



Pesticide retention by weeds: indicators

Nathalie Colbach, Wilfried Queyrel

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President: Professor Christine Watson



President: Professor Bill Davies

ESA 14 - Growing landscapes – Cultivating innovative agricultural systems 5-9 September 2016



PROGRAMME



ESA 14 - Growing landscapes – Cultivating innovative agricultural systems

Edinburgh, Scotland, UK
5-9 September 2016

The conference theme “Growing Landscapes - Cultivating innovative agricultural systems” recognizes that agriculture is the dominant use of land in Europe. Most of our landscapes are places where food and fibre is grown for our use, but they also provide us with a wide range of ecosystem goods and services. Agronomic research underpins the development and management of innovative agricultural systems from crop to field to landscape scale and seeks to balance the delivery of all ecosystem services from land. The 14th Congress of the European Society of Agronomy provides an opportunity to share the latest findings from research and practice, build new networks and collaborations and explore the relationship between land and food in Scotland – The Land of Food and Drink.

PROGRAMME

(BASIS points have been awarded for UK delegates - (10 BASIS points: 2CP, 4E, 2PN and 2PD) register at the desk)

**ALL SESSIONS AND REGISTRATION WILL NOW BE HELD AT AT
APPLETON TOWER, 11 CRICHTON ST, EDINBURGH, EH8 9LE**

Full details of all the concurrent conference sessions are given at the end of the programme.

MONDAY 5 SEPTEMBER 2016

- 08:15–18:00 **STICS TRAINING DAY** (separate registration required:
http://esa14.org.uk/qs1_esa14org/wp-content/uploads/2015/05/ESA-2016_STICS_Training_Day_Page_1.jpg)
SRUC Edinburgh, West Mains Road, Edinburgh EH9 3JG
- 14:00–17:00 **CONGRESS REGISTRATION**
at Appleton Tower, 11 Crichton St, Edinburgh, EH8 9LE
- 15:00–18:00 **STUDENT WELCOME AT SRUC**
SRUC Edinburgh, West Mains Road, Edinburgh EH9 3JG
(All student conference participants are encouraged to attend; for further details contact the student programme co-ordinator Sarah Buckingham - Sarah.Buckingham@sruc.ac.uk)
- 16:00–18:00 **ESA BOARD MEETING**
at Appleton Tower, 11 Crichton St, Edinburgh, EH8 9LE
ESA Board Members should check for the agenda and further details from the ESA secretariat.
- 18:30 **CONFERENCE RECEPTION AND WELCOMES HOSTED BY THE LORD PROVOST**
City Chambers, High Street, Edinburgh EH1 1YJ

TUESDAY 06 SEPTEMBER 2016 (at Appleton Tower)

Morning programme

- 08:15 **CONGRESS REGISTRATION**
at Appleton Tower, 11 Crichton St, Edinburgh, EH8 9LE
- 09:05 **WELCOME**
Christine Watson, ESA President and AAB President Elect
- 09:20 **Get Involved - Scottish Food & Drink Fortnight Promotional Toolkit**
Fiona Richmond (Food and Drink, Scotland)

Plenary Speakers

- 09:40 **The commitment to rural/agricultural/bio science in Scotland and the Scottish Government aspirations for Scotland**
Louise Heathwaite, Chief Scientific Adviser for Rural Affairs and the Environment (Scottish Government)

- 10:00 **People matter! Participatory approaches to sustainable land management**
Marie Helene Jeuffroy (INRA, France)
- followed by questions
- 10:45 **COFFEE**
- 11:15 **Challenges for food security**
Professor Molly Jahn (Laboratory of Genetics and Department of Agronomy, University of Madison-Wisconsin, USA)
- 12:00 **Challenges to land use and food production, a tropical perspective**
Professor Ingrid Oborn (SLU-Uppsala and ICRAF, Kenya)
- followed by questions
- 12:40 **DISCUSSION**
- Afternoon programme**
at Appleton Tower, 11 Crichton St, Edinburgh, EH8 9LE
- 13:00 **LUNCH AND POSTERS, FOLLOWED BY CONCURRENT SESSIONS**
at Appleton Tower
- 13:30 **POSTERS MANNED BY AUTHORS FOR:**
- Optimising the use of pulses in European agriculture (5.x)
 - Optimising the use of long-term experiments for agriculture and agronomy (13.x)
- 14:00 **POSTERS MANNED BY AUTHORS FOR:**
- Supporting agro-ecological innovation through actor-oriented research and farming systems design (6.x)
 - Mining data for better agronomy - Challenges and opportunities (12.x)
- 14:30 **CONCURRENT SESSIONS 14.30- 17.30**
See full session detail on following pages
- *Optimising the use of pulses in European agriculture*
Session organizer: FRED STODDARD (University of Helsinki, Finland)
 - *Supporting agro-ecological innovation through actor-oriented research and farming systems design (sponsored by the FSD Community of Practice)*
Session organizers: JACQUES WERY (Montpellier SupAgro, Montpellier, France) & ELIZABETH STOCKDALE (Newcastle University, UK)
 - *Optimising the use of long-term experiments for agriculture and agronomy*
Session organizers: GORAN BERGKVIST (SLU, Uppsala, Sweden) & RAFAEL LOPEZ-BELLIDO (University of Cordoba, Córdoba, Spain)
 - *Mining data for better agronomy - Challenges and opportunities*
Session organizers: CLAAS NENDEL (ZALF, Leipzig, Germany) & KAIRSTY TOPP (SRUC, Edinburgh, UK)
- 15:45 **TEA**
- 17:30 **TAYLOR & FRANCIS AUTHOR WORKSHOP (OPTIONAL)**
- 18:30 **END OF SESSIONS/WORKSHOP**
- 19:00 **DINNER AND CEILIDH** at the Assembly Rooms, Edinburgh with the Funkeilidh band
54 George Street, Edinburgh EH2 2LR (delegates to make their own way there) - George Street runs parallel to Princes Street

<i>Introduction</i> 14:30–14:35	Optimising the use of pulses in European agriculture (a)	Supporting agro-ecological innovation through actor-oriented research and farming systems design (a)	Optimising the use of long-term experiments for agriculture and agronomy
14:35–14:50	Pulses for the Mediterraneans: Contribution of a simple crop model to pulse-based cropping system design under low water resource availability Hélène Marrou, Michel E Ghanem, Afshin Soltani & Tom R Sinclair (FRANCE)	Growing water landscape: An actor-oriented research on Vittel watershed Arnaud Gobillot & Marc Benoit (FRANCE)	Soil tillage and crop yield in long term uk field experiments R Stobart, P D Hallett, N L Morris, T S George, A C Newton, T A Valentine & B M McKenzie (UK)
14:50–15:05	Legumes improved dryland grazing systems in New Zealand Derrick Moot (NEW ZEALAND)	Intensifying forage-livestock systems: trade-offs between food security and .. Skye Gabb (AUSTRALIA)	Crop yield responses to water table management with different drainage systems in a long term trial Massimo Tolomio, Nicola Dal Ferro & Maurizio Borin (ITALY)
15:05–15:20	Novel approaches to optimize grain legume cropping systems M Reckling, G Bergkvist, R Bloch, F L Stoddard, C A Watson & J Bachinger (GERMANY)	Agronomics: enabling field-scale crop research Daniel Kindred, Roger Sylvester-Bradley, Ben Marchant, Sebastian Rudolph, Sarah Clarke, Susie Roques & Vincent Gillingham (UK)	Development of wheat diseases depending on agrotechnical measures Biruta Bankina, Gunita Bimšteine & Antons Ruža (LATVIA)
15:20-15:35	One field – two crops: Increasing protein yield and N fixation with wheat-pea intercrops Reinhard Neugschwandtner & Hans-Peter Kaul (AUSTRIA)	*Poster highlights (until 15.45)	Arable seedbank composition and distribution after long-term cultivation practices Ashley Gorman, Blair McKenzie, Cathy Hawes & John Rowan (UK)
<i>Discussion</i> until 15:45	Discussion		Discussion

<i>Introduction</i> 16:15–16:20	Optimising the use of pulses in European agriculture (b)	Supporting agro-ecological innovation through actor-oriented research and farming systems design (b)	Mining data for better agronomy - Challenges and opportunities
16:20–16:35	To pea or not to pea? Comparative insights on legume grain yields and protein contents from Europe, North America and Oceania Charles Cernay, David Makowski & Elise Pelzer (FRANCE)	NAMASTE: A dynamic integrated model for simulating farm practices under groundwater scarcity in semi-arid region of India Marion Robert, Alban Thomas & Jacques-Eric Bergez (FRANCE)	Mining data from the national DEPHY farm network: Potential for reconciling low pesticide use and high economic profitability M Lechenet, D Makowski, G Py & N Mmunier-Jolain (FRANCE)
16:35–16:50	Sustainable and profitable protein production using faba bean Pietro Iannetta, Ali Karley, Luke Ramsay, Gavin Ramsay, Euan James & Geoff Squire (UK)	Ex ante evaluation of cropping systems for weed-mediated pests and environmental benefits with simulation-based indicators N Colbach, C Bockstaller, F Colas, S Gibot-Leclerc, D Moreau, O Pointurier, W Queyrel & J Villerd (FRANCE)	Availability and use of information by farmers when making operational decisions Charlotte Daydé, Stéphane Couture & Roger Martin-Clouaire (FRANCE)
16:50–17:05	Organic lentil production – The development of an interesting niche in Switzerland Jürg Hiltbrunner (SWITZERLAND)	Harnessing multiple ecosystem services from legume bi-cropping and switching between spring and winter varieties in arable systems Samuel Leigh, Erika Degani, Nathan Morris, Ron Stobart, Hannah Jones & Simon Potts (UK)	Soil nitrogen mineralisation across different climate zones: How to inform crop models? Claas Nendel, Dennis Melzer, K Christian Kersebaum & Peter Thorburn (GERMANY)
17:05–17:20	Leaf disease – an emerging problem in the sowings of faba bean in Latvia Biruta Bankina, Gunita Bimšteine, Ance Roga & Davids Fridmanis (LATVIA)	Trade-off analysis between durum wheat yield and nitrogen efficiency in Tunisian farmers' fields Yosser Ben Zekri, Karim Barkaoui, Insaf Mekki, Hélène Marrou, Hatem Belhouchette & Jacques Wery (FRANCE)	Toward a future gap for agronomists: are we able to access the information on pesticides applied by farmers? Case of France Romain Vallee, Céline Schott, Catherine Mignolet, Alexandra Papadopoulos, Mathilde Merlo, Jean-Luc Volatier, Marie Frochen & Marc Benoit (FRANCE)
<i>Discussion</i> until 17:30	Discussion	Discussion	Discussion

WEDNESDAY 7 SEPTEMBER at Appleton Tower, 11 Crichton St, Edinburgh, EH8 9LE

09:00 CONCURRENT SESSIONS 09:00- 13:00

See full session details on following pages

- *Sustainable intensification – theory or practice?* (sponsored by the AAB's *Food and Energy Security Journal*)
Session organizers: IAN DODD (University of Lancaster, UK), ROB CARLTON (AAB CATE Convener, De Pinte, Belgium) & NEIL HAVIS (SRUC, Edinburgh, UK)
- *Adaptation to Climate Change* (sponsored by Climate Café FACCE JPI project)
Session organizers: FRED STODDARD (University of Helsinki, Finland) & JOHANN BACHINGER (Zalf, Leipzig, Germany)
- *Building diversity into Cropping Systems* (sponsored by the British Society of Ecology Agroecology group)
Session organizers: PETE IANNETTA (The James Hutton Institute, Dundee, UK), WOPKE VAN DER WERF (Wageningen University, the Netherlands) & BARBARA SMITH (University of Coventry, UK)
- *Measuring the impact of agronomic change*
Session organizer: OLAF CHRISTEN (Martin Luther University Halle-Wittenberg, Germany)
- *Landscape management for food and ecosystem services*
Session organizers: MARC BENOIT (INRA, Mirecourt, Nancy-Lorraine, France) & DAVID RIZZO (Institute of Life Sciences, Scuola Superiore Sant'Anna, Pisa, Italy)
- *Performance and stability of yield and quality in organic and conventional cropping*
Session organizer: THOMAS DÖRING (Humboldt University of Berlin, Germany)

11.15 TEA/COFFEE

13:00 LUNCH AND POSTERS, FOLLOWED BY CONCURRENT SESSIONS

13:00-13:30 POSTERS MANNED BY AUTHORS FOR:

- Understanding and modelling the impact of extreme weather events on crop production (4.x)
- Building diversity into cropping systems (3.x)
- Performance and stability of yield and quality in organic and conventional cropping systems (11.x)

13:30-14:00 POSTERS MANNED BY AUTHORS FOR:

- Sustainable intensification - theory or practice? (1.x)
- Adapting to climate change (2.x)
- Measuring the impact of agronomic change (10.x)
- Managing crops as soil improvers (9.x)

14:00-14:30 POSTERS MANNED BY AUTHORS FOR:

- Managing crop quality for human and livestock nutrition (7.x)
- Landscape management for food and ecosystem service (8.x)
- Water framework directive - Challenges and opportunities (14.x)

14:30 CONCURRENT SESSIONS 14:30- 15:45

See full session detail on following pages

- *Understanding and modelling the impact of extreme weather events on crop production* (in association with *European Journal of Agronomy*)
Session organizers: AFSHIN SOLTANI (University of Agricultural Sciences and Natural Resources, Gorgān, Iran) & OLAF CHRISTEN (Martin Luther University Halle-Wittenberg, Germany)
- *Managing crop quality for human and livestock nutrition*
Session organizers: MIKE GOODING (IBERS, Aberystwyth, UK) & BERNARD JEANGROS (Agroscope, Switzerland)
- *Managing crops as soil improvers*
Session organizers: CHRISTINE WATSON (SRUC, Aberdeen, UK & SLU, Uppsala, Sweden) & RAFAEL CHARLES (FiBL, Switzerland)
- *Water Framework Directive – Challenges and opportunities*
Session organizer: ELIZABETH STOCKDALE (Newcastle University, UK)

15.45 COFFEE/TEA

16:15 ESA GENERAL ASSEMBLY

17.15 FIELD TRIP OVERVIEW - Introduction to all trips

17:45 Growing whisky - followed by **WHISKY TASTING**

18:30 END OF SESSIONS

19:00 DELEGATES MAKE THEIR OWN ARRANGEMENTS FOR DINNER

9:00 **Four parallel platform sessions (Appleton theatres)**

<i>Introduction</i> 9:00–9:05	Sustainable intensification – theory or practice?	Adaptation to climate change (a)	Building diversity into cropping systems (a)	Performance and stability of yield and quality in organic and conventional cropping	Measuring the impact of agronomic change
9:05–9:20		Impacts of climate change and agronomic management on crop yields, soil organic carbon and soil nitrogen: A model ensemble approach B Dumont, B Basso, I Shcherbak, S Asseng <i>et al.</i>	Low input low tillage cropping systems S Cadoux, C Montanier, S Schryve & G Sauzet (FRANCE)	Comparing the temporal stability of organic and conventional cropping systems – a meta-analysis Samuel Knapp & Marcel van der Heijden (GERMANY)	Biological and mechanical subsoiling in potato production – a participatory research approach Victor Guaman Sarango, Anita Unnarsson, Birgitta Båth, Jannie Hagman, Paula Persson (SWEDEN)
9:20–9:35	09:05-09:40 <i>Invited speaker</i> Sustainable de-intensification of irrigation - theory & practice ! Ian Dodd (UK)	Climate change impact on wheat S Asseng, F Ewert, P Martre, A Maiorano, R P Rötter <i>et al.</i> (USA)	Improving cropping system profitability and sustainability through biodiversity Aaron Mills & Sherry Fillmore (CANADA)	Long-term yield and environmental efficiency of organic and conventional systems in north-eastern Italy Nicola Dal Ferro, Massimo Tolomio, Giuseppe Zanin & Maurizio Borin (ITALY)	Geostatistical interpolation and aggregation of crop growth model outputs Luc Steinbuch, Dick Brus, Lenny van Bussel & Gerard Heuvelink (NETHERLANDS)
9:35–9:50		Evidence for improved seed yield in field-droughted oilseed rape (<i>Brassica napus</i> L.) following application of polymers over the reproductive stage M Faralli, I G Grove, M C Hare & P S Kettlewell (UK)	Diversity of nature conservation performances on organic farms Karin Stein-Bachinger & Frank Gottwald (GERMANY)	Long-Term Effects of biogas production systems in organic agriculture on wheat yields K Levin, Anga Simon, Stefan Kimmelman, Hans-Jürgen Reents & Kurt-Jürgen Hülsbergen (GERMANY)	Greenhouse gas balance of German oilseed rape production - nitrogen fertilizer as a key factor for nitrous oxide field emissions T Rübiger, M Andres, R Fuß, H Hegewald, K Kesenheimer, S Koebke, T Suarez, H Flessa & H Kage (GERMANY)
9:50–10:05	09:40–09:55 Ecological intensification as one strategy of SI Julia Cooper (UK)	Agronomic improvement of sorghum drought tolerance using film-antitranspirant Jeremiah T Samaila, M Crook, I G Grove & P S Kettlewell (UK)	Co-design of agro-ecological cropping systems. Reconciling global and local issues A L de Cordoue, S Cadoux, C Toqué, P Pierson R Duval, A Tailleur, F Flénet, F Angevin & P Gate (FRANCE)	Characterisation and assessment of yield robustness in French wheat cropping systems Nicolas Urruty, Delphine Tailliez-Lefebvre & Christian Huyghe (FRANCE)	Production system capacity for soil and nutrient management in the Canadian Lake Erie basin Pamela Joosse, Keith Reid, Ted Huffman, Donna Speranzini & Natalie Feisthauer (CANADA)

	Sustainable intensification – theory or practice?	Adaptation to climate change (a)	Building diversity into cropping systems (a)	Performance and stability of yield and quality in organic and conventional cropping	Measuring the impact of agronomic change
10:05–10:20	09:55–10:35 <i>Invited speaker</i> Crop Health: Reducing our Dependency on Pesticides Rob Edwards (UK)	Effects of climate and management on crop phenology Ehsan Eyshi Rezaei, Stefan Siebert & Frank Ewert (GERMANY)	Effects of three cropping systems on <i>Carabidae</i> Tosser Veronique Tosser, Jean-David Chapelin-Viscardi (FRANCE)	Correlations of stability parameters across quality traits in a Swiss and an Austrian dataset of winter wheat Samuel Knapp, Rosalie Aebi, Martin Anders, Cécile Brabant, Michael Oberforster, Heinrich Grausgruber & Jürg Hiltbrunner (SWITZERLAND)	The “TEA BAG INDEX“ (TBI) – A simple and cheap method to assess the decomposition of organic material in arable soils Sebastian Wolfrum (GERMANY)
10:20–10:35		Discussion	*Poster highlights (3.1-3.5)	Impact of crop sequence on pH changes in a long-term legume based rotation experiment R L Walker & C A Watson (UK)	Impact of high intensity oilseed rape cropping systems on yield, yield formation and blackleg (<i>Leptosphaeria maculans</i>) Hannes Hegewald, Barbara Koblenz, Monika Wensch-Dorendorf & Olaf Christen (GERMANY)
Discussion until 10:45	Discussion		Discussion	Discussion	Discussion

<i>Introduction</i> 11:15–11:20	Sustainable intensification – theory or practice?	Adaptation to climate change (b)	Building diversity into cropping systems (b)	Landscape management for food and ecosystem services
11:20–11:35		Food production under climate change: can agricultural landscapes mitigate emissions? Mariana C Rufino & Patric Brandt (UK)	Legume dead mulch under winter oilseed rape: ability of several species to provide biological nitrogen during spring M Lorin, M H Jeuffroy, A Butier, P Garnier, G Gaudinat & M Valantin-Morison	Evidence of rebound effect in agriculture: recoupling crops and livestock at the district scale does not always reduce nitrogen losses John Regan, Olivier Godinot & Thomas Nesme (FRANCE)
11:35–11:50	11:20–12:05 <i>Invited speaker</i> Good agronomy is the key for sustainable intensification Achim Dobermann (UK)	Participatory approach for identifying/ prioritising adaptation strategies to climate change E García-Ponce, R Oliva, R Gallardo & H Gómez-Macpherson (SPAIN)	Designing cover crop mixtures to enhance potential weed suppression in organic no- till vegetable systems Marzia Ranaldo, Stefano Carlesi, Ambrogio Costanzo & Paolo Barberi (ITALY)	Managing landscapes for promoting the weed seed regulation service D Bohan, S Labruyere, O McLaughlin, B Ricci & S Petit (FRANCE)
11:50–12:05		Climate smart agriculture in western Siberia – potential of no-till in spring wheat production Insa Kühling & Dieter Trautz (DENMARK)	Cover crops: a review of the benefits, management practices and knowledge gaps Charlotte A White, Helen F Holmes, Nathan L Morris & Ron M Stobart (UK)	Land use intensification in Mediterranean periurban areas I Ruiz-Martinez, M Debolini, E Marraccini, E Bonari & C Napoleone (ITALY)
12:05–12:20	Enhancement of European crop yields without agronomic ‘intensification’? Roger Sylvester-Bradley, Daniel Kindred, Ian Smillie & Pete Berry (UK) S	Effect of elevated CO₂ on nitrate assimilation and growth of common bean, wheat and perennial ryegrass Mitchell Andrews, Stuart Larsen, James D Morton, Leo M Condon & Peter D Kemp (NEW ZEALAND)	Diversified cropping benefits pest regulation Sarah Redlich, Emily Martin, Matteo Dainese & Ingolf Steffan-Dewenter (GERMANY)	Participatory scenario building for the management of agricultural areas Davide Rizzo, Elisa Marraccini, Rosalia Filippini, Sabine Gennai-Schott, François Johany & Sylvie Lardon (ITALY)
12:20–12:35	Poster highlights (1.1–1.5)	Photoperiod insensitivity effect on wheat flore development and grain yield Paula Prieto, Helga Ochagavia, Roxana Savin & Gustavo A Slafer (SPAIN)	Improving pest control and pollinations services by means of multi-functional flower strips Peter Sutton, Belinda Bailey, Geoff Coates, Alistair Campbell, David George, Andrew Wilby & Felix Wackers (UK)	Hedgerow networks in the landscape support multiple ecosystem services in cereal crops Matteo Dainese, Silvia Montecchiari, Maurizia Sigura, Tommaso Sitzia & Lorenzo Marini (ITALY)
12:35–12:50		Earliness <i>per se</i> effects on developmental processes, final leaf and spikelet number Helga Ochagavia, Paula Prieto, Roxana Savin & Gustavo A Slafer (SPAIN)	Poster highlights (3.6–3.9)	Poster highlights (8.1 and 8.2)
<i>Discussion</i> until 13.00	Discussion	Discussion	Discussion	Discussion

14:30 **Four parallel sessions (Appleton theatres)**

<i>Introduction</i> 14:30– 14:35	Managing crop quality for human and livestock nutrition	Understanding and modelling the impact of extreme weather events on crop production	Water Framework Directive – Challenges and opportunities	Managing crops as soil improvers
14:35– 14:50	Improving the processability of malting barley P Hedley, L Ramsay, J Russell, J S Swanston, K Houston, J Morris, H Bull, R Keith, C Warden, I Slaiding & W T B Thomas (UK)	Flowering of three olive cultivars under global warming L Testi, A Lopez-Bernal, O García Tejera & F J Villalobos (SPAIN)	The water friendly farming project – A catchment management baci experiment Chris Stoate, Colin Brown & Jeremy Biggs (UK)	Poster highlights
14:50– 15:05	Are models for rice quality suitable for operational contexts? A multi-model study in northern Italy Giovanni Cappelli, Simone Bregaglio, Marco Romani, Sergio Feccia, Maria Ambrogina Pagani, Mara Lucisano & Roberto Confalonieri (ITALY)	Winter wheat's yield reaction to high atmospheric CO₂ concentration and heat stress Adam Luig, Remy Manderscheid, Martin Erbs, Arne M Ratjen, Hans-Joachim Weigel & Henning Kage (GERMANY)	Simulated impacts of crop land use change on nitrogen and phosphorus loads B Mehdi, B Lehner, R Ludwig & H-P Kaul (AUSTRIA)	Evaluation of sustainable soil management and cover crop practices R Stobart, N L Morris, N Hinton, H Fielding & C Stoate (UK)
15:05–15:20	Potassium response of dual purpose crops and implications for mineral: Feed quality relations J Holland, R Hayes, G Refshauge, G Poile, V van der Rijt & M Conyers (UK)	Humidity as a determinant of heat stress tolerance in wheat Rahme Seyhun, Martin Lukac & Paola Tosi	Assessment of the pesticides pressure at the watershed scale: the challenge of the Water Frame Directive Magalie Lesueur Jannoyer, Charles Mottes, Marianne L E Bail & Philippe Cattan (FRANCE)	Direct seeding of cereals is not equivalent to conservation agriculture Helena Gómez-Macpherson & Inmaculada Carmona (SPAIN)
15:20–15:35	Poster highlights	Extension of yam cultivation to the low rainfall zone of West Africa through bio-fortification with Mycorrhizae N C Odoh & R Asiedu	Poster highlights	Integrating livestock within cropping systems to improve soil quality: does diversity matter? Julie Ryschawy & Marc Moraine (BELGIUM)
<i>Discussion</i> until 15:45	Discussion	Discussion	Discussion	Discussion

THURSDAY 8 SEPTEMBER 2016

Field Trips

Delegates will have booked a particular field trip in advance - check in your registration pack for your specific briefing details. All tours will return to Edinburgh for the evenings's ESA conference dinner and entertainment.

1) Exploring challenges facing hill farmers and other land managers in the uplands

SRUC Hill and Mountain Research, the Falkirk Wheel and the Kelpies.

2) Exploring the challenges of growing grass for dairy cows

SRUC Crichton Royal Dairy Unit, Dumfries and the Cream of Galloway farm in Gatehouse of Fleet.

4) Exploring vegetable production and processing

Hosted by Pillars of Hercules, an organic farm with a linked shop and café & East of Scotland Growers who are using more intensive methods of crop management, specialising in brassicas and onion production.

6) Insights into modern cereal production and the whisky production

A visit to the Glenkinchie distillery with a guided tour of the facility, together with a farm visit hosted by the Middlemass family to an arable farm in East Lothian.

7) Insights into conservation approaches to cereal production and the production of whisky

A farm visit hosted by Colin Samuel where cover crops and conservation agronomy are being used to build up the organic matter and fertility of the farm, together with a visit to the Glenkinchie distillery and a guided tour.

19:00 CONFERENCE DINNER AT THE NATIONAL MUSEUM OF SCOTLAND, Chambers St, Edinburgh EH1 1JF
with the PM Stockbridge Pipe Band

FRIDAY 9 SEPTEMBER 2016 (at Appleton Tower)

Plenary Speakers

09:00 What have we learnt and what next?

Student reflections on the conference (organised by Sarah Buckingham and Mike Gooding)

09:45 PRESENTATION OF PRIZES by Jessica Davies (American Society of Agronomy)

10:00 The role of genetics in relation to “Growing Landscapes – Cultivating innovative Agricultural Systems”

Professor Wayne Powell (SRUC, Edinburgh)

10:40 Information needs for sustainable land management decisions

Professor Paolo Barberi (Institute of Life Sciences, Scuola Superiore Sant’Anna, Pisa, Italy)

11:20 Information needs for sustainable agricultural systems

Professor Ian Crute (Recently retired from the Agriculture and Horticulture Development Board, Stoneleigh, UK)

12:00 ESA15 LAUNCH

12:15 AAB Annual General Meeting

All AAB members are asked to remain in attendance for c. 45 minutes

13:00 PACKED LUNCH & DEPART

CONFERENCE SESSIONS

Session: **Optimising the use of pulses in European agriculture**
Session organizer: FRED STODDARD (University of Helsinki, Finland)
These POSTERS to be manned on Tuesday 6 September at 13:30
2 × platform sessions - Tuesday afternoon

2016 is the International Year of Pulses. By growing more pulses (grain legumes), Europe would reduce its protein deficit while increasing the environmental sustainability of its cropping systems, but the profitability of the crops is seen as low, the potential yield of pulses lags behind that of cereals and oilseeds, and the yield gap between potential and achieved yield is also large. The session will examine how we can decrease the yield gap, increase the potential yield, and by quantifying the benefits, improve the perception of their profitability in the whole food chain.

- 5.1 Pre-anthesis nitrogen use efficiency of spring barley varieties grown with mixed mineral and organic nitrogen sources**
John A Baddeley (UK)
- 5.2 Field bean yield and yield components**
Zinta Gaile, Reinis Balodis, Dzintra Kreita & Linda Litke (LATVIA)
- 5.3 The survival of the commercial inoculant in white clover and lucerne**
Kathryn Wigley, Hayley Ridgway & Derrick Moot (NEW ZEALAND)
- 5.4 White lupin + triticale intercrops: new findings after three years of plot trials**
Didier Gerbaud & Bertrand Pinel (FRANCE)
- 5.5 Productivity of early maturing cultivars of soybeans (*Glycine max* L. MERR) in north-western Poland**
Anna Wenda-Piesik & Maciej Kazek (POLAND)
- 5.6 Crops providing proteins for food: A review**
Alicia Ayerdi Gotor & Elisa Marraccini (FRANCE)
- 5.7 Differences in nitrous oxide emissions among faba bean (*Vicia faba* L.) cultivars in a boreal climate**
Clara I Lizarazo, Reza Esfahani, Asko Simojoki & Frederick L Stoddard (FINLAND)
- 5.8 Nitrogen and glyphosate applications affect soil microbiota and physiological parameters of common bean**
Elodie Nivelles, Julien Verzeaux, David Roger, Amélie Chabot, Frédéric Dubois, Arnaud Ameline, Quentin Chesnais, Jérôme Lacoux, Thierry Tetu, Edmundo Nava-Saucedo, Manuella Catterou (FRANCE)

Session: **Supporting agro-ecological innovation through actor-oriented research and farming systems design (sponsored by the FSD Community of Practice)**
Session organizers: JACQUES WERY (Montpellier SupAgro, Montpellier, France)
ELIZABETH STOCKDALE (University of Newcastle, UK)
These POSTERS to be manned on Tuesday 6 September at 14:00
2 × platform sessions - Tuesday afternoon

The emergence of productive agricultural systems with low reliance on pesticides, fertilizers, energy and water will rely on a multi-scale and multi-stakeholder approach in innovation. Farming systems design is needed to identify sustainable trajectories for farm systems, cope with their diversity and explicitly account for their interactions with food and climate systems. We will also hear about best practice in the use of actor-orientated approaches to innovate in agronomy and explore what such approaches have to offer European agriculture and how they might be developed. This session will address methodological challenges and also share the results of farming systems design projects for research and engineering of these farm transition pathways.

Posters in this session

A small number of these posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform sessions

- 6.1PH Development of an ICT-based Irrigation Advisory Platform in West Africa**
Gorka Landeras, Emanuel Bekoe, Mbaye Diop, Joseph Ampofo, Madiama Cissé, Ernesto Ortiz1 & Nora Ibáñez (SPAIN)
- 6.2PH Designing and evaluating arable cropping systems with cash and cover crop legumes in sole crop and intercrop to improve N use**
L Bedoussac, H Tribouillois, D Plaza-Bonilla, E-P JourneT & E Justes (FRANCE)

- 6.3PH Innovative approaches to optimize genetic diversity for sustainable farming systems of the future: quantifying ecological performance**
Robert Simon & Hans Jürgen Reents (GERMANY)
- 6.4PH Fungicide alternatives for Scottish spring barley: farmer perspectives**
Stacia Stetkiewicz, Cairistiona Topp, Ann Bruce, Richard Ennos & Fiona Burnett (UK)
- 6.5PH Participatory action research and systems thinking to foster the implementation of agro-ecological practices**
Fernando Pellegrini & Paolo Barberi (ITALY)
- 6.7 In winter wheat no till increases mycorrhizal colonization thus reducing the need for nitrogen fertilization**
Julien Verzeaux, David Roger, Jérôme Lacoux, Elodie Nivelles, Hazzar Habbib, Bertrand Hirel, Frédéric Dubois & Thierry Tetu (FRANCE)
- 6.8 To drastically reduce pesticides uses: two cases of re-designed systems with biodynamic and protected designation of origin constraints**
Marie Thiollot-Scholtus, Julie Grignon & Joseph Weissbart (FRANCE)
- 6.9 Farmer participatory research for improving productivity of irrigated systems in Mauritania**
E García-Ponce, L Mateos & H Gómez-Macpherson (SPAIN)
- 6.10 Validation of a new multipest synthetical indicator of pests and diseases damage in grapes**
N Smits, L Delbac, A Merot, J Roudet & M Fermaud (FRANCE)
- 6.11 Implementation of sustainable irrigation strategies for almond orchards through a participatory approach**
M Garcia-Vila, P Gamero-Ojeda, M A Carmona, J Berlanga J & E Fereres (SPAIN)
- 6.12 First steps of participatory design for DSS**
Floriane Colas, Sylvie Granger, Jean Villerd & Nathalie Colbach (FRANCE)
- 6.13 Intelligent flying camera system for mobile crop monitoring and on-farm breeding**
G Vársárhelyi, A Jung, P Bónis, M Vresak, G. Somorjai, E Mones, T Árendás, KSárdi, T Vicsek & D Drexler

Session: Mining data for better agronomy - Challenges and opportunities
Session organizers: CLAAS NENDEL (Zalf, Leipzig, Germany)
 KAIRSTY TOPP (SRUC, Edinburgh, UK)
These POSTERS to be manned on Tuesday 6 September at 14:00
1 × platform session Tuesday afternoon

Information is the basis for learning and improvement and agriculture produces a lot of data which seeks analysis and use in model improvement, sensor development and farmer education. Here we will explore the mining of data produced in or for agriculture using new methods or data sources and how this data can be assimilated in real-time applications, as with agro-ecosystem simulation models, on-site crop management or decision support software.

Posters in this session

- 12.1 Agronomy ontology, a powerful tool to harmonize agronomic data**
Céline Aubert, Léo Valette, Marie-Angélique Laporte, Julian Pietragalla, Elizabeth Arnaud & Medha Devare (FRANCE)
- 12.2 Modeling forage maize yield using past experiments**
J Doltra, P Gallejones, R Ortiz-González, G Salcedo, D Báez, A Argamenteria, A Martínez-Fernández, A García-Rodríguez & J Mangado (SPAIN)
- 12.4 The forage plant traits and nutrition database**
Mark Lee (UK)
- 12.5 A statistical analysis of G×E contribution to leaf senescence during grain filling in wheat**
Francois Collin, Pierre Bancal, John Foulkes & Marie-Odile Bancal (UK)

Session: Optimising the use of long-term experiments for agriculture and agronomy
Session organizers: GORAN BERGKVIST (SLU, Uppsala, Sweden)
 RAFAEL LOPEZ-BELLIDO (University of Cordoba, Córdoba, Spain)
These POSTERS to be manned on Tuesday 6 September at 13:30

1 × platform session - Tuesday afternoon

This session covers aspects of agronomy and soil science from a long-term point of view. Topics within this session include, but are not limited to: (i) design, management, analysis, modification, importance, problems, revaluing, ecological surprises, etc.; (ii) sustainable production and adaptation to climate; (iii) climate change mitigation: C farming; (iv) nutrient losses; (v) crop sequences.

Posters in this session

- 13.1 White clover in a terminated long-term experiment**
Thomas Döring, Sören Schultz & Sebastian Roye (GERMANY)
- 13.2 Long term effect of contrasted cropping systems and climate change on drainage over 35 years: A lysimeter experiment**
Julie Constantin, Magali Willaume, Eric Venet, Jérôme Duval & Nicolas Beaudoin (FRANCE)
- 13.3 Long-term effects of conventional and conservation farming systems on soil organic matter and microbial activity**
Sergej Ustak, Milan Vách, Jakub Munoz, Marie Ustaková, Valentin Lopes De Gerenyu & Irina Kurganova (CZECH REPUBLIC)
- 13.4 Statistical approach to analyze production systems: to what extend?**
B Pages & C Toque (FRANCE)
- 13.5 Durum wheat yield and protein stability in a long term experiment in southern Italy**
Domenico Ventrella, Alessandro Vittorio Vonella, Francesco Fornaro & Luisa Giglio (ITALY)
- 13.6 French map of tested re-designed vineyards systems according to drastic reduction of pesticides in PDO constraints**
Marie Thiollot-Scholtus, Lionel Ley, Laurent Deliere, David Lafond & Raphaël Metral (FRANCE)
- 13.7 Soil nitrate dynamic in a long-term double cropping system experiment in northeast Spain**
J Ovejero, C Ortiz, J Boixadera, X Serra, S Ponsá & C Casas (SPAIN)
- 13.8 Potentially mineralizable organic carbon and inorganic nitrogen in an Australian clay soil after 10 years under no tillage or conventional tillage with or without irrigation**
Marshall McDaniel, Carmelo Maucieri, Yaojun Zhang, Maurizio Borin & Mark Adams (ITALY)
- 13.9 Winter wheat production as affected by tillage system and crop rotation**
A Ruza, Z Gaile, D Kreita & L Litke (LATVIA)
- 13.10 Effect of long-term N, P and K fertilization on confectionary sunflower hybrids**
J Crnobarac, I Balalić, D Latković, G Jaćimović & B Čupina (SERBIA)
- 13.11 Long-term effect of tillage system on winter wheat production and soil quality**
M Vach, Z Stražil & M Javůrek (CZECH REPUBLIC)
- 13.12 Investigating the reactivity of phosphate in subsoils using two contrasting UK soil P tests**
S Coyle, M R Broadley, J Craigon, N M J Crout, A C Edwards, R L Walker, C A Watson & S D Young (UK)
- 13.13 Detection of MacroNutrient deficiency in Miscanthus cultivated in Static Experiment by the use of chlorophyll fluorescence technique**
Tomasz Horaczek, Stefan Pietkiewicz, Zdzisław Wyszynski, Wojciech Stępień, Beata Michalska-Klimczak & Momamed Hazem (POLAND)
- 13.14 The sites agroecological field experiment (safe) for long-term cropping systems research**
Maria Ernfors, Linda-Maria Mårtensson & Erik Steen Jensen SWEDEN)

Session Sustainable intensification – theory or practice? (sponsored by the AAB's *Food and Energy Security Journal*)

Session organizers: IAN DODD (University of Lancaster, UK)
ROB CARLTON (AAB CATE Convener, De Pinte, Belgium)
NEIL HAVIS (SRUC, Edinburgh, UK)

These POSTERS to be manned on Wednesday September at 13:30

2 × platform sessions - Wednesday morning

Sustainable intensification aims to increase food production from existing farmland while minimizing pressure on the environment. How can European agriculture 'intensify' food production and make it 'sustainable'? If we fail we undermine our capacity to

continue producing food in the future.

A small number of posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform session

- 1.1PH Row distance and cultivar but not sowing density determined wheat yield and competition against weeds**
Sergio Saia, Salvatore Antonio Colecchia, Ivano Pecorella & Pasquale de Vita (ITALY)
- 1.2PH Nano-titania aided colonization of *Brassica napus* by the Plant Growth Promoting Rhizobacteria *Bacillus amyloliquefaciens* strain UMBC 5113**
N G M. Palmqvist, S Bejai, J Meijer, G A Seisenbaeva & V G Kessler (SWEDEN)
- 1.3PH The effect of fungicides applied pre-stem extension on *Septoria tritici* blotch and yield of winter wheat (*Triticum aestivum*) in Ireland**
H E Creissen, S Kildea, L Glynn & J H Spink (IRELAND)
- 1.4PH Response of mated insected (both sexes) of *Sitophilus granarius* to blends of volatiles**
Dariusz Piesik, Anna Wenda-Piesik & Anita Krasinska (POLAND)
- 1.5PH Injury profile simulator (IPSIM), a modelling platform to design qualitative models predicting injury profiles as a function of cropping practices and production situations. Application to Fusarium head (FHB)**
M H Robin & J N Aubertot (FRANCE)
- 1.6 A meta-analysis of relative crop yields in cereal/legume mixtures suggests options for management**
Yang Yu, Tjeerd-Jan Stomph, David Makowski, Lizhen Zhang & Wopke van der Werf (NETHERLANDS)
- 1.7 Multispectral aerial images to assess nitrogen fertilization in maize (*Zea mays* L.) under high yielding-conditions**
Ángel Maresma, Jaume Lloveras & José Antonio Martínez-Casasnovas (SPAIN)
- 1.9 Novel oilseed crops for cropping systems diversification of central Italy**
Luciana G Angelini, Lara Foschi, Silvia Tavarini & Luca Lazzeri (ITALY)
- 1.10 Concept of resource-use efficiency in organic and conventional farming in Germany**
Lucie Chmelikova, Harald Schmid & Kurt-Jürgen Hülsbergen (GERMANY)
- 1.11 Phosphorus and zinc uptake by sugar beet as affected by soil P status**
Antonio Delgado, Ramiro Recena, Ana María García-López, José Torrent & María del Carmen Del Campillo (SPAIN)
- 1.13 *In vitro* Regeneration of Medicinal Hypoxis Species**
Busie E B Nsibandé, Xueyuan Li, Annelie Ahlman & Li-Hua Zhu (SWAZILAND)
- 1.14 Effect of sulphur in the photosynthetic rate of massai grass exposed to cadmium**
Flávio Henrique Silveira Rabêlo, Elcio Ferreira dos Santos, Lucélia Borgo & José Lavres Junior (BRAZIL)
- 1.15 Effects of mycorrhizal inoculation on soil CO₂ emissions in six energy crop systems fertilized with digestate under rainfed condition**
Carmelo Maucieri, Caterina Caruso, Antonio C Barbera & Maurizio Borin (ITALY)
- 1.16 “La Nouvelle Agriculture” (New Agriculture) as a way to succeed in sustainable intensification of crop production**
Bertrand Terrena Pinel (FRANCE)
- 1.17 De-Mystifying Sustainable Intensification: Insights from an investigation into the views of British stakeholders**
N I Mahon, I Crute, E Simmons & M M Islam (UK)
- 1.18 Impact of chaff collection and removal on density of rye-grass (*Lolium* Sp)**
Pascale Metais, Sylvain Bureau, Damien Gaudillat & Aurélie Geille (FRANCE)
- 1.19 Development of a new threshold scheme for controlling wheat bulb fly**
Kate Storer, Pete Berry & Steve Ellis (UK)
- 1.20 Repellents of non-host phytoecdysteroid plants to neonate larvae of the European corn borer**
Dariusz Piesik, Didier Rochat, Danuta Wrzesinska, & Frédéric Marion-Poll (POLAND)
- 1.21 Stability of fenpropathrin resistance in the predatory mite *Phytoseiulus macropilis* (Acari: Phytoseiidae)**
Maria Cristina, Vitelli Queiroz & Mario Eidi Sato (BRAZIL)

- 1.22 Investigating tolerance of oilseed rape to pollen beetle damage**
Sarah Kendall, Kate Storer, Stephen Ellis & Pete Berry (UK)
- 1.23 Analysis of winter barley yield loss due to disease load and genotypic susceptibility**
Damien Beillouin, Marie-Hélène Jeuffroy & Arnaud Gauffreteau (FRANCE)
- 1.24 Yield and optimum fungicide dose rates of winter wheat varieties with contrasting resistance to *Septoria tritici* blotch**
Joseph P Lynch, Liz Glynn, Steven Kildea & John Spink (IRELAND)
- 1.25 Implementation of measures to reduce nitrate leaching in agriculture with a focus on "site-specific farming"**
Josef Prücklmaier, Kurt-Jürgen Hülsbergen & Franz Xaver Maid (GERMANY)

Session: Adaptation to Climate Change (sponsored by Climate Café FACCE JPI project)

Session organizers: FRED STODDARD (University of Helsinki, Finland)

JOHANN BACHINGER (Zalf, Leipzig, Germany)

These POSTERS to be manned on Wednesday September at 13:30

2 × platform sessions - Wednesday morning

Climate change brings challenges and opportunities for cropping and farming systems. Minimizing the deficits while maximizing the opportunities will require novel strategies, singly and in combination. The session will explore ecological or sustainable intensification, novel rotations including legumes or other regionally novel crops, alternative options such as cover crops and intercrops, tillage options, and other ways of enhancing the resilience of the soil-crop system and the subsequent steps in the bio-economy.

Posters in this session

- 2.4 Effects of Conservation Agriculture on C sequestration in irrigated maize systems**
Carlos Salamanca-Fresno, José M Murillo & Helena Gómez-Macpherson (SPAIN)
- 2.5 Evaluation of *Camelina sativa* (L.) Crantz as oilseed crop in two environments of central and northern Italy**
Luciana G Angelini, Lara Foschi, Silvia Tavarini & Luca Lazzeri (ITALY)
- 2.6 *Lupinus polyphyllus* invasivity in warming climate conditions**
Sigita Jurkonienė, Virgilija Gavelienė, Danguolė Švegždienė, Jūratė Darginavičienė, Jurga Jankauskienė & Nijolė Anisimoviene (LITHUANIA)
- 2.7 Mild heat stress under contrasting availabilities of nitrogen in the field affect wheat yield and quality**
Mónica Elía, Gustavo A Slafer & Roxana Savin (SPAIN)
- 2.8 The performance of AquaCrop model in chickpea crop (*Cicer arietinum* L.) sown on different dates in North Eastern part of South Africa**
M T Mubvuma, J B O Ogola & T Mhizha (SOUTH AFRICA)
- 2.9 Increasing chilling tolerance of sorghum as future energy crop in Europe**
Franciszek Janowiak, Katarzyna Kaczanowska, Agnieszka Domagala, Hai-Chun Jing, Wubishet A Bekele, Birgit Samans & Rod J Snowdon (POLAND)
- 2.11 Exploring rye-soybean double cropping systems as a climate change adaptation strategy**
R Bloch, J Bachinger, M Reckling, J Schuler & P Zander (GERMANY)
- 2.12 Yield, grain number and thousand grain weight plasticity in main stem and tiller of wheat**
Jaime F Herrera, Daniel Paredes & R Calderini (CHILE)
- 2.13 To irrigation management strategy by potato variety in case of restricted available water volume**
Sophie Gendré, Cyril Hannon & Jean-Marc Deumier (FRANCE)
- 2.14 Grain N-acquisition and grain protein concentration in wheat as affected by free air CO₂ enrichment and N fertilization**
Markus Dier, Remy Manderscheid, Jan Sikora, Martin Erbs & Hans-Joachim Weigel (GERMANY)
- 2.15 Growth and genome analysis of 98 barley genotypes exposed to elevated CO₂ under field conditions**
Esther Mitterbauer, Matthias Enders, Jürgen Bender, Martin Erbs, Antje Habekuß, Benjamin Kilian, Frank Ordon & Hans-Joachim Weigel (GERMANY)

- 2.16 Evaluation of the effects of partial root zone drying irrigation on corn yield and yield components**
Mahmoud Raeini-Sarjaz, Mohammad Hosseini & Ali Shahnazari (IRAN)
- 2.17 Heat and drought tolerance evaluation in potato (*Solanum tuberosum* L) cultivars**
Krystyna Rykaczewska (POLAND)
- 2.18 Optimal seeding dates and seeding rates of winter wheat in eastern Canada**
Francis Allard, Anne Vanasse, Denis Pageau, Gilles Tremblay, Julie Durand & Élisabeth Vachon (CANADA)
- 2.19 Do we need heat stress tolerant traits in future genotypes of wheat?**
Henry M Barber, Martin Lukac, Mike J Gooding & Mikhail A Semenov (UK)
- 2.20 Deep rooting in a wheat doubled haploid population with introgression from wild emmer**
Christina K Clarke, Peter J Gregory, Mike Gooding & Martin Lukac (UK)
- 2.21 Building resilience to climate change through the sharp tool: lessons learned through best practices in climate adaptation in sub-saharan Africa**
John Choptiany, Maria Hernandez Lagana, David Colozza & Benjamin Graub (ITALY)
- 2.22 Distribution of soil carbon in arable soils in Scotland under different tillage practices**
J L Brown, R Stobart, P D Hallett, N L Morris, T S George, A C Newton, T A Valentine & B McKenzie (UK)
- 2.23 Spring barley split root systems for evaluating rhizosphere soil carbon and nitrogen cycling under different fertilisers**
J P Parker, A Basley & J M Cloy (UK)

Session: **Understanding and modelling the impact of extreme weather events on crop production** (in association with the *European Journal of Agronomy*)

Session organizers: AFSHIN SOLTANI (University of Agricultural Sciences and Natural Resources, Gorgān, Iran) & OLAF CHRISTEN (Martin Luther University Halle-Wittenberg, Germany)

These POSTERS to be manned on Wednesday 7 September at 13:00

1 × platform session - Wednesday afternoon

Extreme weather events (heat waves, cold temperatures, severe drought, prolonged flooding, etc) are already increasing due to global warming and will increase further which may lead to substantial loss of crop growth and yield. This session welcomes papers dealing with definition and characterization of extreme events for different crops and processes, and experimental observation and modelling extreme events impacts on crop growth and yield.

Posters in this session

- 4.1 Modelling the impact of climate change on crop yield – A sensitivity analysis of the impact of climate interactions**
Sally Olosogba, Les Duckers & Wendy Garner (UK)
- 4.2 Identifying oilseed rape climatic limitation to understand regional and annual yield variability**
A Baux, J Wegmüller, J Herrera & A Holzkämper (SWITZERLAND)
- 4.3 Characterization and quantification of the impacts of abiotic perturbations on wheat yield**
Nicolas Urruty, Delphine Tailliez-Lefebvre & Christian Huyghe (FRANCE)
- 4.4 A dynamic model of sodium accumulation in cucumber leaves**
Dany Moualeu-Ngangué, Tsu-Wei Chen & Hartmut Stützel (GERMANY)
- 4.5 Assessing the impacts of extreme high temperatures on the productivity of olive orchards through a modelling approach**
Alvaro Lopez-Bernal, Omar Garcia-Tejera, Francisco Orgaz, Luca Testi & Francisco J Villalobos (SPAIN)
- 4.6 Hormonal control of dehydrins composition during cold acclimation in *Brassica napus***
Jurga Jankauskienė, Nijolė Anisimovienė, Rima Mockevičiūtė & Pavel Vítámvás (LITHUANIA)
- 4.7 Post-anthesis heat stress in wheat: is the reduction in grain size a consequence of premature maturation of the outer layers of the grain?**
Richard Kino, Paola Tosi & Rowan Mitchell (UK)

- 4.8 Regulation of winter rapeseed resistance to cold. A possible role of amino acids**
Virgilija Gaveliene, Lina Pakalniskyte & Leonida Novickiene (LITHUANIA)
- 4.9 Evaluation of sunflower (*Helianthus annuus* L.) single cross hybrids under heat stress condition**
Maria Khana, Maria Kausara, Saeed Raufa & Muhammad Mubashar Hussaina (PAKISTAN)
- 4.10 Effect of minimum tillage on runoff water quality from wheat and barley fields**
Marco Napoli, Anna Dalla Marta & Simone Orlandini (ITALY)

Session: Building diversity into Cropping Systems (sponsored by the British Society of Ecology Agroecology group)

Session organizers: PETE IANNETTA (The James Hutton Institute, Dundee, UK)
WOPKE VAN DER WERF (Wageningen University, the Netherlands)
BARBARA SMITH (University of Coventry, UK)

These POSTERS will be manned on Wednesday 7 September at 13:00
1 × platform session - Wednesday morning

Building diversity into cropping systems may deliver multiple benefits from improved ecosystem services and greater resilience to abiotic or biotic adverse conditions. Diversity can take place at the level of the crop (e.g. intercropping, cover cropping, agroforestry) or the landscape (e.g. integration of semi-natural habitats and permaculture).

Posters in this session

A small number of posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform session

- 3.1PH Row vs relay intercropping strategies of organic wheat and clover: optimising the trade-off between provided services**
Florian Celette, Sylvain Vrignon-Brenas & Christophe David (FRANCE)
- 3.2PH Can novel crop rotations enhance ecosystems services in arable production?**
Erika Degani, Samuel Leigh, Hannah Jones, Simon Potts & Peter Sutton (UK)
- 3.3PH Effect of black medic (*Medicago lupulina*) and nitrogen fertiliser on crop yield and soil nitrogen**
William E May & Martin Entz (CANADA)
- 3.4PH Incidence of N fertilization on ecological services**
Sylvain Vrignon-Brenas, Florian Celette & Christophe David (FRANCE)
- 3.5PH Synergy between crop diversity and earthworm community improve crop yields**
B Drut, N Cassagne, M Cannavacciuolo & J Fustec (FRANCE)
- 3.6PH Optimal canola rotations**
K N Harker, J T O'Donovan, T K Turkington, R E Blackshaw, N Z Lupwayi, E G Smith, H R Kutcher, C J Willenborg, Y Gan, L M Dossall, L M Hall, G. Peng, R B Irvine & R Mohr (CANADA)
- 3.7PH Evolving towards less pesticide use in apple farms: Which indicators for reflecting the diversity of farm practices?**
Solène Pissonnier, Claire Lavigne & Pierre-Yves Le Gal (FRANCE)
- 3.8PH Can border plantings lure deer from, and attract carabid beetles to, soybean fields in Nova Scotia, Canada?**
Nancy L McLean, Ashley D Mullins & Chris G Cutler (CANADA)
- 3.9PH Operation Pollinator: Positive action for pollinators on arable farms**
Peter Sutton, Geoff Coates, Belinda Bailey, Marek Nowakowski, Mike Edwards, Robin Blake, Ben Woodcock & Richard Pywell (UK)
- 3.10PH Introducing cover crops in vineyards to optimize nitrogen flux**
Aurelie Metay, Nicolas Guilpart, Leo Garcia & Gary Christian (FRANCE)
- 3.12 Ecosystem services bundles and conservation agriculture**
Ariane Chabert & Jean-Pierre Sarthou (FRANCE)
- 3.13 Use of NIR hyperspectral imaging to detect and quantify nodules on root system of associated crops**
Damien Eylenbosch, Jérôme Pierreux, Juan Antonio Fernández Pierna, Vincent Baeten & Bernard Bodson (BELGIUM)

- 3.15 **Meta-modeling light interception**
Floriane Colas, Jean-Pierre Gauchi, Jean Villerd & Nathalie Colbach (FRANCE)
- 3.16 **root dynamics of weed species in relation to soil-nitrogen level. How to represent them?**
Delphine Moreau, Florent Abiven, Hugues Busset, Annick Matejcek & Loïc Pagès (FRANCE)
- 3.17 **A new method to estimate the nitrogen status of individual plants in canopies**
Delphine Moreau, Bruno Andrieu, Romain Barillot, Abad Chabbi, Danilo dos Reis Cardoso Passos, Jean-Louis Durand, François Gastal, Céline Richard-Molard, Anne-Sophie Voisin & Gaëtan Louarn (FRANCE)
- 3.18 **Impact of different tillage systems on root growth and earthworm population in maize**
Barbara Koblenz, Maria Umann, Monika Wensch-Dorendorf, Jan Rücknagel & Olaf Christen (GERMANY)
- 3.19 **Assessing the effect of competition on growth and nutrition status by an Italian ryegrass / tall fescue mixture**
V Gonzalez-Dugo & J L Durand (SPAIN)
- 3.20 **Frost-sensitive legume companion plants in winter oilseed rape: Weed control, nitrogen saving and impact on yield in network trials**
Valentin Verret, Antoine Gardarin, Arnaud Butier, David Makowski, Muriel Valantin-Morison (FRANCE)
- 3.22 **Innovative approaches to optimise crop genetic diversity for sustainable farming systems of the future (insusfar): project overview**
J Peter Baresel, Gunther Backes, Lorenz Bülow, Maria R Finckh, Lothar Frese, Samuel Knapp, Detlev Möller, Hans Jürgen Reents, Torsten Siegmeier, Robert Simon, & Odette Weedon (GERMANY)
- 3.23 **Row spacing and BNF by catch crop**
Chiara De Notaris, Peter Sørensen, Jim Rasmussen & Jørgen E Olesen (DENMARK)
- 3.26 **Bi-cropping spring field bean (*Vicia faba*) and wheat (*Triticum aestivum*) for whole crop forage in the UK**
D Kamalongo, N D Cannon, W P Davies, & J S Conway (UK)
- 3.27 **Short-term break crop influences on nitrogen uptake and yield of wheat in UK arable production**
J M Matthews, W P Davies, G P F Lane & K Rial-Lovera (UK)

Session: Landscape management for food and ecosystem services
Session Organizers: MARC BENOIT (INRA, Mirecourt, Nancy-Lorraine, France)
 DAVID RIZZO (Scuola Superiore Sant'Anna, Pisa, Italy)
These POSTERS will be manned on Wednesday 7 September at 13:30
1 × platform session - Wednesday morning

Landscape is clearly emerging as a crucial level for evaluating and managing agricultural systems. Here we will explore two complementary challenges related to this perspective: (i) how can we assess the performance of the agricultural landscape in the provision of a wide range of ecosystem services?, and (ii) what advances in agronomic knowledge and tools are needed for cultivating and designing innovative agricultural systems? The session includes agronomic and interdisciplinary research, and both theoretical and case-based approaches.

Posters in this session

A small number of posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform session

- 8.1PH **Interdisciplinary approaches to understand the agroecological transition: active teaching in France and Switzerland**
Julie Ryschawy & Alexandre Aebi (FRANCE)
- 8.2PH **Landsharing vs landsparing: how to reconcile crop production and biodiversity? A simulation study focusing on weed impacts**
N Colbach, S Granger, B Ricci & A Messéan (FRANCE)
- 8.3 **Spatial evolution of agricultural buffer filter strips as water purification service along the minor channel network in the Po**
Salvatore Eugenio Pappalardo, Marco Sozzi, Fabio Magosso, Antonio Berti & Maurizio Borin (ITALY)
- 8.4 **Spatial determinants of biomass and root exploration heterogeneity at watershed scale**
Enguerrand Burel, Nathalie Jarosz-Pellé, Rémy Fieuzal, Sébastien Verrier, Julie Betbeder, Sylvain Ferrant & Vincent Bustillo (IRELAND)

- 8.5 Potential impacts of Water Framework Directive on the environmental services associated with historical irrigation systems: A case study from Sourthen Spain**
M Garcia-Vila, J M Martin Civantos, J F Ruiz Ruiz, M T Bonet & E Fereres (SPAIN)
- 8.6 Impact of weeds management on the floristic composition and abundance of the cover in citrus orchards: A step to conservation biological control**
Marie Rothé, Fabrice Le Bellec, Rose-My Payet & Christian Bockstaller (FRANCE)
- 8.8 Low-input farming practices and semi-natural habitats support better pest control in cereal fields through higher abundance of natural enemies**
Zoltán Elek, Gergely Boros, Anikó Kovács-Hostyánszki & András Báldi (HUNGARY)

Session: Performance and stability of yield and quality in organic and conventional cropping
Session organizer: THOMAS DÖRING (Humboldt University of Berlin, Germany)

These POSTERS to be manned on Wednesday 7 September at 13:00

1 × platform session - Wednesday morning

As organic and conventional cropping systems evolve in response to political, environmental and technical developments, the debate on the relative merits of specific cropping systems continues. We explore yield and quality performance and stability in organic and conventional cropping systems, factors affecting the yield gap in both organic and conventional systems.

Posters in this session

- 10.1 Lentil wheat intercrops in organic agriculture**
L Viguié, E P Journet, L Bedoussac & E Justes (FRANCE)
- 10.2 Potential for cereal-pea intercrops to increase protein yields**
R L Walker & J Faulconbridge (UK)
- 10.3 An analysis of winter rye yield variability among fields in central Poland using Classification And Regression Trees (CART)**
Beata Michalska-klimczak, Maciej Oficjalski, Marcin Olik, Wieslaw Madry & Zdzislaw Wyszynski (POLAND)
- 10.4 How does the pre-flowering period determine the final kernel weight in sunflower?**
Santiago Vásquez, Francisca Castillo, Ricardo Riegel, Carolina Lizana & Daniel Calderini (CHILE)
- 10.5 Effects of different organic manuring on spring barley yields**
B Prochazkova, M Houst, J Prochazka & P Hledik (CZECH REPUBLIC)
- 10.6 Impact of nitrogen nutrition on yield and quality of spring fibre flax: renewing old results**
Jean-Pierre Cohan, Delphine Cast, Benjamin Pointereau & François Bert (FRANCE)
- 10.7 Early assessment of yield potential in vineyard systems: Influence of nitrogen and water status on the number of inflorescences**
Anne Merot, Aurélie Metay, Maëlle Lis & Nathalie Smits (FRANCE)
- 10.8 Above-ground biomass at maize under different preceding crops and fertilization conditions**
Ion Viorel, Basa Adrian Gheorghe & Dumbrava Marin (ROMANIA)
- 10.9 Good quality of grapes and small yield: Tension between no use of pesticides and use of organic fertilizers?**
Marie Thiollot-Scholtus, Lionel Ley, Joseph Weissbart & Céline Abidon (FRANCE)
- 10.10 Agronomic performance of maize, soybean, and wheat under organic and conventional cropping systems following three entry crops during the first transition year in New York**
William J Cox (USA)
- 10.11 Contrasting soil tillage influences on soil and weeds in UK organic spring wheat**
A V Vijaya Bhaskar, N D Cannon & W P Davies (UK)
- 10.12 Performance of UK organic spring wheat and contrasting soil tillage: yield and economic**
A V Vijaya Bhaskar, N D Cannon & W P Davies (UK)
- 10.13 Comparing the temporal stability of organic and conventional cropping systems – a meta-analysis**
Samuel Knapp & Marcel van der Heijden (SWITZERLAND)

10.14 Meeting P demand in European organic farms: is it time to change the standard?

Julia Cooper, Anne-Kristin Løe, Stefan Hörtenhuber, Paul Mader, Jakob Magid, Astrid Oberson & Kurt Möller (UK)

Session: Measuring the impact of agronomic change

Session organizer: OLAF CHRISTEN (Martin Luther University Halle-Wittenberg, Germany)

These POSTERS to be manned on Wednesday 7 September at 13:00

1 × platform session on Wednesday morning

Changes in agricultural systems at the field, farm or landscape level have complex consequences in terms of economic, social and environmental impact. Several methodologies have been applied to quantify such consequences for biotic and abiotic resources. We will share best practice in quantifying and integrating the impacts of changes in agronomic practice.

Posters in this session

11.1 Effect of different farming systems on soil organic matter in four regions of Germany

Lucie Chmelikova (GERMANY)

11.2 Combining field experiment and modelling to understand the effect of management practices on N₂O emissions in *Miscanthus* × *Giganteus*

C Peyrard F Ferchaud B Mary & J Leonard (FRANCE)

11.3 Nitrogen in sugarbeet production

Laura L Van Eerd, Nora Alsafi & Lei Wang (CANADA)

11.4 N₂O flux from N-fertilizers with and without nitrification or urease inhibitors applied on two soils

Iride Volpi, Patricia Laville, Simona Bosco, Nicoletta Nassi O Di Nasso & Enrico Bonari (ITALY)

11.6 Valuing natural pest control services

Han Zhang, Tom Breeze, Alison Bailey & Simon Potts (UK)

11.7 Changes in soil physical quality associated with potato production

Blair M McKenzie, Mark A Stalham, Katharine F Preedy, Kenneth W Loades, & Paul D Hallett (UK)

11.8 Sustainability indicators in dairy forage systems

J Doltra, A Villar, R Moros, G Salcedo, N J Hutchings & I S Kristensen (SPAIN)

11.9 Economic analyses of irrigated continuous maize under conventional and no tillage systems in Castile and León (Spain)

A Sombrero, L Rodríguez-Bragado, M C Díez & P Casta (SPAIN)

11.10 Impact of breeding on cereals yields in Poland

Tadeusz Oleksiak (POLAND)

11.11 Pesticide retention by weeds: indicators

W Queyrel & N Colbach (FRANCE)

11.12 Is the inoculation with arbuscular mycorrhizal fungi (*Glomus* sp. and *Acaulospora* sp.) a competitive agricultural practice in colombian gooseberry (*P. peruviana* L.) crop?

M M Ramirez-Gomez, D P Serralde- Ordoñez, A M Peñaranda-Rolon, U A Perez-Moncada, I Baquero-Haberlein & G Roveda Hoyos (COLUMBIA)

11.13 Effects of biogas digestates on soil biological activity in organic farming

Anja Simon, Karin Levin, Robert Simon, Hans Jürgen Reents & Kurt-Jürgen Hülsbergen (GERMANY)

11.14 Impact of slurry strip-till and full-surface application on NH₃ and N₂O emissions

B Pietzner, J Rücknagel, D Bednorz, B Koblenz, N Tauchnitz, J Bischoff, M Schrödter, R Meissner, & O Christen (GERMANY)

11.15 Effects of soil disturbance on distribution of arable weeds within a field

M Santín-Montanyá, F Sánchez, C Casanova, E Zambrana & J L Tenorio (SPAIN)

11.16 Effects of mycorrhizal inoculation on biomass production of six crops under digestate fertilization in rainfed conditions

Caterina Caruso, Carmelo Maucieri, Antonio C Barbera & Maurizio Borin (ITALY)

- 11.17 Changing in seed yield of sunflower hybrids in relation to sowing density**
Igor Balalic, Jovan Crnobarac, Vladimir Miklic, Velimir Radic & Nenad Dusanic (SERBIA)
- 11.18 A nutrient assessment approach for Scottish arable and livestock systems**
Frances Ryan, Anthony Edwards, Christine Watson, Ron Wilson & Cairistiona Topp (UK)
- 11.19 Effect of nitrogen source, rates and time of application on rain fed durum wheat under Mediterranean climate: Agronomic and environmental implications**
Luigi Tedone, Salem Alhajj Ali, Leonardo Verdini & Giuseppe De Mastro (ITALY)
- 11.20 Farmland earthworms uncovered – a comparison of managements systems, habitat types and sampling methods on nine Bavarian farms**
Anna Zvorykina, Anna Köhler & Wolfrum Sebastian (GERMANY)
- 11.21 Effects of conventional and no tillage systems on soil water dynamics and water use efficiency in irrigated continuous maize in a semiarid area of Castile and Leon (Spain)**
A Sombrero, L Rodríguez-Bragado, M C Díez & P Casta (SPAIN)

Session: Managing crop quality for human and livestock nutrition

Session organizers: MIKE GOODING (IBERS, Aberystwyth, UK)
BERNARD JEANGROS (Agroscope, Switzerland)

These POSTERS will be manned on Wednesday 7 September at 14:00

1 × platform session - Wednesday afternoon

The session will address the effects of environment, agronomy and genotype, and their interactions, on the quality of crops for human and livestock consumption. We are particularly interested in how crops can achieve quality attributes while at the same time the sustainability of the production systems is improved, e.g. by increased resource-use efficiency and/or improved adaptation to environmental change.

Posters in this session

A small number of these posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform sessions

- 7.1PH Intercropped barley for brewing and distilling**
Kirsty Black, Graeme Walker, Philip White, Geoff Squire & Pietro Iannetta (UK)
- 7.2PH Agronomic performance of modern bread wheat cultivars under mediterranean conditions**
Spyridon D Koutroubas, Christos A Damalas & Sideris Fotiadis (UK)
- 7.3PH Influence of genotype, environment and crop management on the grain quality traits of spring wheat**
Wijata Magdalena, Grzegorz Sobczyński, Marcin Studnicki, Dariusz Gosdowski, Stanisław Samborski & Jan Rozbicki (POLAND)
- 7.4PH Selenium fertilization differentially affects grain selenium content but not yield in old and modern durum wheat genotypes**
Pasquale De Vita, Cristiano Platani, Mariagiovanna Fragasso, Donatella B.m. Ficco, Salvatore A Colecchia, Sergio Saia, Spartaco Di Gennaro & Angelo Petrozza (ITALY)
- 7.5PH Influence of cultivar and nitrogen nutritional status on winter wheat grain yield components**
Sobczynski Grzegorz & Rozbicki Jan (POLAND)
- 7.6 Evaluation of stevia response to different cutting schedule in a Mediterranean climate**
Luigi Tedone, Donatella Negro, Giulio Sarli & Giuseppe De Mastro (UK)
- 7.7 Impact of agronomical treatments to semipermanent rye grain yields**
J Prochazka, B Prochazkova, J Pelikan & D Knotova (CZECH REPUBLIC)
- 7.8 Response of rape explants (*Brassica napus* var. *oleifera*) cultured *in vitro* on media enriched with iron nanoparticles**
Anna Wenda-Piesik & Agnieszka Nowak (POLAND)

- 7.9 Sulfur and nitrogen fertilization of spring rapeseed grown under a cool climate**
Denis Pageau (CANADA)
- 7.10 Impact of slurry application on dry matter forage yield and N uptake in a maize–triticale double cropping system**
J Ovejero, C Ortiz, J Boixadera, X Serra, S Ponsá & C Casas (SPAIN)
- 7.11 Yield component response of winter barley grown at four nitrogen levels**
Damien Beillouin, Arnaud Gauffreteau, Jean-François Herbomez, Claire Perrot & Marie-Hélène Jeuffroy (FRANCE)
- 7.12 Influence of cultivar and nitrogen nutritional status on winter wheat grain yield components**
Grzegorz Sobczyński & Jan Rozbicki (POLAND)
- 7.13 The quality of triticale-oat bread in different environmental conditions**
Anna Fraś, Kinga Gołębiewska, Dariusz R Mańkowski, Damian Gołębiewski & Danuta Boros (POLAND)

Session: Managing crops as soil improvers
Session organizers: CHRISTINE WATSON (SRUC, Aberdeen, UK & SLU, Uppsala, Sweden)
 RAFAEL CHARLES (FIBL, Switzerland)

These POSTERS to be manned on Wednesday 7 September at 14:00
1 × platform session - Wednesday afternoon

Choice and management of crops can have a major influence on soil chemical, biological and physical properties. In this session we will explore how individual crops and crop sequences can be managed to improve soils, e.g. using cover crops to break up compacted soils.

Posters in this session

A small number of these posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform sessions

- 9.1PH Performance of cover crops and effect on the following crop in a long term tillage experiment**
Lucie Büchi, Marina Wendling, Camille Amossé & Raphaël Charles (SWITZERLAND)
- 9.1aPH Six years of contrasting crop residue management strategy on luvisol : moderate impacts on crop production**
Marie-Pierre HIEL, Jérôme PIERREUX, Gilles COLINET & Bernard BODSON (BELGIUM)
- 9.2PH Mixed cruciferous–legumes cover crops produce N management ecosystem services**
Antoine Couëdel, Simon Giuliano, François Perdrieux, Gaël Rametti, Éric Justes & Lionel Alletto (FRANCE)
- 9.3 Organic field vegetables grown under conservation agriculture: Preliminary results from a 2-site field experiment in central Italy**
Giacomo Tosti, Daniele Antichi, Massimo Sbrana & Christian Frascini (ITALY)
- 9.4 Effect of early arbuscular mycorrhizal fungi inoculation in blackberry (*Rubus glaucus*) plant nutrition**
Diana Paola Serralde-Ordoñez, María Margarita, Ramirez-Gomez, Andrea María Peñaranda-Rolón – Urley, Adrian Pérez-Moncada & Gabriel Roveda-Hoyos (COLUMBIA)
- 9.5 Sugar beet yielding in third rotation of sugar beet – winter wheat – winter rape**
Arkadiusz Artyszak & Beata Michalska-Klimczak (POLAND)
- 9.6 Spatial variability of soil properties and winter triticale yielding in production field**
Beata Michalska-Klimczak, Jakub Paderewski & Zdzisław Wyszynski (POLAND)
- 9.7 Sewage sludge utilization after the *Miscanthus giganteus* cultivation**
Zdzisław Wyszynski, Izabela Toborowicz-Borda, Beata Michalska-Klimczak, Krzysztof Pagowski & Joanna Leśniewska (POLAND)
- 9.8 Iron chlorosis is alleviated by intercropping**
Pedro López Erencía, Juan Carlos Cañasveras, Antonio Rafael Sánchez-Rodriguez, Antonio Delgado, Vidal Barrón, José Torrent & María Carmen Del Campillo (SPAIN)
- 9.9 Nitrogen Dynamics in Organic Rotation**
Kairsty Topp (UK)

- 9.10 How well do we understand the N dynamics of grass/clover pastures?**
N Hutchings, C Topp & I Kristensen (UK)
- 9.11 Effects of cover crop rotational systems and indigenous arbuscular mycorrhizal fungi on the growth and yield of maize (*Zea mays* L.)**
Masao Higo, Yuichi Takahashi, Kento Gunji, Daisuke Suzuki & Katsunori Isobe (JAPAN)
- 9.12 Red clover (*Trifolium pratense*, L.) variety evaluation for soil fertility-building**
P McKenna, N Cannon, W P Davies, J Conway & J Dooley (UK)
- 9.13 Over-sowing maize to minimise diffuse pollution**
K E Smith, A Bowden, R M Dunn, J Morgan & J R Williams (UK)

Session: Water Framework Directive – Challenges and opportunities
Session organizer: ELIZABETH STOCKDALE (Newcastle University, UK)
These POSTERS to be manned on Wednesday 7 September at 14:00
1 × platform session - Wednesday afternoon

This session will focus on how current and alternative agronomic practices can improve water quality by reducing nutrient, sediment, pathogen loads in surface waters in Europe. Presentation and poster include information about experimental and modelling approaches in annual or perennial cropping systems and at field or landscape scales.

Posters in this session

A small number of these posters have been selected for introduction as **POSTER HIGHLIGHTS** within the platform sessions

- 14.1 Nitrogen balance and fluxes in a 17 yr experiment comparing alternative cropping systems**
Bénédicte Autret, Lucia Rakotovololona, Bruno Mary, Michel Bertrand, Claire Chenu, Gilles Grandeau & Nicolas Beaudoin (FRANCE)
- 14.2 Nitrate leaching losses from organic arable crop fields in Northern France**
L Rakotovololona, B Mary & N Beaudoin (FRANCE)
- 14.3 Reactive ditches – easy implementable wood chip bioreactors to reduce nitrate exports from agricultural land**
Insa Kühling, Matthias Pfannerstill, Cindy Hugenschmidt, Michael Trepel & Nicola Fohrer (GERMANY)
- 14.4 ICT tools for enhancing sustainable water management in rural environments**
Giovanna De Filippis, Davide Rizzo, Federico Triana, Matteo Ghetta, Iacopo Borsi, Enrico Bonari & Rudy Rossetto (FRANCE)
- 14.5 Studies on the short-term transformation of available phosphorus forms**
K Sárdi (HUNGARY)
- 14.6 The water framework directive facing tropical context**
Magalie Lesueur Jannoyer, Charles Mottes, Irina Comte & Philippe Cattan (FRANCE)
- 14.7 Locating the contribution of cropping systems to water pollution by pesticide at the watershed scale**
Charles Mottes, Magalie Lesueur-Jannoyer, Pauline Della Rossa, Marianne Le Bail & Philippe Cattan (FRANCE)
- 14.8 Nitrate leaching - measurements and numerical simulations**
Denise Bednorz, Nadine Tauchnitz, Olaf Christen & Ralph Meissner (FRANCE)
- 14.9 Nitrate leaching in oilseed rape cropping systems - a model-based N scenario study**
Thomas Rübiger, Ulf Böttcher & Henning Kage (GERMANY)
- 14.10 Effect of minimum tillage on runoff water quality from wheat and barley fields**
Marco Napoli, Anna Dalla Marta & Simone Orlandini (ITALY)
- 14.11 Taking into account temporal variation in soil physical properties helps in modelling the water dynamics in a conventionally-tilled soil**
Lionel Alletto, Simon Giuliano, Mathieu Costes, François Perdrieux & Valérie Pot (FRANCE)
- 14.12 Soil tillage and mineral nitrogen accumulation in soil**
Aldis Karklins, Inara Lipenite & Antons Ruza (LATVIA)

- 14.13 Using liquid manure as side dress fertilizer in maize**
Carl-Philipp Federolf, Matthias Westerschulte, Hans-Werner Ols & Dieter Trautz (GERMANY)
- 14.14 Soil mineral nitrogen dynamics in maize after slurry injection compared to broadcast application**
Matthias Westerschulte, Carl-Philipp Federolf, Dieter Trautz & Hans-Werner Ols (GERMANY)
- 14.15 Diagnosis of N losses in cropping systems in water protection areas from specific stakeholders**
R Reau, M Bedu, J B Gratecap, F Pucel & V Parnaudeau (FRANCE)