



# LOW PRESSURE- HIGH PERFORMANCE

**Senninger®**  
Irrigation Inc.

[www.senninger.com](http://www.senninger.com)  
Made in U.S.A.

MANUFACTURERS OF  
SPRINKLERS AND  
PRESSURE REGULATORS

## Irrigation Management



*Engineering consultants and contractors are usually responsible for the design and installation of irrigation system hardware. However, once the irrigation system hardware has been installed the responsibility of management is handed over to the grower. This article looks at aspects of irrigation management, for which the grower is responsible.*

### INFIELD IRRIGATION MANAGEMENT CAN BE DIVIDED INTO TWO PARTS:

- Managing the crop in relation to water requirements, including irrigation scheduling.
- Managing the irrigation hardware to ensure it is operating according to design specifications.





Irrigation monitoring:  
Sprinkler flow rate measurement.



Preventative maintenance:  
Drip lateral flushing to limit emitter clogging.



Preventative maintenance: Periodic cleaning of disk and filters over and above automatic backwashing.

# Irrigation Management

## SCHEDULING

An irrigation system will be designed to meet the peak crop water demand for a short period. For the rest of the year, it will be necessary to reduce water applied, according to the crop's reduced requirements. If this is not done, the short-term effect will be the expense of pumping unnecessary water onto the land.

In the long-term the effect could be more serious. The over-application of water will lead to water-logging and perhaps salinity/sodicity accompanied by a dramatic drop in yields and negative return on investment. Therefore, irrigation managers have the greatest impact on irrigation system performance. For more information see the Irrigation Scheduling Toolbox article.

## MONITORING IRRIGATION

Irrigation monitoring refers to the daily or weekly monitoring of the irrigation system. At the start of every irrigation cycle, pressure and flow rates should be checked to ensure that the irrigation system is operating according to design. A design report shows what the required pressures and/or flow rates should be at critical points. These critical points would occur at the inlet to the irrigation system at the pump station or at the inlet to an irrigation block. At this location, in the case of pressurised irrigation systems, the pressure in the system should be compared against the design inlet pressure provided in the design report.

A system operating at the correct pressure should supply the correct amount of water. Deviation from the design inlet pressure will provide an early warning of leakages or pipe bursts, worn nozzles, blocked emitters and other infield problems.

Pressure in pipes can be measured with a pressure gauge, either permanently installed or portable, which has to be manually read at the point of measurement. Piezo-electric pressure gauges can be used and the electronic readings conveyed to a central point, for instance the pump station, via telemetry. Pressure gauges are calibrated every two years.

## PRESSURE GAUGES OR FLOW METERS?

Traditionally, pressure gauges have been cheaper than flow meters and have become the dominant form of monitoring. However, in recent times, because of the increased need to irrigate more precisely, the use of flow meters are on the rise.

Monitoring is a continuous process and planning should be simple and easy to do so that there is no interference with the operator's other tasks.

## MAINTENANCE

Poor irrigation performance is linked to lack of maintenance which can either be preventative or corrective. As can be expected, budgeting for corrective maintenance, which arises from unforeseen circumstances, can be difficult. Preventative maintenance, however, can be pre-planned. Diligent preventative maintenance can substantially reduce the need for corrective maintenance.

Finally, no amount of measurements can replace the value of first-hand observations made in the field and irrigators should verify the results of their operational activities by observing the condition of the soil and the plants.



Ashiel Jumman  
Agricultural Engineer  
South African Sugarcane  
Research Institute  
South African Sugar Association



### PIVOT

### DRAGLINE

### POD

### DRIP

### MICRO

### TURF

### FLOOD

## IRRITECH AGENCIES INTERNATIONAL (Pty)Ltd

343 Boom Street • Pietermaritzburg  
South Africa  
P. O. Box 11398 • Dorpspruit 3206  
Tel: +27(0)33 3423177  
Fax: +27(0)33 3940539  
E-mail: reception@irritechsa.co.za



## ZAMBIAN IRRITECH LIMITED

Kafue Main Road • Chilanga  
Zambia  
P O Box 350231 • Chilanga  
Cell: +260 97 8772551  
Cell: +260 97 7791356  
E-mail: sales@irritechzm.co.zm