

RE-IMAGINE

RE-BUILD

REPEAT

FUTURE
PROOFING
WATER



AGRICULTURAL DECISION SUPPORT TOOLS FOR INCREASED PRODUCTIVITY

Tuesday, 21 September 2021 | 14:00-15:30 (CAT)

This session highlights work done by the WRC and its partners in line with moving from theory to practice in ensuring adoption and utilisation of research output. The aim is to provide knowledge and innovation in the agricultural sector that assist the sector to produce more food with less water.

Four decision support tools developed through WRC funded research will be showcased:

1. Site-specific, risk based DSS for assessing irrigation water quality
2. The Water and Nutrient Balance Framework (WNB)
3. The Buna App
4. The Apple Water Use App

Site-specific, risk based DSS for assessing irrigation water quality

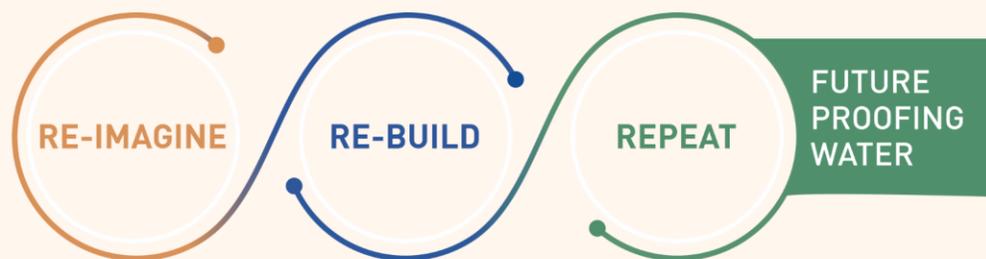
Using the South African Water Quality Guidelines published in 1996 as a starting point, the WRC has developed updated, risk-based guidelines – a fundamental change in philosophy from earlier versions. The new guidelines allow for much greater site-specificity – a widely recognised limitation of the generic 1996 guidelines. Thirdly, they are available primarily as a software based DSS.

The DSS for assessing irrigation water quality has been designed to cater for two diverging applications, namely:

1. To assess the **fitness-for-use** of a water of known composition (water analysis) by determining its fitness-for-use category.
2. To determine the threshold water composition for a specific fitness-for-use category. This application is used by water resource managers and users when deliberating on the **setting of water quality requirements** for a given user of a water resource (river stretch or surface or groundwater body).

The Water and Nutrient Balance Framework (WNB)

The WNB is a tool that can be used by catchment and Agri-park managers to assess the feasibility of their farms, or to determine potential production and field size in terms of water quality and quantity. The user-friendly tool combines crop water footprint information with general crop and water availability and quality data to produce estimates of the potential size of an Agri-park and the production that can be achieved for various crops in terms of water availability and the nutrient content in the water.



The Buna App

The Buna App was developed to deliver an existing WRC manual for small scale fish farmers. The App carries the original 2010 version of the WRC manual and a revised version better suited to a digital platform. For each chapter of the manual, relevant YouTube videos are linked. The App allows farmers to calculate growth parameters to benchmark the farms' production levels. Another important feature in the App is an instant messaging system that farmers and extension officers can use to communicate and share information.

Farm production data is made available to the extension officers and those at provincial and national levels, through a spreadsheet embedded into the App or can be viewed visually on Google Maps. It is also required by the FAO that member countries submit their production data annually.

The Apple Water Use App

This online tool operates on platforms that are easily accessible to end users e.g. farmers, irrigation boards etc. to assist them with irrigation planning in real-time. The developed Smartphone Application (App) for forecasting orchard water requirements a few days in advance using readily available data as inputs. The App was piloted in apple orchards that have some of the largest volume of measured water use data. This innovation comes at the right time when the fruit industry is grappling with water scarcity because of frequent droughts and the increasing demand for limited water resources.

Chair: Samkelisiwe Hlophe-Ginindza

14:00	Welcome and introductions	Samkelisiwe Hlophe-Ginindza
14:05	Opening remarks	Sylvester Mpandeli, WRC
14:10	Site-specific, risk based DSS for assessing irrigation water quality	John Annandale, UP
14:30	The Water and Nutrient Balance Framework	Betsie le Roux, FAWR
14:50	The Buna App	Qurban Rouhani, Rhodes
15:10	The Apple Water Use App	Sebinasi Dzikiti, CSIR
15:30-15:40	Summary and wrap up	Sylvester Mpandeli, WRC