

CURRICULUM VITAE

A. Personal data

Name: Prof. Charles K.K. Gachene
Date of Birth: 1954
Marital status: Married with three children
Profession: Soil Scientist
Contact address: Department of Land Resource Management and
Agricultural Technology (LARMAT), University of
Nairobi,
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Tel: 0722 64 90 33
Area of specialization: Soil Scientist

B. Education

1. Ph.D in Soil Science, Swedish University of Agricultural Sciences, Uppsala, Sweden, 17/3/95.
2. M.Sc. in Soil Science, University of Nairobi. Awarded in 1983.
3. B.Sc. (Honours), University of Nairobi (1975/76-1977/78).

Some of the training courses undertaken:

- Project planning and management (Cambridge International Diploma in Project Management, University of Cambridge)
- Workshop on financial and human resource management
- Rapid transformative leadership and results-based management
- Workshop on integration of socio – economic and biophysical processes in East Africa
- Introduction to ArcView GIS, Nairobi, Kenya.

C. Employment

1. Sabbatical leave, World Agroforestry Centre, Jan 2010 – Sept 2010
2. Chairman, Department of LARMAT, July 2005 to July 2008
3. Associate Professor, July 2005 to date
4. Chairman, Department of Soil Science, June 2002 to 2005.
5. Sabbatical leave, September 2001 to June, 2002
6. Senior Lecturer, April 1997 to 2005.
7. Lecturer in Soil Science, University of Nairobi, September, 1988 to March 1997.
8. Part time Lecturer (M.Sc in Appropriate Technology, taught soil and water conservation course), Kenyatta University, November 1995 to March 1996.
9. Part time Lecturer - Department of Agricultural Engineering, University of Nairobi (M.Sc Land and Water Management), 1987-1988.
10. Technical Coordinator, Kenya Soil Survey, 1987 - August 1988.
11. Research Officer, Ministry of Agriculture, 1978-1986.

C1 Areas of teaching

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|------------------------------------|--------------------------|
| a) Landforms and soil formation | Undergraduate students |
| b) Remote sensing and GIS | Postgraduate (MSc & PhD) |
| c) Soil genesis and classification | Postgraduates |

- d) Soil Survey and land evaluation Under and Postgraduate
 e) Soil and water management Postgraduate

In addition, I have been an external examiner for Kenyatta University and Sokoine University. Have also examined several MSc and PhD thesis, within and outside the University of Nairobi.

C2 Postgraduate Supervision/ Co-supervision

(a) M.Sc Supervision

1. Gicheru, P.T. 1990. The effect of tillage and residue mulching on soil moisture conservation in Laikipia , Kenya. (M.Sc in Land and Water Management, University of Nairobi).
2. Wakindiki, I.C. 1993. Water and salt movement in salt affected soils in Kimorigo/ Kamleza Irrigation Scheme, Taveta, Kenya. (M.Sc in Soil Science, University of Nairobi).
3. Mwaura, E.N., 1994. Hydraulic properties of two selected soils in Kenya. (M.Sc in Soil Science, University of Nairobi).
4. Andersson, J., 1994. (i) Calibration of infra-red thermometer and (ii) Comparison of different erosivity indices (M.Sc, Swedish University of Agricultural Sciences).
5. Minh H.F. 1994. Grass strips as a soil conservation measure in Kenya: suitability and effects (M.Sc, Swedish University of Agricultural Sciences).
6. Kaburu, F.K. 1997. The effect of grass strips on crop growth, yield and terrace development. M.Sc in Appropriate Technology, Kenyatta University.
7. BobeBedani, 1999. Soil productivity evaluation under different soil conservation measures in the Hararge highlands of Ethiopia (M.Sc in Soil Science, University of Nairobi).
8. BerhanuFentaw, 1999. Performance and constraints for adoption of soil and water conservation measures in Gojam highlands, Ethiopia (M.Sc. in Land and Water Management, University of Nairobi).
9. Khisa, W.P. 2000. Soil loss and nutrient losses due to erosion in a maize – legume based cropping system in Gatanga, Kenya. (M.Sc in Soil Science, University of Nairobi).
10. Okoth, E.A. 2004. Characterization and assessment of soil erosion susceptibility of soils of Mt Marsabit area (MSc in Soil Science, University of Nairobi).
11. Ngatia, L.W. 2007. A comparative study of the effects of large herbivores on selected chemical properties of two soil types in Laikipia, Central Savanna Ecosystems (MSc in Range Management, University of Nairobi).
12. Kathumo V. 2007. Applications of GIS in precision agriculture: A case study in semi arid environment of Kenya (MSc Soil Science, University of Nairobi)
13. Ichami M.S. 2008. Diagnosis of soil and plant nutrients in Western Kenya small – scale groundnut production systems using infrared spectroscopy (MSc Soil Sci, University of Nairobi)
14. Wangeci L. 2009. The effect of different sources of N fertilizer and irrigation regimes on growth and yield of French beans (MSc in Agric Res Management, University of Nairobi)
15. Karuma A. 2009. The effect of cover crops and subsoiling on soil properties and maize growth in semi arid areas of Kenya (MSc Soil Sci., University of Nairobi)

16. Njuguna G. 2010. Effect of road design on gully erosion in Embu District, Kenya (MSc in Agric Res Management, University of Nairobi)
17. Okoth L. 2011. Effect of supplemental irrigation on growth and yield of onion and tomatoes in semi arid areas of Kenya (MSc Soil Sc, University of Nairobi)
18. Maggie G.M 2011. Combined effect of tephrosiaspp biomass and inorganic fertilizers on soil chemical properties, growth and yield of maize in central Malawi (MSc in Sustainable Soil Resource Management, University of Nairobi, on – going)

(b) Ph.D Supervision

1. Rutunga, V. 2000. Biomass production and its effect on the yield of maize (*Zea mays* L.) crop: short-duration improved fallows with *TephrosiaVogelii* and *Tithoniadiversifolia* in Western Kenya (Ph.D Soil Sci., University of Nairobi).
2. FuchakaWaswa P. 2000. The impact of land tenure systems on physical land degradation in a semi-arid environment (Ph.D, Rheinische Friedrich-Wihelms - Universitat, Bonn)
3. Kamoni, P.T. 2004. Effect of soil moisture on N uptake and photosynthetically active radiation interception. (Ph.D Soil Sci., University of Nairobi)
4. Gicheru, P.T. 2002. The effect of soil management practices on crust formation and moisture conservation in Gachoka, Mbeere District (Ph.D, Soil Sci., University of Nairobi).
5. Gitari, J.N. 2008. Use of green manure legumes to enhance soil fertility for maize production in Embu and Mbeere districts, Kenya (Kenyatta University)
6. Macharia, P.N. 2008. Integration of legume cover crops to increase primary production and soil fertility of natural pastures in semi arid range lands of Kenya (University of Nairobi).
7. Gacheru E. 2007. Adaptation strategies to climate change in potato and sweet potato production systems: the case of Embu District, Kenya (PhD Soil Sc, University of Nairobi, on going)
8. Kwena K. 2009. Contribution of pigeon pea to soil fertility and productivity of cereal-based dryland cropping systems in Kenya (PhD Soil Sci, University of Nairobi, ongoing)
9. Ikitoo C E. The influence of surface water management and fertilizer use on the growth and yield of maize (*Zea mays* L.) in Vertisols. (PhD Soil Science, Moi University)
10. Melusi M. 2009. Tillage effects on soil moisture, crop yields and soil organic matter in a cereal – legume strip intercropping system in semi – arid western Zimbabwe (PhD in Dryland Res Management, University of Nairobi, on going)
11. Miriti J. 2010. Crop response under different soil tillage management practices in the semi arid eastern Kenya (PhD Soil Science, University of Nairobi)
12. Baaru M. 2011. Development and upscaling of soil and water conservation technologies: effect on soil properties, crop yields and terrace development in a semi – arid area of Kenya (PhD in Dryland Res Management, University of Nairobi)
13. Karuku G. 2011. The effect of different legume residue management practices on soil moisture under tomato at Kabete Field Station, Kenya (PhD in Soil Science, University of Nairobi)

14. Kathumo V. 2011. Impact of land use change on hydrological response in river Gucha catchment area, Kenya (PhD Soil Science, University of Nairobi)
15. Githae EW. 2011. Effects of soil properties and genetic characteristics on gum quality and distribution of *Acacia senegal* varieties in the drylands of Kenya' (PhD Dryland Res Management, University of Nairobi)
16. Syombua J. 2011 Effects of land use change on the dynamics of human-wildlife conflicts in the Tsavo West –Amboseli ecosystem, Kenya (PhD in Dryland Resource Management, University of Nairobi, on – going).

C3. Other important duties undertaken

1. Steering committee member of the Fertilizer Use Recommendation Project (FURP), National Agricultural Laboratories (NARL), Nairobi, 1985.
2. Counterpart Soil Scientist of FURP team during site selection and characterization of FURP fertilizer trial sites covering different agro ecological zones in 32 districts in Kenya, 1985-1987.
3. Member of the Task Force appointed to formulate and prepare the National Soil and Water Management Research Programme, KARI, Muguga, 1986.
4. Member of the Kenya Cooperators of the International Board for Soils Research and Management of vertisols network, 1986-1990.
5. Member of the Task force appointed by the Soil and Water Conservation Branch/ SIDA to write a manual on 'Soil Conservation in Kenya' for use by extension officers. Manual already in use.
6. Member of the Evaluation Mission of the SIDA supported National Soil and Water Conservation Programme in Kenya, February 1996.
7. Member of the NARL-Kenya Soil Survey-Centre Advisory Committee. October 1996 to date.
8. Secretary General of the Soil Science Society of East Africa, 1995 to 1996.
9. External Examiner, Kenyatta University, Department of Environmental Sciences, 1996 to 2001.
10. Chairman, Farm Practice Committee and member of Board of Postgraduate Committee, Faculty of Agriculture, University of Nairobi, 1997 to date.
11. Member of RELMA's (Regional Land Management/Sida) Task force appointed to write a manual on 'Soil Fertility and Land Productivity Handbook: notes for extension Workers in Eastern and Central African Region'.
12. Chairman, Technical Committee on fertilizers, Kenya Bureau of Standards, Kenya.
13. Board of Directors, Environmental Action Team (an NGO based in Western Kenya), 1998 to 2002.
14. External Examiner, Sokoine University of Agriculture, Department of Soil Science, Tanzania, 1999 to 2001.
15. Member of the Regional Advisory Committee, Regional Land Management Unit (RELMA/Sida).
16. Member of the Task Force to chart way forward for IDRDU, UoN Task Force.
17. Task Force member of the Soil Fertility Initiative for Kenya, MoA/RELMA.
18. Management Committee member, Centre for Dryland Research, USDA / Colorado State University / University of Nairobi, 2011

C4 Membership to professional bodies

1. Member of the Soil Science Society of East Africa.

2. Member of the International Union Soil Science Society.
3. Member of the World Association of Soil and Water Conservation.
4. Member of the Association of Geoscientists for International Development.

D. Conferences, Seminars and Workshops attended

I have attended several national, regional and international conferences (in Uganda, Tanzania, Sudan, Ethiopia, Egypt, Ghana, Senegal, Malawi, Zimbabwe, Zambia, Cameroon, South Africa, Mozambique, Netherlands, India, Thailand, Sweden, USA, Honduras, Germany, Australia and Argentina) and have also been involved in the organisation of some of them.

E. Scientific Publications and Reports

(a) Soil survey advisory reports for rural land use planning

1. Wamicha, N.W. and Gachene, C.K.K., 1980. A preliminary investigations of the soils of Ithe-wa-Gathoni farm, Langata, KSS (Kenya Soil Survey) P 43.
2. Michieka, D.O., Rachilo, J.R. and Gachene, C.K.K. 1982. Soils of Busia area. Report No. KSS R8.
3. Batjes, N.H., Blok, C., Bouwman, A., Floor, J., Gachene, C.K.K., Gatahi, M.M. and Smaling, E.M.A. 1983. Soils of the Kilifi area: Appendix I to Report No. KSS R11.
4. Gachene, C.K.K. 1983. Semi-detailed soil survey of the Evurore Catchment (Embu District). KSS S16.
5. Gachene, C.K.K., Mungai, D.N. and Wataka, S. 1983. Detailed soil survey of the Kibuni Farm, Gilgil, Nyandarua District. KSS, D30.
6. Gachene, C.K.K. 1984. An advisory report on the soil conditions of Broom Hill Farm, Timau, Laikipia District. KSS P69.
7. Rachilo, J.R., Wanjohi, J. and Gachene, C.K.K. 1984. Detailed soil survey of the Nyandusi Women Horticultural Irrigation Project, Siaya District. Report No. KSS D43.
8. Gachene, C.K.K., Waruru, B.N. and Wachira, T. 1984. Detailed soil survey of the Voo Research substation, Kitui District. KSS D34.
9. Gachene, C.K.K. 1989. Soils of the Erosion Research Farm, Kabete Campus. Department of Agricultural Engineering, University of Nairobi.
10. Gachene, C.K.K. 1992. Site characterisation of Mwea-Karaba, Kenya. KARI/IBSRAM Collaborative Research Project. Miscellaneous Report No. 35, Kenya Soil Survey.
11. Gachene, C.K.K. and Ndari I. 1992. Soil resources of the proposed Ebubaka drainage project, Kakamega. Small Scale Irrigation Project (SSIP), Nairobi, Kenya.
12. Gachene, C.K.K. and Ndari I. 1992. A preliminary assessment of the drainage suitability of the soils of the proposed Mirere drainage project, Kakamega. SSIP, Nairobi, Kenya.
13. Gachene, C.K.K. and Ndari, I. 1992. An assessment of the drainage suitability of the soils of the proposed Ikuyu drainage project, Murang'a. SSIP, Nairobi, Kenya.
14. Gicheru, P.T., Gachene, C.K.K. and Kilambya, 2000. Soils of Bondo area, KSS R10.
15. Gachene, C.K.K., 2003. Soil Conditions of Mwandu Farm, Karen.
16. Irrigation Master Plan for Rwanda, 2010 – 2011.

(b) Contributed papers in Conferences and Workshops

(i) Proceeding papers

1. Gachene, C.K.K. 1982. Soil classification: historical aspects, diagnostic horizons and their identification. KSS LN31.
2. Gachene, C.K.K. 1984. Soils of the Evurore Catchment area, Embu District: their erosion susceptibility and management. *Paper presented at the 6th AGM of the Soil Science Society of East Africa, Nyeri, Kenya.*
3. Gachene, C.K.K. 1985. Mapping of soil erosion hazard: a review of assessment techniques. KSS LN41.
4. Gachene, C.K.K. 1985. A review of methods of measuring soil erodibility. KSS LN42.
5. Macharia, D.N., and Gachene, C.K.K., 1986. Soil description as related to salinity and sodicity problems. In: *Scheme identification and evaluation: Part 1 Soils*. Ministry of Agriculture, Irrigation and Drainage Branch.
6. Gachene, C.K.K. and D'Costa V. 1986. The characteristics, classification and land use of Histosols in Kenya. *Paper presented at the 2nd International Soil Management Workshop, Bangkok, Thailand.*
7. Muchena, F.N. and Gachene, C.K.K. 1988. The distribution, characteristics and classification of swell-shrink soils in Kenya. *Paper presented at the International Workshop on Classification, Management and Use Potential of Swell-shrink Soils, Nagpur, India.*
8. D'Costa, V.P., Gatahi, M.M. and Gachene, C.K.K. 1988. The characteristics, classification and land use significance of swell-shrink soils east of Lake Victoria, Kenya. *Paper presented at the International Workshop on Classification, Management and Use potential of Swell-shrink Soils, Nagpur, India.*
9. Gachene, C.K.K. and Wokabi, S.M. 1989. Use of soil survey information in soil conservation - the Kenyan experience. *Paper presented at the 5th International Soil Conservation Conference, Bangkok, Thailand.*
10. Gachene, C.K.K., Wanjogu, S.N. and Gicheru, P.T. 1989. The distribution, characteristics and some management aspects of sandy soils in Kenya. *Paper presented at the International Symposium on Managing Sandy Soils, Jodhpur, India.*
11. Gachene, C.K.K. 1989. Site characterisation for the proposed MOVUSAC (Management of vertisols under semi arid conditions) project at Gategi, Embu District. *Paper presented at the International Workshop on Multipurpose Use of Soil Survey Information for Efficient Land Use Management, Nairobi, Kenya.*
12. Gachene, C.K.K. 1991. Use of soil survey data in Agricultural Engineering. *Paper presented at the Kenya Society of Agricultural Engineering Seminar, JKUCAT, Kenya.*
13. Gachene, C.K.K. 1991. Major soil types of Kenya: vulnerability to erosion due to their inherent characteristics. *National Soil and Water Conservation Seminar* (for NSWC staff at Highlands hotel, Molo, March 1991; Green Hills Hotel, Nyeri, September 1991 and August 1992 and at Izaak Walton Hotel, Embu, May, 1992).
14. Gachene, C.K.K. 1995. Current research work on soil fertility and organic matter management in Kenya. *Paper presented at a workshop on organic matter management in Kenya, 6th-9th February, 1995, Kasarani, Kenya.*

15. Mureithi, J.G. and Gachene, C.K.K. 1998. An overview of legume screening network activities. *Paper presented at the Workshop on improving rural livelihoods through conservation farming techniques*, KARI Headquarters, Nairobi.
16. Gachene, C.K.K. and Haru, R. 1998. Soil moisture extraction in maize-*Mucuna* based cropping system. *Paper presented at the 16th Conference of Soil Sci. Soc. of East Africa*, 13-19 Dec., 1998, Tanga, Tanzania.
17. Khisa, P.W., Gachene, C.K.K., Karanja, N. and Mureithi, J.G. 2000. Returning land back to productivity: the role of green manure cover crops in controlling soil erosion in farmers fields, Gatanga, Kenya. *Poster presented at the 11th international Soil Conservation organisation Conference*, Buenos Aires, Argentina.
18. Khisa, P.W., Gachene, C.K.K., Karanja, N.K. and Mureithi, J.G. 2000. Soil loss and erosion induced nutrient losses in a maize-legume based cropping system in Central Kenya highlands. LRNP Newsletter Issue No. 3, NARL/KARI, P5-6.
19. Gachene, C.K.K., Karanja, N.K. and Mureithi, J.G. 2000. Effect of soil erosion on soil productivity using green manure cover crops: data summary of a long term field experiment. LRNP Newsletter Issue No. 4, NARL/KARI, p 11-13.
20. Makau, N. and Gachene, C.K.K. 2001. Introduction of green manure legume cover crops to smallholders in Kimutwa location, Machakos District, Kenya. LRNP Newsletter Issue No. 5, NARL/KARI, p 2-4.
21. Macharia PN, Kinyamario JI, Ekaya WN and Gachene CKK. 2003. Screening forage legumes for integration into natural pastures of semi – arid rangelands of Kenya. Paper presented at the VII International Rangeland Congress, Durban, South Africa, 26th July to 1st August 2003.
22. CKK Gachene, M Malesu ,A Oduor, R Cherogony , A Karuma and D Nyolei Soilscape, 2010. Survey for Planning Smallholder Irrigation Schemes: the need for reliable information. Paper presented during the SearNet Conference held in Ethiopia, July 2010.
23. CKK Gachene, IV Sijali, Mercy Kamau and L Okoth, 2010. Crop production in water scarce environments: getting the most out of localised drip irrigation systems. Paper presented during the SearNet Conference held in Ethiopia, July 2010
24. Gathaara VN, Gachene CKK, Ngugi JN, Thurania EG and Maaru MW, 2010. Adoption and opportunities for improving soil and water conservation measures in Kathekakai Settlement Scheme, Machakos District. Paper presented during the 12th KARI Biennial Scientific Conference, 8 – 12 Nov 2010.
25. Gacheru E, Gicheru PT, Gachene CKK and Lieven C, 2011. Effect of organic mulch type and time of application on potato yield, soil moisture and temperature in a contrasting climate gradient in Embu district. Paper presented during the International Conference on Integrated water management, Mekelle, 19th to 23rd September 2011.
26. Baaru MW, Gachene CKK, Onwonga R and Mbuvi JP, 2011. Effect of vegetative macro contour lines on soil moisture conservation and crop performance in eastern province, Kenya. Paper presented during the 10th African Crop Science Society Conference, Maputo, Mozambique, 10th to 14th October 2011.

(ii) Referred proceeding papers

1. Gachene, C.K.K. and Barber, R.G. 1983. A preliminary report on an evaluation and detailed mapping of erosion susceptibility at Kaloleni, Kilifi District. In: *Soil and water conservation in Kenya* (eds. D.B. Thomas and W.M. Senga). IDS Occasional Paper 42, 87-104.
2. Gachene, C.K.K. 1989. Nutrient losses in eroded soil materials from Kenyan soils: preliminary results. In: *Soil and water conservation in Kenya* (eds. D.B. Thomas, E.K. Biamah, A.M. Kilewe, L. Lundgren and B.O. Mochoge). Department of Agricultural Engineering/SIDA, Nairobi.
3. Gachene, C.K.K. 1991. Soil erosion in Kenya: its impact on soil productivity. In: *Soil and water management for sustainable productivity* (eds. A.M. Elgala, J.F. Parr, S.B. Hornick, T.A. Taha and M.E. Simpson). Cairo, Egypt, 391-395
4. Biamah, E.K., Gachene, C.K.K., Gicheru, P.T. and Cherogony, R.K.K. 1994. Seasonal variability in soil moisture due to tillage and residue mulching of a clay soil. In: *Soil tillage for crop production and protection of the environment* (eds. H.E. Jensen, P. Schjonning, S.A. Mikkelsen and K.B. Madsen). Royal Vet. and Agric. University and Danish Inst. of Plant and Soil Sci., Denmark, 465-474.
5. Biamah, E.K., Gachene, C.K.K., Gicheru, P.T. and Cherogony, R.K.K. 1994. Crop response to tillage and residue mulching practices in a clay soil. In: *Soil tillage for crop production and protection of the environment* (eds. H.E. Jensen, P. Schjonning, S.A. Mikkelsen and K.B. Madsen). Royal Vet. and Agric. University and Danish Inst. of Plant and Soil Sci., Denmark, 1093-1102.
6. Gachene, C.K.K. and Haru, R. 1997. Controlling seasonal surface runoff and soil loss using purple vetch (*Viciabenghalensis*). Proceedings of All Africa Crop Science Congress, Vol 3 p 369-373.
7. Mureithi, J.G., Maobe, S.N., Dyck, E., Gachene, C.K.K., Gitari, N., Kirungu, B., Muli, B.M., Ojiem, J., Saha, H.M. and Tana, P. 1998. Screening of legume germplasm in Kenya. Effect of rhizobia inoculation on performance of best bet legumes. In (eds) AJ Shayo-Ngowi, G. Ley and FBR Rwehumbize. Soil and sustainable crop production in East Africa. Proceedings of the 16th SSSEA Mkonge, Tanga, Tanzania, pp 130-143.
8. Gachene, C.K.K., Mureithi, J.G. and Anyika, F., 1999. The influence of green manure cover crops on maize growth. *Paper presented at the 1999 ASA, CSSA, SSSA Annual Meeting*, Utah State, USA. Annual Meeting Abstracts, pp 43.
9. Mureithi, J.G., Gachene, C.K.K., Mwaura, P.M. and Nekesa, C.O., 1999. Incorporating green manure cover crops in smallholder agriculture in Central Kenya. *Poster presented at the 1999 ASA, CSSA, SSSA Annual Meetings*, Oct., 31-Nov., 4, 1999, Salt Lake City, Utah State, USA. Annual Meetings pp 41.
10. Gachene, C.K.K., Klingspor, P., Oduor, A. and Mbegera, M. 2000. Use of cover crops to improve soil productivity: preliminary studies using tropical velvetbean (*Mucunapruriens*) at Kabete and Mbooni sites, Kenya. In (eds): F.N. Gichuki, D.N. Mungai, C.K.K. Gachene and D.B. Thomas. Towards sustainable landuse. Proceedings of the 4th National Soil and Water Management Workshop, Wida, Kenya. ISBN 9966-9690-0-4, p133-136.

11. Gachene, C.K.K., Oduor, A., Klingspor, P. and Haru, R. 2000. Soil erosion control with legume cover crops: data summary. In (eds J.G. Mureithi, C.W. Mwendia, F.N. Muyeko, M.A. Onyango and S.N. Maobe) Participatory Technology Development for Soil Management by Smallholders in Kenya. Special Publication of Soil Management and Legume Research Network Projects. KARI, Nairobi, ISBN No. 9966-879-32-3, p169 –176.
12. Gachene, C.K.K., J.P. Mbuvi, H, Linner and N, Jarvis, 2000. Crop response to soil water content under fertilized and non-fertilized conditions. Soil Science Society of East Africa (SSSEA) ISBN No. 9966-879-27-7, p 161-169.
13. Gachene, C.K.K., N. Jarvis, H. Linner and J.P. Mbuvi, 2000. Soil erosion effects on productivity of humicNitosol. Soil Science Society of East Africa ,ISBN No. 9966-8879-27-7, p 233-239.
14. Gachene, C.K.K. and Makau, M. 2000. Screening legume cover crops for dry-season survival in a semi-arid environment of Kenya. In (eds J.G. Mureithi, C.W. Mwendia, F.N. Muyeko, M.A. Onyango and S.N. Maobe). Participatory Technology Development for Soil Management by Smallholders in Kenya. Special Publication of Soil Management and Legume Research Network Projects. KARI, Nairobi, ISBN No. 9966-879-32-3, p77 – 86.
15. Gachene, C.K.K., Makau, M. and Haru, R. 2000. Soil moisture extraction by different cover crops. In (eds J.G. Mureithi, C.W. Mwendia, F.N. Muyeko, M.A. Onyango and S.N. Maobe) Participatory Technology Development for Soil Management by Smallholders in Kenya. Special Publication of Soil Management and Legume Research Network Projects. KARI, Nairobi, ISBN No. 9966-879-32-3, p133 – 143.
16. Gachene, C.K.K., Mureithi, J.G., Anyika, F. and Makau M. 2002. Incorporation of green manure cover crops in maize based cropping system in semi-arid and sub-humid environments of Kenya. In (eds) J.G. Mureithi, C.K.K. Gachene, F.N. Muyekho, M. Onyango, L. Mose and O. Magenya. Participatory technology development for soil management by smallholders in Kenya, KARI/LRNP, Nairobi, ISBN No. 9966-879-42-0, p145-151.
17. Macharia P.N., J.I. Kinyamario, W.N. Ekaya and C.K.K. Gachene. 2005. Enhancement of grassland production through integration of forage legumes in semi-arid rangelands of Kenya. In: O'Mara et al. 2005 (eds). Proceedings of the XX International Grassland Congress: Offered papers, Ireland and United Kingdom. pp 341-341
18. Macharia PN, J.I. Kinyamario, W.N. Ekaya, C.K.K. Gachene and J.G. Mureithi. 2006. Improvement of traditional pasture preservation areas with forage legumes in semi-arid rangelands of Kajiado District. In: Proceedings of the 10th KARI Biennial Scientific Conference and 2nd Agricultural Forum. 13-17th November, 2006. KARI Headquarters, Nairobi.
19. Macharia PN, J.I. Kinyamario, W.N. Ekaya and C.K.K. Gachene. 2006. Soil moisture utilization by grasses and forage legumes in a grass/legume mixture in a semi-arid environment in Kenya. In: Proceedings of the 23rd Soil Science Society of East Africa. 20-24th November, 2006. Masaka, Uganda
20. Macharia PN, J.I. Kinyamario, W.N. Ekaya, C.K.K. Gachene and J.G. Mureithi. 2007. Forage legumes for improvement of grassland productivity in semi-arid smallholder agro-pastoral systems in Kenya. In: Hare, M.D. and Wongpichet, K. (Eds). Forages: A Pathway to Prosperity for Smallholder Farmers. Proceedings of an International Forage Symposium. Faculty of Agriculture, UbonRatchathani University, Thailand. pp 187-202

21. Macharia P.N., J.I. Kinyamario, W.N. Ekaya, C.K.K. Gachene and J.G. Mureithi. 2007. Reinforcement of natural pastures with forage legumes to mitigate effects of declining pasture productivity in semi-arid rangelands of Kenya. In: Proceedings of the 4th African Soil Science Society Conference. 7-13th January, 2007. Accra, Ghana
22. Macharia PN, C.K.K. Gachene and J.G. Mureithi. 2007. Using forage legumes to improve soil fertility for enhanced grassland productivity of semi-arid rangelands of Kajiado District, Kenya. In: A. Bationo, J.M. Okeyo, B.S. Waswa, P. Mapfumo, F. Maina and J. Kihara (Eds). Proceedings of the TSBF-CIAT International Symposium on Innovations as Key to the Green Revolution in Africa: Exploring the Scientific Facts. 17-21st September, 2007. Arusha, Tanzania

(a) **Referred journal papers and published book articles**

1. Muchena, F.N. and Gachene, C.K.K. 1986. Properties, management and classification of vertisols in Kenya. In: *FAO World Soil Resources Report No. 56 FAO, Rome, 22-30.*
2. Gachene, C.K.K. and Weeda, A. 1986. The land quality: 'resistance to erosion' its application in the Luni Catchment area. In: *IILR Publication (eds. W. Siderius). Publication No. 40, Netherlands, 143-153.*
3. Muchena, F.N. and Gachene, C.K.K. 1990. Soils of the highlands and mountainous areas of Kenya with special emphasis on agricultural soils: In: *African Mountains and Highlands: problems and perspectives (eds. B. Messerli and H. Hurni). AMA, Switzerland, 157-169.*
4. Gachene, C.K.K. 1995. Evaluation and mapping of soil erosion susceptibility: an example from Kenya. *Soil Use and Management Vol. II, 1-4.*
5. Gachene, C.K.K., Jarvis, N.J., Linner, H. and Mbuvi, J.P. 1997. Soil erosion effects on soil properties in a highland area of Central Kenya. *Soil Sci. Soc. Am. J., 61: 559 – 564.*
6. Tiffen, M., Purcell, R., Gichuki, F.N., Gachene, C.K.K. and Gatheru, J. 1996. National Soil and Water Conservation Programme, Sida Evaluation 96/25. Department for Natural Resources and the Environment, Sweden.
7. Contributed in the write up of the document "Maintenance and improvement of soil productivity in the highlands of Ethiopia, Kenya, Madagascar and Uganda". *AHI Technical Report Series No. 6., ICRAF, 1997.*
8. Gachene, C.K.K., Mbuvi, J.P., Jarvis, N.J. and Linner, H. 1998. Maize yield reduction due to erosion in a high potential area of Central Kenya highlands. *African Crop Sc. Journal, Vol. 6. No. 1, pp 29-37.*
9. Gicheru, P.T., Gachene, C.K.K. and Biamah, E.K. 1998. Effects of tillage and mulching on soil moisture conservation and crop production. *Applied Plant Sciences, 12 (1), pp 5-9.*
10. Mureithi, J.G., Gachene, C.K.K., Saha, H.M. and Dyck, E. 1998. Incorporation of green manure legumes into smallholder farming systems in Kenya: achievements and current activities of legume screening network. In (eds): F Rasolo and M. Raunet. *Agrobiological Management of Soils and Cropping Systems. Montpellier France, Grad, pp 443-454.*

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12. Gachene, C.K.K., Linner, H., Jarvis, N. and Mbuvi, J.P. 1998. Soil organic carbon, nitrogen and phosphorus losses in eroded sediments from runoff plots on a clay soil in Kenya. *Applied Plant Sciences*, 12(3), pp. 72-76.
13. Bobe, B. and Gachene, C.K.K. 1999. Soil productivity evaluation under different soil conservation measures in Harerge highlands of Ethiopia. *Special Issue of E.A.A.F. Journal*, Vol. 65 No. 2, 95 – 100.
14. Kinoti, F.N. and Gachene, C.K.K. 1999. The effect of grass strips on terrace development and crop yield. *Special Issue of E.A.A.F. Journal*, Vol. 65 No. 1, 79 – 83.
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18. Waswa, F., Eggers, H., Kutsch, T. and Gachene, C.K.K. 2000. Community capacity building as an opportunity for sustainable land management: lessons from Ndome and Ghazi in Taita-Taveta District, Kenya. *Journal of Agriculture in the Tropics and Subtropics*, Vol 101 pp 181-189.
19. Khisa, P., Gachene, C.K.K., Karanja, N.K. and Mureithi, J.G. 2002. The effect of post-harvest crop cover on soil erosion in a maize-legume based cropping system in Gatanga, Kenya. *Journal of Agriculture in the Tropics and Subtropics*, Vol 103, pp 17-28.
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22. J.G. Mureithi, C.K.K. Gachene and J. Ojiem, 2003. The Role of Green Manure Legumes in Smallholder Farming Systems in Kenya: The Legume Research Network Project. *Tropical and Subtropical Agroecosystems*, Vol. 1 : 57-70.
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24. J.M. Miriti, D.B. Thomas and C.K.K. Gachene. 2003. Soil chemical properties, sunflower growth and yields as affected by double digging, mulch and compost in central Kenya. *E. Afri. Agric. For. J.* 68(3), 159-163.

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26. Macharia PN, JI Kinyamario, WN Ekaya and CKK Gachene. 2003. Screening forage legumes for integration into natural pastures of semi arid rangelands of Kenya. *African Journal of Range & Forage Science*, Vol 20 (2) 1417 – 1420.
27. P. Gicheru, C. Gachene, J. Mbuvi, E. Mare, 2004. Effects of soil management practices and tillage systems on surface soil water conservation on a sandy loam in semi-arid Kenya. *Soil & Tillage Research* 75, 173-184.
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29. C.K.K. Gachene and C.S. Wortmann. 2004. Green manure/cover crop technology in Eastern and Central Uganda: Development and Dissemination. In (eds) M Eilitta, J Mureithi and R Derpsch. *Green manure/cover crops systems of smallholder farmers: Experiences from Tropical and Subtropical Regions*, Kluwer Academic Publishers, Netherlands. (Chapter 9), 219-236.
30. CKK Gachene, N Karanja and JG Mureithi. 2004. Farmers' evaluation of legume cover crops for erosion control in Gathwariga catchment, Kenya. *International Journal of Agriculture and Rural Development*, 5: 176 –186.
31. J.G. Mureithi, C.K.K. Gachene and J.W. Wamuongo. 2005. Participatory evaluation of residue management effects of green manure legumes on maize yield in the central Kenya highlands. *Journal of Sustainable Agriculture*, Vol. 25(4), 49-68.
32. S.N. Ngigi, H.H.G. Savenije, J.R. Rockstrom and C. Gachene. 2005. Hydro-economic evaluation of rainwater harvesting and management technologies: Farmers' investment options and risks in semi-arid Laikipia district of Kenya. *Physics and Chemistry of the Earth*, 30: 772-782.
33. PT Gicheru, CKK Gachene and JP Mbuvi. 2005. Effects of soil management practices and tillage systems on soil moisture conservation and maize yield on a sandy loam in semi arid Kenya. *Journal of Sustainable Agriculture*, Vol 27(3) 77 – 92.
34. Macharia PN, JI Kinyamario, WN Ekaya and CKK Gachene. 2005. Enhancement of grassland production through integration of forage legumes in semi arid rangelands of Kenya. *Tropical Grasslands*, Vol 39, No.4 pp 234 – 234.
35. Nyambati EM, Mureithi JG, Gachene CKK and Gitari JN. 2006. Managing green manure legumes for improved maize production in Kenyan highlands. In JgMuriethi, CKK Gachene, JW Wamuongo and M Eilitta (eds) *Enhancing agricultural productivity in East Africa: Development and up-scaling of green manure legume technologies in Kenya*. KARI / LRNP, ISBN 9966-879-71-4, pp 61 – 82.
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- and up-scaling of green manure legume technologies in Kenya. KARI / LRNP, ISBN 9966-879-71-4, pp 145 – 170..
37. Karuku G, Gachene CKK and Macharia P. 2006. Soil water behaviour under different cover crops and under different residue management practices. In JgMuriethi, CKK Gachene, JW Wamuongo and M Eilitta (eds) Enhancing agricultural productivity in East Africa: Development and up-scaling of green manure legume technologies in Kenya. KARI / LRNP, ISBN 9966-879-71-4, pp 171 – 200.
 38. Macharia PN and Gachene CKK. 2006. Forage legumes for the improvement of natural pastures of semi arid rangelands of Kajiado District. In JgMuriethi, CKK Gachene, JW Wamuongo and M Eilitta (eds) Enhancing agricultural productivity in East Africa: Development and up-scaling of green manure legume technologies in Kenya. KARI / LRNP, ISBN 9966-879-71-4, pp 251 - 272.
 39. GN Chemining'wa, JW Muthomi, JG Mureithi and CKK Gachene. 2007. response of green manure legumes to rhizobia inoculation and starter – N fertilizer application. Botswana Journal of Agriculture and Applied Sciences, Vol 3 No. 2, 164 – 169.
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 41. Kathumo V, Gicheru P and CKK Gachene. 2010. Factors contributing to spatial variability of Katumani soils, Eastern Kenya. E. Afri. Agric. For. J., Vol 75 No. 1 & 2., pp 13 - 20
 42. Miriti J, Kironchi G, Gachene CKK and Esilaba O. Effect of tied ridging on crop response under different soil tillage management practices in the semi arid eastern Kenya (accepted for publication in E. Afri. Agric. For. J.)
 43. S. Muhati, K. Shepherd, C. Gachene, M. Mburu, R. Jones, G.O. Kironchi and A. Sila. Diagnosis of nutrient constraints in small-scale groundnut (*Arachis hypogaea* L.) production systems of Western Kenya using infrared spectroscopy (accepted for publication with minor corrections in J. of Agric Sciences and Technology)
 44. JN Gitari, JG Mureithi, DN Mugendi, JB Kungu and CKK Gachene, 2009. Indigenous farmer's knowledge in soil fertility and its scientific verifications in Embu District. (Accepted for publication, E. Afr. Agric For. J.)
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 46. PN Macharia, JI Kinyamario, WN Ekaya, CKK Gachene, JG Mureithi and EG Thurania. 2010. Evaluation of forage legumes for introduction into natural pastures of semi arid rangelands of Kenya. Grass and Forage, 65: 456 – 462.
 47. PN Macharia, CKK Gachene, LG Mureithi, JI Kinyamario, WN Ekaya and EG Thurania, 2010. The effect of introduced forage legumes in improvement of soil fertility in natural pastures of semi arid rangelands of Kajiado District, Kenya. J of Tropical & Subtropical Agroecosystems, 14: 221 – 227
 48. Eunice W Githae, CKK Gachene and David Odee, 2011. Implications for *in situ* conservation of indigenous species with special reference to Wild

- Coffea arabica* L. population in Mt Marsabit Forest, Kenya. *J of Tropical & Subtropical Agroecosystems*, 14: 715 – 722.
49. Eunice W. Githae, Charles K. K. Gachene and Jesse T. Njoka, 2011. Soil physicochemical properties under *Acacia Senegal* varieties in the dryland areas of Kenya. *African Journal of Plant Science* Vol. 5(8), pp. 475-482.
 50. Emmanuel Zziwa, Geoffrey Kironchi, Charles Gachene, Swidiq Mugerwa and Denis Mpairwe, 2011. Production systems, land cover change and soil factors affecting pasture production in semi-arid Nakasongola (Accepted for publication in *Agriculture and Biology Journal of North America*).
 51. Kathumo V, Gachene C.K.K., Gicheru P. and Kariuki J. Stream Flow Estimation Studies Using Hydrologic Modeling System For River Gucha, Kenya. Paper submitted to *International Journal of Remote Sensing*.

F. Manuals

1. Soil and Water Conservation Manual for Kenya, 1997. (Eds. D.B. Thomas, A. Eriksson, M. Grunder and J.K. Mburu) Contributors: E.K. Biamah, K. Fahlstrom, C.K.K. Gachene, J.M. Gachingiri, J.K. Kiara, M. Mbegera, P. Mbogo, C.N. Mburu, K. Mutunga, F.S. Muya and D.B. Thomas. Soil and Water Conservation Branch, MoA, Nairobi, Kenya, 296 pp.
2. Kanyanjua, S.M., Mureithi, J.G., Gachene, C.K.K. and Saha, H.M., 2000. Soil Fertility Management Handbook for Extension Staff and Farmers in Kenya. Kenya Agricultural Research Institute, Nairobi, Kenya, 45 pp.
3. Gachene, C.K.K., Kimaru, G., Oduor, A., E.K. Biamah, C. Kariuki, D. Mutuli, M. Mbegera and Z. Mugonyi, 2004. Soil fertility and land productivity. A guide for extension workers in the eastern Africa region. RELMA Technical Handbook Series 30. Nairobi, Kenya, RELMA/Sida, ISBN 9966-896-66-X, 146 + xiv pp.

G. Reviewing and Editing of scientific publications

1. E. Afr. Agric. For J. special issue Vol. 65 Nos. 1 and 2, 1999. Improving and sustaining the national soil and water resource base to meet the challenges of poverty alleviation and food security, 175p.
2. LRNP biannual Newsletter (2001 to date).
3. Gichuki, F.N., Gachene, C.K.K. and Mungai, D (eds). 2000 Land and Water Management in Kenya: Towards Sustainable Landuse. Proceedings for the 4th National Workshop on Land and Water Management, Wida Motel, Kenya. 369p ISBN No. 9966-9690-0-4.
4. Mureithi, J.G., Gachene, C.K.K., Muyekho, F.N., Onyango, M., Mose L. and Magenyia, O. 2002 (Eds). Participatory technology development for soil management by smallholders in Kenya, ISBN No. 9966-879-42-0, KARI/LRNP/SMP, Nairobi, 551p.
5. Gachene C.K.K. (eds) 2002. Soil fertility initiative for Kenya. Proceedings of the 1st stakeholders workshop on soil fertility initiative for Kenya.
6. Mureithi, J.G., Macharia, P.N., Mburu, M. Mwanje, Mugendi, D.N. and Gachene, C.K.K., 2003 (Eds). Sustainable use of land resources to alleviate poverty in the new millennium. Proceedings for the 19th AGM of the SSSEA. ISBN No. 9966-879-51-X, 590p.
7. Gachene, C.K.K. and Kimaru, G. 2004 (eds.) Soil fertility and land productivity. A guide for extension workers in the eastern Africa region.

RELMA Technical Handbook Series 30. Nairobi, Kenya RELMA/Sida, ISBN 9966-896-66-X, 146 + xiv pp.

8. Member of the Editorial Board of the international journal of 'Tropical and Subtropical Agroecosystems', Yucatan, Mexico (2005 to date).
9. JG Mureithi, CKK Gachene, JW Wamuongo and Marjatta Eilitta. 2006 (eds) Enhancing agricultural productivity in East Africa: Development and up-scaling of green manure legume technologies in Kenya. KARI / LRNP, ISBN 9966 – 879 – 71 – 4, 361 p

H. Consultancy

- 1985 An assessment of soil erosion hazard of Lake Victoria basin. (ICRAF/UNDP/Ecosystems Ltd).
- 1991 Assessment of the drainage and irrigation suitability of the soils of
- 1992 several proposed drainage and irrigation projects in Western Kenya. (SSI&DP/MoA).
- 1995 Preparing proposals for strengthening non - point pollution assessment capabilities and for research .Task 16. (Land Use Consultants)
- 1996 Inventory and rehabilitation of soil conservation measures in the Nyayo Tea Zones Dev. Corporation (Land Use/ KAMFOR Co.). Task also included the production of a Soil Conservation Manual for NTZ field staff.
- 1996 Evaluation of SIDA supported National Soil and Water Conservation Programme in Kenya (Odi/MoA).
- 1998 Maintenance and improvement of soil productivity in the highlands of Ethiopia, Kenya, Madagascar and Uganda : an inventory of spatial and non-spatial survey and research data on natural resources and land productivity in the African Highlands (AHI/ ICRAF).
- 1999 Synthesis reports on green manure cover crops for soil fertility improvement: Case studies in Tanzania and Uganda (Rockefeller Foundation).
- 2004/5 Evaluation of EcoRegion Fund supported EROAHI and PROSAM projects (KARI/ILRI/Wageningen University) covering western and eastern Kenya
- 2008 Evaluation of HELP International agroforestry project in Western and Eastern parts of Kenya
- 2010/11 Lead Soil Scientist, Irrigation Master Plan for Rwanda, ICRAF / Ebony / RADA

I. Awards / grants

1. SSSEA certificate of appreciation (for contribution in outstanding services to the Society as the Secretary General of the Society).
2. Certificate of excellence for the best educational material (Soil Fertility Management Handbook for Extension Staff and Farmers in Kenya. Kenya Agricultural Research Institute, Nairobi, Kenya, 45 pp.) ASA/SSSA/CSSA during the ASA AGM held on 2001, Carolina, USA
3. Fellowship award by RELMA to carry out soil fertility studies in Kirinyaga district, 1999 to 2003.
4. Legume Research Network Project, 1997 – 2006. RF/KARI Grants to carry out research in Kabete and Machakos sites
5. Commission of Higher Education grant, 2008 to date

6. National Council of Science and Technology grant, 2009 to date
7. Awarded trophy for the best paper under the theme ‘ Outreach and Partnerships: Technology Transfer’ during the 12th KARI Biennial Scientific Conference, 8 – 12 Nov 2010 (*Adoption and opportunities for improving soil and water conservation measures in Kathekakai Settlement Scheme, Machakos District, Gathaara VN, Gachene CKK, Ngugi JN, Thurania EG and Maaru MW*)
8. Overall 2nd best paper under the theme ‘ Outreach and Partnerships: Technology Transfer’ during the 12th KARI Biennial Scientific Conference, 8 – 12 Nov 2010 (*Adoption and opportunities for improving soil and water conservation measures in Kathekakai Settlement Scheme, Machakos District, Gathaara VN, Gachene CKK, Ngugi JN, Thurania EG and Maaru MW*)

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