Pioneered by Netafim in 1965, drip irrigation is an established irrigation technology that delivers water and nutrients directly to the plant root zone, minimizing waste and improving crop performance. For decades, drip irrigation has been used as a proven method for watering high-value crops, but it wasn’t until the 1990s that drip irrigation expanded to larger scale use in row crops and in maize.

Drip irrigation is more than an irrigation method, it’s a management tool that allows producers to apply the precise amount of water and nutrients directly to the root zone. When used as a field management tool, drip irrigation provides growers with precision control over the root zone environment of their maize crop during the plant’s critical growth stages. This enables growers to maintain optimal uniform soil moisture levels with outstanding aeration while delivering precision quantities of nutrients and water directly to each plant’s root zone.

Drip irrigation is a highly flexible and versatile system and can have the following unique characteristics that help make it a viable irrigation alternative for maize in many growing scenarios.

- **Limited water resources:** Drip increases water use efficiency, since it creates no evaporation or run-off, and the water is precisely targeted to the root zone.
- **Drip fits all plot shapes and sizes:** Unlike central pivots, drip can be used in odd-shaped and small fields.
- **Drip can achieve perfect water distribution even on extreme slopes:** Pressure-compensated drippers allow for uniform water emission across all parts of the plot, regardless of slope.
- **Drip is ideal for rainy areas due to efficient fertilization:** Fertilizer application can be divided into small portions that can be given more regular, leading to less nutrient loss due to leaching caused by rain.
- **Drip requires the lowest energy consumption:** Drip operates at low pressures, so it can significantly cut irrigation costs, compared to other pressurized systems.
- **Drip is ideal for irrigating uniformly under windy conditions:** Drip is unaffected by wind unlike overhead irrigation systems.
- **Less weeds than an overhead irrigation system:** saving in spraying of herbicides.
- **Operational:** easy access to field at any time for any purpose (the field is not wet after irrigation as with overhead systems).
High yields with limited water

In the evolving history of irrigating maize with drip, the first areas worldwide that adopted the method were arid and semi-arid locations where water scarcity is severe, and where rain during the growing season is scarce or non-existent. There has been a similar trend in parts of the US, especially in Nebraska, Texas and Kansas. In those areas, the depletion of local aquifers has driven farmers to look for irrigation practices enabling them to grow more maize with their limited water budget.

From rain-fed to drip – increasing productivity while reducing risk

Next in line to have interest in drip irrigation, are the rain-fed maize farmers. Traditionally, they have grown crops according to timely rainfall. Today, however, they understand that to secure high and consistent yields year-over-year, they need to irrigate. Yields in these areas are not being driven to new records, due to not only water aspects, but also nutritional aspects. In rainy areas, the leaching of nutrients and the deficits they create limit high yields. Therefore, the ability to spoon-feed the crop with a drip system at any time and with any amount of nutrients is critical to reaching high yields.

Drip irrigated maize in South Africa

Although drip irrigated maize is extremely common in many parts of the world, it is rare, even non-existent, when it comes to growing maize in South Africa. Netafim, the global leader in drip irrigation, is currently busy with several maize irrigation trial sites in South Africa. Netafim South Africa, along with local irrigation dealers, have chosen the sites, which include locations in the Free State, KwaZulu-Natal and Mpumalanga.

Key Factors for consideration

Netafim has extensive experience in providing advanced drip systems for maize plots. To decide which system will work best on your farm, the grower needs to take the following key factors in consideration:

- Water availability – source, quantity and quality
- Electricity available at the water source
- Tillage practice
- Rotational crops
- Topography
- Reasons for switching to drip – water saving, yield stabilising, labour saving, energy saving, cost of system
- Own experience on drip irrigation

For more information on drip irrigation of maize in your region, please contact Willem Botha at willem.botha@netafim.com