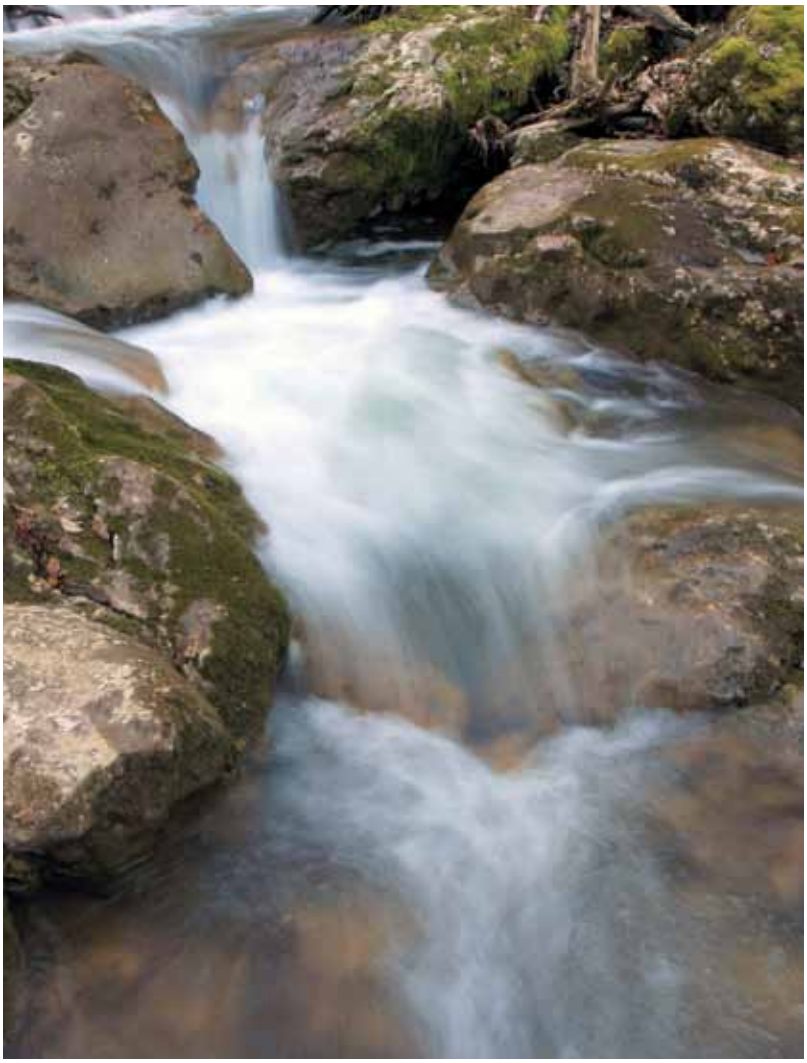

IRRIGATION WATER QUALITY IN THE SOUTH AFRICAN SUGAR INDUSTRY

Sustainable sugarcane production under irrigation requires water of appropriate quality, most especially with regards to salinity and sodicity. Irrigation can also impact negatively on water quality through return flows which contain high levels of nutrients and salts that have leached from the root zone.

A RECENT SURVEY CONDUCTED USING LONG-TERM WATER QUALITY DATA FROM THE DEPARTMENT OF WATER AFFAIRS SHOWS THAT IRRIGATION WATER IN THE INDUSTRY IS GENERALLY OF GOOD QUALITY. FOR THE CROCODILE, KOMATI-LOMATI AND PONGOLA RIVER CATCHMENTS, SALT CONCENTRATION INCREASES SIGNIFICANTLY ALONG THE RIVER COURSE AS A RESULT OF VARIOUS ANTHROPOGENIC ACTIVITIES IN THESE CATCHMENTS. IRRIGATORS LOCATED FURTHER DOWNSTREAM WILL THEREFORE GENERALLY HAVE TO PAY MORE ATTENTION TO ON-FARM SALINITY MANAGEMENT.

A serious sodicity hazard is posed for the Mkuze River, and to a lesser extent for the lower parts of the Komati-Lomati and Pongola River Catchments and the Umfolozi River. Interestingly, acidifying effects of mine water drainage are potentially being countered by high salt input from agricultural return flows. Nitrogen and phosphorus enrichment (the primary nutrients responsible for eutrophication) is evident for most of these rivers. Irrigators have a crucial role to play in minimising the impacts of irrigation on water quality, more especially since the major rivers in the industry go on to flow into neighbouring countries (Swaziland and Mozambique) or ecologically sensitive protected areas (iSimangaliso/ Greater St Lucia Wetland Park).

Michael van der Laan
Systems Modeller
South African Sugarcane Research Institute
South African Sugar Association