Annals of Arid Zone Research

Special Issue on Improving Water Productivity in Dry Areas

Special Issue Guest Editors

- Prof. Vinay Nangia (International Center for Agricultural Research in the Dry Areas, Morocco), and
- Dr. Narendra Dev Yadava (Central Arid Zone Research Institute, India)

ABOUT THE JOURNAL

Annals of Arid Zone is an official publication of the Arid Zone Research Association of India. It publishes full length articles and short communications dealing with the physical, biological, and socioeconomic aspects of arid and semiarid regions. Papers on applied research dealing with desertification, management and conservation of the resources and recovery of degraded arid land are preferred.

CALL FOR PAPERS

About 41% of the Earth's land area is classified as dryland wherein the farming system is characterized by approximately 300–500 mm of annual rainfall. The low rainfall, which is not only insufficient but irregular, constitutes a major challenge to profitable farming in dry areas. Nevertheless, local populations depend on these lands for producing food and drylands are inhabited by more than two billion people worldwide.

With a growing and more affluent global population, food demand is projected to nearly double by 2050. Without increases in water productivity, crop water requirements may increase by 70–110% with potentially serious implications for the environment. There is an urgent need to reduce the amount of water abstracted for agriculture by producing more food, income, livelihoods, and ecological benefits at less social and environmental costs per unit of water used. Water productivity, defined in physical terms, is the ratio of the mass of agricultural output to the amount of water used. In an economic sense, water productivity reflects the value derived per unit of water used. Improving physical water productivity in irrigated and rainfed agriculture reduces the need for additional water and is thus a critical response to increasing water scarcity.

Fortunately, there is substantial scope for improving physical water productivity in both rainfed and irrigated agriculture, particularly in dry areas of Africa and South Asia where yields are low because of sub-optimal nutrient and water supply. There is great interest in learning from success stories from research in drylands around the world which this Special Issue aims to capture. These include:

- ✓ innovative as well as conventional techniques for rainwater harvesting and other means of supplemental irrigation,
- ✓ managing cropping systems to maximize water productivity,
- ✓ predicting and managing impacts of climatic variability and climate change,
- ✓ institutional and policy options to improve water productivity, and
- ✓ economic analysis (including standardization of methodology) of crop water productivity.

TIMELINE AND SUBMISSIONS

Manuscript submission deadline: **September 1, 2016**
Review comments provided by: October 15, 2016
Planned month for issue publication: December, 2016

ABOUT THE GUEST EDITORS

Prof. Vinay Nangia is a Senior Agricultural Hydrologist at ICARDA, associate professor at International Platform for Dryland Research & Education of Tottori University (Japan) and an adjunct faculty at the Texas A&M University (USA). He received his Ph.D. in Water Resources Science and two M.S. degrees - one in Biosystems & Agricultural Engineering and another in Geographic Information Science - all from the University of Minnesota (USA). Throughout his career, he has applied skills in hydrologic and crop modeling, and GIS and remote sensing to research issues relating to climate change, climatic variability, conservation agriculture, water quality, water productivity, land degradation and sustainable crop production. During an 11-year research career, he has served as a PI or co-PI on research projects worth about $5.75 million, authored or co-authored 59 technical publications that include 35 refereed journal articles in national or international journals. Dr. Nangia serves on the editorial boards of professional society journals. Previously, Dr. Nangia was a NSERC Visiting Fellow at Agriculture and Agri-Food Canada conducting research on GHG emissions from subsurface tile-drained croplands of Eastern Ontario prior to which he was a post-doctoral fellow at the International Water Management Institute (IWMI), where he started his career in 2005.

Dr. Narendra Dev Yadava is a Principal Scientist and Head at ICAR-Central Arid Zone Research Institute, Regional Research Station, Bikaner, India since July 2011. He has done his M.Sc. (Agronomy) in 1981 on parallel cropping system of cereals and legumes and Ph.D. (Agronomy) in 1989 on pigeon pea-based cropping system in eastern Uttar Pradesh from Narendra Dev University of Agriculture and Technology, Kumarganj, Faizabad. He joined Agricultural Research Services (ARS) in 1986 at ICAR-CAZRI, Regional Research station Bikaner as Scientist (Agronomy) and worked as senior scientist, and principal scientist for developing sustainable farming system in rainfed situation of hyper-arid parts of India. He has worked on cropping systems, farming system models, alternate land used system for dry areas, agronomy of crops and grasses and developed grass-based cropping system for control of wind erosion under dryland areas in arid parts of western Rajasthan. He has long experience in development of rainfed agronomy, sand dune stabilization and pasture development. He has visited different countries like International Irrigation Centre, Utah State University, USA, Tanzania, ICARDA, Jordan for research activities especially on deficit irrigation, water and land productivity of agricultural systems. He has more than 45 research papers in different national and international journals and 5 books to his credit. He is working in research project in collaboration with ICARDA on water productivity of crops and cropping system of Indira Gandhi Canal Command Area (IGNP) since past 3 years.