

Assessing limits of adaptation to climate change and opportunities for resilience to be enhanced (A-LA-CARTE)

Publications list

Peer reviewed publications with direct acknowledgement to A-LA-CARTE

Book

1. Paloviita, A. and Järvelä, M. (Eds) 2015. *Climate Change Adaptation and Food Supply Chain Management* (Routledge Advances in Climate Change Research), Routledge, London, 224 pp.

Journal articles and book chapters

1. Angulo, C., Rötter, R.P., Lock, R., Enders, A., Fronzek, S. and Ewert, F. 2013. Implication of crop model calibration strategies for assessing regional impacts of climate change in Europe. *Agricultural and Forest Meteorology* 170, 32-46.
2. Borgström, S. 2015. Assessing the capacity of nature conservation law to help biodiversity adapt to climate change: the case of Finland. *Review of European, Comparative & International Environmental Law* 24(1), 69-82.
3. Carter, T.R. 2015. Preface. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
4. Eitzinger, J., Thaler, S., Schmid, E., Strauss, F., Ferrise, R., Moriondo, M., Bindi, M., Palosuo, T., Rötter, R.P., Kersebaum, K.C., Olesen, J.E., Patil, R.H., Saylan, B., Caldag, B. and Caylak, O. 2013. Sensitivities of crop models to extreme weather conditions during flowering period demonstrated for maize and winter wheat in Austria. *The Journal of Agricultural Science* 151, 813-835.
5. Fronzek, S., Carter, T.R. and Jylhä, K. 2012. Representing two centuries of past and future climate for assessing risks to biodiversity in Europe. *Global Ecology and Biogeography* 21(1), 19-35.
6. Heikkinen, R.K., Bocedi, G., Kuussaari, M., Heliölä, J., Leikola, N., Pöyry, J. and Travis, J.M.J. 2014. Impacts of land cover data selection and trait parameterisation on dynamic modelling of species' range expansion. *PLOS One* 9(9), e108436. doi:10.1371/journal.pone.0108436
7. Höhn, J.G., Rötter, R.P. 2014. Impact of climate change on cereal production in Europe. *CAB Reviews*, 9, pp 1-15
8. Huttunen, S., Mela, H. and Hilden, M. 2015. Good farmers, good adapters? How cultural understanding of good farming affects farmers' adaptive capacity? In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
9. Järvelä, M. and Kortetmäki, T. 2015. Coping with climate change: rural livelihoods, vulnerabilities and farm resilience. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
10. Kahiluoto, H., Kaseva, J., Hakala, K., Himanen, S.J., Jauhiainen, L., Rötter, R.P., Salo T. and Trnka, M. 2014. Cultivating resilience by empirically revealing response diversity. *Global Environmental Change* 25: 186–193.
11. Kahiluoto, H., Rimhanen, K., Kuisma, M. and Mäkinen, H. 2015. Managing dairy systems for resilience. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
12. Kahiluoto, H., Rötter, R., Webber, H. and Ewert, F. 2014. Chapter 13. The role of modelling in adapting and building the climate resilience of cropping systems. In: Fuhrer, J. and Gregory, P. (Eds.) *Effects of Climate Change on Crop and Livestock Systems*. CAB International, pp. 204-215.
13. Lehtonen, H. and Liu, X. 2015. Balancing climate change mitigation and adaptation with socio-economic goals at farms in northern Europe. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
14. Paavola, S., Himanen, S., Kahiluoto, H. and Miettinen, R. 2015. Making sense of resilience in barley breeding: towards usability of the concept of response diversity. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
15. Paloviita, A. 2015. Food processors, retailers and climate-resilient supply chain management. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
16. Paloviita, A. and Järvelä, M. 2015. Introduction. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.

17. Puupponen, A. 2015. Climate change, vulnerability and local adaptation strategies of food enterprises in Finland. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
18. Puupponen, A. and Paloviita, A. 2014. Ilmastonmuutokseen sopeutuminen elintarvikeketjun hallinnan näkökulmasta - Tapaustutkimus kolmen maakunnan alueella [Adaptation to climate change with respect to food supply chain management – a case study of three regions]. *Alue ja Ympäristö* 43:1, 61-72 [in Finnish]
19. Rötter, R.P., Palosuo, T., Kersebaum, C.K., Angulo, C., Bindi, M., Ewert, F., Ferrise, M., Hlavinka, P., Moriondo, M., Nendel, C., Olesen, J.E., Patil, R., Ruget, F., Takáč, J. and Trnka, M. 2012. Simulation of spring barley yield in different climatic zones of Northern and Central Europe: A comparison of nine crop models. *Field Crops Research* 133, 23-36.
20. Rötter, R.P., Höhn, J. and Fronzek, S. 2013. Projections of climate change impacts on crop production – a global and a Nordic perspective. *Acta Agri Scand A Animal Sci.* 62(4), 166-180.
21. Rötter, R.P., Höhn, J., Trnka, M., Fronzek, S., Carter, T.R. and Kahiluoto, H. 2013. Modelling shifts in agroclimate and crop cultivar response under climate change. *Ecology and Evolution* doi: 10.1002/ece3.782.
22. Tainio, A., Heikkinen, R.K., Heliölä, J., Hunt, A., Watkiss, P., Fronzek, S., Leikola, N., Lötjönen, S., Mashkina, O. and Carter, T.R. 2014. Conservation of grassland butterflies in Finland under a changing climate. *Regional Environmental Change* doi: 10.1007/s10113-014-0684-y.
23. Tapiola, T. and Paloviita, A. 2015. Building resilient food supply chains for the future: Survey for food system experts. In: *Climate Change Adaptation and Food Supply Chain Management* [Paloviita, A. and Järvelä, M., Eds] *Ibid*.
24. Virkkala, R. and Rajasärkkä, A. 2011. Climate affects populations of northern birds in boreal protected areas, *Biology Letters* 7, 395-398.
25. Virkkala, R. and Rajasärkkä, A. 2011. Northward density shift of bird species in boreal protected areas due to climate change, *Boreal Environment Research* 16 (suppl. B), 2–13.
26. Virkkala, R. and Rajasärkkä, A. 2012. Preserving species populations in the boreal zone in a changing climate: contrasting trends of bird species groups in a protected area network. *Nature Conservation* 3, 1-20.
27. Virkkala, R., Heikkinen, R.K., Fronzek, S., Kujala, H. and Leikola, N. 2013. Does the protected area network preserve bird species of conservation concern in a rapidly changing climate? *Biodiversity and Conservation* 22, 459-482.
28. Virkkala, R., Heikkinen, R.K., Fronzek, S. and Leikola, N. 2013. Climate change, northern birds of conservation concern and matching the hotspots of habitat suitability with the reserve network. *PLoS ONE* 8(5): e63376. doi:10.1371/journal.pone.0063376
29. Virkkala, R., Pöyry, J., Heikkinen, R.K., Lehikoinen, A. and Valkama, J. 2014. Protected areas alleviate climate change effects on northern bird species of conservation concern. *Ecology and Evolution* 4, 2991-3003.
30. Webber, H., Kahiluoto, H., Rötter, R. and Ewert, F. 2014. Chapter 11. Enhancing climate resilience of cropping systems. In: Fuhrer, J. and Gregory, P. (Eds.) *Effects of Climate Change on Crop and Livestock Systems*. CAB International, pp. 167-179.

In press

1. Recio, M.E. (In press) The Warsaw Framework and the future of REDD+. *Yearbook of International Environmental Law*

Submitted

1. Korhonen, J., Kahiluoto, H. and Yliviikari, A. (Submitted). Resilience Regime Shift as a Sustainability Paradigm Change. *Global Environmental Change*.
2. Korhonen, J., Kahiluoto, H. and Yliviikari, A. (Submitted). Exploring resilience theory in a regional agricultural and food industry system. *Ecology & Society*.
3. Liu, X., Lehtonen, H., Purola, T., Pavlova, Y., Rötter, R. and Palosuo, T. (Submitted). Dynamic economic modelling of crop rotation choice with farm management practices under future pest pressure challenges. *Agricultural Systems*
4. Mäkinen, H., Kaseva, J., Virkajärvi, P. and Kahiluoto, H. (Submitted) Adaptive capacity of modern cultivars of forage crops under climate change in the North.
5. Mäkinen, H., Kaseva, J., Virkajärvi, P. and Kahiluoto, H. (Submitted) Response diversity of modern forage crops to weather.
6. Pirttioja, N., Carter, T.R., Fronzek, S., Bindi, M., Hoffmann, H., Palosuo, T., Ruiz-Ramos, M., Tao, F., Trnka, M., Acutis, M., Asseng, S., Baranowski, P., Basso, B., Bodin, P., Buis, S., Cammarano, D., Deligios, P., Destain, M.-F., Dumont, B., Ewert, F., Ferrise, R., François, L., Gaiser, T., Hlavinka, P., Jacquemin, I., Kersebaum, K.C.,

Kollas, C., Krzyszczak, J., Lorite, I.J., Minet, J., Minguéz, M.I., Montesino, M., Moriondo, M., Müller, C., Nendel, C., Öztürk, I., Perego, A., Rodríguez, A., Ruane, A.C., Ruget, F., Sanna, M., Semenov, M.A., Slawinski, C., Stratonovitch, P., Supit, I., Waha, K., Wang, E., Wu, L., Zhao, Z. and Rötter, R.P. (Submitted) A crop model ensemble analysis of temperature and precipitation effects on wheat yield across a European transect using impact response surfaces. *Climate Research*.

Peer reviewed publications closely related to A-LA-CARTE

1. Angulo, C, Rötter, R, Trnka, M, Pirttioja, N, Gaiser, T, Hlavinka, P, Ewert, F. 2013. Characteristic 'fingerprints' of crop model responses to weather input data at different spatial resolutions. *European Journal of Agronomy* 49, 104–114. **[EJA paper of the month for September 2013]**
2. Asseng S, Ewert F, Rosenzweig C, Jones JW, Hatfield JL, Ruane AC, Boote KJ, Thorburn PJ, Rötter RP, Cammarano D, Brisson N, Basso B, Martre P, Aggarwal PK, Angulo C, Bertuzzi P, Biernath C, Challinor AJ, Doltra J, Gayler S, Goldberg R, Grant R, Heng L, Hooker J, Hunt LA, Ingwersen J, Izaurralde RC, Kersebaum KC, Müller C, Naresh Kumar S, Nendel C, O'Leary G, Olesen JE, Osborne TM, Palosuo T, Priesack E, Ripoche D, Semenov MA, Shcherbak I, Steduto P, Stöckle C, Stratonovitch P, Streck T, Supit I, Tao F, Travasso M, Waha K, Wallach D, White JW, Williams JR, Wolf J (2013) Uncertainty in simulating wheat yields under climate change. *Nature Climate Change* 3:827-832.
3. Borgström, S. 2012. Helping Biodiversity Adapt to Climate Change - Implications for Nature Conservation Law in Finland. *Nordic Environmental Law Journal* 2012:1, 31-42.
4. Borgström, S. 2012. Luonnonsuojelu ilmaston muuttuessa - Luonnonsuojelulain mahdollisuudet, rajat ja kehittämistarpeet. *Ympäristöjuridiikka* 2012/2, 7-30.
5. Carter, T.R. 2013. Agricultural impacts: Multi-model yield projections. *Nature Climate Change*, 3, 784-786.
6. Ebi, K.L., Hallegatte, S., Kram, T., Arnell, N.W., Carter, T.R., Edmonds, J., Kriegler, E., Mathur, R., O'Neill, B.C., Riahi, K., Winkler, H., van Vuuren, D.P. and Zwickel, T. 2014. A new scenario framework for climate change research: background, process, and future directions. *Climatic Change*, 122 (3), 363-372.
7. Hakala, K., Jauhainen, L., Himanen, S.J., Rötter, R., Salo, T. and Kahiluoto, H. 2012. Sensitivity of barley varieties to weather in Finland. *Journal of Agricultural Science* 150, 145–160.
8. Himanen, S.J., Hakala, K. and Kahiluoto, H. 2013. Crop responses to climate and socio-economic change in northern regions. *Regional Environmental Change* 13(1), 17-32.
9. Himanen, S.J., Ketoja, E., Hakala, K., Rötter, R., Salo, T. and Kahiluoto, H. 2012. Cultivar diversity has great potential to increase yield of feed barley. *Agronomy for Sustainable Development* 33, 519-530.
10. O'Neill, B.C., Kriegler, E., Riahi, K., Ebi, K.L., Hallegatte, S., Carter, T.R., Mathur, R. and van Vuuren, D.P. 2014. A new scenario framework for climate change research: The concept of shared socioeconomic pathways. *Climatic Change*, 122 (3), 387-400.
11. PROVIA 2013. *PROVIA Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change*. Consultation document, United Nations Environment Programme, Nairobi, Kenya, 198 pp. [authors: Hinkel, J., Bharwani, S., Bisaro, A., Carter, T., Cull, T., Davis, M., Klein, R., Lonsdale, K., Rosentrater, L. and Vincent, K.] <http://www.sei-international.org/publications?pid=2432>
12. Rötter, R.P. 2014. Agricultural Impacts: Robust uncertainty. *Nature Climate Change* 4, 251-252.
13. Rötter, R.P., Carter, T.R., Olesen, J.E. and Porter, J.R. 2011. Crop-climate models need an overhaul. *Nature Climate Change* 1, 175-177.
14. Rötter, R.P., Palosuo, T., Virtanen, N.K., Dubrovsky, M., Salo, T., Ristolainen, A., Fronzek, S., Aikasalo, R., Trnka, M. and Carter, T.R. 2011. What would happen to barley production in Finland if global warming exceeded 4°C? A model-based assessment. *European Journal of Agronomy* 35, 205-214.
15. Settele, J., Carter, T.R., Kühn, I., Spangenberg, J.H. and Sykes, M.T., 2012. Editorial: Scenarios as a tool for large-scale ecological research: experiences and legacy of the ALARM project. *Global Ecology and Biogeography* 21: 1-4.
16. Spangenberg, J.H., Bondeau, A., Carter, T.R., Fronzek, S., Jaeger, J., Jylhä, K., Kühn, I., Omann, I., Paul, A., Reginster, I., Rounsevell, M., Schweiger, O., Stocker, A., Sykes, M.T. and Settele, J. 2012. Scenarios for investigating risks to biodiversity. *Global Ecology and Biogeography* 21, 5-18.
17. Trnka, M., Rötter, R.P., Ruiz-Ramos, M. Kersebaum, K-C., Olesen, J.E. and Semenov, M.A. 2014. Adverse weather conditions for wheat production in Europe will become more frequent with climate change. *Nature Climate Change* 4, 637-643.
18. van Ruijven, B.J., Levy, M., Agrawal, A., Biermann, F., Birkmann, J., Carter, T.R., Ebi, K.L., Garschagen, M., Jones, B., Jones, R., Kemp-Benedict, E., Kok, M., Kok, K., Lemos, M.C., Lucas, P.L., Orlove, B., Pachauri, S., Parris, T., Patwardhan, A., Petersen, A., Preston, B.L., Ribot, J., Rothman, D.S. and Schweizer, V.J. 2014. Enhancing the relevance of Shared Socioeconomic Pathways for climate change impacts, adaptation and vulnerability research. *Climatic Change* 122 (3), 481-494.

19. van Vuuren, D.P. and Carter, T.R. 2014. Climate and socio-economic scenarios for climate change research and assessment: reconciling the new with the old. *Climatic Change* 122 (3), 415-429.
20. van Vuuren, D.P., Kriegler, E., O'Neill, B.C., Ebi, K.L., Riahi, K., Carter, T.R., Edmonds, J., Hallegatte, S., Kram, T., Mathur, R. and Winkler, H. 2014. A new scenario framework for climate change research: Scenario matrix architecture *Climatic Change* 122 (3), 373-386.
21. Virkkala, R. and Lehikoinen, A. 2014. Patterns of climate-induced density shifts of species: poleward shift faster in northern boreal birds than in southern birds. *Global Change Biology* 20(10): 2995–3003.
22. Virkkala, R., Heikkinen, R.K., Lehikoinen, A. and Valkama, J. 2014: Matching trends between recent distributional changes of northern-boreal birds and species-climate model predictions. *Biological Conservation* 172, 124-127.

Conference abstracts and posters acknowledging A-LA-CARTE

1. Asseng, S. and 49 others (Palosuo, T. and Rötter, R.P.), 2012. A comparison of 27 wheat crop models for climate change impact: the AgMIP Wheat pilot study. Congress of the European Society for Agronomy, Helsinki, August 2012, *Maataloustieteiden laitoksen julkaisuja* 2012:14, p. 34.
2. Asseng, S., and 49 others (Palosuo, T. and Rötter, R.P.) 2012. The AgMIP Wheat pilot study: A sensitivity analysis with 27 crop models. In: *Proceedings of 6th International Crop Science Congress*, Bento Gonçalves, Brazil, 6-10 August 2012, 1p. <http://www.6icsc.com.br/>
3. Borgström, S. 2013. Legal assessment of the options for biodiversity conservation measures in the era of a climate change. Poster presented at the *FICCA midway seminar*, Hilton Helsinki Strand, 16 April 2013, Helsinki, Finland.
4. Borgström, S. 2014. The capacity of nature conservation regulation to facilitate biodiversity adaptation to climate change. Poster presented at the *FICCA Final Seminar*, 2-3 December 2014, Helsinki, Finland.
5. Carter, T.R. and 23 others. 2011. *Investigating the Adaptive Capacity of Ecosystem Services to Cope with Climate Change in Finland*. Poster presented at the Finnish Research Programme for Climate Change (FICCA) Kick-off meeting Ilmastonmuutos – vaikutukset ja hallinta (Climate change – impacts and management), 20 January 2011, Helsinki, Finland.
6. Carter, T.R., Fronzek, S., Pirttioja, N.K. and Rötter, R.P. 2012. Probabilistic assessment of climate change impacts on crop yields. Poster presented at the international conference: *Planet under Pressure: New Knowledge Towards Solutions*, 26-29 March 2012, London. <http://www.planetunderpressure2012.net/index.asp>
7. Carter, T.R., Järvelä, M., Kahiluoto, H., Miettinen, R., Määttä, T., Borgström, S., Fronzek, S., Heikkinen, R., Heliölä, J., Himanen, S., Höhn, J., Inkinen, A., Kortetmäki, T., Kuisma, M., Kulovesi, K., Lahtinen, I., Lehtonen, H., Liu, X., Mäkinen, K., Mäkinen, H., Mashkina, O., Mela, H., Paavola, S., Palosuo, T., Paloviita, A., Pavlova, Y., Pirttioja, N., Pöyry, J., Purola, T., Puupponen, A., Rimhanen, K., Rötter, R., Suvantola, L., Tainio, A., Virkkala, R. 2014. Adaptation challenges for Finnish agrifood systems and biodiversity under a changing climate – key messages of the A-LA-CARTE project. Poster presented at the *FICCA Final Seminar*, 2-3 December 2014, Helsinki, Finland.
8. Fronzek, S., Pirttioja, N.K., Luoto, M., Rötter, R.P. and Carter, T.R. 2013. Using impact response surfaces to evaluate sources of uncertainty in modelling climate change impacts. *Impacts World 2013. International Conference on Climate Change Effects*, 27-30 May 2013, Potsdam, Germany.
9. Heikkinen, R.K., Carter, T.R., Fronzek, S., Kuussaari, M., Heliölä, J., Leikola, N., Pöyry, J., Mashkina, O., Tainio, A., Virkkala, R., Lötjönen, S., Bocedi, G., Travis, J.M.J., Hunt, A. and Watkiss, P. 2014. Challenges for adaptation in the conservation of grassland butterflies. Poster presented at the *FICCA Final Seminar*, 2-3 December 2014, Helsinki, Finland.
10. Himanen, S.J., Rikkonen, P., Niemi, J. and Kahiluoto, H. 2012. Enhancing adaptive capacity of Finnish agrifood systems: a Delphi based survey on stakeholder views. In: *NORDCLAD-Net/NONAM*, *ibid.* p. 67.
11. Himanen, S.J., Rikkonen, P., Niemi, J. and Kahiluoto, H. 2012. Determinants of adaptive capacity in agrifood systems: a Delphi study on building robustness for plausible futures. *Adaptation Futures. 2012. International Conference on Climate Adaptation*. Arizona University. Abstract book.
12. Höhn, J., Fronzek, S., Trnka, M., Kahiluoto, H., Carter, T.R., Rötter, R.P., 2012. New 30-year time series of agroclimatic indicators for present and future climate as a basis for assessing different adaptation strategies for crop production in Finland In: *NORDCLAD-Net/NONAM*, *ibid.* p. 50.
13. Järvelä, M., Puupponen, A. and Paloviita, A. 2014. Perspectives on climate resilient food chains – a case study from Finland. *ISA World Conference 2014, RC40, Research Committee on Sociology of Agriculture and Food*, Yokohama 13-19 July 2014. <https://isaconf.confex.com/isaconf/wc2014/webprogram/Paper51390.html>
14. Kahiluoto, H., Himanen, S.J., Hakala, K., Miettinen, A., Rötter, R.P. and Salo, T. 2012. Diversification as a means to enhance resilience of agrifood systems. In: *NORDCLAD-Net/NONAM*, *ibid.* p. 43.
15. Kahiluoto, H., Himanen, S.J., Hakala, K., Kuosmanen, N., Miettinen, A., Rötter, R.P., Salo, T. 2012. Diversification as a means to enhance resilience of agrifood systems. *Adaptation Futures. International Conference on Climate Adaptation*. Arizona University. Abstract book.

16. Kahiluoto, H., Mäkinen, H., Miettinen, R., Paavola, S., Järvelä, M., Paloviita, A., Himanen, S., Rimhanen, K. and Puupponen, A. 2013. Tools to enhance resilience. Poster presented at the *FICCA midway seminar*, Hilton Helsinki Strand, 16 April 2013, Helsinki, Finland.
17. Kuisma, M., Rimhanen, K., Ponomarev, M., Surovtsev, V. and Kahiluoto, H. 2014. Enhancing resilience of agrifood systems by nutrient and energy economy. Oral presentation in: *Resilience 2014, Resilience and Development: Mobilizing for Transformation*, 4-8 May 2014, Montpellier, France.
18. Kuisma, M., Rimhanen, K., Ponomarev, M., Surovtsev, V. and Kahiluoto, H. 2014. . Integrated nutrient and energy economy of dairy farms – a key to resilience? In: *Systems Ecological Perspectives on Sustainability*, 24-26 September 2014, Finnish Environment Institute (SYKE), abstract, Helsinki, Finland.
19. Lehtonen, H., Palosuo, T., Rötter, R., Pavlova, Y. and Liu, X. 2013. AlaCarte: Assessment of impacts and adaptation for agricultural systems. Poster presented at the *FICCA midway seminar*, Hilton Helsinki Strand, 16 April 2013, Helsinki, Finland.
20. Lehtonen, H., Liu, X., Purola, T., Rötter, R. and Palosuo, T. 2014. Farm level dynamic economic modelling of crop rotation with adaptation practices. Presentation in *MACSUR Mid-term Scientific Conference*, Sassari, April, 01-04, 2014
21. Lehtonen, H., Kässi, P., Korhonen, P., Niskanen, O., Rötter, R., Palosuo, T., Liu, X., Purola, T. and Virkajärvi, P. 2014. Improving analysis and developing methods in North Savo pilot study. Presentation in *MACSUR Mid-term Scientific Conference*, Sassari, April 1-4 2014
22. Lehtonen, H., Palosuo, T., Rötter, R., Liu, X. and Purola, T. 2014. A-LA-CARTE WP 3A: Assessment of impacts and adaptation for agricultural systems. Poster presented at the *FICCA Final Seminar*, 2-3 December 2014, Helsinki, Finland.
23. Liu, X., Lehtonen, H. and Purola, T. 2014. Economic analysis of crop rotation and fungicide treatment as sustainable intensification options at a farm level - with emphasis on dynamic optimisation of crop rotation. Presentation in *Maataloustieteen Päivät 2014*, Helsinki January 8 2014
24. Lehtonen, H., Liu, X., Purola, T., Rötter, R. and Palosuo, T. 2014. Dynamic economic modelling of crop rotation with adaptation practices. Poster paper accepted for presentation in *EAAE Congress* in Ljubljana, Slovenia, August 26-29 2014
25. Lehtonen, H., Palosuo, T., Rötter, R., Pavlova, Y. and Liu, X. 2013. AlaCarte: Assessment of impacts and adaptation for agricultural systems. Poster presented at the *FICCA midway seminar*, Hilton Helsinki Strand, 16 April 2013, Helsinki, Finland.
26. Mäkinen, H., Kaseva, J., Virkajärvi, P., Trnka, M. and Kahiluoto, H. 2014. An empirical assessment method for resilience through diversification – An application in forage plants. Oral presentation in: *Resilience 2014, Resilience and Development: Mobilizing for Transformation*, 4-8 May 2014, Montpellier, France and in: *Systems Ecological Perspectives on Sustainability*, 24-26 September 2014, Finnish Environment Institute (SYKE), abstract, Helsinki, Finland.
27. Mäkinen, H., Kaseva, J., Virkajärvi, P. and Kahiluoto, H. 2014. Vastediversiteetti nurmikasvien resilienssin arvioinnissa ja edistämisessä. In: *Maataloustieteen Päivät 2014*, 8.-9.1.2014 Viikki, Helsinki : Poster presented in: *Maataloustieteen päivät 8-9 January 2014*, Helsinki, Finland. Abstract in: Kuisma, R., Schulman, N., Kymäläinen, H.-R. and Alakukku, L. (Eds) *Suomen maataloustieteellisen seuran tiedote* 31: p. 211.
28. Miettinen, R., Paavola, S., Järvelä, M., Paloviita, A., Puupponen, A., Kahiluoto, H. and Himanen, S. 2013. Looking for interdisciplinary understanding: defining key concepts in the A-LA-CARTE project. Poster presented at the *FICCA midway seminar*, Hilton Helsinki Strand, 16 April 2013, Helsinki, Finland.
29. NORDCLAD-Net/NONAM, 2012. *Adaptation Research meets Adaptation Decision-Making: Programme and Abstracts of the Second Nordic International Conference on Climate Change Adaptation, 29-31 August 2012*, Nordic climate change adaptation research network (NORDCLAD-Net) and Nordic network on adaptive management in relation to climate change (NONAM), Helsinki, Finland, 72 pp.
<http://www.nordicadaptation2012.net/>
30. Paavola, S., Himanen, S., Kahiluoto, H. and Miettinen, R. 2014. Making sense of resilience in barley breeding: Towards usability of the concept of response diversity. Oral presentation in: *Resilience 2014, Resilience and Development: Mobilizing for Transformation*, 4-8 May 2014, Montpellier, France and in: *Systems Ecological Perspectives on Sustainability*, 24-26 September 2014, Finnish Environment Institute (SYKE), abstract, Helsinki, Finland.
31. Paavola, S., Mäkinen, H., Miettinen, R. and Kahiluoto, H. 2014. Enhancing resilience with response diversity. Poster presented at the *FICCA Final Seminar*, 2-3 December 2014, Helsinki, Finland.
32. Paloviita, A., Puupponen, A. and Järvelä, M. 2013. The Climate Vulnerability of Food Enterprises in Finnish Food Supply Chain. Poster presented at the *Ninth International Conference on Environmental, Cultural, Economic and Social Sustainability*, Hiroshima, Japan, January 2013, http://onsustainability.com/uploads/S13_Program-Final_for_website.pdf
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