., Wang, Y. Y., *et al.* 2025. Adaptation of plants to UV-B radiation with altitude in Tuha Basin: Synergistic regulation of epidermal structure, secondary metabolites, and organic element allocation. *Life*, 15(9): 1375.

Widarta, H., Hartono, S., Sulandari, S., Hertanto, C., & Anastasia, E. 2017. Integrated leaf curl disease control on tobacco plants in Klaten, Central Java. *Jurnal Perlindungan Tanaman Indonesia*, 21(1): 10–15.

Widiati, R., Kusumastuti, T. A., Widi, T. S. M., & Pertiwiningrum, A. 2012. Mapping and socioeconomic profile of smallholder dairy farmers in the Special Region of Yogyakarta. *Journal of the Indonesian Tropical Animal Agriculture, 37*(3), 210–219.

Wilsani, R., Hidayat, S. H., & Sudarsono. 2014. Deteksi dan karakterisasi molekuler tiga spesies *Begomovirus* pada tanaman cabai di Jawa Barat. *Jurnal Fitopatologi Indonesia*, 10(3): 89–96. https://doi.org/10.14692/jfi.10.3.89

World Health Organization. 2020, 29 April. *Healthy Diet*. https://www.who.int/news-room/fact-sheets/detail/healthy-diet