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DAFTAR PUSTAKA

Ali, H.F., M. Junaidi, M. Ahmad, A. Bibi, A. Ali, S. Hussain, S. Alam, &J.A. Shah. 2013. Molecular And Pathogenic Diversity Identified Among Isolates Of *Erwinia Carotovora* Sub-Species *Atroseptica* Associated With Potato Blackleg and Soft Rot. *Pakistan Journal of Botany* 45 : 1073-1078.

Alonso, R., A. Alemany, & M.F. Andres. 2011. Population Dynamics of *Globodera pallida* (Nematoda: Heteroderidae) on Two Potato Cultivars in Natural Field Conditions in Balearic Islands, Spain. *Spanish Journal of Agricultural Research* 9 : 589-596.

Anonim.1972. descriptions of plant-parasitic nematodes. Commonwealth Institute of helminthology: <http://trove.nla.gov.au/version/22968312> (diakses 4 Februari 2014).

Anonim. 2002. *Nematodes, Potato Cyst Nematodes*, IPC (International Potato Center) Peru-Lima.

Anonim**.** 2003. Potato cyst nematodes. Ref no. QIC/65. Department for Environmental Food and Rural Affairs, Central Science Laboratory. 2 p.

Anonim. 2004. Diagnostic Protocols for Regulated Pests, *Globodera rostochiensis* and *Globodera pallida*. PM 7/40(1). *OEPP/EPPO Bulletin* 34: 309–314

Anonim. 2006. APHIS News Release. USDA and CFIA establish protocol for potato pest detection and response. United States Department of Agriculture, Animal and Plant Health Inspection Service, Legislative and Public Affairs. 2 p.

Anonim. 2007a. *Crop Protection Compendium* (CD-ROM) Wallingford, UK : CABI. 2 CD-ROM dengan penuntun didalamnya.

Anonim. 2007b. Pest Alert, *Globodera pallida* (Stone) Behrens. North American Plant Protection Organization's Phytosanitary Alert System.

Anonim. 2009. Guidelines on Surveillance and Phytosanitary Actions for the Potato Cyst Nematodes *Globodera rostochiensis* and *Globodera pallida*. Canadian Food Inspection Agency and United States Department of Agriculture. 15 p.

Anonim. 2013a. Phytosanitary Certificate Issuance & Tracking System. *Globodera rostochiensis.* Queried September 23, 2013 from, https://pcit.aphis.usda.gov/PExD/faces/PExDReport.jsp.

Anonim. 2013b. *Globodera rostochiensis*. Crop Protection Compendium. Accessed September 25, 2013 from: www.cabi.org/cpc.

Anonim. 2014. Mengenal beberapa varietas kentang dan manfaatnya. Lembar Informasi Pertanian (LIPTAN). Balai Pengkajian Teknologi Pertanian Sumatera Selatan.

Arabi, M.I.E, & M. Jawhar. 2007. Molecular and Pathobenic Variation Identified Among Isolates of *Cochliobolus sativus*. *Australian plant pathology* 36 : 17-21. CSIRO Publishing. www.publish.csiro.au/journals/app.

Ashandi, A.A., & N. Gunadi. 1989. Syarat tumbuh tanaman kentang. *Dalam:Kentang*. Edisi kedua. Balai Penelitian Hortikutura Lembang.

UNIVERSITAS
GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Bacic J, P. Barsi, & P. Strbac. 2011. Life cycle of the potato golden cyst nematode (*globodera rostochiensis*) Grown under climatic conditions in Belgrade. *Archives of Biological Sciences* 63 : 1069-1075.

Badan Pusat Statistik. 2013. Data Produksi Kentang di Indonesia tahun 2009, 2010 dan 2011. http://www.bps.go.id/sector/agri/horti/index.html. (18 Nopember 2013).

Baimey, H. D., G. Coyneb, Dagbenonbakinc, & B. Jamesa. 2009. Plant-parasitic nematodes associated with vegetable crops *In* Benin. Relationship with soil Physico-chemical properties. *Nematologica mediterranea* 37 : 227-236.

Been, T. H. & C. H. Schomaker. 2000. Development and evaluation of sampling methods for fields with infestation foci of potato cyst nematodes (*Globodera rostochiensis* and *G. pallida*). *Phytopathology* 90 : 647-656.

Belk, C & V. Borden. 2003. *Biology Science for Life*. University of Minnesota-Duluth. 475pp.

Berg, G. 2006. *Agriculture Notes, Potato Cyst Nematode*. AG0572. State of Victoria, Department of Primary Industries. 2 p.

Brodie, B. B., Evans, K. & Franco, J. 1993. Nematode Parasites of Potatoes. Pp. 87-132 *In* K. Evans, D. L. Trudgill, and M. Webster. *Plant Parasitic Nematodes in Temperate Agriculture.* CAB International.

Brodie BB. 1984. Nematode parasites of potato. *In*: Nickle WR, editor. *Plants and Insect Nematodes*. Narcell Dekker Inc, New York.

Bridge, J. & J. L. Starr. 2010. *Plant Nematodes of Agricultural Importance*. Academic Press. p. 70-72.

Buda, V. & R.C. Rakauskiene. 2015. The effect of α-solanine and zinc sulphate on the behaviour of potato cyst nematodes *Globodera rostochiensis* and *G. pallida*. *Nematology* 17 : 1105-1111

Bulman S. R. & J. W Marshall. 1997. Differentiation of Australasian potato cyst nematode (PCN) populastions using the polymerase chain reaction (PCR). *New Zealand Journal of Crop and Horticultural Science* 25:123-129.

Castagnone-Sereno, P., A. Skantar, & L. Robertson. 2011. Molecular tools for diagnostics, p. 434-464. *In:* Jones JT, Gheysen G and Fenoll C. *Genomics and molecular genetics of plant–nematode interactions*. Eds Springer, Berlin, Germany.

Caswell, E. P. & P. A. Roberts. 1987. Nematodes Population Genetics. *In* Sociaty of Nematologist. Vistas on Nematology., Inc. Hyattsville, Maryland.

Chen, Y. & Nelson, R.L. 2005. Relationship between origin and genetic diversity in Chinese soybean germplasm. *Crop Science* 45 : 1645–1652

Chrisanfova, G.G., D.A. Charchevnikov, I.O. Popov, S.V. Zinovieva & S.K. Semyenova. 2008. Genetic variability and Differentiation of Three Rusian populations of Potato cyst nematode as reveled by Nuclear Markers. *Russian Journal of Genetics* 44 : 533-538.

SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Coleman, A.W. 2007. Pan-eukaryote ITS2 homologies revealed by RNA secondary structure. *Nucleic Acids Research* 35 : 3322-3329

Dalamu, V.Bhardwaj, R.Umamaheshwari, R. Sharma, S.K. Kaushik, T.A. Joseph, B.P. Singh, & C. Gebhardt. 2012. Potato cyst nematode (PCN) resistance: genes, genotypes and markers – an update Of breeding and genetics. *Sabrao journal* 44 : 202-228.

Devine, K.J. & P.W. Jones. 2003. Comparison of the production and mobility of hatching activity towards the potato cyst nematodes, *Globodera rostochiensis* and *G. pallida* within soil planted with a host potato crop. *Nematology* 5 : 219-225.

.

Evans, K. & Stone, A.R. 1977. A review of the distribution and biology of the potato cyst nematode *Globodera rostochiensis* and *G. pallida. PANS*. 23 : 178-189.

Evans, K., 1987. The interactions of potato cyst nematodes and *Verticillium dahliae* on early and main crop potato cultivars. *Annals of Applied Biology* 110 : 329–339.

Eyres, N., V.Vanstone, & A. Taylor. 2005. Factsheet. Potato cyst nematodes Globodera rostochiensis and G. pallida. Exotic threats to Western Australia. Factsheet No. 10/2005. Government of Western Australia, Department of Agriculture. 2 p.

Fenwick, D. W., 1951. The effect of temperature on the development of the potato root eelworm Heterodera rostochiensis. *Annals of Applied Biology* 38 : 615–617.

Fenwick, D.W., 1994. Methodes for the recovery and counting of cysts of *Heterodera schachtii* from soil. *Journal of Helminthology* 18 : 155-172.

Ferris, H. 2005. *Globodera rostochiensis*. http://plpnemweb.ucdavis.edu/nemaplex/Taxadata/G053s2.htm. (diakses 9 Agustus 2015).

Fleming, C.C. & T.O. Powers. 1998. Potato cyst nematode diagnostics: morphology, differential hosts and biochemical techniques, p. 91-114. *In*: Marks RJ, Brodie BB (Eds), *Potato Cyst Nematodes, Biology, Distribution and Control*, CAB International, Wallingford, UK.

Fleming, C.C. & T.O. Powers. 1998. Potato cyst nematodes: species, pathotypes and virulence concepts, pp. 51–57. *In*: Marks RJ, Brodie BB (Eds), *Potato cyst nematodes: biology, distribution and control.* CABI Publishing, Wallingford, UK.

Fleming & S.J. Turner. 1998. Protection and production of sugar beet and potatoes Diagnostics of cyst nematodes: use of the polymerase chain reaction to determine species and estimate population levels. *Journal of Nematology* 25: 270-276.

Frankham, R. 2005. Review Genetics and extinction. Key Centre for Biodiversity and Bioresources, Department of Biological Sciences, Macquarie University, *Biological Conservation* 126 : 131–140

Franco J., R. Oros, G. Main, & N. Ortuno. 1998. Potato cyst nematodes (*Globodera* species) in South America, p. 239-270. *In*: Marks RJ, Brodie BB (Eds), *Potato Cyst Nematodes, Biology, Distribution and Control*, CAB International, Wallingford, UK.

SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Franco J, 1979. Effect of temperature on hatching and multiplication of potato cyst-nematodes. *Nematologica* 25 : 237–244.

Franco, P. & K. Evans. 1978. Mating of British and Peruvian populations of potato cyst-nematodes Globodera spp. *Nematropica* 8 : 5-9.

Friedman, W. 1985. Pests not Known to Occur in the United States or of Limited Distribution, No. 68: Golden Nematode. United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine. 10 p.

Fullaondo, A., A. Salazar, E. Barrena, & E. Ritter. 1999. Comparison of moleculer patterns and virulence behaviour of potato cyst nematodes. *Fundamental Applied Nematology* 20 : 425-434.

Foot, M.A. 1978. Temperature Responses of three Potato-Cyst Nematode Populations from New Zealand. *Nematologica* 24 : 412-417.

Greco, N., & I. Moreno. 1992. Influence of *Globodera rostochiensis* on yield of summer, winter, and spring sown potato in Chile. *Nematropica* 22 : 165-173.

Greco, N., M. Di Vito, A. Brandonisio, I. Giordano & G. De Marinis. 1982. The effect of *Globodera pallida* and *G. rostochiensis* on potato yield. *Nematologica* 28 : 379-386.

Hadisoeganda, A.W.W. 2006. *Nematoda Sista Kentang : Kerugian, Deteksi, Biogeografi, dan Pengendalian Nematoda Terpadu*. Monografi No. 29. Badan Penelitian Tanaman Sayuran. Pusat Penelitian dan Pengembangan Hortikultura. Badan Penelitian dan Pengembangan Pertanian.

Hajihassani, A., E. Ebrahimian, & M. Hajihasani. 2013. Estimation of yield damage in potato caused by Iranian population of *Globodera rostochiensis* with and without aldicarb under greenhouse conditions. *International Journal Of Agriculture And Biology* 15 : 352–356.

Halford P.D., M.D. Russel, & K. Evans. 1999. Use of resistant and susceptible potato cultivars in the trap cropping of potato cyst nematodes, *Globodera pallida* and *G. rostochiensis*. *Annals of* Applied Biology 134 : 321-327.

Haverkort, A.J. & D.L. Trudgill. 1995. “Crop physiological responses to infection by potato cyst nematode (*Globodera* spp)” p. 167-183. *In*: A.J. Haverkort, D.K.I. Mac Kerron. Potato Ecology. *Proceedings of the Second International Potato Modeling Conference*, *held in Wageningen 17-19 May, 1994*.

Hasyim, A., E. Sofieri, Kusmana, Y. Kusadriani, & Lutfi. 2012. Diseminasi varietas kentang unggul resisten *Phytopthora infestans* (Mont.) de Bary. Kementrian Riset dan Teknologi. 23 p.

Hlaoua, W., N.H. Raouani. 2008. Morphological and molecular characterisation of Potato Cyst Nematode populations from Tunisia and survey of their probable geographical origin. *Biotechnology.* 4 : 651-659.

Hodda, M. & D.C. Cook, 2009. Economic Impact from Unrestricted Spread of Potato Cyst Nematodes in Australia. *Phytopathology.* 99 : 1387–1393

SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Hudaya, A. 2009. "Identifikasi Spesies Nematoda Sista Kentang (*Globodera* spp.) Asal Kabupaten Banjarnegara dan Wonosobo". Skripsi : Universitas Gadjah Mada. Yogyakarta. 70 p.

Ibrahim, S. K., S. T. Minnis, & A.D.P. Barker. 2001. Evaluation of PCR, IEF and Elisa Techniques for the detection and identification of potato cyst nematodes from field soil samples in England and Wales. *Pest Management Science* 57 : 1068-1074.

Inagaki, H. 1977. Seasonal occurrence of the potato cyst nematode, *Globodera rostochiensis*. Japan. *Journal of Nematol*ogy 7 : 33–38.

Indarti, S. 2012. Potensi Jamur Parasit Telur dan Sista Nematoda sebagai Agens Hayati Pengendali *Globodera rostochiensis*. Disertasi. Universitas Gadjah Mada. 190 p.

Indarti, S., Bambang, R.T.P., Mulyadi, D., and Triman, B. 2004. First record of potato cyst nematode Globodera rostochiensis in Indonesia. *Australasian Plant Pathology* 33 : 325-326.

Ingham, R.E., Kroese, D., Zasada, A.A. 2015. Effect of Storage Environment on Hatching of the Cyst Nematode Globodera ellingtonae. *Journal of Nematology* 47 : 45–51.

Jatala, P. & J. Bridge,. 1990. Nematode Parasites of Root and Tuber Crops, p. 137-180 *In*: M. Luc; R.A. Sikora; and J. Bridge. *Plant Parasitic Nematodes in Subtropical and Tropical Agriculture*. CAB Intl.

Jatala, P. & J. Bridge. 1995. Nematoda Parasitik pada Tanaman Akar dan Ubi-ubian, p. 176-185 *In :* Luc, M., Sikora, R.A. dan Bridge, J. (penyunting). *Nematoda Parasitik Tumbuhan*. Yogyakarta: Gadjah Mada University Press.

Jogaite, V., Cepulyte, R., Staneli,S .A., Buda, V. 2007. Monitoring of *Globodera* spp. In Lithuania using diagnostic morphometric analysys and Polimerase Chain Reaction. *Acta Zoologica Lituanica* 17 : 184-187.

Jones, F.G.W., J.M. Carpenter, D.M. Parrott, A.R. Stone, & D.L. Trudgill. 1970. Potato Cyst Nematode : One Species or Two?. *Nature* 227 : 83-84.

Jones, M.G.K. & D.H. Northcote, 1972. Nematode induced syncytium, a multinucleate transfer cell. *Journal of Cell Science* 10 : 789–809.

Jones, J.T., G. Smant & V.C. Blok. 2000. SXP/RAL-2 proteins of the potato cyst nematode *Globodera rostochiensis*: secreted proteins of the hypodermis and amphids. *Nematology* 2 : 887–893.

Kaczmarek, A., Mac Kenzie, K., Kettle, H. And Blok, V.C. 2014. Influence of soil temperature on *Globodera rostochiensis* and *Globodera pallida*. *Phytopathologia Mediterranea* 53 : 396−405.

Kakaire S., I.G. Grove & P.P.J. Haydock, 2012. Effect of temperature on the life cycle of *Heterodera schachtii* infecting oilseed rape (*Brassica napus* L.). *Nematology*. 14 : 855–867.

Keputusan Menteri Pertanian Nomor 154/Kpts/3/1980, tanggal 10 Maret 1980, tentang Deskripsi tanaman Kentang Varietas Cipanas.

UNIVERSITAS
GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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Keputusan Menteri Pertanian Nomor 797/Kpts/Tp.830/10/1984, Tanggal 15 Oktober 1984, tentang Pemasukan Media Pertumbuhan Tanaman Ke Dalam Wilayah Negara Republik Indonesia.

Keputusan Menteri Pertanian Nomor : 447/Kpts/SR.120/4/2008, Tanggal : 22 April 2008 tentang Deskripsi Kentang Varietas Margahayu.

Koenning S.R. & B.S. Sipes, 1998. Biology, p. 156–190. *In*: Chapman and Hall (S.B. Sharma ed.). *Cyst-forming Nematodes.* London, UK.

Kort, J., H. Ross, H.J. Rumpenhorst & A.R. Stone. 1977. An international scheme for identiying and classifying pathotypes of potato cyst-nematodes *Globodera rostochiensis* and *G. pallida. Nematologica* 23 : 333-339.

Leach, M., A. Paula, & G. Patrick. 2009. Effect of Temperature on the Embryogenesis of Geographic Populations of *Rotylenchulus reniformis. Journal of Nematology* 41 : 23–27.

Leung, H., R. J. Nelson, & J. E. Leach. 1993. Population structure of plant pathogenic fungi and bacteria. *Advances in Plant Pathology* 10 **:** 157-205

Lowe, J. M. F. 1992. Do *Globodera rostochiensis* and G. *Pallida* interbreed in semi-natural conditions an examination of the next generations. *Fundamental applied Nematology.* 15 : 545-550.

Lisnawita, Sinaga, M., Supramana & G. Suastika. 2010. Pengaruh Temperatur terhadap Perkembangan Nematoda Sista Kentang (*Globodera* spp.) Indonesia. *Jurnal Hama Penyakit Tumbuhan Tropika* 10 : 29 – 34.

Lisnawita. 2007. Identifikasi, kajian Biologi dan ketahanan tanaman terhadap Nematoda Sista Kentang (*Globodera* spp.) Indonesia. Disertasi: Sekolah Pascasarjana Institut Pertanian bogor. 110p.

Luc, M, Sikora, R.A., Bridge, J. 2005. *Parasitic Nematodes in Subtropical and Tropical Agriculture*. CABI Publishing. 917p.

Mc Sorley, R. 1998. Population Dynamic, p. 109-134. *In.* Barker, K; G.A. Pederson; & G.L. Windham. 1998. *Plant nematode interactions*. Madison, Wisconsin USA.

Madani M, L.J. Ward & S.H. De Boer. 2008. Multiplex real-time polymerase chain reaction for identifying potato cyst nematodes *Globodera pallida* and *Globodera rostochiensis*, and the tobaccocyst nematode, *Globodera tabacum*. *Canadian Journal of Plant Pathology* 30 : 554–564.

Madani M, S.A. Subbotin, L.J. Ward, X. Li & S.H. De Boer. 2010. Molecular characterization of Canadian populations of potato cyst nematodes, *Globodera rostochiensis* and *G. pallida* using ribosomal nuclear RNA and cytochrome *b* genes. *Canadian Journal of Plant Pathology* 32 : 252–263.

Marks, R.J. & B.B. Brodie, 1998. *Potato Cyst Nematodes Biology, Distribution and Control*. Department of Plant Pathology Cornell University Ithaca, New York, USA.

Marks, R. J., & Rojancovski, 1998. Potato cyst nematodes (*Globodera* species) in central Europe, The Balkans and the Baltic states, p. 299-311. *In* R.J. Marks and B.B.

UNIVERSITAS
GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Brodie. *Potato Cyst Nematodes: Biology, Distribution and Control*. CAB International, Oxon.

Marshall, J.W. 1984. The comparative biology of *Globodera rostochiensis (Wollenweber)* and *Globodera pallida* (Stone) (Nematoda, Heteroderidae) in the South Island of New Zealand. University of Canterbury. *Zoology*. http://library.canterbury.ac.nz/thesis/etheses_copyright.shtml

Marshall, J.W. 1993. Detecting the presence and distribution of *Globodera rostochiensis* and *G. pallida* mixed populations in New Zealand using DNA probes. *New Zealand Journal of Crop and Horticultural Science*. 21: 219-223.

Marshall JW. 1998. Potato cyst nematodas (*Globodera* species) in New Zealand and Australia, p. 353-394. *In*: Marks RJ. Brodie BB, editor. *Potato cyst nematode: biology, distribution and control*. New York (US) & Wallingford (UK): CAB International.

Mulder, J.G. 1988. Temperature response of *G. rostochiensis* Woll. and *G. pallida* Stone. *Nematologia Mediterranea* 45 : 434–440.

Mulder, J.G. & A.F. Van der Wal 1997. Relationship between potato cyst nematodes and their principal host. I. A literature review. *Potato Research*. 40 : 317-326.

Mulholland, U., L. Carde, K.L. O'Donnel, C.C. Fleming, & Powers. 1996. Use of the polymerase chain reaction to discriminate potato cyst nematode at spesies level. Pp. 247-252. *In* G. Marshall (ed). *Proceeding of Diagnostics in Crop Production Symposium.* British Crop Production Symposium.. British Crop Production Council, Fernham, UK.

Mulyadi, B. Rahayu, B. Triman & S. Indarti. 2003. Identifikasi Nematoda Sista Kuning (*Globodera rostochiensis*) pada Kentang di Batu, Jawa Timur. *Jurnal Perlindungan Tanaman Indonesia*. 9 : 46-53.

Mulyadi, B. Rahayu, B. Triman & S. Indarti. 2003. Survei keberadaan nematoda sista kuning (*Globodera rostochiensis*) di beberapa sentra produksi kentang. Kongres XVII dan Seminar Ilmiah Nasional Perhimpunan Fitopatologi Indonesia. UNPAD Bandung 6-8 Agustus 2003.

Mulyadi, B. Rahayu, B. Triman & S. Indarti. 2004. Studi Bioekologi Nematoda Sista Kuning (*Globodera rostochiensis*). Kerjasama antara Balai Penelitian Sayuran Lembang Bandung dengan Fakultas Pertanian Universitas Gadjah Mada Yogyakarta.

Mulyadi, B. Rahayu, B. Triman & S. Indarti. 2010. Population increase and decrease of potato cyst nematodes. Research report. Colaboration of ACIAR with Plant Protection Department Gadjah Mada University.

Mulyadi, B. Triman, S. Indarti, R.H. Murti & B.R.T. Pujiastomo. 2005. The effect of initial population levels of *Globodera rostochiensis* on yield of potato. Abstract of paper that was presented at the 1st International Conference of Crop Security. Brawijaya University, Malang, East Java Indonesia, September 20th – 25nd.

Mulyadi. 2009. *Nematologi Pertanian*. Gadjah Mada University Press. Yogyakarta. 339 p.

Neilson R. & B. Boag, 1996. The predicted impact of possible climatic change on virus-vector nematodes in Great Britain. *European Journal of Plant Pathology*. 102 : 193–199.

UNIVERSITAS
GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Noe, J.P. & R.A. Sikora. 1995. Efek Iklim Tropik pada Distribusi dan Hubungan Inang-Parasit pada Nematoda Parasitik Tumbuhan, p.786-789. *In* Luc M, R.A. Sikora, & J. Bridge (eds.), *Nematoda Parasitik Tumbuhan di Pertanian Subtropik dan Tropik*. Gadjah Mada University Press.

Nowaczyk K, R. Dobosz, S. Kornobis, & A. Obrepalska-Steplowska. 2008. TaqMan Real-Time PCR-based approach for differentiation between Globodera rostochiensis (golden nematode) and *Globodera artemisiae* species. *Parasitology Research* 103: 577- 581.

Nurjanah. 2009. Sebaran Spesies Nematoda Sista Kentang (*Globodera pallida* (Stone) Behrens dan *Globodera rostochiensis* (Woll.) Behrens) Berdasarkan Ketinggian Tempat di Dataran Tinggi Dieng Jawa Tengah. Tesis. Institut Pertanian Bogor. 57 p.

Oerke E.C. 2006. Crop losses to pests. *Journal of Agricultural Science*. 144 : 31–43.

Oro, V. & Radovanovic, V.O. 2012. Molecular characterization of pcn populations from Serbia. *Genetika.* 44 : 189-200.

Patra, A.P., A.K. Mukherjee & L. Acharya. 2011. Comparative study of RAPD and ISSR markers to asses the genetic diversity of betel vine (*Piper betle* L.) in Orissa, India. Am. *Journal Biochemical Molecular Biology* 1 : 200-211.

Peraturan Menteri Pertanian Nomor 93/Permentan/OT.140/12/2011, tanggal 29 Desember 2011 tentang Jenis Organisme Pengganggu Tumbuhan Karantina

Perry R.N., 1998. The physiology and sensory perception of potato cyst nematodes, *Globodera* species, p. 27-49. *In*: Marks R.J., Brodie B.B. (eds) *Potato cyst nematodes: biology, distribution and control*. CAB International, Cambridge University Press, UK.

Plantard O, D. Picard, S. Valette, M. Scurrah, E. Grenier & D. Mugniery. 2008. Origin and genetic diversity of Western European populations of the potato cyst nematode (*Globodera pallida*) inferred from mitochondrial sequences and microsatellite loci. *Molecular Ecology* 17 : 2208–2218.

Powers, T. 2004: Nematode molecular diagnostics: From bands to barcodes. *Annual* Review of *Phytopathology* 42: 367-383.

Prot, J.C. & S.D. Van Gundy. 1981. Influence of Photoperiod and Temperature on Migrations of Meloidogyne Larvaes. J*ournal of Nematology* 13 : 217-220.

Pullin, R.SV. 2002. *Draft glossary of standard terms for a proposed Fisheries Information Network for Genetic Resaurces (FINGER) Consultant's to the Food and Agriculture Organization of the United Nations.* Rome. 71p.

Pusat Data dan Sistem Informasi Pertanian. 2013. *Kinerja Perdagangan Komoditas Pertanian. Sekretariat Jenderal Kementerian Pertanian*. Volume 4 Nomor 2. 128 hal. [http://pphp.deptan.go.id]

Pusat Data dan Informasi Badan Karantina Pertanian (*e-plac*). 2015. *Data Impor kentang 2010-2014 (Benih dan Media Pembawa*). Badan Karantina Pertanian.

SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Pylypenko, L.A., Uehara, T., Phillips, M.S., Sigareva, D.D., & Blok, V.C. 2005. Identification of *Globodera rostochiensis* and *Globodera pallida* in the Ukraine by PCR. *European Journal of Plant Pathology.* 3 : 39-46.

Rehman, S., W. Postma, T. Tygat, P. Prins, L. Qin, H. Overmars, J. Vossen, L.N. Spiridon, A.J. Petrescu, A. Goverse, J. Bakker & G. Smant,. 2009. A secreted SPRY domain-containing protein (SPRYSEC) from the plant-parasitic nematode *Globodera rostochiensis* interacts with a CC-NB-LRR protein from a susceptible tomato. *Molecular Plant-Microbe Interactions*. 22: 330–340.

Reid, A., & J. Pickup. 2005. Molecular characterization of a morphologically unusual potato cyst nematode. *OEPP/EPPO Bulletin* 35 : 69-72.

Renault, D., C. Salin, G. Vannier, & P. Vernon. 2002. Survival at low temperatures in insects: What is the ecological significance of the supercooling point? *CryoLetters* 23 : 217-228.

Renco, M., & T. D. Addabbo. 2007. "The effect of five composts of different origin on the survival and reproduction of *Globodera rostochiensis. Nematology* 9 : 537-543.

Rinus, K. 2014. *A molecular, morphological and biological characterisation of the genus Globodera* (Nematoda: Heteroderinae) in South Africa. Supervisor: Dr Antoinette Swart, ARC, Co-supervisor: Dr Pia Addi-son. Friday 31 January 2014, 13:00, Room 3028, JS Marais Building.

Robinson, M.P., J.A. Howard, & N.P. Roland, 1987. The influence of temperature on the hatching, activity and lipid utilization of second stage larvaes of the potato cyst nematodes *Globodera rostochiensis* and *G. pallida*. Department of Pure and Applied Zoology, Agricultural Sciences Building, University of Leeds, Leeds, LS2 9JT and Nematology Department, Rothanuted Experimental Station, Harpenden, Herts., AL5 2Ja England. *Revue Nématology* 10 (3) : 349-354.

Rott, M., T. Lawrence & M. Belton. 2008. *Detection of the golden nematode, Globodera rostochiensis, in Canada 25 years after quarantine. In* Fifth Internatioanal Congress of Nematology, 13-18 July 2008, Brisbane, Australia. P. 322 [Abstr.].

Sabaratnam, S. 2012. *Potato Cyst Nematodes.* British Columbia Ministry of Agriculture. http://www.agf.gov.bc.ca/cropprot/goldennema.htm.

Salazar & E.J. Ritter. 1993. Effects of daylength during cyst formation, storage time and temperature of cysts on the *in vitro* hatching of *Globodera rostochiensis* and G. *Pallida. Fundamental* and *Applied Nematology* 16 : 567-572.

Schomaker, C.H. & T.H. Been. 2006. Plant growth and population dynamics. *In:* Perry RN and Moens M (Eds). *Plant nematology.* CABI Publishing, Wallingford, UK. p . 275-301.

Scurrah MI, B. Niere, & J. Bridge. 2005. Nematodas parasites of solanum and sweet potatoes.*In:* Luc M. Sikora RA. Bridge J, editor. *Plant parasitic Nematodas in Subtropical and tropical agricultural*. Wallingford (UK): CABI publishing.

Sedlak P, M. Melounova, S. Skupinova, P. Veji, & Domkarova. 2004. Study of European and Czech populations of potato cyst nematodes (*Globodera rostochiensis* ang *G. pallida*) by RAPD method. *Plant Soil Environment* 50 : 70-74.

SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Singh, R.S. & K. Sitaramaiah, 1993. *Plant Pathogens : The Plant Parasitic Nematodes*. Science Publish. Inc., USA, 320p.

Subbotin, S. A., P.D. Halford, A. Warry & R.N. Perry. 2000. Variations in ribosomal DNA sequences and phylogeny of *Globodera* parasitising solanaceous plants. *Nematology* 2 :591-604.

Subbotin S. A., P. Deliang & M. Maurice. 2001. A rapid method for the identification of the soybean cyst nematode *Heterodera glycines* using duplex PCR. *Nematology*. 3 : 365-371.

Sullivan, M.J., R.N. Iserra, J. Franco, I. Moreno-Leheude & N. Greco. 2007. Potato cyst nematodes: plant host status and their regulatory impact. *Nematropica* 37 : 193-201.

Sysoeva, M,I., V. V. Lavrova, E.M. Matveeva, E.G. Sherudilo, & L.V. Topchieva. 2011. Cross Adaptation of Potato Plants to Low Temperatures and Potato Cyst Nematode Infestation. *Russian Journal of Plant Physiology*. 58: 999–1004.

Spears, J. 1968. *The golden nematode handbook (survey, laboratory, control and quarantine procedures.* 118p.

Stone AR. 1983. Three approaches to the status of a species complex, with a revision of some species of *Globodera* (Nematoda: Heteroderidae). *in*: Stone AR, Platt HM, Khalil LF, eds, *Concepts in nematode systematics*, Systematics Association Special Volume No. 22. London, UK: Academic Press. Pp. 221-233

Southey, JF. 1974. Methods for detection of potato cyst nematodes. *EPPO Bulletin* 4 : 463 – 473.

Stevenson, W.R., L. Rosemary, D.F. Gary, D.P. Weingartner. 2001. *Compendium of Potato Disease*. Second Edition. The American Phytopathological Society.

Stone, A.R. 1973a. *Heterodera pallida* N. Sp. (Nematoda: Heteroderidae), a second species of potato cyst nematode. *Nematologica* 18: 591-606.

Stone, A.R. 1973b. *Heterodera pallida* and *Heterodera rostochiensis*. CIH Descriptions of Plant-parasitic Nematodes No. 16 and 17. CAB International, Wallingford, UK.

Stoyanov, D. & Z. Trifonova. 1995. Hatching dynamics of golden potato cyst nematode larvae Globodera rostochiensis. Bulgarian *Journal of Agricultural Science* 1 : 241–246.

Suwardiwijaya, E. I.N. Raga, & H. Lanya. 2007. *Penyebaran vertikal dan horisontal sista Globodera sp., di sentra penanaman kentang di Pegunungan Dieng, Propinsi Jawa Tengah*. Makalah pada Pertemuan Koordinasi Kelompok Kerja Penanganan NSK. Bandung, 2-4 Mei 2007. Balai Besar Peramalan Organisme Pengganggu Tumbuhan, Direktorat Jenderal Tanaman Pangan.

Thiery, M. & D. Mugniery. 1996. Interspesific rDNA restriction fragment length polymorphism in *Globodera* species, parasites of Solanaceaous plants. *Fundamental and Applied Nematology* 19 : 471-479.

UNIVERSITAS
GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
NURJANAH, Prof. Ir. Y. Andi Trisyono, M.Sc., Ph.D.; Dr. Ir. Siwi Indarti, M.P.; Dr. Ir. Sedyo Hartono, M.P.
Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Tiilikkala, K.A. 1987. Life cycle of the potato cyst nematode in Finland. *Annales Agriculturae Fenniae* 26 : 171-179.

Tiilikkala, K.A. 1992. Influence of soil temperature on initial energy reserves of *Globodera rostochiensis* larvae. *Fundamental applied Nematology* 15 (1) : 49-54.

Trudgill, D. L., 1970. Survival of different stages of *Heterodera rostochiensis* at high temperatures.*Nematologica* 16 : 94–98.

Trudgill, D.I., K. Evans, & M.S. Philipps. 1998. Potato cyst nematode damage mechanisms and tolerance in the potato.. *In* R.J. Marks and B.B. Brodie (eds.). *Potato Cyst Nematodes. Biology, distribution and control.* CAB International, Wallingford, UK. p. 117-133

Trudgill, D.L., 1980. Effects of *Globodera rostochiensis* and fertilisers on the mineral nutrient content and yield of potato plants. *Nematologica* 26: 243–254

Trudgill D.L., Perry J.N., 1994. Thermal time and ecological strategies – A unifying hypothesis. *Annals of Applied Biology* 125 : 521-532.

Trifonova, Z. 1999. Temperature influence on the potato cyst nematode (*Globodera rostochiensis* Woll. 1923) development. *Bulgarian Journal of Agricultural Science* 5 : 863-866.

Turner, S. 1998. Sample preparation, soil extraction and laboratory facilities for the detection of Potato Cyst Nematodes , p. 75-77. *In* R. J. Marks & B. B. Brodie (eds.), *Potato Cyst Nematodes, Biology, Distribution and Control*. CAB International, Wollingford, UK.

Turner, S. J., & C.C. Fleming. 2009. Variation in hatch among pathotypes of the potato cyst nematodes, globodera rostochiensis and G. pallida, in response to potato root diffusate from solanum spp. I. preliminary assessments to establish optimal testing conditions. *Nematology* 11: 749-756.

Turner, S. & K. Evans, 1998. The origin, global distribution and biology of potato cyst nematodes (*Globodera rostochiensis* Woll and *G. pallida* Stone), p. 7-23. *In*: R. Y. Marks and B. B. Brodie (Eds.) *Potato Cyst Nematodes, Biology, Distribution and Control*. *CAB International*, Wollingford, UK.

Turner, S.J., & J.A. Rowe. 2006. Cyst Nematodes, p. 91-122. *In*: Perry R. N. and Moens M. (eds.) *Plant Nematology*. CAB International, Wallingford (GB).

Uehara, T., A. Kushida, K. Itou, T. Narabu & Y. Momota, 2005. Discrimination of three cyst-forming nematodes of the genus *Globodera* (Nematode: Heteroderidae) from Japan based on PCR-RFLP of ribosomal DNA. *Applied Entomology and Zoology* 40 : 537-543.

Wallace, H. R. 1964. *The biology of plant parasitic nematodes*. St, Martin's Press Inc., New York. 280 p.

Wharton, D.A., G. Goodall, & Marshall. 2002. Freezing rate affects the survival of a short-term freezing stress in *Panagrolaimus davidi*, an Antartic nematode that survives intracellular freezing.. *In*: Randy Gaugler, Al Bilgrami 2004. *Nematode Behaviour*. *Cryoletters*. 23 : 5-10.

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GADJAH MADA
SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

White, T. J., T. Bruns, S. Lee & J. Taylor. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. *In:* . Innes, M. A.; Gelfard, D. H.; Sninsky, J. J.; White, T. J. *ed. PCR protocols. A guide to methods and applications.* San Diego, Academic Press.

Winslow, R.D., & R.J. Willis. 1972. *Nematode diseases of potatoes*. II. Potato cyst nematode, *Heterodera rostochiensis*. *In*: Webster J. (ed.), *Economic Nematology*, Academic Press, New York, p. 18-34.

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SEBARAN DAN KERAGAMAN GENETIK NEMATODA SISTA KENTANG (Globodera spp.) DI JAWA
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