Workshop Program

LWR-2017-028

Improving Salinity and Agricultural Water Management in the Indus Basin of Pakistan

A Short Research and Development Activity (SRA) undertaken by Charles Sturt University and partners with the support of the Australian Centre for International Agriculture Research (ACIAR)

Workshop, 14-15 November, 2017
Serena Hotel, Faisalabad

This workshop will provide a context to help develop a four-year research project exploring innovative approaches to salinity management in Pakistan. The project intends to explore a holistic approach, meaning one that integrates social, economic, hydrogeologic, agronomic and ecological aspects of salinity management.

The objectives of the workshop are to:

1. Contribute to a holistic understanding of the underlying causes of salinity in the Indus Basin of Pakistan, and the difficulties that result for affected farming and coastal communities.
2. Contribute to an understanding of how the concept of ecosystem services can be incorporated into and improve holistic approaches to salinity management.
3. Identify examples of holistic approaches to salinity management already being undertaken in Pakistan, including any that consider the use of the ecosystem services concept, and a strategy to engage with and learn from those involved in these case study examples.
4. Identify the most significant research questions that might arise from this emerging holistic understanding of salinity management for further investigation as part of a four-year research project.
5. Establish a network of researchers and intended research beneficiaries with whom the case for a more holistic approach to salinity management can be investigated.

Workshop participants will be expected to have come prepared to offer examples and evidence from their working experience as follows:

1. Case examples where salinity management has improved through the use of a holistic or integrated approach.
2. Case examples where remedial focus on the broader environmental context has led to improved livelihoods of communities affected by salinity.
3. Case examples where livelihoods of those living or working in environments affected by salinity have improved through the use of innovative agricultural or coastal practices, especially any that have been driven by community collective action.
4. Case studies of innovative and successful salinity management interventions that have been adopted and implemented by farmers.

Schedule

Monday Nov 13: Arrival of participants at Serena Hotel not based locally

Tuesday Nov 14: Workshop: Arrival by 9 am of local participants

7:30 – 8:30 am	**Breakfast (for those staying at Serena)**
9:00 am – 5:30 pm	**Workshop Day One**
9:00 – 9:20	**Opening and welcome** – Dr Robyn Johnston and Dr Munawar Kazmi, ACIAR – Assoc Prof Catherine Allan, CSU
9:20 – 9:30	**Salinity issues and management options in Pakistan** – Dr Muhammad Ashraf, PCRWR
9:30 – 9:40	**Brief overview of state of salinity research internationally and in Pakistan, and rationale for currently proposed project** – Dr Ed Barrett-Lennard, Murdoch
9:40 – 9:50	**Brief overview of holistic approaches to salinity research and management in Punjab** – Dr Javaid Akhtar, UAF
9:50 – 10:00	**Brief overview of holistic approaches to salinity research and management in Sindh** – Prof Bakhshal Lashari, MUET USPCASW
10:00 – 10:30	**Panel discussion** – Q&A with speakers
10:30 – 11:00	**Morning Tea**
11:30 – 11:45	**Brief overview of global sustainability research underpinning an ecosystem approach to managing salinity, with prospects for currently proposed project** – Prof Max Finlayson
11:45 – 1:00	**Sharing and documenting case examples from participants – World Cafe** 4 groups spend 15 minutes each sharing and having their experiences documented at the following four tables: **Table 1: Understanding Salinity as a Systemic Issue:** Case examples where a holistic or integrated approach to salinity management has been trialled or put into practice **Table 2: Save our Environments:** Case examples where a focus on broader environmental causes of salinity has resulted in improved landscapes or livelihoods T**able 3: Bottom Up is Best:** Case examples of innovative salinity management practices developed by communities through their own efforts **Table 4: Successful Adoptions:** Case examples of innovative salinity management practices introduced to a community that they have adopted and implemented
1:00 – 2:15	**Lunch**
2:15 – 2:40	**Brief report back from World Cafe table leaders**, leading into...
2:40 – 3:30	Whole of workshop discussion to fill gaps, identify gaps that we could address, and implications for research questions and design
3:30 – 3:45	**Afternoon tea**
3:45 – 4:30	Small group discussions to identify and formulate the most significant research questions that could be pursued through the four year project
4:30 – 5:15	**Follow up:** Who else do we need to meet with to learn more/ help develop the project? Recommended sites for field visits Process for compiling relevant literature that needs to be included in desk-top review
5:15 – 5:30	Workshop evaluation
7:30 pm onwards	**Dinner for all participants – arrangements TBA**

Wednesday Nov 15: Field Trip

6:30 – 7:30 am	**Breakfast (for those staying at Serena)**
7:30 am – 1:30 pm	**Field trip**
1:30 pm	Participants leave
1:30 – 3:00	Follow up meeting of core team members to: 1. Develop a schedule for follow up meetings and field visit 2. Develop a strategy and assign responsibilities to complete a desk-top review of relevant literature 3. Develop a strategy for identifying who will be part of the network, the responsibilities they can bring, and next steps
3:00 – 3:30	**Afternoon tea and departure of core team members not staying on**

Improving Salinity and Agricultural Water Management in the Indus Basin of Pakistan

Project Summary

Background

About 6.3 million hectares of Pakistan are affected by different levels and types of salinity. Nearly half of this area is under irrigated agriculture. Since the early 1960s, many efforts have been undertaken to improve the management of salt-affected and waterlogged soils. These include lowering groundwater levels through deep tubewells, leaching of salts by excess irrigation, application of chemical amendments (e.g. gypsum, acids, organic matter), and the use of biological and physical methods. However, results have been disappointing and problems persist. On-farm approaches have had limited success, and many regional and basin-wide interventions which had some success in early years were later abandoned or, in some cases, created other environmental problems. Previous programs often failed because they were small, scattered, and focused only on biophysical outcomes.

A more holistic approach that incorporates social, environmental, technical and economic aspects of salinity management is needed. Such an approach offers better prospects for identifying and exploring adaptation measures and building resilience for communities affected by salinity. A focus only on biophysical aspects impedes improvement, and does not take into account opportunities presented by considering ecosystem services as a pathway to improving landscapes and livelihoods of those in saline affected areas.
Together with the Australian Centre for International Agriculture Research (ACIAR), we are inviting key researchers and agencies involved in salinity management to become part of a network to help design a research project over four years to explore this new approach. This will be a Short Research and Development Activity (SRA) to be undertaken in November 2017, involving a workshop, meetings and field visits. Project partners in the initial development phase are Charles Sturt University (CSU) as commissioned organisation, Pakistan Council of Research in Water Resources (PCRWR) as local lead in Pakistan, and Mehran University of Engineering and Technology (MUET) as a local university partner. These partners will be responsible for identifying other collaborators.

SRA Goal and Objectives

The goal of the SRA is to establish the case for a holistic, integrating approach to salinity and water management, and a network of researchers and intended research beneficiaries able to co-design an integrated salinity research project for ACIAR funding.

The objectives are to:

1. Develop a holistic understanding of the underlying causes of salinity, and the difficulties that result for farming and coastal communities affected, through review of existing technical, economic and social assessments of salinity
2. Develop a case for incorporating the broad concept of ecosystem services into an integrated salinity management framework for Pakistan, by exploring its potential to (i) enhance appreciation of salinity as a systemic issue, and (ii) help identify opportunities for amelioration of those impacts and/or improve livelihoods of those living with salinity.
3. Establish a network of researchers and intended research beneficiaries with whom the case for a more holistic approach to salinity management can be discussed, and who can then take a leading role in designing an ACIAR funded research project through which an integrated salinity management framework for Pakistan can be developed and applied.

Research strategy and activities

Our strategy is to enable a four-year research project to be proposed and designed in collaboration with project partners and beneficiaries. Initial face-to-face meetings and a workshop of relevant stakeholders will be held to:

1. Identify the most significant issues of concern that could be explored as research questions for salinity management across the Indus Basin.
2. Understand the extent of research already undertaken at all scales (from farm level to basin-wide level).

These discussions will help frame a desk-top review forming the basis for considering the incorporation of ecosystem services into an integrated salinity management framework.

Proposed activities are to:

1. Conduct a preliminary desk top literature review of technical, economic and social aspects related to salinity management in the Indus Basin Irrigation System. This will require liaison with key national and provincial government departments, non-government organisations and university-based researchers to source relevant grey literature reports, policy documents and any available information on innovative approaches to salinity management, especially any that seek to take a holistic ecosystem management approach. We will also conduct a review of the application of ecosystem service approaches to agricultural situations in other equivalent parts of Asia, including any use of ecosystem services payment and incentive schemes.
2. Identify key government and non-government agencies that may have taken or be aware of those taking innovative holistic approaches to salinity management, or to developing productive livelihoods in salinity affected areas, and arrange meetings with key representatives of these agencies to identify and explore research questions that may support these initiatives.
3. Conduct a workshop where researchers and agencies working in the area of salinity management can detail any work they may be undertaking that adopts an innovative and/or holistic approach. Participants will be required to come prepared to offer case examples of innovative and holistic approaches to salinity management from their working experience. This input will be used to identify key research questions for the project to pursue, and those best placed to contribute to the network we are seeking to establish.
4. Undertake a field trip and rapid assessment of on-ground actions for managing various levels of waterlogging and salinity to identify successful examples of farming and costal community initiated actions.
5. Secure commitment from those we identify as persons who should join our network, the contributions they can make to furthering the research project, and the practical arrangements for how they will be engaged in an ongoing way.
6. Develop a report on SRA findings that highlights the gaps in salinity research, and identifies key opportunities for improving salinity and water management.

Project benefits

Intended research beneficiaries include:

1. Government and non-government agencies
2. Community-organised farmers' organisations and water user associations
3. Farming and other resource dependent families directly involved with the project
4. Private sector (input suppliers, output buyers)

The ultimate beneficiaries are intended to be farming and coastal communities affected by salinity. The four-year project will be designed to maximise engagement with such communities, especially those exhibiting positive prospects of actively working towards improved livelihoods.

Criteria of people to be part of our network:

The people who have been invited to this workshop match those we think might be useful contributors to the network we are establishing. This network will be given the responsibilities of taking a leading role in designing an ACIAR funded four-year research project through which an integrated salinity management framework for Pakistan can be developed and applied. We want the network to have both researchers and practitioners. Researchers include scientists and engineers who may be based at universities or employed by government and non-government organisations. By practitioners we mean people in government and non-government sectors with practical salinity management experiences, especially those working with communities affected.

We are in particular seeking the following for our network:

1. Researchers and practitioners who have adopted a holistic approach to exploring and improving salinity management.
2. Researchers and practitioners who have developed and implemented innovative strategies for improved agricultural water and salinity management.
3. Researchers and practitioners with experience and/or knowledge of environmental change in ecosystems affected by salinity, including coastal ecosystems, especially any who have made practical use of that ecosystems knowledge to improve management of saline affected environments.
4. Researchers and practitioners with direct practical experiences engaging with communities living or working in agricultural or coastal environments affected by salinity and who are seeking to improve their livelihoods.
5. Representatives from communities living or working in agricultural or coastal environments affected by salinity who have adopted a proactive and/or innovative approach to improving their livelihoods.
6. Researchers with expertise in remote sensing, mobile acquired data, and other related technologies that can be applied to gather spatially mapped data on salinity and land degradation.
7. Researchers modelling groundwater and salinity at regional scales in ways that can be used for the strategic monitoring and management of salinity affected environments.
8. Researchers who have undertaken economic analyses of the cost and externality impacts of salinity and waterlogging in the Indus Basin.
9. Researchers and practitioners with expertise based on a broad and global appreciation for the sustainable use of species and ecosystems for human livelihood enhancement.