

Name: Bernard Vanlauwe
Position Title: Senior Scientist
Appointment Date: November 2003 (with TSBF from February 2001)
Specialty Area: Soil Fertility Specialist
Current time allocation: 100%

Project	FTE
PE-2	100%

Education:

- Ph.D.: 1990 - 1996: PhD degree in Applied Biological Sciences; Catholic University of Leuven, Belgium (K. U. Leuven); Title thesis: ‘Residue quality, decomposition and soil organic matter dynamics under sub-humid tropical conditions’
- Agr Eng: 1984 - 1989: Engineer in Applied Biological Sciences; Catholic University of Leuven, Belgium (K. U. Leuven); Title thesis: ‘Decomposition of ¹⁴C labeled maize-straw’

Positions held (since terminal degree):

- 2003 – today: Senior Scientist at the Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture (TSBF-CIAT), Nairobi, Kenya.
- 2001 - 2003: Integrated Soil Fertility Management Officer at the Tropical Soil Biology and Fertility programme, Nairobi, Kenya.
- 1997 - 2001: Associate Scientist at the International Institute of Tropical Agriculture, Ibadan, Nigeria (IITA) in the framework of a special project on ‘Balanced Nutrient Management Systems for Maize-based Farming Systems in the Moist Savanna and Humid Forest Zones of West-Africa’ (BNMS) between IITA and K. U. Leuven.
- 1993 - 1997: Associate Expert at the International Institute of Tropical Agriculture, Ibadan, Nigeria (IITA) in the framework of a special project on ‘Process based studies of soil organic matter dynamics in relation to the sustainability of agricultural systems in the tropics’ between IITA and K. U. Leuven.
- 1991 - 1993: Junior Expert at the International Institute of Tropical Agriculture, Ibadan, Nigeria (IITA) in the framework of a special project on ‘Dynamics of Soil Organic Matter and Soil Fertility under Different Fallow and Cropping Systems’ between IITA and K. U. Leuven.
- 1990 - 1991: Research Assistant at the Laboratory of Soil Fertility and Soil Biology, K. U. Leuven, Belgium.

Research Responsibilities (2002 – present):

- List here briefly your major research activities and areas of expertise
 - Agro-ecosystem health management: decomposition of organic inputs, soil organic matter dynamics and fractionation, N balance in agro-forestry and legume-cereal systems, soil fauna dynamics.
 - External input management: local soil fertility evaluation, site-specific management of fertilizer, organic-mineral interactions, appropriate management of external P inputs (fertilizer and rock phosphates).
 - Participatory adaptation of integrated soil fertility management practices: integration and contribution of legumes to cropping systems, integrated striga management.
 - Systems agronomy: banana-based systems, cereal-legume rotations and intercrops, agro-forestry systems.

Professional Service (2002 – present):

- Memberships & services in scientific societies
 - Belgian Soil Science Society (BBV)
 - African Soil Science Society (ASSS)
 - Soil Science Society of America (SSSA)
 - African Association for Biological Nitrogen Fixation (AABNF)
- Service on editorial boards
 - Consultant Editor - Plant and Soil
 - Regular reviewer for the following international journals: European Journal of Soil Science, Agronomy Journal, Geoderma, Soil Biology and Biochemistry, Agriculture, Ecosystems and Environment, Soil Science Society of American Journal, and other.
- Contributions to major global/regional initiatives and task forces
 - Played a major role in initiating and setting up the ‘Consortium for Improved Agricultural Livelihoods in Central Africa’ (CIALCA), a Consortium formed between CIAT, IITA, INIBAP-IPGRI, and their various research and development partners, in the context of the recently approved DGDC projects
- Contributions to major international conferences (organizer)
 - ‘Dynamics of Organic Matter in Relation to the Sustainability of Agricultural Systems’, 3-6 November 1991, Leuven, Belgium.
 - ‘Balanced Nutrient Management Systems for the Moist Savanna and Humid Forest Zones of Africa’ - 9-12 October 2000, Cotonou, Benin Republic.

Honors and Awards (since terminal degree):

- Promising Young Scientist award of the Consultative Group on International Agricultural Research, International Centers Week, November 2000, Washington.

Graduate Student Advisement (2002 – present):

Degrees completed

MSc [11]: Wim Govaerts (Catholic University of Leuven, Belgium), Telesphoret Ndabamenya (Wageningen University, the Netherlands), Giannisi Papanagiotou (Wageningen University, the Netherlands), Alejandro Ponce (CINVESTAV-IPN, Mexico), Esther Rutto (Egerton University, Kenya), Salome Muriuki (Kenyatta University, Kenya), Mercy Karundity (Kenyatta University, Kenya), Boaz Waswa (Kenyatta University, Kenya), Pablo Tiltonell (Wageningen University, the Netherlands), Jeremiah Okeyo (Kenyatta University, Kenya), Leen Symons (Catholic University of Leuven, Belgium).

PhD [3]: Chike Nwoke (University of Ibadan, Nigeria), Koen Oorts (Catholic University of Leuven, Belgium), B Tulema (Noragric, Norway).

Current

MSc [12]: Rasheed Mwashasha (Jomo Kenyatta University of Science and Technology); Judith Odhiambo (Egerton University); Matieu Henry (CNEARC/ENGREF); Agnes Kavoo (Kenyatta University), Job Ogada (Egerton University, Kenya), Micheal Ochieng (Jomo Kenyatta University of Science and Technology, Kenya), Justin Muriuki (Kenyatta University, Kenya), Alfred Nyambane (Kenyatta University, Kenya), Julie Lunzihirwa (University of Kinshasa, DR Congo), Rachel Zozo (Makere University, Uganda), Leni Driessen (Catholic University of Leuven, Belgium), Tunsisa Hurisso (Wageningen University, the Netherlands).

PhD [11]: John Ojiem (Wageningen University, the Netherlands), Jane Kapkiyai (Cornell University, USA), Pablo Tittonell (Wageningen University, the Netherlands), Jacintha Kimiti (Kenyatta University, Kenya), Monicah Mucheru (Kenyatta University, Kenya), Edward Yeboah (University of Ghana, Ghana), Pauline Nhamo (University of California Davis, USA), Leon Nabahungu (Wageningen University, the Netherlands), Roberta Gentile (University of California Davis, USA), Josaphat Mugabo (Catholic University of Leuven, Belgium), Isabelle Vandenplas (Catholic University of Leuven, Belgium), Fredrick Ayuke (Wageningen University, the Netherlands).

Refereed journal publications (2002-2006)

- (1) B Vanlauwe, Diels J, Lyasse O, Aihou K, Iwuafor E N O, Sanginga N, Merckx R, Deckers J 2002 Fertility status of soils of the derived savanna and northern guinea savanna and response to major plant nutrients, as influenced by soil type and land use management. *Nutrient Cycling in Agroecosystems* 62, 139-150.
- (2) B Vanlauwe, Akinnifesi F K, Tossah B K, Lyasse O, Sanginga N, Merckx R 2002 Root distribution of *Senna siamea* grown on a series of soils representative for the moist savanna zone of Togo, West Africa. *Agroforestry Systems* 54, 1-12.
- (3) B Vanlauwe, C A Palm, H K Murwira and R Merckx 2002 Organic resource management in sub-Saharan Africa: validation of a residue quality-driven decision support system. *Agronomie* 22, 839-846.
- (4) N Sanginga, J Okogun, B Vanlauwe and K Dashiell 2002 The contribution of nitrogen by promiscuous soybeans to maize base cropping in the moist savanna of Nigeria. *Plant and Soil* 241, 223-231.
- (5) F Place, C B Barrett, H A Freeman, J J Ramisch and B Vanlauwe 2003 Integrated soil fertility management: evidence on adoption and impact in African smallholder agriculture. *Food Policy* 28, 365-378.
- (6) K D Shepherd, C A Palm, C N Gachengo and B Vanlauwe 2003 Rapid characterization of organic resource quality for soil and livestock management in tropical agroecosystems using near infrared spectroscopy. *Agronomy Journal* 95, 1314-1322.
- (7) N Sanginga, K Dashiell, J Diels, B Vanlauwe, O Lyasse, R JCarsky, S Tarawali, B Asafo-Adjei, A Menkir, S Schulz, B B Singh, D Chikoye, D Keatinge and O Rodomiro 2003 Sustainable resource management coupled to resilient germplasm to provide new intensive cereal-grain legume-livestock systems in the dry savanna. *Agriculture, Ecosystems and Environment* 100, 305-314.
- (8) OC Nwoke, B Vanlauwe, J Diels, N Sanginga and O Osonubi 2004 Impact of residue characteristics on phosphorus availability in West African moist savanna soils. *Biology and Fertility of Soils* 39, 422-428.
- (9) J Diels, B Vanlauwe, M K Van der Meersch, N Sanginga and R Merckx. 2004 Long-term soil organic carbon dynamics in a subhumid tropical climate: ¹³C data and modeling with RothC. *Soil Biology and Biochemistry* 36, 1739-1750.
- (10) K Oorts, B Vanlauwe, S Recous and R Merckx 2005 Redistribution of particulate organic matter during ultrasonic dispersion of highly weathered soils. *European Journal of Soil Science*, 56, 77-91.
- (11) K Oorts, B Vanlauwe, J Pleysier and R Merckx 2004 A new method for the simultaneous measurement of pH-dependent cation exchange capacity and pH buffering capacity. *Soil Science Society of America Journal* 68, 1578-1585.
- (12) OC Nwoke, B Vanlauwe, J Diels, N Sanginga, O Osonubi and R Merckx 2003 Assessment of labile phosphorus fractions and adsorption characteristics in relation to soil properties of West African savanna soils. *Agriculture, Ecosystems and Environment* 100, 285-294.

- (13) K Oorts, B Vanlauwe and R Merckx 2003 Cation exchange capacities of soil organic matter fractions in a Ferric Lixisol with different organic matter inputs. *Agriculture, Ecosystems and Environment* 100, 161-171.
- (14) OC Nwoke, B Vanlauwe, J Diels, N Sanginga and O Osonubi 2004 The distribution of phosphorus fractions and desorption characteristics of some soils in the moist savanna zone of west Africa. *Nutrient Cycling in Agroecosystems* 69, 127-141.
- (15) P Tittonell, B Vanlauwe, PA Leffelaar and KE Giller 2005 Estimating yields of tropical maize genotypes from non-destructive, on-far, plant morphological measurements. *Agriculture, Ecosystems and Environments* 105, 213-220.
- (16) B Vanlauwe, K Aihou, B K Tossah, J Diels, N Sanginga and R Merckx 2005 *Senna siamea* trees recycle Ca from a Ca-rich subsoil and increase the topsoil pH in agroforestry systems in the West African derived savanna zone. *Plant and Soil* 269, 285-296.
- (17) Mando A., Ouattara, B. Sédogo, M. Stroosnijder, L., Ouattara, K., Brussaard, L. and Vanlauwe, B. 2005 Long-term effect of tillage and manure application on soil organic fractions and crop performance under Sudano-Sahelian conditions. *Soil & Tillage Research* 80, 95-101.
- (18) B Vanlauwe, C Gachengo, K Shepherd, E Barrios, G Cadisch and CA Palm 2005 Laboratory validation of a resource quality-based conceptual framework for organic matter management. *Soil Science Society of America Journal*, 69, 1135-1145.
- (19) KD Shepherd, B Vanlauwe, CN Gachengo and CA Palm 2005 Decomposition and mineralization of organic resources predicted using near infrared spectroscopy. *Plant and Soil* 277, 315-333.
- (20) P Tittonell, B Vanlauwe, PA Leffelaar, E Rowe and KE Giller 2005 Exploring diversity in soil fertility management of smallholder farms in western Kenya. I. Heterogeneity at region and farm scale. *Agriculture, Ecosystems and Environment* 110, 149-165.
- (21) P Tittonell, B Vanlauwe, PA Leffelaar, KD Shepherd and KE Giller 2005 Exploring diversity in soil fertility management of smallholder farms in western Kenya. II. Within farm variability in resource allocation, nutrient flows and soil fertility status. *Agriculture, Ecosystems and Environment* 110, 166-184.
- (22) B Vanlauwe and KE Giller 2005 Popular myths around soil fertility management in sub-Saharan Africa 2005 *Nutrient Cycling in Agroecosystems*, *In Press*.
- (23) B Vanlauwe, J Diels, N Sanginga and R. Merckx 2005 Long-term integrated soil fertility management in South-western Nigeria: crop performance and impact on the soil fertility status. *Plant and Soil* 273, 337-354.
- (24) B Vanlauwe, P Tittonell and J Mukalama 2006 Within-farm soil fertility gradients affect response of maize to fertilizer application in western Kenya. *Nutrient Cycling in Agroecosystems*, *In Press*.
- (25) Tittonell P, Leffelaar PA, Vanlauwe B, van Wijk MT and Giller KE 2006 Exploring diversity of crop and soil management within smallholder African farms: a dynamic model for simulation of nutrient (N) balances and use efficiencies at field scale. *Agricultural Systems*, *In Press*.
- (26) Mtambanengwe F, Mapfumo P, Vanlauwe B 2006 Comparative short-term effects of different quality organic resources on maize productivity under two different environments in Zimbabwe. *Nutrient Cycling in Agroecosystems*, *In Press*.

Invited keynote presentation at major international conferences (2002-2006)

- Organised a Symposium on ‘Management of organic matter in the tropics’, 17th World Congress of Soil Science, Bangkok, Thailand, 14-20 August.
- Member of the Scientific Committee of the following international meetings:
 - ‘Management of Tropical Sandy Soils for Sustainable Agriculture - a holistic approach for sustainable development of problem soils in the tropics’, 28 November – 1 December 2005, Khon Kaen, Thailand.

- ‘Carbon Sequestration in Developing Countries and Environmental Impact of Land Use Change’, 23-27 April 2006, Mexico City, Mexico.
- Oral presentations:
 - ‘Organic resource management in sub-Saharan Africa: validation of a residue quality-driven decision support system, 17th World Congress of Soil Science, August 2002, Bangkok, Thailand.
 - ‘Integrated soil fertility management research at TSBF: the framework, the principles, and their application, International Symposium on Improving Human Welfare and Environmental Conservation by Empowering Farmers to Combat Soil Fertility Degradation, May 2004, Yaounde, Cameroon.
 - ‘Integrated Soil Fertility Management in East Africa: principles, processes, and practice’, Rockefeller Soils Grantees Workshop, September 2004, Nairobi, Kenya.
 - ‘Managing organic inputs for enhancing biological and physico-chemical soil health in the West African Savannas’, International Symposium on ‘the Management of Tropical Sandy Soils for Sustainable Agriculture - a holistic approach for sustainable development of problem soils in the tropics’, November 2005, Khon Kaen, Thailand.
 - ‘The role of soil organic matter in the provision of specific services for crop production in smallholder systems in sub-Saharan Africa’, International Symposium on ‘Carbon Sequestration in Developing Countries and Environmental Impact of Land Use Change’, April 2006, Mexico City, Mexico.

Research Grants (2002 – present):

Funding source	Grant Title (Principal investigators)	Amount US\$	Period
Flemish Inter-University Council (VLIR), Belgium	Integrated Soil Fertility Management Strategies to Enhance Food Security in the Central Highlands of Kenya (D Mugendi, Kenyatta University)	309,834 Euro	2003-2007
Department for International Development (DfID), UK	Integrated pest and soil management to combat <i>Striga</i> , stemborers and declining soil fertility in the Lake Victoria basin (Z Khan, ICIPE)	292,250 British Pounds	2003-2006
Rockefeller Foundation, USA	Valuing within-farm soil fertility gradients to enhance agricultural production and environmental service functions in smallholder farms in East Africa (B Vanlauwe, TSBF-CIAT)	545,386	2003-2005
Rockefeller Foundation, USA	Exploring the multiple potentials of soybeans in enhancing rural livelihoods and small industry in East Africa (B Vanlauwe, TSBF-CIAT)	479,050	2005-2007
National Science Foundation, USA	The interaction between resource quality and aggregate turnover controls ecosystem nitrogen and carbon cycling (J Six, University of California, Davis)	673,037	2004-2007
Rockefeller Foundation, USA	Exploration of Integrated Soil Fertility Management for Banana Production and Marketing in Uganda and Kenya: Arbuscular Mycorrhizal Fungi help establishment and production of tissue culture banana (B Vanlauwe, TSBF-CIAT)	174,000	2004-2005

Rockefeller Foundation, USA	Promiscuous soybean processing and utilization for improving the health and nutrition of rural households in HIV-AIDS affected areas of Kenya and Uganda (O Ohiokpehai, TSF-CIAT)	589,050	2005-2007
Flemish Inter-University Council (VLIR), Belgium	A strategy for reviving the vital breadbasket of the Democratic Republic of Congo through Integrated soil fertility management coupled to resilient germplasm in cassava-based systems (C Kachaka, University of Kinshasa)	307.288,- Euro	2005-2009
Directorate General for Development Cooperation (DGDC), Belgium	Enhancing the resilience of agro-ecosystems in Central Africa: a strategy to revitalize agriculture through the integration of natural resource management coupled to resilient germplasm and marketing approaches (B Vanlauwe, TSBF-CIAT)	2,060,994 Euro	2005-2008
Directorate General for Development Cooperation (DGDC), Belgium	Building Impact Pathways for Improving Livelihoods in <i>Musa</i> -based Systems in Central Africa (G Blomme, INIBAP)	2,123,814 Euro	2005-2008
Wageningen University (Wetenschappelijk Onderzoek in the Tropen – WOTRO)	More Crop per Drop, More Cropping per Dropping: Optimizing the Interactions between Organic Resources, Soil Macrofauna Biodiversity and Soil Structure for Enhanced Water and Nitrogen Use Efficiency in West and East African Cropping Systems (in particular in Burkina Faso and Kenya) (L Brussaard, Wageningen University)	600,000 Euro	2006-2010
Sub-Saharan Africa Challenge Program	Making Markets Work for the Poor: Unlocking Opportunities for Agro-Enterprise Diversification in the Lake Kivu Pilot Learning Site (P Sanginga, CIAT Africa)	2,000,138	2006-2010