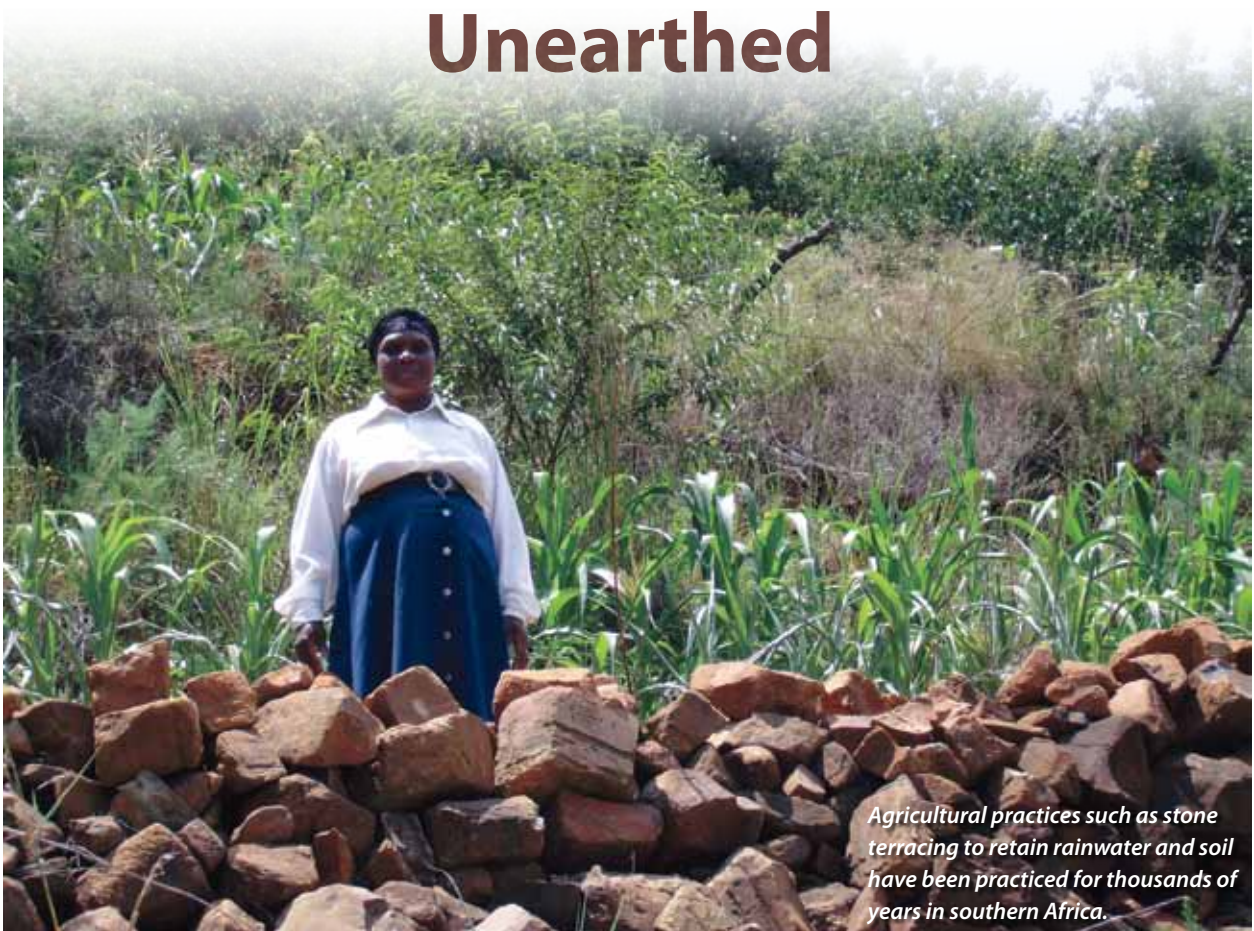


Ancient Southern African Irrigation Technology Unearthed



Jonathan Denison

Agricultural practices such as stone terracing to retain rainwater and soil have been practiced for thousands of years in southern Africa.

Our ancestors had a closer relationship with water than initially realised – early southern African communities used irrigation technologies to manipulate water to survive and thrive in a harsh land.

Compiled by Lani van Vuuren.

It has long been realised that there existed a special bond between the ancient peoples of southern Africa and water. The southern African climate is highly variable over space and time and thousands of years ago communities were reliant on their deep-seated knowledge of the landscape's water whims, passed on from generation to generation, for their survival.

However, little is known about the use of water for irrigation purposes prior to the arrival of European settlers in

the fifteenth century. "There seems to be a historical blind-spot regarding the acknowledgement of the heritage of indigenous irrigation technology," reports Prof Johann Tempelhoff of the School of Basic Sciences at North West University's Vaal Triangle Campus, who has been researching the subject.

Yet, early irrigation technologies played an important role in shaping these early communities thousands of years ago. "The small irrigation furrow of the subsistence farmer was just as important to an insular

community of Bantu-speaking people in southern Africa in pre-colonial times as is the sophisticated irrigation technology used in many irrigation projects in a highly industrialised society in present-day South Africa," Prof Tempelhoff points out.

DOMINANCE OF PASTORALISM

There are various reasons for this dearth of information. One reason is that few traces of evidence remain of these pre-colonial irrigation works. Indigenous

irrigation systems have either been washed away by floods or destroyed to make way for modern agriculture.

The focus on ancient communities' pastoralist natures have also resulted in the role of irrigation being downplayed, notes Prof Tempelhoff. "While there is clear evidence today that practices of mixed pastoral and agricultural activity prevailed in many parts of southern Africa, there remains a somewhat superficial impression that pastoralism dominated about two millennia ago. The overall effect of this perception was that agricultural activity, specifically irrigation farming, hardly enjoyed attention in broader historical discourse."

Prof Tempelhoff points to a number of examples of irrigation technologies being practiced by Iron Age communities unearthed in southern Africa. These include the sites at Nyanga in eastern Zimbabwe, the Limpopo River catchment area, the Lowveld and the Drakensberg escarpment region of Mpumalanga and KwaZulu-Natal. "At these sites are traces of past cultural activities that relate to irrigation technological innovation. There is clear evidence of structures such as terraces, furrows and aqueducts."

In Iron Age southern Africa (from about 1800 years ago to the early twentieth century) irrigation activities were conducted in two very specific environmental localities. The first has a bearing on irrigation in the fertile hills, where furrows would typically have been used to lengthen the cultivation season to support denser populations. The second type of irrigation was that found in valleys where rivers flow into the dryer land and where planting is specifically dependent on good furrows.

EVIDENCE OF IRRIGATION TECHNOLOGY

According to Prof Tempelhoff, the best regional example of pre-colonial irrigation technology is to be found in the Nyanga district in the north-eastern part of Zimbabwe, where a veritable archaeological treasure trove was discovered

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in the late nineteenth century. The site contains a vast number of old aqueducts, some 3,2 km or more in length, running from artificial dams on the mountain streams, and crossing from hill to hill. These furrows are all 400 to 600 mm wide and about 600 mm in depth.

Notable at the Nyanga site are the terraces covering an area of about 22 000 ha. It is believed that these terraces were built mainly (although not exclusively) for agricultural purposes. They tended to

be slanted downwards which ensured a natural form of irrigation and drainage that reached different levels along the hillsides.

These terraces require substantial amounts of labour. The retaining walls of terraces were seldom more than 0,6 m and were built from stones that had been cleared when the lands were prepared. In the Nyanga case, the terraces were about 1,5 to 3 m in width. Once constructed, they were practically indestructible, standing out as a feature on the landscape for centuries.

Further south, in South Africa, terraces are common in the Soutpansberg mountain range and along the Drakensberg escarpment into the Mpumalanga Lowveld at Barberton, Waterval-Onder and Elandshoek. In 1956, anthropologist AC Myburgh discovered a pre-colonial irrigation site on a farm near Carolina. There were a number of canals on a fairly level tract of land and a dam of sorts had been built to take water from the Gemsbokspruit. Consequently, a floodplain was formed and water could siphon through the lands.



*The remains of terraced farming activities in the Nyabongwe Valley, Nyanga, Zimbabwe in the mid-twentieth century (*In: R Summers (1951) Ancient ruins and vanished civilisations of southern Africa)*

IRON AGE PEOPLE IN SOUTHERN AFRICA

It is reported that from about 200 AD (around 1 800 years ago) Iron Age people began drifting into southern Africa. They came



Mapungubwe Museum/UP

from the north-westerly and north-easterly directions, where rainfall was high, and trekked across savannah lands where supplies of water were readily available. Apart from smelting and processing ore to make iron tools, these people were agriculturalists who cultivated crops such as sorghum, millet, ground peas and cow peas. They also herded sheep and cattle. Their settlements were generally located in low-lying areas near the coast or in river valleys where fertile soil and good summer rainfall ensured reliable harvests.

There were successive waves of migration and in subsequent centuries settlement started taking shape in the central eastern areas of southern Africa. By 800 AD they were well established in the present-day Limpopo, Mpumalanga, KwaZulu-Natal and Eastern Cape. Patterns of

settlement began to change around 800 to 1000 AD, probably as a result of the increasing importance of cattle. People started moving onto the grasslands of the interior and by 1200 AD almost the entire Highveld area was inhabited by Iron Age people.

Between 1200 and 1500 AD powerful centres of socio-economic and political influence came into existence, the most significant of which were Mapungubwe and Great Zimbabwe. Mapungubwe, situated south of the Limpopo River, developed into the dominant power of the region during the 13th century and was home to over 10 000 people at the peak of its power.

By the fifteenth and sixteenth centuries, the entire interior of South Africa, with the exception of the Karoo, was settled by Iron Age people who practiced mixed agriculture and pastoralism, and who engaged in extensive trade.

Source: A Dictionary of South African History

Myburgh noted that the canals were obviously made for the purposes of irrigation because there were no direct indications of a settlement in the vicinity of what must have been a patch of agricultural land. Another canal on the same farm was presumably used to provide water to the local community resident on the land. Elements of terracing have also been studied in the southern Highveld region of Mpumalanga, and the Free State.


Terracing fell out of favour with agriculturalists in the nineteenth century, partly as a result of the introduction of ox-drawn ploughs, a revolutionary technological innovation introduced by European settlers. It allowed wider tracts of land to be cultivated.

WETLAND FARMING

A more well-known pre-colonial agricultural system was wetland farming, also known as dambos, mapani, matoro, amaxhapozi or vleis. They are primarily situated in wetlands environments that retain water close to the surface for the greater part of the year. Traditionally, Bantu-speaking people in southern Africa exclusively planted sorghum, pumpkins and a variety of gourds. These crops were later largely replaced by maize.

In the case of well-flooded dambos rice crops were produced. Water was near the surface and this meant that shallow wells could be used to water vegetable gardens at all times of the year. This form of agriculture persisted in many isolated parts of southern Africa deep into the twentieth century.

Much more needs to be done to enhance our knowledge of these historical irrigation practices, notes Prof Tempelhoff. "A better knowledge of the past can only enhance our understanding of the manner in which a scarce resource can be used sensibly in the future."

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Johann Tempelhoff

Traces of terraced agricultural lands in a nature terrace near Suikerbosfontein near Carolina in Mpumalanga. A major tributary of the Nkomati River passes within 200 m of this site.