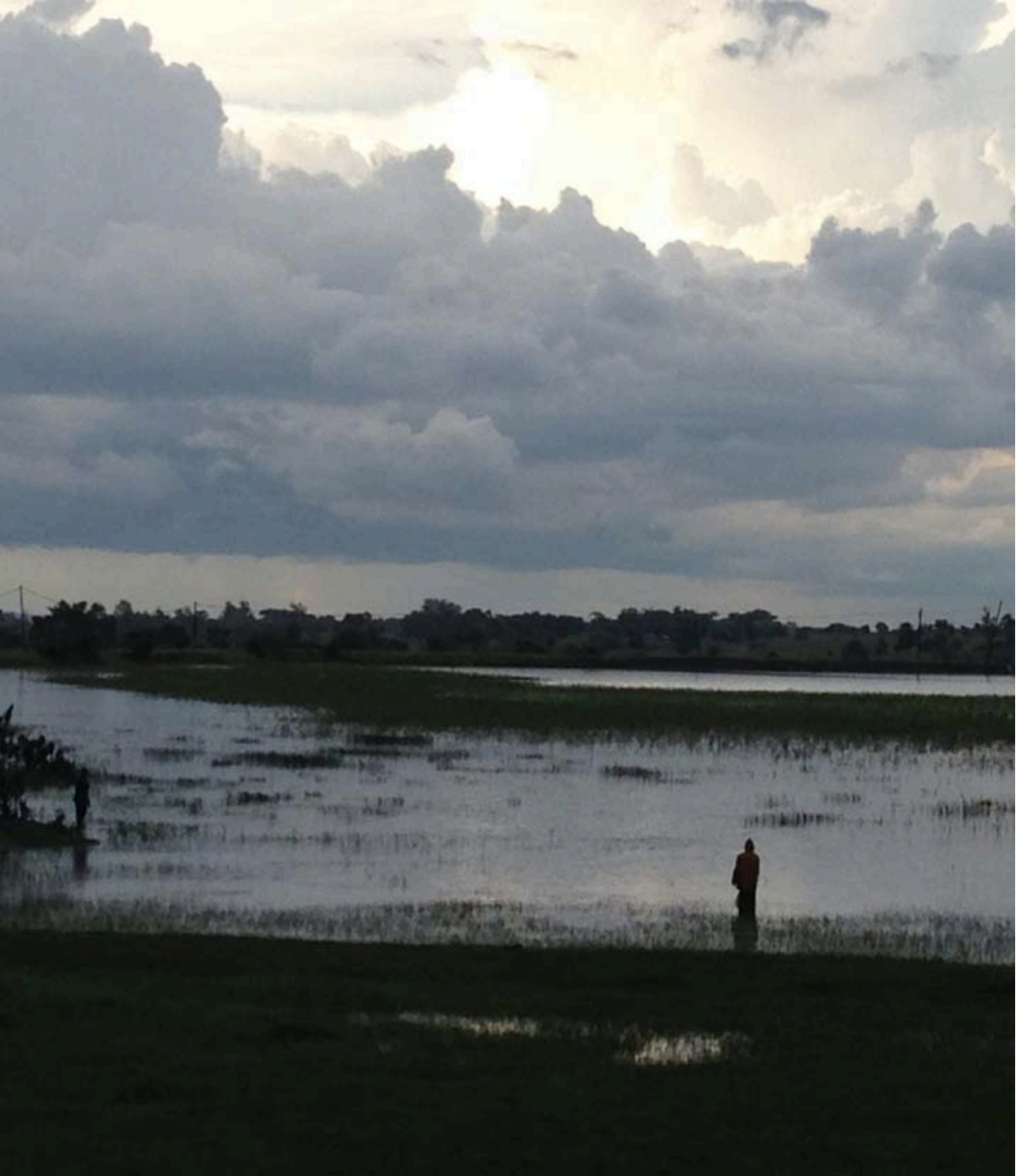

Water productivity in basin management: Experiences from Flood Based Farming

META

Flood-Based Livelihoods Network Foundation

Introducing flood based livelihood systems

- What are flood based livelihood systems – the forgotten system
- Water productivity and basin management
- Introducing the FBLN

META

Flood-Based Livelihoods Network Foundation

Floods could surprise you – we may think of them as a hazard but they are an asset just as wel

FBLS makes use of temporarily predictable flood water to support farming, fishery, grazing grounds, recharge and groundwater storage


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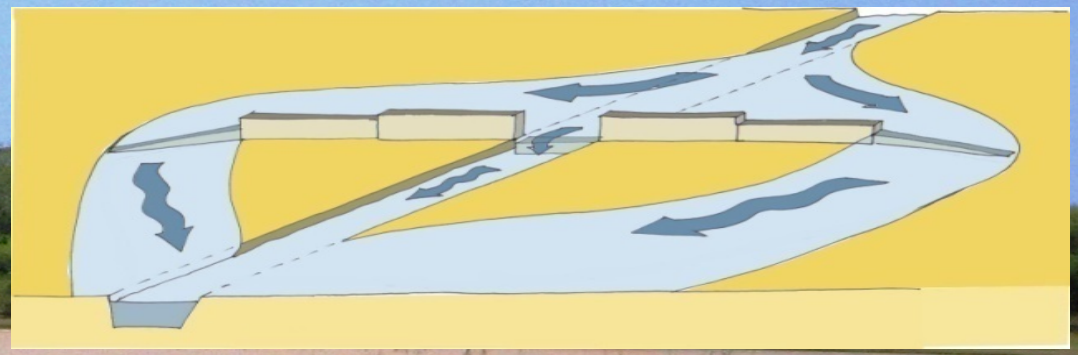
Methods of Flood-based Farming

- Spate Irrigation: diversion, distribution and management of short duration flood flows from seasonal or ephemeral rivers
- Flood-spreading weirs: using a series of weirs to manage and spread floods for rehabilitating degraded land, enhancing ground water recharge
- Roads for water: Water harvesting from roads for multiple use
- Floodplain agriculture: cultivation of flood plains, using either receding or rising flood water or both
- Inundation canal systems: as above with high water canals guiding the flood water

Spate Irrigation

Floodwater spreading weir

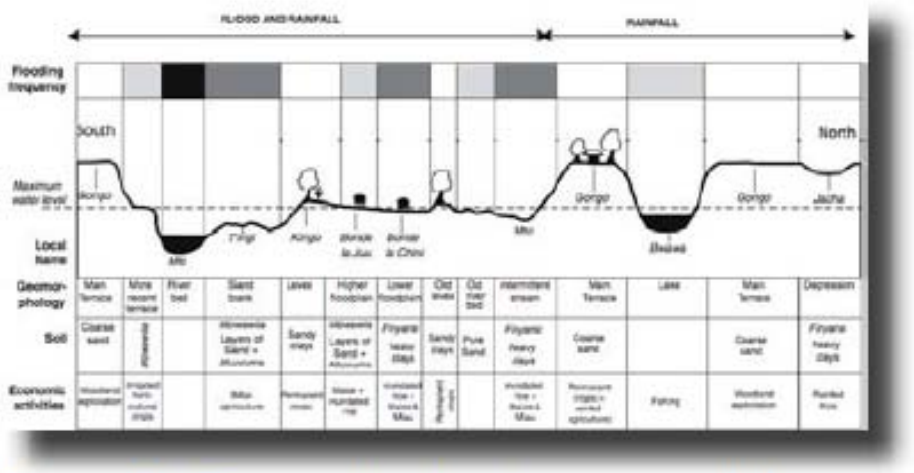


Harvesting floodwater from roads

Flood-plain agriculture - recession

Flood-plain agriculture – flood rise

- Deep water rice or sorghum varieties that grow in flooded conditions: water > 50 cm deep for at least a month
- More than 100 million people in South and Southeast Asia rely on deep-water rice for their sustenance



Annual average field rise: 3 cm

Up to 10% sediment concentration in floodwater

Flood-based farming systems: special water right systems

Floods – turning a threat into an assets

Reversing the destructive nature of floods and huge sediment challenges they bring along into a blessing for:

- Increased cropped area and higher yield: cereals, oil seeds, pulses, fruit trees
- Preserving biodiversity, rehabilitation of degraded environments
- Better groundwater recharge
- Domestic and livestock water supply
- Mitigating climate change impact and variability
- Stabilizing river basins

Reasons why we should invest in FBFS

- They constitute poverty pockets - central to our effort to lift 700 to 800 million people out of poverty and into prosperity.
- They are significant: 15 Million ha in arid and semi- arid regions in SSA - 30 million ha worldwide.
- Much of the potential is still unharnessed - they are orphans left-out between rain-fed and conventional irrigated Agriculture.
- Much scope for innovation

We should invest – FBFS are productive

Chick pea - yield

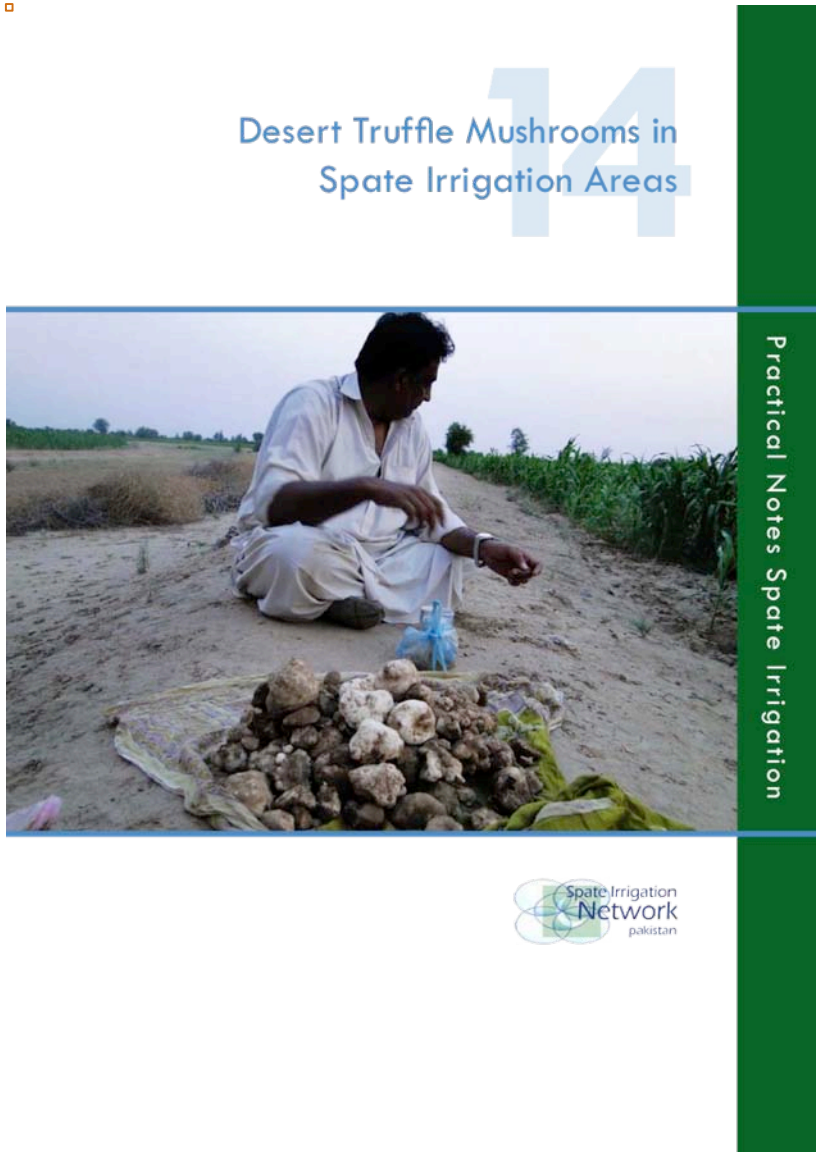
- Rainfed: 400 to 600 Kg/ha - rain fed
- Flood-Irrigated: 2000 - 5200 kg/ha -

Fogera Flood plain - Flood recession and rise: North West Ethiopia, East of Lake Tana

Why invest: preserving biodiversity & providing livelihood

Flood-based systems are depositories of local biodiversity - Natural species of vegetation are often of considerable value and may provide additional source of income to local communities

Leading to promising niche crops: mushrooms and wild vegetables



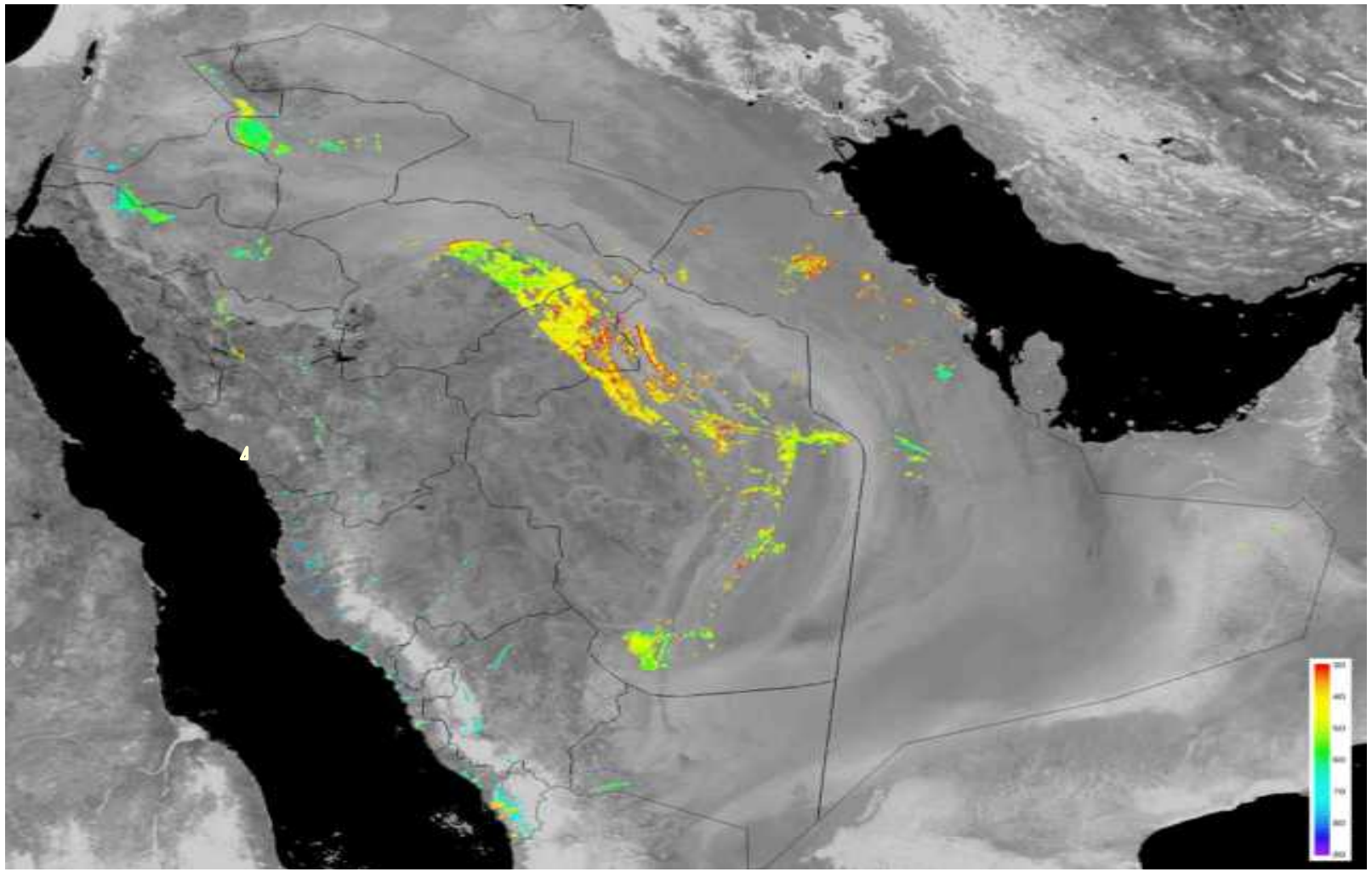
Basin management and water productivity in flood based farming systems

- FBFS:
  - Often only source of water
  - Unused potential
  - Direct (high) water productivity
  - Mitigate floods
  - Stabilize productive landscapes
  - Recharge groundwater

Often the only source of wter

Water productivity (consumption/supply) for all irrigated areas in Saudi Arabia averaged for the period 1975 to 2005. The wheat belt with (badly managed) centre pivot irrigation systems have an efficiency of 40%. The highest efficiencies (70%) are obtained at the spate irrigation systems along the Red Sea coast!

Saudi Arabia: Water productivity can be high in flood Based farming systems



Source: WaterWatch

Manage soil moisture

Since flood based irrigation usually is based on pre-sowing irrigation moisture conservation is essential

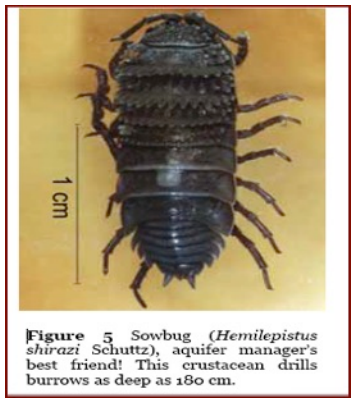


Figure 5 Sowbug (*Hemilepistus shirazi* Schuttz), aquifer manager's best friend! This crustacean drills burrows as deep as 180 cm.

Water producitivity: huge potential for better field water management

No overflow control structures

Open field intake with stop blocks

Orifice with settling basin

for sloping fields

Water productivity and basin management

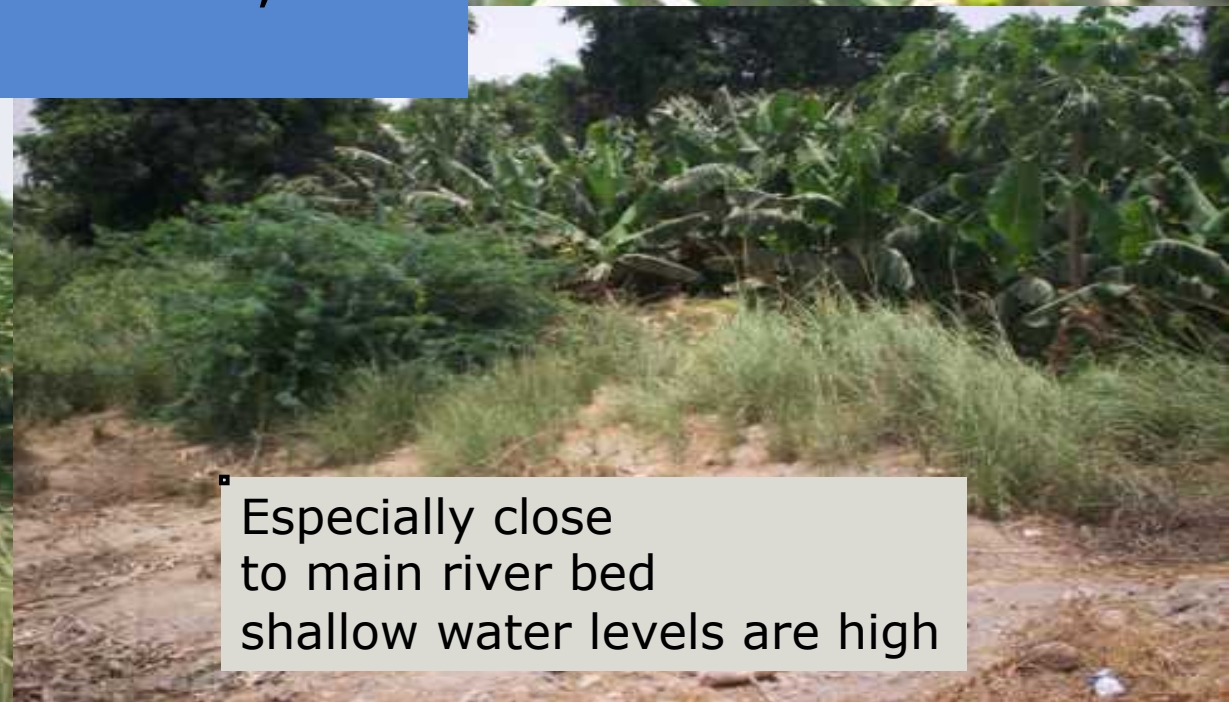
Keep command area
small and concentrated

In Pakistan, it is quite common to have large areas that are only irrigated in exceptional years: this creates social tension and discourages land preparation

(Increasing) recharge

LOW RECHARGE WEIR
TO SLOW DOWN AND SPREAD FLOODS

High value crops
For instance:
Papaya, Mango, Banana, Vegetables



Especially close
to main river bed
shallow water levels are high

How to optimize recharge from spate flows?

- Modify water distribution
- Recharge mainly from main riverbed – far less from main wadi flood channels or fields
- Recharge most effective from gravelly sections of the river bed
- Recharge most effective, if spate flows slow
- Recharge from flat sections of the river bed
- Recharge from water ponded at bunds and weirs
- Recharge from (subsurface) base flow
- Spread spate over large area to optimize recharge

Flood-Based Livelihoods Network Foundation

- Network
- Network of professionals (800) > now becoming network of farmers
- Country chapters (4>10)
- > All flood based livelihood systems
- Resources:
  - Practical Notes, Guidelines, Overview Papers
  - Library
  - Training package, taped lectures, presentations

Flood-Based Livelihoods Network Foundation

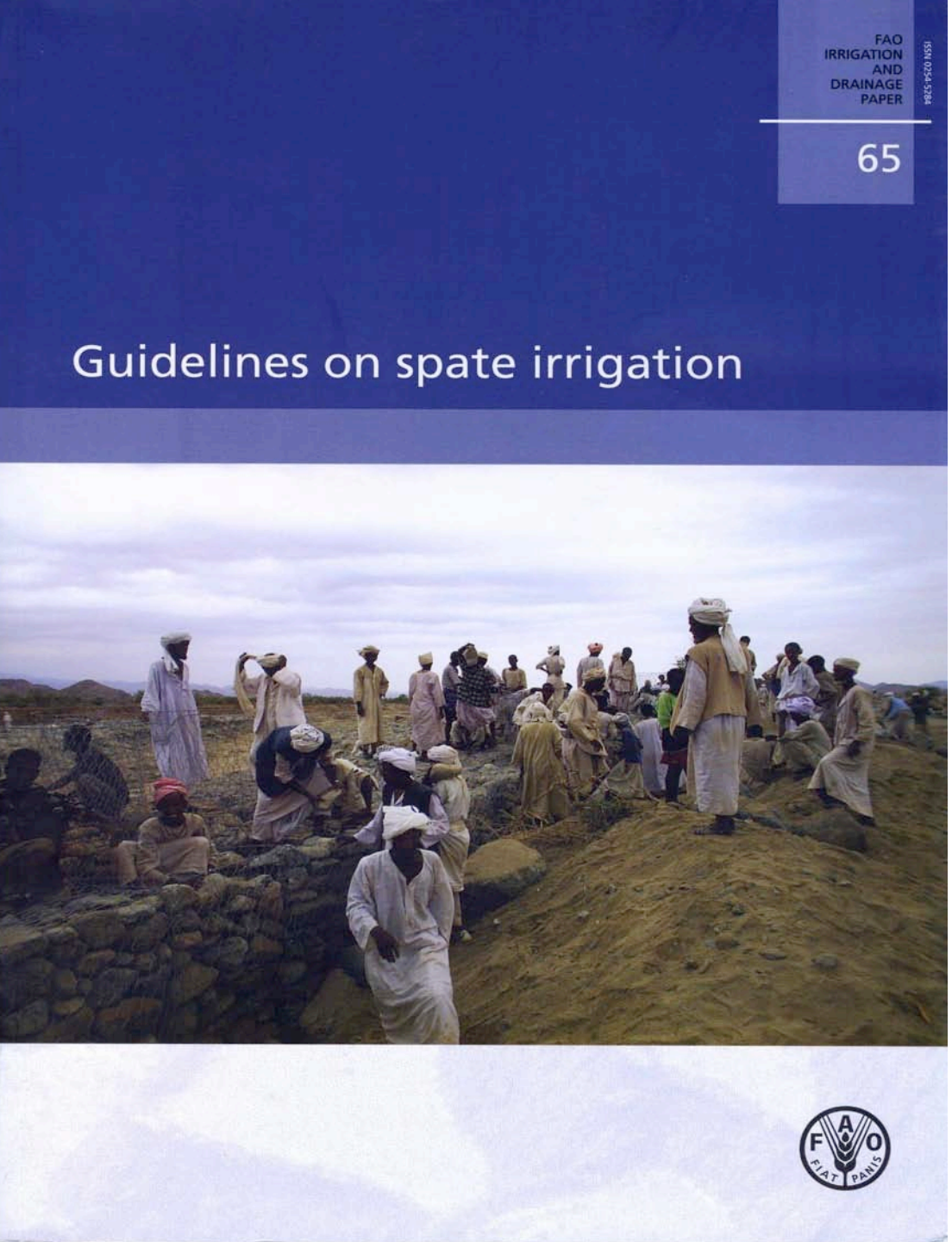
Spate Irrigation Network Foundation

"Floods are not always a hazard. They may also sustain aquatic life and riverine biodiversity, recharge aquifers, enrich soils and in some of the world's poorest areas they are the main source of

NEWS

- In February and March 2016, a leadership course is being organized in flood based farming and rainwater harvesting. The objective of the leadership course is to contribute to nurturing development leaders with a good understanding of the bigger picture related to participatory approach to watershed management and climate change and variability. For more information and application see this **link**.

- On December 7 Sindh Agriculture University Tandojam, Research and Development Foundation and Mehran University of Engineering and Technology Jamshoro, Sindh-Pakistan organized the National Conference



FAO GUIDELINES ON SPATE IRRIGATION

More detailed Design guidelines are under preparation

www.spate-irrigation.org

Spate Irrigation Network

Home/ What is Spate Irrigation?/ News/ Guidelines/ Partners/ Contact / Spate Irrigation Network/ Library/ Links/ Spate Irrigation Community

"Floods are not always a hazard. They may also sustain aquatic life and riverine biodiversity, recharge aquifers, enrich soilds and in some of the world's poorest areas they are the main source of irrigation."

Global Water Partnership (2000) 'Toward water security: a framework for action'

News & Recent Additions

Events

- 15 September 2011: Summer course "Spate Irrigation and Water Management Under Drought and Water Scarcity" in Delft from 5 to 16 September 2011. Read more...

Highlights

- Download the Overview Paper Spate Irrigation: Spate Irrigation in the Horn of Africa: Status and Potential

THE SPATE IRRIGATION NETWORK is a network of spate irrigation professionals and practitioners. The network stimulates the development of programmes of implementation that improve the livelihoods of those in spate irrigation areas, exchanges experiences and good practices, helps upgrade training, identify priority fields for improvement and research and

پاکستان ۾
نئيُن جي آبپاشي نظام وارن علائقن ۾ ننڍن فصلن جي پوک

ADF Oxfam Spate Irrigation Network Pakistan

Codifying Water Rules and Rights
(in Spate Irrigation)

26

Practical Note Spate Irrigation

Spate Irrigation Network Foundation

Reducing Women's Work Load by
Electric Milk Churners

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Practical Note Spate Irrigation

Spate Irrigation Network

Looking for cooperation and partnering