



Project launch in Sudan: Harnessing Floods For Enhanced Livelihoods and Ecosystem Services

Defining the Research Programme

Day 2: 28 April 2015



Today's Programme at a Glance

9:30 to 9:40: Framing the research programme: Dr. Abraham

9:40 to 10:00: Water Allocation: RIBASIM Model: Prof. Yasir

10:00 to 10:20: Groundwater modeling – the MODFLOW: Kebir

10:20 to 10:45: Discussion

10:45 to 11:00 : Coffee break

11:00 to 11:20: Field experiment – efficient distribution & use of soil moistures; and other ecosystems services : Dr. Frank

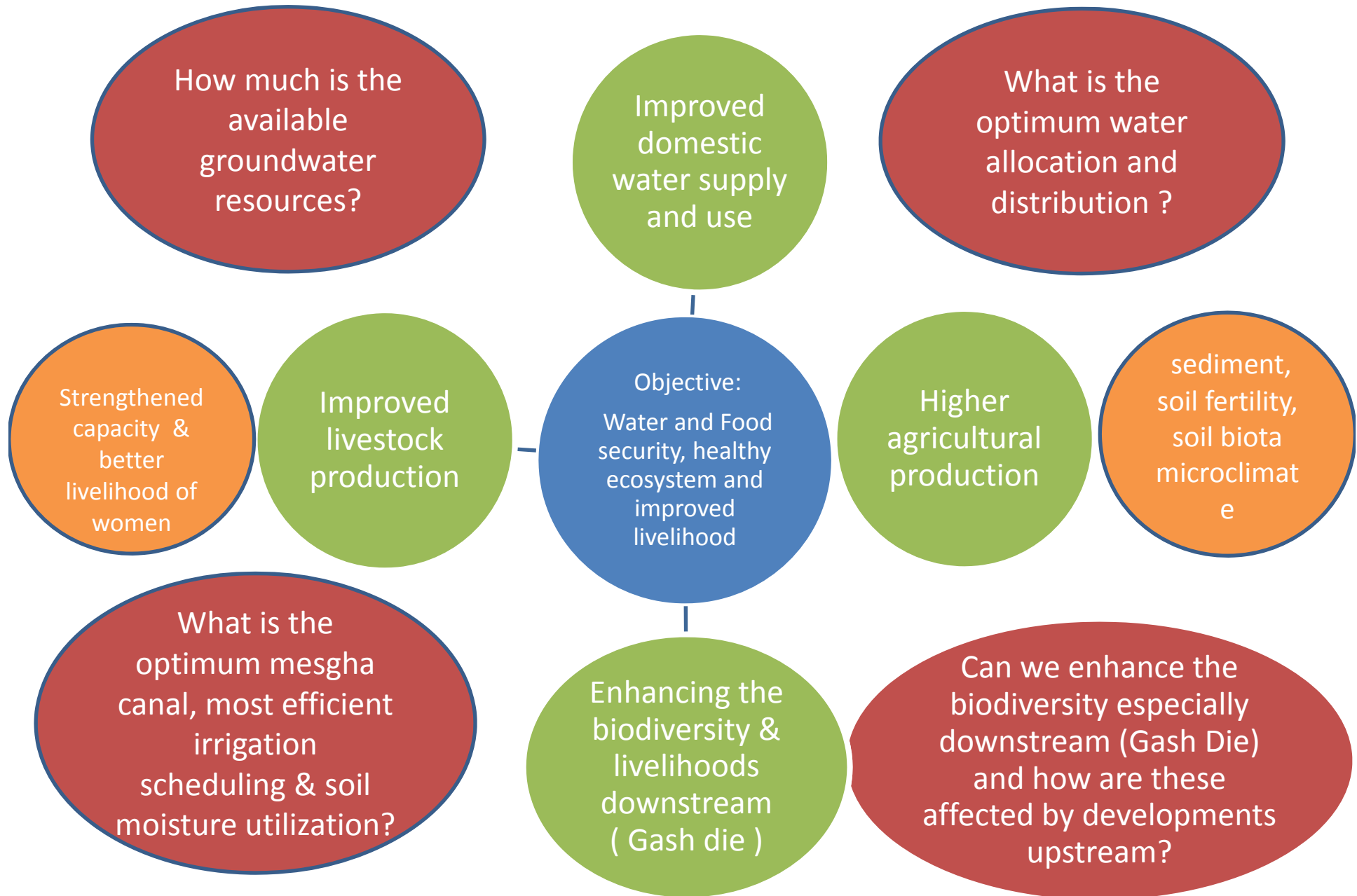
11:20 to 11:30: Irrigation scheduling and AQUACROP model: Dr. Abraham

11:30 to 12:10: Discussion

12:10 to 12: 40: Communication strategies: Ahmed and Mathijs

12: 40 to 13:40: Lunch break

The Research Programme framework



AQUACROP Modeling

**to answer the research
question**

**What is the optimum irrigation scheduling for
more efficient use of soil moisture and higher
agricultural productivity**

WHAT IS AQUACROP MODEL AND WHAT CAN IT SIMULATE?

- AquaCrop is a publicly available crop water productivity model developed by the Land and Water Division of FAO.
- It simulates yield response to climate, water, soil type and fertility, water logging, salinity (water salinity)
- It is particularly suited to address conditions where water is a key limiting factor in crop production.
- Assess yield under different irrigation schedules and irrigation systems
- As a benchmarking tool, comparing the attainable yields against actual yields of a field, farm, or region, to identify the yield gap and the constraints limiting crop production

WHAT SETS IT APART FROM CROPWAT ?

- Separates Biomass and Yield
- Partitions Transpiration and Evaporation
- Analyses the effect of temperature, nutrients, irrigation water quality on biomass and yield
- Provides opportunities for evaluating the impact of various field water management practices

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WHAT ARE THE INPUT PARAMETERS AND ARE THEY AVAILABLE?

The screenshot displays the 'Main menu' window of the AquaCrop software. It is organized into several sections, each with a category icon and a list of input parameters. Each parameter is represented by a button with a dropdown menu and a descriptive text.

- Environment and Crop**
 - Climate** (Weather icon): Climate button with dropdown '(None)'. Description: 'Specify climatic data when Running AquaCrop'.
 - Crop** (Sunflower icon): Crop button with dropdown 'DEFAULT.CRO'. Description: 'Growing cycle: Day 1 after sowing: 22 March - Maturity: 24 July a generic crop'.
 - Management** (Person working icon):
 - Irrigation** (Water drop icon): Irrigation button with dropdown '(None)'. Description: 'Rainfed cropping'.
 - Field** (Tractor icon): Field button with dropdown '(None)'. Description: 'No specific field management'.
 - Soil** (Soil profile icon):
 - Soil profile** (Soil icon): Soil profile button with dropdown 'DEFAULT.SOL'. Description: 'Deep loamy soil'.
 - Groundwater** (Water table icon): Groundwater button with dropdown '(None)'. Description: 'no shallow groundwater table'.
- Simulation** (Calendar icon):
 - Simulation period**: Simulation period button with dropdown 'Simulation period: From: 22 March - To: 24 July'.
 - Initial conditions** (Calendar icon with '1'): Initial conditions button with dropdown '(None)'. Description: 'Soil water profile at Field Capacity'.
 - Off-season** (Calendar icon with 'X'): Off-season button with dropdown 'Simulation period linked to cropping period'.
 - Run** (Water flow icon): A large 'Run' button with three left-pointing arrows.
- Project** (Folder icon): Project button with dropdown '(None)'. Description: 'No specific project'.
- Field data** (Calendar icon with '22'): Field data button with dropdown '(None)'. Description: 'No field observations'.

Climate data

Primary data – collected from a local meteorological station

Secondary data:

- Personally collected from specific meteorological station
- Climwat
(http://www.fao.org/nr/water/infores_databases_climwat.html)
- NewLocClim
(http://www.fao.org/nr/climpag/pub/en0201_en.asp)