



**Centre for  
Ecology & Hydrology**

NATURAL ENVIRONMENT RESEARCH COUNCIL

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### **CV of Ragab Ragab, PhD**

Principal Research Scientist & water resources management specialist, Vice President of the International Commission on Irrigation & Drainage, ICID ([www.icid.org](http://www.icid.org)), (2010-2013), Chairman of the UK national Committee on Irrigation and Drainage (2007-2011), Chairman of the Permanent Committee on Strategies and Organization, ICID (2011-2014), Chairman of the Work Group on Water & Crops, (2000-present), Founder of the Work Group on the Use of Poor Quality Water for Food Production, ICID, (1997-present), Editor, Journal of Agricultural Science, Cambridge University Press (2013-present). Adjunct Professor, Alexandria University, Egypt (2007-present). Reviewer and evaluator to several Scientific Journals and funding organizations.

#### **Scientific Interest:**

- Building cross-sectoral collaborations to understand the dynamic interactions across the water-energy-food nexus using new scientific knowledge to help stakeholders set objectives for freshwater management & transforming science into management solutions.
- Improving water productivity and water use efficiency, irrigation and drainage management, agricultural water management, soil physics/soil hydrology, remote sensing application in hydrology, hydrological modelling at catchment scale, quantifying the impact of climate and land use changes on water resources, identifying the gap between water supply and demand and suggest management solutions to narrow the gap, and water, soil, and fertilizers management modelling and experimentation at field scale.

#### **Summary of Professional Expertise**

Principal Hydrologist and Agriculture Water Management specialist at CEH. Expert in catchment hydrology, drought management, irrigation, drainage, soil hydrology, water use efficiency, use of poor quality water for crop production, urban hydrology, impact of land use and climate change on water resources. Has experience in working for both the universities and research centres. Leader of several projects in the UK and overseas. In addition to the UK, has extensive field experience and has carried out numerous projects in North Africa, Europe, the Middle East, the Mediterranean region and India. Developed two widely used

models, SALTMED for field scale as a tool for integrated management of water, soils, crops and N- fertilizers and IHMS (Integrated Hydrological Modelling System) for catchment/basin scale. Recipient of several International Awards.

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## Employment

1989 - Present Principal Research Scientist (**UK Professor Level**), Centre for Ecology & Hydrology, CEH, (Natural Environment Research Council, NERC) Wallingford, OX10 8BB, Oxfordshire, UK.

## Work Experience

2014 - 2018 **Drought** Risk management. PI and Project Leader Natural Environment Research, NERC Research grant (£1.8 Million).

2012 - 2017 **“Water 4 Crops”**: “Integrating bio-treated wastewater with enhanced water use efficiency to support the Green Economy in EU and India” Grant agreement no: 11933. THEME [KBBE.2012.3.5-03] [Biotechnological waste water treatments and reuse in agronomical systems] Collaborative project, Seventh Framework Programme, the European commission. Project leader and leader of Work Package 3 “Efficient water use in Irrigated Agriculture”.

2008 - 2013 **SWUP-MED**: Sustainable Water Use Securing Food Production in Dry Areas of the Mediterranean Region. EU funded project. Contract No. KBBE-2008- 212337. 7<sup>th</sup> Frame Work Programme, Theme 2: Food, Agriculture, Fisheries, and Biotechnology. Project Leader: Modelling and field testing the impact of climate change on farming systems - Adaptation of agriculture to climate change

2009 - 2010 **Soil Threats**: Climate change threats to UK soils Funded by the Department for Environment, Food and Rural Affairs (DEFRA). Task Leader: Possible impact of seawater inundation on soil salinity and vegetation survivals in the UK lowlands.

2006 - 2009 **SAFIR**: Safe and High Quality Food Production using Low Quality Waters and Improved Irrigation Systems and Management. EU funded project. Contract No. Food- CT-2005-023168. Project Leader: Modelling and field tests of deficit irrigation using Partial Root Drying, PRD

2002 - 2006 **MEDIS**: Towards Sustainable Water Use on Mediterranean Islands: Addressing Conflicting Demands and Varying Hydrological, Social and Economic Conditions. EU funded Project. Contract No. EVK1-2001-00042. Project Leader: Quantification of surface and subsurface water

resources under present and future climate change, model development and testing using representative catchments on each island.

- 2003 - 2004 **WSSI**: Sustainable strategies for irrigation in salt-prone Mediterranean region: a system approach. Coordinator. EU funded project. Contract No. ICA4-CT-2002-50037
- 2002 - 2006 **Urban Hydrology**: Quantification of water fluxes and identification of water pathways in urban areas. Project leader. Project funded by the Natural Environment Research Council, NERC.
- 1998 - 2002 **SALTMED**: A systems approach to a sustainable increase in irrigated vegetable crop production in salinity prone areas of the Mediterranean region. EU funded project. Contract No. ERB351PL972469. Project leader: Model development and experimental verification at field scale.
- 1998 - 2001 **AIMWATER**: Analysis, Investigation and Monitoring of Water Resources for the Management of Multipurpose Reservoirs. EU funded Project. Contract No. C989 012 C1 068. Project leader: Implementation of remote sensing information in catchment scale models to predict runoff to surface water reservoirs in France and Portugal.
- 1996 - 2000 **HYDROMED**: Program of research on hill reservoirs in the semi-arid zone of the Mediterranean basin. EU funded project. Contract No. IC18-CT96-0091 with EU- DGXII. Project leader: Developing a lumped hydrological model for small catchments in arid and semi-arid regions.
- 1996 - 1999 **GRAPES**: Groundwater and River Resources Action Programme at European Scale. EU funded project. Contract number ENV4- CT95 - 0186 with EU- DGXII. Task leader. Responsible for modelling and experimental validation of the groundwater recharge catchment scale hydrological models.
- 1996 - 1998 **ERS2**: Study of Spatial and Radiometric Resolution of Space-Borne SAR Data for Hydrological Applications. Project funded by the European Space Agency (ESA) and the European Space Technology Centre (ESTEC). Responsible for model development and validation.
- 1997 - 1998 **Landfill Site management**: Effect of different soil layers and vegetation types on the hydrology of landfill sites. Project funded by the UK Environment Agency. Project leader.
- 1994 - 1997 **HYDRO-MORECS**: Development of a distributed hydrological catchment scale model for operational use. SB funded project. Project leader: Updating the Meteorological Office Rainfall and Evaporation Calculation System: MORECS.

- 1993 - 1994 **Groundwater Recharge:** Developing a National System for Groundwater Recharge Assessment. Project funded by the National River Authority, NRA (The Environment Agency, EA at present). National R & D Project: 449. Responsible for model development and validation.
- 1991 - 1995 **CAMAR:** Gestion des ressources en eau: Consequences agronomiques" Management of limited water resources: agro-economic impact". EC funded project. Contract No. CAMAR CT109. Co-ordinator of the modelling group with members from the UK, Spain, Denmark. (France and Belgium)
- 1990 - 1994 **N-Leaching:** Modelling nitrate leaching to surface waters. Project funded by the Ministry of Agriculture, Fisheries and Food, MAFF (DEFRA at present). Project CSA 1716. Responsible for model development and testing
- 1991 - 1994 **ERS1:** Using remote sensing techniques via ERS-1 satellite in hydrology and water management studies. NERC Special Topic. Responsible for developing an operational system to obtain the root zone soil moisture from the remotely sensed soil moisture of the surface layer, responsible for Modelling and ground truth assimilation
- 1989 - 1991 **Simulating Radionuclide Transport from the Geosphere to the Biosphere.** UK NIREX Ltd funded project. Contract No. UX/96/242. Responsible for developing techniques and models to obtain the Slapton Wood catchment's hydraulic parameters for the "SHE" model application
- 1983 - 1985 **Optimizing Fertility and Water Management** for Soils with Shallow Water Table: University Linkage Project between Alexandria University, Egypt, and Louisiana State University, USA, Grant No. 263-0118. Responsible for carrying out the experiment and developing a soil water balance model for areas with shallow water tables
- 1976 - 1977 **Fertility and Irrigation Interaction.** USDA funded project. Contract No. P.L. 480 FG- EG-164 (EG-ARS-40) Assisting in soil survey, laboratory experiments and data analysis.

### Achievement Awards

- 2014 ICID Award of Excellence in recognition of the exceptional contributions to the ICID as the chairman of the Permanent Committee on Strategies and Organization, (2010-2014), Gwangju, South Korea
- 2013 ICID Award of Excellence in recognition of the exceptional contributions to the ICID as Vice President (2010-2013), Mardin, Turkey

- 2012 ICID Award of Excellence in recognition of the exceptional contributions to the ICID as the chairman and founder of the Working Group on the use of poor quality water (1995-2011), Adelaide, Australia.
- 2002 ICID Award of Excellence in recognition of the exceptional contributions to the ICID and the world food security. International Commission on Irrigation and Drainage (ICID), Montreal, 2002.
- 2000 The Baron's 500: Leaders for the New Century. J.L. Pellam. ISBN-13:9781882292189
- 1998 "The Marquis Who's Who in Science and Engineering", American Biographer, 4th Edition.
- 1996 "The Marquis Who is Who in the World", American Biographer. 13th Edition. Recognition by the Publications Board for outstanding achievement in science.
- 1987 Egypt State Recognition and Merit Award for Scientific Achievements.

#### **Professional assignment/invitations**

- 2010-13 Vice President (elect) of the International Commission on Irrigation & Drainage, ICID. At present, Honorary Vice President for life.
- 2007-11 Chairman of the British National Committee on Irrigation and Drainage, ICID- UK
- 2011-14 Chairman of the Permanent Committee on Strategy and Organization, PCSO, ICID
- 2008-11 Nominated member of the ICE, UK water panel Experts
- 2009- Invited international adviser to the Brazilian National Institute of Salinity studies
- 2008- Invited member of the Editorial Board of the Brazilian Journal of Agricultural Science
- 2007 External Examiner for Ph. D. degree to the Université des Sciences et Technologies de Lille, France
- 2003 External Examiner for Ph.D. degree to the Department of Civil Engineering, Imperial College of London, UK
- 1997 External Examiner for Ph. D. degree to the Department of Civil Engineering, University of Newcastle. UK
- 1995-96 External Examiner for Ph.D. MSc. and Diploma to the Department of Agricultural and Environmental Science, University of Newcastle upon Tyne, UK, 1995 - 1996.
- 1997- External Examiner for MSc. and Diploma in Irrigation and Hydrology, Bari Institute for Advanced Mediterranean Agronomic Studies, Bari, Italy.

- 2001 IFAD (International Fund for Agricultural Development) Mission to Tunisia
- 2015 External Examiner for Ph.D. degree to the College of Medical, Veterinary and Life Sciences, Glasgow University. UK
- 2017 External Examiner, September 2017 to Harper Adams University, UK
- 2000- Several invitations for key note presentations in international conferences, including three times the World Water Forum
- 1990-
1. Invited by the British Council to several events that took place in Spain, Syria, Morocco and London.
  2. Invited by different organizations to meet ministers of water resources in Iraq, Syria, Morocco, Jordan, and Egypt.
  3. Established a good working relationship with the House of Lords through Lord Cameron of Dillington, the Chairman of All Party Parliamentary Group on Agriculture and Food for Development.
  4. Keynote Speaker: Challenges, Bottlenecks and Issues on: Measuring, Modelling, Policies and Managing the Water Resources under Changing Climate and Land Use. 11th ICID International Drainage Workshop on Agricultural Drainage Needs and Future Priorities. Cairo, Egypt, September 23 – 27, 2012
  5. Invited by Lord Cameron to give a presentation in the House of Parliament in a meeting on ‘Water and Smallholder Agriculture’ organised by Lord Cameron of Dillington, the Chairman of All Party Parliamentary Group on Agriculture and Food for Development to APPG, June 2012.
  6. Invited speaker at the annual meeting of Alexander von Humboldt foundation at the German Embassy, London, October 19, 2012.
  7. Invited by the Chemistry and Industry society to give a talk on “More Crop per Drop” - Raising water use efficiency on 29 November 2012 at SCI London. A brief was published in Chemistry & Industry. January 2013 page 13&60
  8. Invited to chair a session of the WssTP – Copa-Cogeca Workshop on innovative agricultural water management held in Brussels on 20th March 2013 and that has been conceived as kick-off event for the WIRE Action Group. WIRE Action Group to be set up under the European Innovation Partnership on Water; WIRE standing for “Water & Irrigated agriculture Resilient Europe”.
  9. Invited to be a Program Committee member of the European water and soil forum, Aqua con Soil, Barcelona, March 2013. Chaired two sessions.
  10. Invited to lecture at COST-EU program meeting, Budapest-Hungary, September 2013
  11. Invited to be evaluator for United Nation Development program, UNDP and to the launch of Arab water resources report meeting, Bahrain, November 2013
  12. Invited as PhD examiner, Rabat-Morocco, January 2014
  13. Invited to lecture and conduct modelling workshop in King Saud University, Riyadh, Saudi Arabia. February 2014.
  14. Invited to Lead a workshop on Salinity in Agriculture at INOVAGRI Institute, INOVAGRI international meeting, Fortaleza, Brazil April 2014.
  15. Invited keynote speaker by the British Council, Cairo, March 2015.
  16. Invited speaker at the joint meeting of the FAO-Arab Water Council, May 2015.
  17. Invited Keynote Speaker at the Agriculture and the Environment, Conference, Cairo, May 2015.

18. Invited PhD examiner, Glasgow University, July 2015.
19. Invited Speaker at the British Ecological Society, Edinburgh, December 2015
20. Invited Speaker to the National Farmers Union, NFU, Kent, March 2016.
21. Invited by FAO and Arab Water Council to participate in producing the Guidelines for using saline water in Agriculture, 2016.
22. Invited speaker to the Ministry of Water Resources in Egypt, 2017 and Ministry of water and Energy, Iran, 2017.
23. Invited speaker by the European Commission to the launch of their PRIMA program in Cairo, April 2017.

### **Editorial Boards memberships**

- Expert Reviewer for the Intergovernmental Panel for Climate Change, IPCC.
- Member of the Editorial Board of the Journal of Agricultural Science, Cambridge University Press.
- Member of the Editorial Board of “Revista Brasileira de Engenharia Agricola e Ambiental”, an official Journal of Latin American and Caribbean Association of Agricultural Engineering (Journal of Agricultural science, Brazil).
- Member of the Editorial Board of Water Resources and Irrigation Management Journal (WRIM) and Egypt Journal of Agronomy.
- Ex. Member of the Editorial Board of the International Journal of Agriculture Water Management (2002 - 2006)

**Reviewer for staff promotion** for overseas Universities and organizations.

**Evaluator of research proposals for funding**, recent examples include: EU FP7, Agriculture- Canada, Qatar foundation, The Foundation of the Arab Science and Technology, Research Foundation Flanders (FWO), Belgium and Foundation of Science and technology, FCT, Portugal, Natural and Environmental Sciences 2012 Call. LISBON, 7-9 NOVEMBER 2012. Invited Expert for EU, Brussels, 2015.

### **Journal Referee for:**

International Journal of Hydrology.  
 International Journal of Hydrological processes.  
 Emirates Journal for Agricultural Science.  
 Royal Meteorological Society.  
 International Journal of Irrigation and Drainage  
 International Journal of Agriculture and Forest Meteorology.  
 The Arabian Journal for Science and Engineering  
 Journal of Hydrology and Earth System Sciences  
 Journal of Environmental Management  
 International Journal of Agriculture, Ecosystems and Environment  
 International Journal of Agricultural Engineering  
 International Journal of Plant and Soil



The Egyptian Journal of Agronomy  
Journal of Irrigation Science  
Journal of Agricultural Water Management  
Nature

## **International Workshops**

### **Chairman and Organizer**

- 2015 International Workshop on Precision irrigation. Held within the International Commission on Irrigation and Drainage, ICID conference in Montpellier, France, October 2015.
- 2013 International Workshop on climate change impact on the environment. Held within the International Commission on Irrigation and Drainage, ICID conference in Mardin, Turkey, October 2013.
- 2012 International workshop on the use of Poor Quality Water and Environmental Flows, ICID, June 25, 2012, Adelaide, Australia.
- 2006 International Workshop on Environmental Consequences of Irrigation with Poor Quality Waters. September, 12, 2006, Kuala Lumpur, Malaysia. Joint workshop. ICID-FAO
- 2006 International Workshop on Water Saving Practices in Rice Paddy Cultivation, September, 14-15, 2006, Kuala Lumpur, Malaysia.
- 2004 International workshop on “Management of Poor Quality Water for Irrigation: Institutional, Health and Environmental aspects”. Moscow 9-10, 2004. International Commission on Irrigation and Drainage, ICID.
- International workshop on Sustainable Strategies for Irrigation in Salt-prone
- 2003 Mediterranean Region: A System Approach, Cairo, Egypt, December 8-10, 2003.
- 2002 International workshop on Crop Production under Limited Water Supply, Montreal Canada, July 21-22, 2002.
- 2001 International workshop on the Wastewater Reuse Management, Seoul, Korea, September 19-20, 2001.
- 1998 International Workshop on the Use of Saline and Brackish Water for Irrigation- Implication for the Management of Irrigation, Drainage and Crops, Bali, Indonesia, July 23-24, 1998.
- 1996 International Workshop on Crop-Water-Environment Models, Cairo, Egypt. September 17, 1996.



### Co-Chairman/organizer

- 2004 International Workshop on Drought Mitigation in the Semi-Arid Mediterranean Region, April 15, 2004, Cairo, Egypt
- 2004 International Workshop on Rainfall Harvesting, September 9, 2004, Moscow, Russia
- 2003 International Workshop on Drought Mitigation Strategies, July 2003, Tehran, Iran
- 2002 International Workshop on Irrigation Advisory Services (FAO/ICID), Montreal Canada, July 24-25, 2002
- 2000 International Workshop on Adverse Impacts of Fertilizers and Agrochemicals, Cape Town, South Africa, Oct. 22-27, 2000
- 1997 International Workshop on Sustainable Irrigation in Areas of Water Scarcity and Drought, Oxford, UK, Sept. 11- 12, 1997
- 1995 International Workshop on Irrigation Scheduling from Theory to Practice. FAO-ICID. Rome, Italy, September 12-13, 1995.

### Models Developed

- **IHMS:** Integrated hydrological Modelling system for catchment scale. Includes unsaturated zone model, DiCaSM, groundwater flow model, MODFLOW (saturated zone model) and Seawater intrusion model, SWI. Accounting for the impact of water management and possible future climate and land use changes on water flows from the surface to the sea. Hydrological Processes, 2010. Volume 24 issue 19.
- **SALTMED 2015.** SALTMED model as an integrated management tool for management of water, crop, soil and N-fertilizers. The model is a free download from Water4Crops project at the following link: <http://www.water4crops.org/saltmed-2015-integrated-management-tool-water-crop-soil-n-fertilizers>
- **HYDROMED** model for Hydrology of surface reservoirs in the Mediterranean region. A model to predict runoff volume to surface reservoirs/lakes that also calculates the probability of failure for surface reservoirs.
- **Two layers soil model:** A continuous operational system to estimate the root zone soil moisture from intermittent remotely sensed surface soil moisture.
- **FRLM,** Four layer hydrological model to estimate groundwater recharge.
- **CUF,** Capillary Upward Flux model to estimates the capillary water flux from shallow groundwater to the root zone.
- **Two dimensional water and solute transport model.**

**Selected Publications, excluding reports (76 ISI publications, H-index: 20, Scopus: 26/04/18)**

**Ragab, R., Feyen, J., and Hillel, D.** 1981. Comparative study of numerical and laboratory methods for determining the hydraulic conductivity of a sand. *Soil Sci.* 131: 375-388.

**Ragab, R., Feyen, J., and Hillel, D.** 1982. Comparison of experimental and simulated infiltration profiles in sand. *Soil Sci.* 133: 61-64.

**Ragab, R., Feyen, J., and Hillel, D.** 1982. Effect of the method for determining pore size distribution on prediction of the hydraulic conductivity function and of infiltration. *Soil Sci.* 134: 141-145.

**Ragab, R.** 1983. The effect of sprinkler intensity and energy of falling drops on soil surface sealing. *Soil Sci.* 136: 117-123.

**Ragab, R., Feyen, J., and Hillel, D.** 1984. Simulating two-dimensional infiltration into sand from a trickle line source using the matric flux potential concept. *Soil Sci.* 137: 120-127.

**Ragab, R., and Fathi Amer.** 1986. Estimating water table contribution to the water supply of maize. *Agricultural Water Management.* 11: 221-230.

Depre, N., Fathi Amer., and **Ragab, R.** 1987. Fertilizer nitrogen transformations in a soil with shallow water table. *Egypt. J. Soil Sci.* 27: 445-455.

**Ragab, R., Fathi Amer.** 1987. Field study of soil aeration status in presence of shallow water table. *Zeitschrift fur Pflanzenernahrung und Bodenkunde (Journal of Plant Nutrition and Soil Science).* 150: 135-138.

Fathi Amer., **Ragab, R., EL-Ghamry, W., and Fathi A.** 1987. Exploitation of the shallow water table for saving irrigation water. *Proceedings of the International Groundwater Conference: "Groundwater and Environment", 22-26 June 1987, Kuala Lumpur, Malaysia.* B26-B32.

**Ragab, R., Beese, F., and Ehlers, W.** 1987. Simulation of soil water balance and dry matter production of oats - Summary. German Soil Science Society Conference, 6-12 September 1987, Stuttgart, West Germany. *Proceedings of the German Soil Science Society (Mitteilungen der Deutschen Bodenkundlichen Gesellschaft).* 55: 227.

**Ragab, R., and Fathi Amer., and EL-Ghamry, W.M.** 1988. The conjunctive use of rainfall and shallow water table in meeting water requirements of Faba bean. *Journal of Agronomy and Crop Science (Zeitschrift fur Acker- und Pflanzenbau).* 160: 47-53.

**Ragab, R., and Feyen, J.** 1988. Experimental verification of two-dimensional infiltration model using a new sampling technique. *Journal of Rural Engineering and Development (Zeitschrift fur Kulturtechnik und Flurbereinigung).* 29: 117-124.

Van Aelst, P., **Ragab**, R., Feyen, J., and Raes, D. 1988. Improving irrigation management by modelling the irrigation schedule. International Symposium on Water Management for Agricultural Development, 7-11 April 1986, Athens, Greece. Special Issue of Agricultural Water Management. 13: 113-125.

**Ragab**, R., Beese, F., and Ehlers, W. 1988. A numerical analysis of soil water balance and dry matter production of oats - Summary. European Society of Nuclear Methods in Agriculture (ESNA), XIXth Annual Meeting, Aug. 29 - Sept. 2, 1988, Vienna, Austria.

**Ragab**, R., and Fathi Amer 1989. Predicting water table contribution to crop evapotranspiration in Central Nile Delta by CUF model. Journal of Rural Engineering and Development (Zeitschrift fur Kulturtechnik und Landentwicklung). 30: 217-222.

**Ragab**, R., Beese, F., and Ehlers, W. 1990. A soil water balance and dry matter production model. I. Soil water balance of oats. Agronomy Journal. 82: 152-156.

**Ragab**, R., Beese, F., and Ehlers, W. 1990. A soil water balance and dry matter production model. II. Dry matter production of oats. Agronomy Journal. 82: 157-161.

**Ragab**, R., and Cooper, J.D. 1990. Obtaining soil hydraulic properties from field, laboratory and predictive methods. Safety Studies NIREX Radioactive Waste Disposal, NSS/R226 p.83.

**Ragab**, R., and Cooper, J.D. 1991. Variability of unsaturated zone water transport parameters: Implications for hydrological modelling. (Summary), Annales Geophysicae, XVI General Assembly, Wiesbaden, Germany, 9:C469.

**Ragab**, R. 1992. Assessment of the relationship between remotely sensed topsoil moisture content and profile moisture content. In: Eley, F.J., Granger, R., and Martin. L. (eds). Soil Moisture modelling and monitoring for regional planning. Workshop held at The National Hydrology Research Centre, Environment Canada. Saskatoon, Saskatchewan, Canada, March 9-10, 1992. NHRI Symposium No. 9 Proceedings. pp.141-153.

**Ragab**, R., and Cooper, J.D. 1993. Variability of unsaturated zone water transport parameters: Implications for Hydrological Modelling. 1 - *In situ* measurements. J. of Hydrology. 148: 109-131.

**Ragab**, R., and Cooper, J.D. 1993. Variability of unsaturated zone water transport parameters: Implications for Hydrological Modelling. 2 - Predicted versus *In situ* measurements and evaluation of methods. J. of Hydrology. 148: 132-147.

Blyth, K., Biggin, D.S., and **Ragab**, R. 1993. ERS-1 SAR for monitoring soil moisture and river flooding. Proc. 2nd ERS-1 Symposium `Space at the service of our Environment, Hamburg, Germany, Oct. 1993. European Space Agency Publication sp. 361. 2:839-844, Noordwijk, The Netherlands.

**Ragab**, R. 1995. Approaches to modelling nitrogen transformation and transport in agrosystems. INRA-BBSRC-NERC Proceedings of Workshop on "Nitrogen Cycle in

Agrosystems", Loon, France, 6-8 April, 1994. Institut National de la Recherche Agronomique INRA, Loon, Cedex, France. pp 56-59.

**Ragab, R.** 1995. Towards a continuous operational system to estimate the root zone soil moisture from intermittent remotely sensed surface moisture. Abstract of a paper presented at the 20<sup>th</sup> General Assembly of the European Geophysical Society, Hamburg, 1995. *Annales Geophysicae*, Part III. pp C538.

**Ragab, R.** 1995. Towards a continuous operational system to estimate the root zone soil moisture from intermittent remotely sensed surface moisture. *J. of Hydrology*. 173: 1-25

**Ragab, R., Cooper, D.M., Harris, G.L., and CAtt, J.A.** 1996. Simulating nitrate leaching under winter wheat grown on a structured clay soil considering by-pass flow. *J. of Hydrology*. 182: 157-173.

**Ragab, R.** 1996. Soil Hydraulic Conductivity: Issues in measuring, predicting and upscaling. In: Durner, W., Halbertsma, J and Cislerova, M. (Editors). *Advanced Methods to Determine Hydraulic Properties of Soils. Extended Abstracts of the European Workshop on Advanced Methods to Determine Hydraulic Properties of Soils.* Thurnau, Germany, June 10-12, 1996. Extended Abstract, (Invited paper presented at the workshop).

**Ragab, R., EL-Quosy, D., van den Broek, B., and Pereira, L.** 1996. (Eds). *Crop-Water-Environment Models. Proceedings of a Workshop at the occasion of the 16<sup>th</sup> International Commission on Irrigation and Drainage, ICID at Cairo, Egypt. September 17, 1996.* pp301.

**Ragab, R., Finch, J., and Harding, R.** 1997. Estimation of groundwater recharge to chalk and sandstone aquifers using simple soil models. *J. of Hydrology*. 190: 19-41.

**Ragab, R., Austin, B.N., and Albergel, J.** 1997. Hydrology of semi-arid Mediterranean catchments with hill reservoirs: an overview and some preliminary results from a Tunisian catchment. *Proceedings of "Water in the Mediterranean" Conference, Istanbul, Turkey, Nov. 25 -28, 1997.* Pp1-12.

**Ragab, R., and Cain, J. D.** 1997. Aggregation of input parameters for catchment scale model and its implication to model validation. *Monitoring and modelling of soil moisture: Integration over time and space. Workshop program W3. 5<sup>th</sup> Scientific Assembly of the International association of Hydrological Sciences (IAHS), Rabat, Morocco, 23- April - 3 May 1997.* (Abstract of a paper presented at the assembly).

**Ragab, R, and Hamdy, A.** 1997. Reuse of saline and waste waters for irrigation: major issues on water, crop and soil management, environment protection and health safety. *Proceedings of "International conference on Water management, salinity and pollution control towards sustainable irrigation in the Mediterranean region", Sept. 22-26, 1997.* Bari, Italy. 1: (Keynote papers) 101 - 143.

Yeo, A, Flowers, T.J., **Ragab, R.** and Pearce, G.R. 1997. The role of crop salt tolerance in the development of an integrated management plan for irrigation with saline water.

Proceedings of “International conference on Water management, salinity and pollution control towards sustainable irrigation in the Mediterranean region”, Sept. 22-26, 1997. Bari, Italy. 1V: 19-35.

**Ragab**, R. 1999. Inter-plant competition and complementarity for water resource capture in natural and agro-ecosystem. In: Bastiansen, L. and Ingram, J.S.I. (eds.) Modelling Inter-Plant competition in Natural and Agroecosystems, GCTE Working Document 26. Invited paper at Workshop on Modelling Inter-Plant competition in Natural and Agroecosystems, Wageningen, The Netherlands. November 12-14, 1997. pp 21.

Smith, M., Pereira, L.S, Berengena, J., Itier, B., Goussard, J., **Ragab**, R., Tollefson, L., and Van Hofwegen, P. (Editors) 1997. Irrigation Scheduling From Theory To Practice. FAO-ICID Special Publication. Water Report 8. FAO, Rome. Pp1-385.

De Jager, J. M., Vermes, L.P., and **Ragab**, R. (Eds), 1997. Proceedings of the International Workshop on Sustainable Irrigation in Areas of Water Scarcity and Drought. International Commission on Irrigation and Drainage, ICID, Conference, Oxford, UK, Sept. 11-12, 1997. Pp 1-257.

Finch, J., **Ragab**, R., and Harding, R. 1997. A simple method for estimating mean annual groundwater recharge for drift free areas of the chalk and Permo-Triassic sandstone aquifers in the UK. J. of Chartered Institute of Water Engineers and Managers, J. CIWEM. 11: 357-362.

**Ragab**, R., Sene, K., and Austin, B. 1997. A decision support system for hill reservoirs in the semi-arid zone of the Mediterranean periphery. European Geophysical Society, Annales Geophysicae Part II Supplement II to Volume 15. (Abstract of a paper presented at the EGS annual conference), Vienna, Austria. Pp C338.

Cain, J., and **Ragab**, R. 1997. Accounting for sub-grid heterogeneity through aggregation of input parameters in a catchment scale water balance model. European Geophysical Society, Annales Geophysicae Part II Supplement II to Volume 15. (Abstract of a paper presented at the EGS annual conference), Vienna, Austria. Pp C337.

**Ragab**, R. 1997. Constraints and applicability of irrigation scheduling under limited water resources, variable rainfall and saline conditions. Thematic paper (Theme III), ICID-FAO Workshop, Rome, Sept. 12-13, 1995. In: Smith, M, Pereira. L.S., Berengena, J., Itier, B., Goussard, J., **Ragab**, R., Tollefson, L. and van Hofwegen, P. (Editors) 1997. Irrigation Scheduling from Theory to Practice. FAO-ICID Special Publication. Water reports No. 8. FAO, Rome. Pp 149-165.

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