

**FAO/IAEA International Symposium  
on Managing Soils for Food Security and  
Climate Change Adaptation and Mitigation**

**23 – 27 July 2012  
Vienna, Austria**

**PROGRAMME**

2012-06-26

**Scientific Committee:**

M. S. Aulakh	India
W. E. H. Blum	Austria
P. M. Chalk	IAEA
E. T. Craswell	Australia
T. Friedrich	FAO
R. Lal	USA
Q. Liang	IAEA
L. Montanarella	EC/JRC
M. L. Nguyen	IAEA
S. Nortcliff	United Kingdom
N. Sanginga	IITA
N. Senesi	Italy
J. C. Yang	PR China
P. Zdruli	Italy
B. Zhang	PR China

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**IAEA Secretariat:**

Scientific Secretary:	M. L. Nguyen
Technical Support:	P. M. Chalk
Administrative Support:	J. Antal
Conference Coordination:	K. Morrison M. Khaelss
Exhibition Coordination:	B. Keceli Meszaros

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**Location of the Symposium:**

International Atomic Energy Agency  
Vienna International Centre (VIC)  
Building M  
Boardroom A (M02)  
Wagramer Strasse 5  
1400 Vienna, Austria

Tel.: (+43 1) 2600 21317

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**Working Language:** English

**Resolutions:** No resolutions may be submitted for consideration on any subject; no votes will be taken.

## TIMETABLE

### Sunday, 22 July 2012

16:00–18:00 Registration Gate 1

### Monday, 23 July 2012

08:00 Registration M Building Ground Floor

09:00–10:00 Opening Session

10:00–11:30 Plenary Session

**11:30–12:00** Coffee/Tea Break

12:00–13:00 Session 1 Managing soils for crop production and ecosystem services

**13:00–14:30** Lunch Break

14:30–16:00 Session 1 (Cont'd)

**16:00–16:30** Coffee/Tea Break (hosted by IAEA)  
**VIC Rotunda**

16:30–17:45 Session 1 (Cont'd)

**18:30–20:00** Welcome Reception (hosted by IAEA)  
**VIC Rotunda**

### Tuesday, 24 July 2012

08:30–10:00 Session 2 Preserving and protecting soil resources

**10:00–10:30** Coffee/Tea Break

10:30–11:30 Session 2 (Cont'd)

11:30–13:15 Session 3 Soil and water conservation zones for pollution control

**13:15–14:15** Lunch Break

14:15–15:30 Poster Session

**15:30–16:00** Coffee/Tea Break (hosted by IAEA)  
**VIC Rotunda**

16:00–17:00 Poster Session (Cont'd)

### Wednesday, 25 July 2012

08:30–10:30 Session 4 Managing soils for climate change adaptation and mitigation

**10:30–11:00** Coffee/Tea Break

11:00–13:00 Session 4 (Cont'd)

**13:00–14:00** Lunch Break

14:00–16:00 Session 5 Managing agricultural water for Climate change adaptation

**16:00–16:30** Coffee/Tea Break

16:30–18:00 Session 5 (Cont'd)

### Thursday, 26 July 2012

08:30–10:30 Session 6 Recent advances in nuclear techniques and applications

**10:30–11:00** Coffee/Tea Break

11:00–13:00 Session 6 (Cont'd)

**13:00–14:00** Lunch Break

14:00–15:15 Session 7 General discussion, summary and conclusions

**15:15–15:45** Coffee/Tea Break (hosted by FAO)  
**VIC Rotunda**

15:45–17:30 Session 7 (Cont'd)

17:30–18:00 Closing Session

### Friday, 27 July 2012

08:45–10:30 The Global Soil Partnership (GSP)

**10:30–11:00** Coffee/Tea Break (hosted by FAO)  
**VIC Rotunda**

11:00–13:15 GSP (Cont'd)

**13:15–14:30** Lunch Break

14:30–16:00 GSP (Cont'd)

## SUNDAY, 22 July 2012

16:00–18:00     **Registration and distribution of symposium material**

## MONDAY, 23 JULY 2012

08:00            **Registration and distribution of symposium material**

09:00–10:00    **OPENING SESSION**

<b>Chair</b>	<b>M. L. Nguyen</b>	<b>IAEA</b>
<b>Co-chair</b>	<b>S. P. Indraratne</b>	<b>Sri Lanka</b>
<b>Rapporteur</b>	<b>P. M. Chalk</b>	<b>IAEA</b>

M. Daud  
Deputy Director General  
Head of the Department of  
Nuclear Sciences and Applications, IAEA

Opening Remarks

A. Mueller  
Assistant Director General  
Department of Natural Resources and  
Environment, FAO

Opening Remarks

Q. Liang  
Director  
Joint FAO/IAEA Division of Nuclear  
Techniques in Food and Agriculture

Opening Remarks

## MONDAY, 23 JULY 2012

### 10:00-11:30 PLENARY SESSION

**Chair** E. T. Craswell **Australia**  
**Co-chair** C. W. Rice **USA**  
**Rapporteur** P. M. Chalk **IAEA**

<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
10:00-10:25	W. E. H. Blum	Austria	Soils and food security under global change/112
10:25-10:50	B. Vanlauwe	International Institute for Tropical Agriculture (IITA)	Integrated soil fertility management in Sub-Saharan Africa: Principles and application/237
10:50-11:15	S. Machi	Japan	Nuclear technique of soil management for sustainable agriculture/248
11:15-11:30	M. L. Nguyen	IAEA	Towards sustainable soil management for enhancing food security while mitigating climate change impacts: The role of nuclear and isotopic techniques/247
<b>11:30-12:00</b>	Coffee/Tea Break		
<b>12:00-17:45</b>	<b>SESSION 1: Managing soils for crop production and ecosystem services</b>		
<b>Chair</b>	<b>W. E. H. Blum</b>	<b>Austria</b>	
<b>Co-chair</b>	<b>W. Wiriya-kit-nateekul</b>	<b>Thailand</b>	
<b>Rapporteur</b>	<b>J. K. Ladha</b>	<b>International Rice Research Institute (IRRI)</b>	
12:00-12:15	S. Bunning	FAO	Improving soil and agro-ecosystem management and resilience/251
12:15-12:30	J. K. Ladha	IRRI	Contributions of fertilizer N in global cereal production, soil organic matter status and environmental quality/1
12:30-12:45	S. H. Chien	USA	The agronomic properties of a new non-explosive fused ammonium sulfate nitrate (SULF-N26) for crop production: preliminary results/9
12:45-13:00	M. Malter Terrada (S. López)	Argentina	Ammonia volatilization losses from urea fertilizer applied on wheat/185
<b>13:00-14:30</b>	Lunch Break		

*Note: Name in brackets indicates presenter*

**MONDAY, 23 JULY 2012**

<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
14:30-14:45	M. Zaman (M. L. Nguyen)	New Zealand	Influence of fine particle suspension of urea + NBTPT on N and water use efficiency in grassland using <sup>15</sup> N, <sup>13</sup> C and <sup>18</sup> O techniques/165
14:45-15:00	H. C. Suter	Australia	Stabilized nitrogen fertilizers to reduce greenhouse gas emissions and improve nitrogen use efficiency in Australian agriculture/68
15:00-15:15	C. Steiner	Denmark	Biochar improves nitrogen fertilizer efficiency on a highly weathered central Amazonian Ferralsol/8
15:15-15:30	J. C. Yang	FAO	Selection and evaluation of maize genotypes tolerant to low phosphorus soils/204
15:30-15:45	J. J. Adu-Gyamfi	IAEA	Overview of FAO/IAEA Coordinated Research Project on Crop Genotypes Tolerant to Low N and P Soils/244
15:45-16:00	R. A. El-Motaium	Egypt	Using <sup>10</sup> B to study B uptake and translocation of peach and plum trees grown in sandy and calcareous soil under different levels of calcium/2
<b>16:00-16:30</b>	Coffee/Tea Break	(hosted by IAEA) <b>VIC Rotunda</b>	
16:30-16:45	M. B. Peoples	Australia	The use of isotopic techniques to quantify the role of legumes in contributing to food security and in the adaptation and mitigation of climate change/99
16:45-17:00	Z. F. Abdul Aziz (K. Abdul Rahim)	Malaysia	Contribution of nitrogen from biofertilizer inoculum to young oil palm under field condition/227
17:00-17:15	M. E. Haque	Bangladesh	Legume nitrogen derived from different sources as affected by rhizobial inoculant in Bangladesh soil/33
17:15-17:30	M. Shrivastava	India	Bio-solubilization of rock phosphate and plant growth promotion by <i>Aspergillus niger</i> TMPS1 in Ultisol and Vertisol/34
17:30-17:45	D. I. W. Mayer	Austria	AGRO-ICT infrastructure: Information and communication technology tools for farm and land management/249
<b>18:30-20:00</b>	<b>Welcome Reception</b>	(hosted by IAEA) <b>VIC Rotunda</b>	

*Note:* Name in brackets indicates presenter

## TUESDAY, 24 JULY 2012

**08:30-11:30**      **SESSION 2:  
Preserving and protecting soil  
resources**

**Chair**            **D. E. Walling**      **United Kingdom**  
**Co-chair**       **M. S. Aulakh**      **India**  
**Rapporteur**    **G. Dercon**        **IAEA**

<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
08:30-08:45	D. E. Walling	United Kingdom	Upscaling the application of fallout radionuclides to support catchment sediment management programmes/37
08:45-09:00	P. N. Owens	Canada	Assessing the sources of suspended sediments in the streams of an agricultural watershed in the Canadian prairies using <sup>137</sup> Cs as a tracer/144
09:00-09:15	P. Schuller	Chile	Using <sup>137</sup> Cs and <sup>210</sup> Pb <sub>ex</sub> and other sediment source fingerprints to quantify fine sediment sources in forested catchments in Chile/50
09:15-09:30	V. N. Golosov	Russian Federation	Use of an integrated approach for assessing soil redistribution in the Vorobzha river basin/38
09:30-09:45	M. Benmansour	Morocco	Assessment of soil erosion and sedimentation rates in "MY Bouchta" watershed in North Morocco using fallout radionuclides and stable isotopes/41
09:45-10:00	Y. Li	PR China	Quantify agricultural land degradation processes related to soil carbon and nitrogen redistribution in Western China by using FRN and <sup>13</sup> C techniques/40
<b>10:00-10:30</b>	Coffee/Tea Break		
10:30-10:45	C. Brandt	Germany	Compound-specific stable-isotopes to investigate soil organic carbon source/sink relocations between areas of land degradation and deposition areas in a mountainous watershed in Northwest Vietnam/95
10:45-11:00	G. J. Hancock	Australia	Determining sources of soil erosion using compound specific isotope analysis: an initial assessment in a rural Australian catchment/96
11:00-11:15	W. H. Blake	United Kingdom	Tracing crop-specific sediment sources in agricultural catchments with compound specific stable isotope (CSSI) and geochemical markers/97
11:15-11:30	G. Dercon	IAEA	Compound-specific stable isotope techniques for improving precision soil conservation strategies: An overview of the lessons learnt in an FAO/IAEA Co-ordinated Research Project/176



## WEDNESDAY, 25 JULY 2012

**08:30-13:00**      **SESSION 4:  
Managing soils for climate  
change adaptation and  
mitigation**

**Chair**            **N. Senesi**            **Italy**  
**Co-chair**       **B. Zhang**            **FAO**  
**Rapporteur**    **P. N. Owens**        **Canada**

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<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
08:30-08:45	E. T. Craswell	Australia	Carbon sequestration in agricultural soils: Separating the muck from the magic/105
08:45-09:00	O. Ito	United Nations University (UNU)	Crop and soil management in rainfed cropping systems to cope with climate change/233
09:00-09:15	S. Corsi	FAO	A review of carbon sequestration through conservation agriculture/115
09:15-09:30	G. Dercon	IAEA	Assessment of carbon distribution and soil organic carbon storage in mulch-based cropping systems by using isotopic techniques/240
09:30-09:45	M. Ismaili	Morocco	The use of <sup>13</sup> C- and <sup>15</sup> N-based isotopic techniques for assessing soil C and N changes under conservation agriculture/78
09:45-10:00	M. S. Aulakh	India	Crop production, nutrient use efficiency and soil quality in conservation agriculture for soybean-rapeseed rotation/217
10:00-10:15	R. Sommer	International Center for Agricultural Research in The Dry Areas (ICARDA)	Carbon sequestration potentials under conservation agriculture in dry areas/173
10:15-10:30	F. Bampa	European Commission / Joint Research Centre (EC/JRC)	Soil organic carbon preservation and sequestration in European agricultural soils: An overview/123
<b>10:30-11:00</b>	Coffee/Tea Break		
11:00-11:15	C. W. Rice	USA	Land use change and soil management impacts soil biological and physical properties involved in ecosystem carbon sequestration/191
11:15-11:30	J. M. Sá (R. M. Boddey)	Brazil	The impact of 20 years of pastures, no-till and plough-till cropping and integrated crop/pasture systems on soil carbon stocks in the Brazilian Cerrados/188
11:30-11:45	M. Kibblewhite	United Kingdom	Global soil monitoring: Feasible options for early Implementation/252
<i>Note:</i>	<i>Name in brackets indicates presenter</i>		

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**WEDNESDAY, 25 JULY 2012**

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<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
11:45-12:00	O. T. Denmead	Australia	Linking models and measurements of soil nitrogen emissions on a field scale/60
12:00-12:15	R. Wassmann	IRRI	GHG mitigation projects in rice production systems: Status and prospects of possible carbon certification in farmers' fields/200
12:15-12:30	G .D. Schwenke	Australia	Legumes in crop rotations reduce nitrous oxide emissions compared to fertilized non-legume rotations/67
12:30-12:45	S. H. Waluyo	Indonesia	Nuclear technologies in global warming: Assessing the greenhouse gas effects caused by huge biofuel production in Indonesia/225
12:45-13:00	D. Chen	Australia	Effect of elevated carbon dioxide on nitrogen dynamics and greenhouse gas emissions in grain crop and legume ley pasture systems: A meta-analysis/61
<b>13:00-14:00</b>	Lunch Break		
<b>14:00-16:00</b>	<b>SESSION 5: Managing agricultural water for climate change adaptation</b>		
<b>Chair</b>	<b>T. Hsiao</b>	<b>USA</b>	
<b>Co-chair</b>	<b>R. El-Motaium</b>	<b>Egypt</b>	
<b>Rapporteur</b>	<b>L. K. Heng</b>	<b>IAEA</b>	
14:00-14:15	E. Fereres	Spain	Enhancing the contribution of isotopic techniques to the expansion of precision irrigation/166
14:15-14:30	D. Z. Gong (X. Mei)	PR China	Partitioning plant transpiration and soil evaporation with eddy covariance and stable isotope method in North China Plain /103
14:30-14:45	N. Amenzou	Morocco	Isotopic and conventional techniques to improve the irrigation practices to enhance agricultural production under water limiting conditions in Morocco/11
14:45-15:00	E. Wang	Australia	Roles of climate and soil in regulating water limitation to crop productivity/22
15:00-15:15	P. Monneveux	International Potato Centre (CIP)	Facing climate change effects on potato cultivation: an integrative approach/113
15:15-15:30	M. Ahmed	Pakistan	Modeling soil water dynamics under rainfed agriculture to mitigate climate change/130

*Note: Name in brackets indicates presenter*

**WEDNESDAY, 25 JULY 2012**

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<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
15:30-15:45	V. Zupanc	Slovenia	Environmental sustainability of vegetable production above a shallow aquifer/59
15:45-16:00	D. N. Dang	Vietnam	Improving irrigation practice to reduce risk of nitrogen percolation into deeper aquifers in vegetable cultivation in suburban Ha Noi, Viet Nam/12
<b>16:00-16:30</b>	Coffee/Tea Break		
16:30-16:45	K. Mahmood	Pakistan	Improving yield and water use efficiency of wheat ( <i>Triticum aestivum</i> L.) by regulating plant-available water during crop development under semiarid conditions in Pakistan/19
16:45-17:00	D. K. Asare	Ghana	Yield, water and nitrogen use by drip-irrigated cabbage grown under different levels of applied water/14
17:00-17:15	H. S. Duong	Vietnam	Water use efficiency of coffee under mulch and drip irrigation on the Tay Nguyen plateau, Vietnam/13
17:15-17:30	A. Wahbi	Syrian Arab Republic	Yield and carbon isotope discrimination for wheat, barley and lentil under different crop sequences and water treatments in Northern Syria/84
17:30-17:45	S. Kale	Turkey	Carbon isotope discrimination in wheat under water stress conditions and relationships with crop physiological indices /82
17:45-18:00	L. Heng	IAEA	Managing irrigation water to enhance crop productivity under water-limiting conditions: A role for isotopic techniques/238

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## THURSDAY, 26 JULY 2012

**08:30-13:00**      **SESSION 6:**  
**Recent advances in nuclear**  
**techniques and applications**

**Chair**            **R. Merckx**        **Belgium**  
**Co-chair**       **J. C. Yang**       **FAO**  
**Rapporteur**    **C. J. Smith**      **Australia**

<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
08:30-08:45	E. Frossard	Switzerland	Can the oxygen isotope composition of phosphate help to understand phosphorus cycling in soil-plant systems?/107
08:45-09:00	R. Merckx	Belgium	Isotopic techniques and their role in designing new P-availability tests for weathered, P-fixing soils/245
09:00-09:15	C. T. Inácio	Brazil	From fertilizer to food: Tracing N dynamics in organic and conventional cropping systems using <sup>15</sup> N/235
09:15-09:30	M. Unkovich	Australia	Biological N <sub>2</sub> fixation and nitrogen isotope fractionation/141
09:30-09:45	T. C. Hsiao	USA	Field comparison of methods for measuring evapotranspiration and soil evaporation, including a stable isotope method/179
09:45-10:00	D. G. Williams	USA	Isotopic techniques for tracing evapotranspiration at the field scale: simple or complex?/100
10:00-10:15	Q. Hu (G. T. Li)	PR China	Partitioning evaporation and transpiration by isotope mass balance method in winter wheat and spring maize in the North China Plain/102
10:15-10:30	R. J. Panetta	USA	Rapid analysis of water isotopic fractionation along a <i>Pinus</i> spp. branch: in situ measurement of matrix-bound waters/162
<b>10:30-11:00</b>	Coffee/Tea Break		
11:00-11:15	E. K. Towett (F. Rasche)	Germany	The potential of combining infrared and total X-ray fluorescence spectroscopy for the prediction of soil functional properties/108
11:15-11:30	S. Bodé	Belgium	Dynamics of de novo formation of amino sugars in soil via compound-specific stable isotope analysis (CSSIA) - a promising tool to assess microbial physiology?/94
11:30-11:45	M. Gibbs	New Zealand	Suess effect on biomarkers used to determine sediment provenance from land-use changes/98
11:45-12:00	C. A. Kirkby	Australia	Inorganic nutrients mediate the sequestering of soil carbon as humus/74
12:00-12:15	T. Ge	PR China	Input and distribution of rice-root derived carbon in plant-soil-micro-ecological system following <sup>14</sup> C continuous labeling/76

*Note:*            *Name in brackets indicates presenter*

## THURSDAY, 26 JULY 2012

<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title/No. of paper IAEA-CN-191</i>
12:15-12:30	I. R. P. Fillery (M. Peoples)	Australia	The use of <sup>13</sup> C and <sup>14</sup> C to quantify the amount of carbon sequestered below-ground in agricultural production systems/73
12:30-12:45	T. E. Franz (M. Zreda)	USA	Application of cosmic-ray probes to long-term monitoring of soil moisture/92
12:45-13:00	A. Hawdon (C. J. Smith)	Australia	Large area soil moisture measurement using cosmic rays: The Australian CosmOz network/90
<b>13:00-14:00</b>	Lunch Break		
<b>14:00-18:00</b>	<b>SESSION 7: General discussion, summary and conclusions</b>		
<b>Chair</b>	<b>M. L. Nguyen</b>	<b>IAEA</b>	
<b>Co-chair</b>	<b>C. K. Kaizzi</b>	<b>Uganda</b>	
<b>Rapporteur</b>	<b>J. Adu-Gyamfi</b>	<b>IAEA</b>	
14:00-14:20	P. M. Chalk	IAEA	Rapporteur Report Opening and Plenary Sessions and Discussion
14:20-14:40	J. K. Ladha	IRRI	Rapporteur Report Session 1 and Discussion
14:40-15:00	G. Dercon	IAEA	Rapporteur Report Session 2 and Discussion
15:00-15:15	C. Nolte	FAO	Rapporteur Report Session 3 and Discussion
15:15-15:45	Coffee/Tea Break	(hosted by FAO) <b>VIC-Rotunda</b>	
15:45-16:05	P. N. Owens	Canada	Rapporteur Report Session 4 and Discussion
16:05-16:25	L. K. Heng	IAEA	Rapporteur Report Session 5 and Discussion
16:25-16:45	C. J. Smith	Australia	Rapporteur Report Session 6 and Discussion
16:45-17:00	M. I. Bakarr	Global Environment Facility (GEF)	Sustainable land management in the global environment facility – enhancing ecosystem services in production landscapes/228
17:00-17:15	A. K. Braimoh	World Bank	Soil carbon sequestration: Benefits and policies for the 21st century/234
17:15-17:30	P. Koohafkan	FAO	The state of the world's land and water resources for food and agriculture/250
<i>Note:</i>	<i>Name in brackets indicates presenter</i>		

## THURSDAY, 26 JULY 2012

### 17:30-18:00 CLOSING SESSION AND VOTE OF THANKS

To be advised

M. L. Nguyen

P. Koohafkan

Senior IAEA Management

Head, Soil and Water Management & Crop Nutrition Section,  
IAEA

Director, Land and Water Division, FAO

## FRIDAY, 27 JULY 2012

### 08:45-16:00 SESSION: The Global Soil Partnership

<b>Chair</b>	<b>M. L. Nguyen</b>	<b>IAEA</b>	
<i>Time</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title</i>
08:45-09:15	Q. Liang P. Koohafkan	IAEA FAO	Opening remarks
09:15-09:45	P. Koohafkan	FAO	Presentation of the Global Soil Partnership (GSP) – vision and mission, objectives, governance, pillars of action and implementation framework
09:45-10:30	Invitees		Brief statements (~5 minutes each) on related international processes and discussion on GSP process and components (Facilitated by P. Koohafkan)
<b>10:30-11:00</b>	Coffee/Tea Break	(hosted by FAO) <b>VIC-Rotunda</b>	
<b>Chair</b>	<b>P. Koohafkan</b>	<b>FAO</b>	
11:00-11:30	Participants		Discussion on linking the 2 pillars of action of the GSP on (i) promoting sustainable soil management and (ii) targeted soil research, to the scientific and technical conclusions from days 1 to 4 of the Symposium (Facilitators from FAO & IAEA)
11:30-13:15	Participants		Discussion in working groups on priority areas for action and concrete proposals for partnership (Facilitators from FAO & IAEA)
<b>13:15-14:30</b>	Lunch Break		
<b>Chair</b>	<b>M. L. Nguyen</b>	<b>IAEA</b>	
14:30-15:00	Facilitators	FAO & IAEA	Report back from working groups and comments/clarifications
15:00- 15:45	Participants		Becoming a partner of the GSP – Interactive process for development of a plan of action for collaboration with partner organizations/institutions – identification of priority areas for action (with interventions by NARS, CGIAR, other partners, etc) (Facilitators from FAO & IAEA)
15:45-16:00	P. Koohafkan	FAO	Sum up of conclusions and recommendations regarding implementation of the GSP

## POSTER SESSION

All posters will be displayed in the VIC Rotunda for the entire duration of the symposium.

A poster session is scheduled for Tuesday, 24 July 2012 from 14:15 to 17:00.

During the Poster Session authors are requested to be present at their posters for discussion with interested participants.

### SESSION 1

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
003P	M. S. Awad	Egypt	Effective use of slow release nitrogen fertilizer on sorghum-barley sequence grown on calcareous soil
005P	Y. G. M. Galal	Egypt	Management of nutrient sources for increasing crop productivity and minimizing the environmental risks: Application of <sup>15</sup> N technique
006P	S. Kloss (G. Soja)	Austria	Does biochar application to soil improve soil nutrient status and plant yield?
007P	R. C. Hood-Nowotny	Austria	Priming effects of biochar elucidated using stable isotope techniques
023P	M. A. Mousavi Shalmani (N. Piervali)	Iran, Islamic Republic of	Application of isotope tracer technology in management of nitrogen fertilizer to improve productivity of sugar beet under different irrigation systems
026P	A. Andriamananjara (L. Rabeharisoa)	Madagascar	Use of nuclear tools to study the adaptation mechanism of Voandzou ( <i>Vigna subterranea</i> ) under P deficiency
027P	A. Borzouei	Iran Islamic Republic of	Effects of salt stress and <sup>15</sup> N-labelled fertilizer on some physiological parameters and nitrogen use efficiency in winter wheat
030P	J. B. O. Ogola	South Africa	Effect of rhizobium inoculation on radiation use of winter-sown chickpea ( <i>Cicer arietinum</i> L.) in a dry environment
032P	J. A. Vera-Núñez	Mexico	<sup>15</sup> N-uptake by maize inoculated with <i>Trichoderma harzianum</i>
035P	A. Idrissa (Z. Hamidou)	Niger	Evaluation of the biological nitrogen fixation of cowpea under different water regimes in Niger using <sup>15</sup> N labelled urea
062P	S. K. Lam	Australia	Elevated CO <sub>2</sub> effects on fertilizer N recovery in wheat in southern Australia and northern China
070P	J. A. Vera-Núñez	Mexico	N-uptake and N <sub>2</sub> O losses from new composite fertilizers of

## SESSION 1

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
085P	N. S. Pasricha	India	Dynamics of nitrogen and water as affected by crop residue retention and no-tillage in rice-wheat production system
086P	E. C. Silva (T. Muraoka)	Brazil	Nitrogen use efficiency from urea and green manures by rice crop grown under no-tillage in Cerrado (Savannah) Oxisol
087P	M. B. Halitligil	Turkey	Nitrogen and organic matter influenced by tillage, N fertilizer and irrigation under two rotation systems in the semiarid Ankara region
088P	J. M. Miriti	Kenya	Soil water storage, yield and economic returns of maize and cowpea in semi-arid eastern Kenya as affected by tillage and cropping systems
119P	P. Houngnandan	Benin	Potential for changing traditional soil fertility management systems in the Rhodic Ferralsols in the south of Benin
120P	Z. Mkile	South Africa	The effect of applying combination of inorganic fertilizer and manure on maize yield on an acidic soil of Mfundisweni, South Africa
124P	S. A. Materechera	South Africa	Managing soil nutrients and water for sustainable food crop production under a smallholder eco-gardening system in South Africa
127P	M. S. Fan	FAO	Advancing food security with environmental protection through integrated soil-crop systems management in China
131P	S. F. Al Harbi	Saudi Arabia	Effect of foliar application of phosphorus on wheat and corn grain yield, phosphorus uptake and use efficiency in calcareous soil
132P	S. S. Al-Ismaily	Oman	The role of mixed fertilizer in optimizing yield of tomatoes grown under saline conditions
136P	A. Nario	Chile	<sup>15</sup> N fertilizer efficiency in maize cropped by small farmers in the VI region of Chile
138P	E. Hien	Burkina Faso	Impact of spreading urban waste on agricultural land on soil bacterial communities in peri-urban Ouagadougou, Burkina Faso
142P	O. Muñiz Ugarte	Cuba	Biological nitrogen fixation associated with lowland rice Cuban genotypes
146P	M. Q. Vinh	Vietnam	Application of <i>Trichoderma</i> fungi for rice straw decomposition to improve soil organic matter and fertility for sustainable rice cultivation in Vietnam

**SESSION 1**

No. of Paper	Name	Designating Member State/organization	Title of Poster
148P	H. J. Causarano Medina	Paraguay	Assessing the effect of tillage and mineral nitrogen ( $^{15}\text{N}$ ) fertilization on sesame ( <i>Sesamum indicum</i> L.) in a degraded Paraguayan soil
151P	A. Kassam	United Kingdom	Harnessing on-farm and landscape ecosystem services from agriculture in the Paraná III Basin, Brazil and the Alberta Prairie, Canada
167P	J. J. Adu-Gyamfi	IAEA	Phosphorus acquisition from sparingly soluble forms by maize and soybean in low- and medium-P soils using $^{32}\text{P}$
170P	C. Kayuki Kaizzi	Uganda	Inorganic fertilizer and manure use for increased vegetable production, improved livelihood and income of smallholder farmers in Uganda
172P	H. S. Al-Hashmi	Oman	Determination of optimum fertilization of cucumber ( <i>Cucumis sativus</i> L.) under greenhouse condition
182P	S. P. Nissanka	Sri Lanka	Impact of control release and bio fertilizers on nutrient use efficiency and productivity in tea
187P	S. K. Lam	Australia	Effect of elevated $[\text{CO}_2]$ on symbiotic nitrogen fixation of grain legumes in southern Australia and northern China
197P	M. D. Denton	Australia	Evaluation of legume inoculant technologies to increase the contribution of fixed nitrogen to subsequent cereal crops
208P	S. P. Indraratne	Sri Lanka	Factors affecting the phosphorus fertility index of major soils of Sri Lanka
213P	U. Turker	Turkey	Precision farming for better soil fertility management in Turkey
222P	S. C. López	Argentina	Alternative soil management and fertilization for sweet corn in small farms of Argentina
223P	J. S. Bayuelo-Jiménez	Mexico	Root-foraging strategies to enhance phosphorus acquisition efficiency by maize landraces in acid soils of Mexico
231P	C. Yathaputanon	Thailand	N-fixation of soybean and the residual benefits of rice-soybean cropping system using the $^{15}\text{N}$ technique
239P	D. Wang	PR China	The effect of crop straw incorporation on soil organic matter dynamics and ammonia volatilization from urea applied to a paddy soil
243P	Y. Wang	FAO	Modeling crop productivity and soil nitrogen dynamics as affected by long term fertilization in the North China Plain

**SESSION 2**

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
039P	X. Zhang	PR China	A case study on land use changes and sediment sources by the $\delta^{13}\text{C}$ technique in the hilly Sichuan Basin, upper reaches of the Yangtze River, China
043P	R. H. Gil Castillo	Cuba	Application of the $^{137}\text{Cs}$ technique for soil erosion assessment in tobacco plantations in Cuba
045P	A. F. Asfary	Syrian Arab Republic	Assessment of soil erosion rates under degraded forest, olive groves and wheat/fallow in semi-arid regions of Syria
046P	J. J. Ayub (H. Velasco)	Argentina	$^7\text{Be}$ in rain water and soil in South American ecosystems: Progress in its use to document soil redistribution
047P	X. Videla	Chile	Assessment of runoff ( $^7\text{Be}$ ) in vineyards of the central valley of Chile
048P	W. Froehlich	Poland	The use of $^{137}\text{Cs}$ , $^7\text{Be}$ and $^{210}\text{Pb}_{\text{ex}}$ in investigations of the impact of short- and long-term land use practices on sediment transfer in the Polish Flysch Carpathians
049P	N. Rabesiranana	Madagascar	Use of FRN techniques (Cs-137 and Pb-210 <sub>ex</sub> ) to document soil erosion and soil redistribution on manually-tilled hillslopes in the Madagascar highland
051P	G. Q. Liu (Y. Z. Zhang)	PR China	Use of fallout radionuclides to test the effectiveness of the FAO-LADA approach in assessing soil erosion-induced land degradation in the Chinese loess plateau
052P	A. D. M. Bulos	Philippines	Assessment of soil erosion using fallout radionuclides in the Inabanga watershed in the Philippines
053P	I. Yordanova	Bulgaria	Radioactivity in Bulgarian soils and behaviour of some man-made radionuclides in different soil types
057P	C. Centeri	Hungary	Soil degradation problems on nature conservation areas in Hungary
133P	C. S. Mosquera (J. A. Guerrero Dallos)	Colombia	Sorption of tebuconazole using nuclear and HPLC techniques on Tota Lake catchment soils
140P	D. A. Lobb (P. N. Owens)	Canada	Understanding the causes and management of soil landscape variability
145P	B. VandenBygaart (P. N. Owens)	Canada	Reconstructing recent agricultural landscape evolution utilizing radiocarbon and radiocesium
154P	C. K. Dewage	Sri Lanka	Establishment of a $^{137}\text{Cs}$ reference inventory for the assessment of soil erosion in the Uma Oya catchment in Sri Lanka

**SESSION 2**

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<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
160P	M. Störrle (G. Broll)	Germany	Soil degradation and sustainable land management in the western Siberian corn-belt
175P	V. Belyaev	Russian Federation	The use of the Cs-137 technique to assess soil erosion in the high Pamir mountains of Tajikistan
183P	S. J. Crittenden	Netherlands	Can reduced soil disturbance improve soil physical quality through earthworms?
189P	D. Huygens	Belgium	Microbial nitrogen dynamics in south central Chilean agricultural and forest ecosystems located on an Andisol
190P	J. S. Chin Pampillo	Costa Rica	Biodegradation of <sup>14</sup> C-labelled carbofuran and terbufos in cultivated soils of Cartago and Limón provinces, Costa Rica
192P	S. Gameda	International Food Policy Research Institute (IFPRI)	A soil information system for Ethiopia
207P	A. Castillo	Chile	The influence of precipitation magnitude and vegetation cover on soil <sup>7</sup> Be inventories
211P	D. Joseph	Haiti	Preliminary measurements of the <sup>137</sup> Cs fallout in Haiti and its potential use as a soil tracer
221P	M. Hentschel	Austria	Assessment of soil quality under two cultivation systems
230P	C. Baldwin (P. N. Owens)	Canada	Validating the wind erosion risk indicator model using Cs-137: Preliminary study

**SESSION 3**

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<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
004P	A. S. Fasina	Niger	Rice response to climate change and nitrogen fertilizer on three wetland soils in Nigeria
010P	M. M. Tenywa (C. L. Kizza)	Uganda	Urea and water management to mitigate pollution and enhance rice productivity in the Doho Wetland, Uganda
016P	N. Chkir	Tunisia	Isotopic tracing of water fluxes of a small hill reservoir in a Mediterranean agricultural catchment (Kamech, Cap Bon, Tunisia)
024P	M. A. Mousavi Shalmani (N. Piervali)	Iran, Islamic Republic of	Large scale evaluation of water conservation zones and modelling of effective parameters for improvement of water quality and biomass production in northern Iran
028P	I. F. Gheorghe	Romania	Comparative efficiency in nutrient retention between natural ecosystems vegetation and agro-systems vegetation
054P	Z. Othman	Malaysia	Environmental implications of deforestation in nutrient contents of a lake catchment
055P	A. O. Olaleye	Lesotho	Vegetation isotopic signatures and soil organic carbon pools of two Lesotho wetlands at different levels of degradation

**SESSION 4**

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
029P	M. B. Halitligil	Turkey	Plant nitrogen uptake, soil profile moisture and organic matter contents under different rotation systems in Niğde Province, Turkey
036P	K. M. Kwena	Kenya	No rain, bumper harvest: The magic of pigeonpea in semi-arid Kenya
044P	O. A. El Sharief Abdalla	Qatar	Biomass production under degraded salt affected soils and saline waters - Transforming liabilities into renewable resources
063P	Y. K. Gaihre	IRRI	Effect of elevated temperatures on methane emission from irrigated lowland rice fields
064P	P. Ly	FAO	Effects of water and nutrient management on CH <sub>4</sub> and N <sub>2</sub> O fluxes from paddy rice
065P	D. Q. Vu	Vietnam	The effect of manure management on small-holder livestock farms with and without biogas on methane emissions from paddy rice in Vietnam
066P	N. Begum (G. Schwenke)	Australia	Nitrous oxide emissions from two contrasting systems: Legume versus synthetic nitrogen
069P	H. C. Suter	Australia	Use of the nitrification inhibitor 3,4-dimethylpyrazole phosphate (DMPP) to reduce N <sub>2</sub> O emissions from pastures in southern Australia
071P	W. J. Wang	Australia	Large N <sub>2</sub> O emissions from a high organic carbon sugarcane soil and effects of different management practices
072P	I. Djukic	Austria	In-situ carbon turnover dynamics and the role of the soil microbial community therein: A climate warming simulation study in an Alpine ecosystem
079P	T. Razafimbelo (L. Rabeharisoa)	Madagascar	Assessment of soil organic matter storage in conservation agriculture (CA) systems using natural abundance of <sup>13</sup> C (Antsirabe, Madagascar)
080P	M. Wiesmeier	Germany	Soil organic carbon stocks in southeast Germany (Bavaria) as affected by land use, soil type and sampling depth
089P	R. Hu	FAO	Effects of rice straw on soil phenols, dissolved carbon, and phenol oxidase under different moisture conditions and UVB radiation
111P	C. W. Rice	USA	Managing soils for climate change while providing food security
129P	J. E. Olesen	Denmark	Sustainable management of agricultural soils in Europe for enhancing crop production and climate change mitigation

## SESSION 4

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
134P	B. O. Sander	IRRI	Greenhouse gas emissions in Philippine farmers' rice fields: A 'reality check' for water management as a mitigation option
137P	A. Ngwira	Malawi	Soil carbon dynamics under conservation tillage systems in Malawi
143P	A. A. Giloyan	Armenia	Climate forecasting system improvement and increasing of food security level in the Republic of Armenia
152P	L. A. Gomez	Cuba	Selection of common bean lines tolerant to low phosphorus availability in an Acrisol soil on the basis of root traits and N <sub>2</sub> fixation
156P	M. Hafsi	Algeria	Carbon isotope discrimination as a tool of durum wheat selection and its stability value in the eastern high plateau of Algeria
163P	M. Annabi	Tunisia	The effect of no-tillage practice on soil nitrogen dynamics
168P	J. J. Adu-Gyamfi	IAEA	Oxygen isotope composition and carbon isotope discrimination for evaluating wheat lines for tolerance to pre- and post-anthesis water stress
180P	S. P. Nissanka	Sri Lanka	Impact of water and fertilizer management on methane emission from rice fields
181P	G. Karunaratne (S. P. Nissanka)	Sri Lanka	Climate vulnerability mapping of tea lands in Nuwara Eliya district of the upper Mahaweli catchment in Sri Lanka
193P	H. P. King	Australia	Soil carbon and landscape function: the effect of grazing on soil carbon sequestration mechanisms
196P	R. F. de Morais (R. M. Boddey)	Brazil	Nitrous oxide emissions from forms and rate of different nitrogen fertilizers applied to elephant grass ( <i>Pennisetum purpureum</i> )
203P	S-H. Yao (B. Zhang)	FAO	Biophysical controls over mineralization and sequestration of amended organic carbon in soil: effects of intensity and frequency of drying and wetting cycles
209P	R. A. Alybayeva	Kazakhstan	Identification of wheat germplasm resistant to heavy metals for cultivation on polluted soils
210P	S. S. Kenzhebayeva	Kazakhstan	Growth response and carbon accumulation in wheat germplasm at varying phosphorus availability
216P	M. I. Garcia Meca	Austria	Influence of organic fertilizers on soil CO <sub>2</sub> flux and soil physical properties under pea

**SESSION 4**

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<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
218P	A. Wawra	Austria	Short-term measurements of soil CO <sub>2</sub> efflux from two agricultural sites in lower Austria
219P	A. Nakhforoosh	Austria	Root characteristics of durum wheat and wheat relatives
220P	S. K. Saha	USA	Soil carbon storage in tropical land-use system and its implication to food security and climate change management
224P	U. W. Vitharana (S. P. Indraratne)	Sri Lanka	Spatial characterization of soil properties for site-specific soil management of paddy
232P	U. Baatar	Austria	Impact of different soil tillage systems on soil respiration of agriculturally used soils in Austria

**SESSION 5**

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
015P	M. Semiani	Algeria	Determining crop water requirements and developing irrigation scheduling for drip and furrow irrigation systems to improve yield and water use efficiency of sweet pepper In Algeria
017P	N. Bani-Hani	Jordan	Effect of deficit irrigation on qualitative and quantitative characteristics of Navel oranges in the Jordan Valley
018P	W. Ishaque	Pakistan	Evaluation of irrigation methods on maize yield and soil moisture content under semi-arid conditions of Pakistan
021P	E. Phiri	Zambia	Evaluation of evapotranspiration and production of paprika ( <i>Capsicum annum</i> L.) using the soil water balance approach under variable irrigation water application
025P	K. Zouari	Tunisia	Water fluxes through the vadose zone under irrigated crops estimated by soil profile and lysimeter measurements (Kairouan Plain, Central Tunisia)
081P	M. O. Özbaş (M. İ. Çağırğan)	Turkey	Agronomic performance of the mutant and improved lines of barley selected for carbon isotope discrimination in a Mediterranean environment
116P	D. R. Rankine	Jamaica	Developing management options for adaptation of rainfed and irrigated sweet potato to drought in Jamaica
125P	F. Huang	FAO	China's food security under growing water scarcity as affected by climate change using a green and blue water approach
126P	A. Schöning	Germany	Greening the semi-arid tropics: water spreading weirs in the Sahel
147P	L. Zhu (X. Xu)	PR China	Water uptake from different soil depths and ameliorative effect on saline-alkali soil of halophytic shrubs in Northwest China
150P	R. Nolz (P. Cepuder)	Austria	Evapotranspiration of spring barley on lysimeter- and field scale
178P	S. Zingore	International Plant Nutrition Institute (IPNI)	Enhancing water use efficiency in smallholder irrigation systems under water and nutrient limiting conditions
214P	T. Schnabl	Austria	Application of AquaCrop for spring barley under semi-arid conditions
215P	N. Galgoczi	Austria	Determination of the vegetation cover for the model "AquaCrop"

**SESSION 6**

<i>No. of Paper</i>	<i>Name</i>	<i>Designating Member State/organization</i>	<i>Title of Poster</i>
091P	M. Zreda	USA	Measuring soil moisture using cosmic-ray neutrons: Potential use with center-pivot irrigation systems
093P	Q. Hu (B. G. Li)	PR China	Isotope analysis of water extracted from different soils with centrifugation and low-temperature vacuum distillation
101P	L. K. Heng	IAEA	Partitioning evaporation and transpiration using isotopic and modelling approaches
109P	B. Al-Barri	Belgium	Presenting soil loss and dimensioning control measures using isotopes and 3D coupled surface-subsurface hydrological model
110P	V. Pfahler	Switzerland	The effect of plant growth stages on the isotopic composition of oxygen associated to P in leaves
139P	N. T. Lam	Vietnam	Integration of compound specific stable isotopes and fallout radionuclides to link source and sink relationships with land use history in the Chieng Khoi watershed
149P	A. Canella Avelar	Brazil	Assessing major and microelements in rabbit manure using neutron activation analysis for managing nutrient resources in smallholder crop/livestock integration
153P	P. Macaigne	Austria	Evaporation and transpiration rates of maize estimated from the $\delta^{18}\text{O}$ composition of soil water and irrigation
157P	L. Mayr	IAEA	An improved vacuum distillation method for extracting soil and plant water for stable isotope analyses
174P	L. K. Heng	IAEA	A simple technique for validating estimates of soil evaporation and plant transpiration from isotopic data
177P	C. von Sperber	Switzerland	The effect of acid phosphatases on the oxygen isotopic composition of phosphate in soils
195P	J. Ezzahar	Morocco	Combining eddy covariance and sap flow techniques to determine the partition of evapotranspiration over citrus orchards in semi-arid region
201P	S. Jovanovic	Montenegro	Recent advances in generalized approach to quantitative gamma-spectrometry – applicability in soil management and food security
226P	P. Buss	Australia	Applied knowledge in crop research and production using near-continuous soil water data recorded by multi-sensor capacitance probes

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### **2013**

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8-12 April 2013, Ottawa, Canada

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in the 21st Century  
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30 September-4 October 2013, Vienna, Austria

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Radioactive Sources: Maintaining the Continuous Global Control  
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27-31 October 2013, Abu Dhabi, UAE

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Nuclear Installation Safety  
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