

Dr. Eike Luedeling

Senior Decision Analyst
World Agroforestry Centre
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Based at:

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* 01 November 1977 in Hannover, Germany
Married, with two children
ResearcherID: A-5662-2012
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Professional experience

- 08/2014 to present **Specialist (Senior Decision Analyst)**
Global Crop Diversity Trust, Bonn Germany
Development of an impact pathway for ICRAF's tree genebank
- 07/2014 to present **Associate Senior Scientist**, Department of Ecology and Natural Resources Management (ZEF C)
Centre for Development Research (ZEF), University of Bonn, Germany
Research on applying decision analysis approaches in agricultural development
Development of partnerships, resource mobilization, supervision of students
- 04/2013 to present **Senior Decision Analyst**, Science Domain 4 "Land Health Decisions"
World Agroforestry Centre (ICRAF), Nairobi, Kenya
Research on enhancing the efficiency of investment decisions in development through business analysis tools; decision support; priority setting in development science; applying Bayesian research approaches in agricultural systems research
Resource mobilization; supervision of students; establishment of working group; development and application of new research

- methodologies
- 02/2010 – 03/2013 **Climate Change Scientist**, Global Research Project 5 “Climate Change Adaptation and Mitigation through Agroforestry”
World Agroforestry Centre (ICRAF), Nairobi, Kenya
Research on climate change impacts on agricultural and natural ecosystems; climate change mitigation through agroforestry; carbon markets for smallholders; quantitatively appropriate climate change adaptation strategies; quantification of vegetation responses to climate
Resource mobilization; supervision of students
- 01/2010 to present **Associate** in the Agricultural Experiment Station, Department of Plant Sciences (unpaid position)
University of California Davis, USA
Research on climate change effects on fruit trees
Supervision of students
- 11/2008 – 12/2009 **Postdoctoral Scholar**, Department of Plant Sciences
University of California Davis, USA
Coordinator of USDA project: “Advanced sensing and management technologies to optimize resource management in specialty crops – case studies of water and nitrogen management in deciduous crops under normal and resource-limited conditions”
Research on climate change impacts on fruit trees; climate change impacts on hydrological processes in farming regions
Resource mobilization; supervision of students
- 01/2008 – 10/2008 **Postdoctoral Scholar**, Department of Land, Air and Water Resources
University of California Davis, USA
Research on remote sensing of pest damage in orchards; climate change impacts on fruit trees; urban land cover change; climate change effects on hydrological processes
Resource mobilization; supervision of students
- 07/2005 – 12/2007 **Research associate and PhD candidate**, Department of Organic Plant Production and Agroecosystems Research in the Tropics and Subtropics
University of Kassel, Germany
Research on the sustainability of mountain oases in Oman; urban agriculture in Niamey (Niger) and Khartoum (Sudan)
Teaching; supervision of students

Education & degrees

- In progress
(expected in late
2016/early 2017) **Habilitation in Agroecology**
University of Bonn, Germany
Thesis topic: Performance of complex crop production systems
affected by climate change – assessment and projection (under
review)
- 06/2005 – 12/2007 **Dr. agr. (Ph.D.) in Agricultural Sciences** (summa cum laude)
University of Kassel, Germany
Thesis topic: Sustainability of mountain oases in Oman – Effects
of agro-environmental changes on traditional cropping systems
- 09/2004 – 07/2005 **MSc in International Agricultural Development** (GPA: 4.0)
University of California Davis, USA
- 04/2003 – 09/2004 **MSc in International Ecological Agriculture** (Grade: 1.1)
University of Kassel, Germany
Thesis topic: Geological and topographic determinants of oasis
locations in the Oman Mountains - a remote sensing approach
02/2004 – 06/2004: Exchange semester at the University of
Western Australia, Perth, Australia.
- 10/1999 – 02/2003 **Diplom I (BSc) in Organic Agriculture** (Grade: 1.2)
University of Kassel, Germany
Thesis topic: Water use and water resources of mountain oases in
Oman
- 10/1998 – 09/1999 **Studies of Physics and Mathematics**
University of Hannover, Germany
- 1990 – 1997 **Abitur** (Grade: 1.4)
Gymnasium Lehrte, Germany

Language skills

- Native language: **German**
- Fluent: **English**
- Good skills: **French, Spanish**

Grants received

- Zhang M et al. Increasing the competitiveness of walnut growers: economic vs. environmental impact. California Department of Food and Agriculture, 2007-2010; US\$ 99,968 (Collaborator, contributor to proposal)
- Luedeling E** & Brown PH. Tree phenology models for climate change projection and improved water and nutrient management; California Department of Food and Agriculture, 2010-2012; US\$ 405,903 (Principal Investigator).
- Cherogony K et al. Enhancing Farm Productivity in Smallholder Agrosilvopastoral Systems in the Communes of Busoni and Bugabira, Kirundo Province, Burundi; Sub-grant of the European Commission/Concern Worldwide “Farming Together” project, 2011-2012; EUR 102,930 (co-Investigator).
- Luedeling E**, Omeny P & Gumbricht T. Past and future climate change in Busia and Homa Bay and their impacts on crop yields; Gesellschaft fuer Internationale Zusammenarbeit (German Development Agency), 2011; US\$ 50,130 (Principal Investigator).
- Russell A, **Luedeling E** et al. Adaptation of people to climate change in East Africa: Ecosystem services, risk reduction and human well-being. Rockefeller Foundation 2012-2015; US\$ 621,565 (co-Investigator).
- Luedeling E**, Norton-Griffiths M and Kindt R. Multi-disciplinary species distribution modeling – climate change impact projection and adaptation planning with climatic, environmental and socioeconomic factors. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). 2012; US\$ 150,000 (Principal Investigator).
- Kehlenbeck K, Kindt R & **Luedeling E**. Suitable agroforestry germplasm for adaptation of smallholder farming systems to climate change - identification and introduction. CGIAR Research Program on Forests, Trees and Agroforestry (CRP6.4). 2011; US\$ 150,000 (co-Investigator).
- Mowo et al. Improving Sustainable Productivity in Farming Systems and Enhanced Livelihoods through Adoption of Evergreen Agriculture in Eastern Africa. Australian Council for International Agricultural Research. 2012-2015; AU\$ 5,508,000 (work package leader).
- De Leeuw J, **Luedeling E** et al. Assessing Risks of Investment in Groundwater Resources in Sub-Saharan Africa; Natural Environment Research Council, United Kingdom, 2013-2014; GBP 149,730 (co-investigator).
- Van Asten et al. Influencing and linking policies and institutions from national to local level for the development and adoption of climate-resilient food systems. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS); Flagship 4. 2014-2017. US\$ 4,000,000 (activity leader: US\$ 320,000 budget)

DeClerck F et al. Targeting Agricultural Innovation in the northern Volta basin. Innovation Fund of the CGIAR Research Program on Water, Land and Ecosystems (WLE). 2015-2017. US\$ 1.9 million (work package leader: US\$ 275,000 budget)

Luedeling E et al. Probabilistic Causal Models for Nutrition Outcomes of Agricultural Actions. Innovative Metrics and Methods for Agriculture and Nutrition Actions (IMMANA). 2015-2017- GBP 250,000 (Principal Investigator)

International experience

Studies in *Germany, USA, Australia* and *Denmark*. Worked in USA for two years and in Kenya for 4.5 years. Since 1999, scientific visits for various purposes to *Australia, Burundi, China, Czech Republic, Denmark, Ethiopia, France, India, Indonesia, Italy, Mexico, The Netherlands, Oman, Peru, Rwanda, South Africa, South Korea, Sudan, Switzerland, Tanzania, Uganda, United Kingdom, United States* and *Vietnam*. Scientific interactions with colleagues from well over 100 countries.

- 02/2007 – 03/2007 **Research stay** and teaching of GIS course in *Khartoum, Wad Medani and El Obeid, Sudan*
- 09/2006 – 10/2006 **Research stay** in mountain oases of *Oman*
- 03/2006 – 04/2006 **Research stay** in mountain oases of *Oman*
- 02/2006 – 03/2006 **Research stay** in *Niamey, Niger*
- 11/2005 – 12/2005 **Research stay** in mountain oases of *Oman*
- 02/2004 – 06/2004 **Exchange semester**, University of Western Australia, *Perth, Australia*
- 11/2002 – 12/2002 **Research stay** in mountain oases of *Oman*
- 06/2002 – 08/2002 **Internship** at Universidad San Antonio Abad del Cusco, *Cusco, Peru*
- 04/2002 – 06/2002 **Internship** at Universidad del Altiplano, *Puno, Peru*
- 02/2002 – 03/2002 **Research stay** in mountain oases of *Oman*
- 03/2000 – 04/2000 **Organic farm** „Bloublommetjieskloof“ in *Wellington, South Africa*
- 07/1999 – 08/1999 **Mountain farm**, Furna, Graubünden, Switzerland

Awards and scholarships

- 2007 **Poster Award** (3rd out of 200+) Tropentag Conference
- 2004-05 **Fulbright Scholarship** for graduate studies in the United States
- 2004 **LEAFSE scholarship** for an exchange semester in Australia

- (Learning through Exchange – Agriculture, Food Systems and Environment)
- 2003 **Gustav-Hacker Award** for best Diplom I graduate in the Faculty of Organic Agriculture at the University of Kassel, Germany
- 2002 **DAAD Travel Grant** for Research Internship in Peru

Teaching experience

Lectures:

University of Kassel, Germany:

- 2005 **GIS / GPS** (BSc/MSc course)
- 2006 & 2007 **Collection and processing of spatial data** (BSc/MSc course)
- 2006 & 2007 **Crops of the Tropics and Subtropics: Fibre Crops and Pulses** (BSc course)
- 2006 **Introduction to Ecology: Tutorial / Group Project** (BSc course)
- 2007 **Methods of Plant Production: Preparation of lacquer peel soil profiles, scientific applications of Google Earth** (MSc course)
- 2007 **Principles of organic farming, Organic mixed farming systems under (sub-)tropical conditions** (MSc course)

Agricultural Research Corporation (ARC), Khartoum, Sudan:

- 2007 **Collection and processing of spatial data** (Training of PhD students and ARC faculty)

University of California Davis, USA:

- 2008 **Climate change affects traditional high-altitude fruit production systems in Oman** (Presentation to students of the Agricultural GIS lab)
- 2008 **Fruit and nut production in a warmer world** (Presentation to students of the Agricultural GIS lab)

World Agroforestry Center (ICRAF), Nairobi, Kenya:

- 2011 **Climate change at ICRAF** (Lecture to groups of visiting students from the University of Göttingen, Germany)
- 2011 **Climate analogues for climate change adaptation planning** (ICRAF seminar series)
- 2011 **Tools for climate change adaptation planning** (Lecture at ICRAF office in Kunming, China)
- 2012 **Decision support tools for adaptation to climate change** (Lecture to ICRAF's 'Emerging Scientists' group, mainly students and interns)
- 2013 **Climate change analysis methods** (Lecture to students at ICRAF office in Kunming, China)
- 2013 **Decision-making and modeling under uncertainty** (ICRAF Science Week Skill Enhancement Session)

- 2013 **Filling remaining knowledge gaps – targeting sites for interventions** (ICRAF Science Week Eye-opening Lecture)
- 2014 **Comprehensive impact projection – based on what matters, not what we happen to know** (ICRAF seminar series)
- 2014 **Agroecosystem decision analysis and risk assessment** (Capacity strengthening session during Landscape Analysis Tool Bazaar)
- University of Bonn, Germany (Center for Development Research):
- 2015 **Climate and land interactions** (ZEFc PhD course)
- 2015 **Evergreen Agriculture** (ZEFc PhD course)
- 2015 **Decision analysis – a fresh view on Research for Agricultural Development** (ZEF interdisciplinary PhD course)
- 2016 **“Diversity of Tropical Crop Production Systems”, “Tropical Agroforestry Systems” and “Supporting land use decisions in complex agroecosystems”** (Agricultural Sciences and Resource Management in the Tropics and Subtropics – ARTS – MSc program)
- Freiburg University, Germany:
- 2015 **Integrated Land Use Systems and Climate Change** (Integrated Land Use Summer School)

Student supervision:

- in progress **Juliet Wanjiku** (PhD; Center for Development Research, University of Bonn)
- in progress **Girmay Gebre** (PhD; Mekelle University, Ethiopia)
- in progress **Negusse Yigzaw** (PhD; University of Nairobi, Kenya)
- in progress **Liman Issoufou** (PhD; Kenyatta University, Kenya)
- 2015 **John Musau** (MSc; Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya)
- 2015 **Risper Nyairo** (MSc; Nairobi University, Kenya)
- 2014 **Swen Bos** (MSc; Bangor University, Wales, UK)
- 2014 **Guo Liang** (PhD; Kunming Institute of Botany, Kunming, China)
- 2013 **Rebecca Darbyshire** (PhD; Melbourne University, Australia; external thesis reviewer)

Editing and reviewing experience

- Since 2014 **Editorial Advisory Board of Global Change Biology**
- 2013-2014 **Co-editor of special issue on Sustainability Challenges for Current Opinion in Environmental Sustainability**
- Since 2013 **Associate Editor of Frontiers in Environmental Science** (specialty section on Agroecology and Land Use Systems)
- 2012-2013 **Editorial Board of The Scientific World Journal** (subject area

Meteorology)

Since 2008

Scientific reviewer for 43 journals (Global Change Biology; PLoS ONE; International Journal of Biometeorology; Climatic Change; Remote Sensing of Environment; Field Crops Research; Plant and Soil; Scientia Horticulturae; Journal of Arid Environments; Global Ecology and Biogeography; Agricultural and Forest Meteorology; Agricultural and Forest Entomology; Agroforestry Systems; International Journal of Climatology; HortScience; Journal of Agriculture Science and Technology; Journal of Agriculture and Rural Development in the Tropics and Subtropics; Arid Land Research and Management; Regional Environmental Change; Journal of Environmental Management; Remote Sensing; Forestry, Trees & Livelihoods; Canadian Journal of Earth Sciences; Journal of Environmental Quality; Journal of Experimental Botany; Theoretical and Applied Climatology; Forestry: An International Journal of Forest Research; Mitigation and Adaptation Strategies for Global Change; Frontiers in Environmental Sustainability; Science of the Total Environment; Advances in Meteorology; QScience Connect; Mathematical Geosciences; Earth and Space Science; Tree Physiology; Fresenius Environmental Bulletin; Applied Biological Research; Botany; Genetic Resources and Crop Evolution; Nature Communications; Catena; Fruits; South African Journal of Science)

Other experience

2010 - 2014

Panel member of several staff selection and recruitment committees at the World Agroforestry Centre, including recruitment of Director General

2002

Part-time assistant, Büro für Ingenieurbiologie und Landschaftsplanung, Witzenhausen, Germany (environmental consulting firm)

1999 - 2000

Co-founder and editor of student magazine „Lebendige Herde“, Faculty of Organic Agriculture, University of Kassel, Germany

1995 - 1997

Basketball coach, different age groups, Lehrte, Germany

Publications by Eike Luedeling

Up to May 2016

Theses

- Luedeling E**, 2003. Water use and water resources of mountain oases in Oman. Diplom I Thesis from the University of Kassel, Germany.
- Luedeling E**, 2004. Geological and topographic determinants of oasis locations in the Oman Mountains - a remote sensing approach. Master Thesis from the University of Kassel, Germany.
- Luedeling E**, 2007. Sustainability of mountain oases in Oman – Effects of agro-environmental changes on traditional cropping systems, PhD Thesis from the University of Kassel, Germany, ISBN 978-3-89958-354-0.
- Luedeling E**, 2015. Performance of complex crop production systems affected by climate change – assessment and projection. Habilitation Thesis submitted to the Faculty of Agriculture at the University of Bonn, Germany (under review).

Articles in peer-reviewed journals

Articles under review

- Guo L, **Luedeling E**, Koerner SE, He JS, Xu J, Wang M, Li W, Jin J, Gang C, Su J, Luo R, Chen J, Cheng J. Critical climate periods for grassland productivity on China's Loess Plateau: implications for climate change.
- Martínez-Lüscher J, Hadley P, Ordidge M, Xu X, **Luedeling E**. Increasing temperatures during chill accumulation counteract flowering advances of apricot in the UK.
- Favretto N, **Luedeling E**, Stringer L, Dougill A. Valuing ecosystem services in semi-arid rangelands through stochastic simulation.
- Benmoussa H, Ben Mimoun M, Ghrab M, **Luedeling E**. Chilling and heat requirements for local and foreign almond (*Prunus dulcis* Mill.) cultivars in a warm Mediterranean location over 30 years of observation.
- Namirembe S, Mwangi J, Gathenya J, Nyongesa F, Shepherd K, **Luedeling E**. Business case for payments by a Kenyan water utility company to providers of watershed ecosystem services – Is profitability a strong enough motivation for the private sector to engage in PES?
- Luedeling E**, Shepherd K. Decision-focused agricultural research.
- Rosenstock TS, Tully KL, Magnan N, Girvetz EH, **Luedeling E**, Tomich TP. Environmental impacts of US Cannabis production.

Articles under review, revisions requested

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Articles in press (or accepted)

- Martínez-Lüscher J, Kizildeniz T, Vučetić V, Dai Z, **Luedeling E**, van Leeuwen C, Gomès E, Pascual I, Irigoyen JJ, Morales F, Delrot S. Sensitivity of grapevine

phenology to water availability, temperature and CO₂ concentration. *Frontiers in Environmental Science*.

Fully published articles

2016:

1. Yet B, Constantinou A, Fenton N, Neil M, **Luedeling E**, Shepherd K, 2016. A Bayesian Network framework for project cost, benefit and risk analysis with an agricultural development case study. *Expert Systems with Applications* 60, 141-155.
2. Gebauer J, Adam YO, Cuní Sanchez A, Darr D, Eltahir MES, Fadl KEM, Fernsebner G, Frei M, Habte TY, Hammer K, Mahmoud TE, Hunsche M, Johnson H, Kordofani M, Krawinkel M, Kugler F, **Luedeling E**, Maina A, Mithöfer D, Munthali CRY, Noga G, North R, Owino WO, Prinz K, Rimberia FK, Saied A, Schüring M, Sennhenn A, Späth MA, Taha MEN, Triebel A, Wichern F, Wiehle M, Wrage-Mönnig N, Kehlenbeck K, 2016. Africa's wooden elephant: the baobab tree (*Adansonia digitata* L.) in Sudan and Kenya – a review. *Genetic Resources and Crop Evolution* 63, 377-399.
3. **Luedeling E**, Smethurst PJ, Baudron F, Bayala J, Huth NI, van Noordwijk M, Ong CK, Mulia R, Lusiana B, Muthuri CW, Sinclair FL, 2016. Field-scale modeling of tree–crop interactions: Challenges and development needs. *Agricultural Systems* 142, 51-69.

2015:

4. **Luedeling E**, Blanke M, Gebauer J, 2015. Chilling Challenges in a Warming World. *Acta Horticulturae* 1099, 901-907.
5. Bos S, Pagella T, Kindt R, Russell A, **Luedeling E**, 2015. Climate Analogues for agricultural impact projection and adaptation - a reliability test. *Frontiers in Environmental Science* 3, 65.
6. Guo L, Xu J, Dai J, Cheng J, **Luedeling E**, 2015. Statistical identification of chilling and heat requirements for apricot flower buds in Beijing, China. *Scientia Horticulturae* 195, 138-144.
7. Araya A, Hoogenboom G, **Luedeling E**, Hadgu KM, Kisekka I, Martorano LG, 2015. Assessment of maize growth and yield using crop models under present and future climate in southwestern Ethiopia. *Agricultural and Forest Meteorology* 214-215, 252-265.
8. Shepherd K, Hubbard D, Fenton N, Claxton K, **Luedeling E**, De Leeuw J, 2015. Development goals should enable decision-making. *Nature* 523, 152-154.
9. Musau J, Sang J, Gathenya JM, and **Luedeling E**, 2015. Hydrological responses to climate change in Mt. Elgon watersheds. *Journal of Hydrology: Regional Studies* 3, 233-246.
10. **Luedeling E**, Oord A, Kiteme B, Ogalleh S, Malesu M, Shepherd K, De Leeuw J, 2015. Fresh groundwater for Wajir—ex-ante assessment of uncertain benefits for multiple stakeholders in a water supply project in Northern Kenya. *Frontiers in Environmental Science* 3, 16.

11. Guo L, Dai J, Wang M, Xu J, **Luedeling E**, 2015. Responses of spring phenology in temperate zone trees to climate warming: a case study of apricot flowering in China. *Agricultural and Forest Meteorology* 201, 1-7.

2014:

12. Musau J, Sang J, Gathenya J, **Luedeling E**, Home P, 2014. SWAT model parameter calibration and uncertainty analysis using the HydroPSO R package in Nzoia Basin, Kenya. *Journal of Sustainable Research in Engineering* 1, 17-29.
13. Brown CH, Clement CR, Epps P, **Luedeling E**, Wichmann S, 2014. The Paleobiolinguistics of the common bean (*Phaseolus vulgaris* L.). *Ethnobiology Letters* 5, 104-115.
14. Nyairo R, Onwonga R, Cherogony K, **Luedeling E**, 2014. Applicability of climate analogues for climate change adaptation planning in Bugabira Commune of Burundi. *Sustainable Agriculture Research* 3, 46-62.
15. Ranjitkar S, Kindt R, Hart R, Sujakhu NM, Guo W, Yang X, Shrestha K, Xu J, **Luedeling E**, 2014. Separation of the bioclimatic space of Himalayan tree *Rhododendron* species predicted by ensemble suitability models. *Global Ecology and Conservation* 1, 2-12.
16. Guo L, Dai J, Ranjitkar S, Yu H, Xu J, **Luedeling E**, 2014. Chilling and heat requirements for flowering in temperate fruit trees. *International Journal of Biometeorology* 58, 1195-1206.
17. Brown CH, Clement CR, Epps P, **Luedeling E** and Wichmann S, 2014. The paleobiolinguistics of maize (*Zea mays* L.). *Ethnobiology Letters* 5, 52-64.
18. Kraft KH, Brown CH, Nabhan GP, **Luedeling E**, Luna Ruíz J, Coppens d' Eeckenbrugge G, Hijmans R and Gepts P, 2014. Multiple Lines of Evidence for the Origin of Domesticated Chili Pepper, *Capsicum annuum*, in Mexico. *Proceedings of the National Academy of Sciences (PNAS)* 111, 6165-6170.
19. Rosenstock TS, Mpanda M, Aynekulu E, Kimaro A, Neufeldt H, Shepherd K, Kristjanson P, **Luedeling E**, 2014. Targeting conservation agriculture in the context of livelihoods and landscapes. *Agriculture, Ecosystems and Environment* 187, 47-51.
20. Guo L, **Luedeling E**, Dai J, Xu J, 2014. Differences in heat requirements of flower and leaf buds make hysteranthous trees bloom before leaf unfolding. *Plant Diversity and Resources* 36, 245-253.
21. Bernard F, van Noordwijk M, **Luedeling E**, Villamor G, Gudeta S and Namirembe S, 2014. Social actors and unsustainability of agriculture. *Current Opinion in Environmental Sustainability* 6, 155-161.
22. Mbow E, van Noordwijk M, **Luedeling E**, Neufeldt H, Minang PA and Kowero G, 2014. Agroforestry solutions to address food security and climate change challenges in Africa. *Current Opinion in Environmental Sustainability* 6, 61-67.
23. Ordoñez J, **Luedeling E**, Kindt R, Tata HL, Harja D, Jamnadass R and van Noordwijk M, 2014. Constraints and opportunities for tree diversity management along the forest transition curve to achieve multifunctional agriculture. *Current Opinion in Environmental Sustainability* 6, 54-60.
24. **Luedeling E**, Kindt R, Huth NI, and Koenig K, 2014. Agroforestry systems in a changing climate – challenges in projecting future performance. *Current Opinion in Environmental Sustainability* 6, 1-7.

2013:

25. **Luedeling E**, Kunz A and Blanke M, 2013. Identification of chilling and heat requirements of cherry trees - a statistical approach. *International Journal of Biometeorology* 57, 679-689.
26. **Luedeling E**, Guo L, Dai J, Leslie C, Blanke M, 2013. Differential responses of trees to temperature variation during the chilling and forcing phases. *Agricultural and Forest Meteorology* 181, 33-42.
27. Guo L, Dai J, Ranjitkar S, Xu J, **Luedeling E**, 2013. Response of chestnut phenology in China to climate variation and change. *Agricultural and Forest Meteorology* 180, 164-172.
28. Brown CH, Clement CR, Epps P, **Luedeling E** and Wichmann S, 2013. The paleobiolinguistics of domesticated manioc (*Manihot esculenta*). *Ethnobiology Letters* 4, 61-70.
29. Gebauer J and **Luedeling E**, 2013. A note on the Baobab (*Adansonia digitata* L.) in Kordofan, Sudan. *Genetic Resources and Crop Evolution* 60, 1587-1596.
30. Ranjitkar S, **Luedeling E**, Kumar Shrestha K, Guan K and Xu J, 2013. Flowering phenology of tree rhododendron along an elevation gradient in two sites in the Eastern Himalayas. *International Journal of Biometeorology* 57 (2), 225-240.
31. Brown CH, Clement CR, Epps P, **Luedeling E** and Wichmann S, 2013. The paleobiolinguistics of domesticated chili pepper (*Capsicum* spp.). *Ethnobiology Letters* 4,1-11.

2012:

32. Yu H, Xu J, Okuto E and **Luedeling E**, 2012. Seasonal response of grasslands to climate change on the Tibetan Plateau. *PLoS ONE* 7(11), e49230.
33. **Luedeling E** and Neufeldt H, 2012. Carbon sequestration potential of parkland agroforestry in the Sahel. *Climatic Change* 115, 443-461.
34. Yang X, Kodikara GRL, **Luedeling E**, Yang X, He J, Liu P and Xu J, 2012. Looking below the ground: Prediction of economic mushroom *Tuber indicum* habitat using the weight of evidence method. *Ecological Modelling* 247, 27-39.
35. Yang X, **Luedeling E**, Chen G, Hyde KD, Yang Y, Zhou D, Xu J and Yang Y, 2012. Climate change effects fruiting of the prize matsutake mushroom in China. *Fungal Diversity* 56, 189-198.
36. **Luedeling E**, 2012. Climate change impacts on winter chill for temperate fruit and nut production: a review. *Scientia Horticulturae* 144, 218-229.
37. **Luedeling E** and Gassner A, 2012. Partial Least Squares Regression for analyzing walnut phenology in California. *Agricultural and Forest Meteorology* 158, 43-52. doi: 10.1016/j.agrformet.2011.10.020

2011:

38. **Luedeling E**, Kunz A and Blanke M, 2011. Mehr Chilling für Obstbäume in wärmeren Wintern? (More winter chill for fruit trees in warmer winters?). *Erwerbs-Obstbau* 53, 145-155.
39. **Luedeling E**, 2011. Adapt now to climate change. *Food Technology* 65(9), 120.
40. **Luedeling E**, Yu H and Xu J, 2011. Replies to Shen, Chen et al., and Yi and Zhou: Linear regression analysis misses effects of winter temperature on Tibetan vegetation. *Letter to Proceedings of the National Academy of Sciences (PNAS)* 108(19), E95.

41. **Luedeling E**, Girvetz EH, Semenov MA and Brown PH, 2011. Climate change affects winter chill for temperate fruit and nut trees. *PLoS ONE* 6(5), e20155.
42. **Luedeling E** and Brown PH, 2011. A global analysis of the comparability of winter chill models for fruit and nut trees. *International Journal of Biometeorology* 55, 411-421.
43. **Luedeling E**, Steinmann KP, Zhang M, Brown PH, Grant J and Girvetz EH, 2011. Climate change effects on walnut pests in California. *Global Change Biology* 17 (1), 228-238.

2010:

44. Yu H, **Luedeling E** and Xu J, 2010. Stronger winter than spring warming delays spring phenology on the Tibetan Plateau. *Proceedings of the National Academy of Sciences (PNAS)* 107 (51), 22151-22156.
45. Ficklin D, **Luedeling E** and Zhang M, 2010. Sensitivity of groundwater recharge under irrigated agriculture to changes in climate, CO₂ concentrations and canopy structure. *Agricultural Water Management* 97 (7), 1039-1050.
46. Buerkert A, **Luedeling E**, Dickhoefer U, Lohrer K, Mershen B, Schaeper W, Nagieb M, Schlecht E, 2010. Prospects of mountain ecotourism in Oman: the example of As Sawjarah on Al Jabal Al Akhdar. *Journal of Ecotourism* 9 (2), 104-116.
47. Ficklin D, Luo Y, **Luedeling E** and Zhang M, 2010. Sensitivity of agricultural runoff loads to rising levels of CO₂ and climate change in the San Joaquin Valley watershed of California. *Environmental Pollution* 158, 223-234.

2009:

48. **Luedeling E** and Jarvis-Shean K, 2009. Climate change and food production. Invited perspective article. *Food Technology* 63 (10), 108.
49. **Luedeling E**, Zhang M, McGranahan G and Leslie C, 2009. Validation of winter chill models using historic records of walnut phenology. *Agricultural and Forest Meteorology* 149, 1854-1864.
50. **Luedeling E**, Zhang M and Girvetz EH, 2009. Climatic changes lead to declining winter chill for fruit and nut trees in California during 1950-2099. *PLoS ONE* 4 (7), e6166.
51. **Luedeling E**, Blanke M and Gebauer J, 2009. Auswirkungen des Klimawandels auf die Verfügbarkeit von Kältewirkung (Chilling) für Obstgehölze in Deutschland (Climate change effects on winter chill for fruit crops in Germany). *Erwerbs-Obstbau* 51, 81-94.
52. Ficklin D, Luo Y, **Luedeling E** and Zhang M, 2009. Climate Change Sensitivity Assessment of a Highly Agricultural Watershed Using SWAT. *Journal of Hydrology* 374, 16-29.
53. **Luedeling E**, Zhang M, Luedeling V and Girvetz EH, 2009. Sensitivity of winter chill models for fruit and nut trees to climatic changes expected in California's Central Valley. *Agriculture, Ecosystems and Environment* 133, 23-31.
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Further publications and scientific presentations

1. **Luedeling E**, Shepherd K, 2016. Prioritizing research for development impact. Oral presentation at the 3rd Global Conference on Agricultural Research for Development (GCARD3), 6th-9th Apr, Johannesburg, South Africa.
2. **Luedeling E**, Shepherd K, 2016. Decision analysis principles can guide modelling of complex agroforestry systems. Poster presentation. iCROP2016 International Crop Modelling Symposium, 15th-17th Mar, Berlin, Germany.
3. Ngulu J, Kindt R, **Luedeling E**, Kehlenbeck K, 2015. Current and future distributions of mango varieties along an environmental gradient in Kenya. Paper presented at the XI International Mango Symposium, 28th Sep-2nd Oct, Darwin, Australia. Book of Abstracts, p. 29-30.
4. **Luedeling E**, De Leeuw J, Lamanna C, Rosenstock T, Whitney C, Shepherd K, 2015. Business decision analysis principles in research for agricultural development. Poster presentation. Tropentag 2015, Berlin, Germany.

5. Whitney C, Gebauer J, Bahati J, **Luedeling E**, 2015. Farming for food security: probabilistic simulations of farm contributions to nutrition in Southwest Uganda. Poster presentation. Tropentag 2015, Berlin, Germany.
6. **Luedeling E**, De Leeuw J, Rosenstock T, Lamanna C and Shepherd K, 2015. Evaluating the cost-effectiveness of development interventions. Poster presentation. Climate-Smart Agriculture 2015, 16th- 18th March, Montpellier, France.
7. Lamanna C, Rosenstock TS and **Luedeling E**, 2015. Targeting CSA in Southern Tanzania under multiple uncertainties. Poster presentation. Climate-Smart Agriculture 2015, 16th- 18th March, Montpellier, France.
8. Rosenstock TS, Mpanda M, Kimaro A, **Luedeling E**, Kuyah S, Aynekulu E, Freeman OE, Thiong’o M, Abwanda S, Mutuo P, Mativo J, Shaba S, Kirui J, Franzel H, Neufeldt H, Shepherd K, Neely C, Rioux J, Seeberg-Elverfeldt C, Tapio-Biström KL, Karttunen K, 2014. Science to support climate-smart agricultural development – concepts and results from the MICCA pilot projects in East Africa. Mitigation of Climate Change in Agriculture (MICCA) Programme, FAO.
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12. **Luedeling E**, Rosenstock T, De Leeuw J, Shepherd K, 2014. Considering imperfect information in supporting development decisions. Poster presentation. Tropentag 2014, Prague, Czech Republic.
13. **Luedeling E**, Downie K, De Leeuw J, Shepherd K, 2014. Assessing Resilience in the Horn of Africa – an Applied Information Economics Approach. Oral presentation. Building resilience for food & nutrition security – IFPRI 2020 International Conference, 15th – 18th May, Addis Ababa, Ethiopia.
14. **Luedeling E**, Downie K, De Leeuw J, Shepherd K, 2014. An applied information economics approach to assessing resilience in the Horn of Africa. Oral presentation. Resilience 2014 – Resilience and Development, Mobilizing for Transformation, 4th – 8th May, Montpellier, France.
15. Smethurst PJ, Huth NI, **Luedeling E**, 2014. Tree-crop modelling strategy for the ICRAF-ACIAR project Trees-for-Food-Security, East Africa. CSIRO, Hobart, Australia.

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