



International Center
for Agricultural Research
in the Dry Areas

BRIEFING

Cactus Pear in South Africa: History, challenges, and potential



In South Africa an estimated 1500 ha are now being cultivated for Cactus Pear fruit, and a further 3000 ha exclusively for fodder

Given the fear of potential invasions by cacti, there is resistance among government officials and farmers to promote the use of spineless Cactus Pear varieties in South Africa. This presents a missed opportunity to utilize a high yielding, sustainable, water-efficient crop as a source of fodder for livestock. Recent developments also suggest this plant could be harvested and processed for human consumption, providing an extra source of income for rural communities.

From invasion to cultivation

Prickly Pear (*Opuntia ficus-indica*) was introduced to the Cape over 300 years ago. Carried by settlers to arid and semi-arid parts of the sub-continent thereafter, the plants gradually reverted to their spiny forms over a period of approximately 150 years. This contributed to the plant's invasive properties, which often resulted in dense, impenetrable thickets.

More than two million hectares were invaded during the early part of the 20th century, severely affecting agriculture – although in cooler parts of the country, cactus was less aggressive and farmers utilized it more extensively. Similar invasions occurred in Ethiopia, Eritrea, Yemen, Saudi Arabia and Madagascar. To solve the problem of uncontrollable invasions, South Africa relied on biological control: pests such as the Cactus Moth (*Cactoblastis cactorum*) and the Cochineal (*Dactylopius opuntiae*). As predicted, however, these same insects also began to attack cultivated cactus.

Despite the continued threat of these natural enemies, many farmers in South Africa are successfully cultivating spineless Cactus Pear for fruit and fodder. An estimated 1500 ha are now being cultivated for fruit, and a further 3000 ha exclusively for fodder - although the success of established orchards depends on the ability and diligence of individual farmers to combat pests. Best practice methods are now being disseminated via information campaigns to ensure that cultivation can be sustained and extended.

Developing genetic resources

The family Cactaceae is native to the Americas where many species are widely utilized or cultivated. In contrast, many cactus species introduced to Africa, Madagascar, India, Australia and Arabia have now become invasive, including *O. dillenii*, *O. aurantiaca*, *O. stricta*, *O. humifusa*, *O. engelmannii*, *Harrisia* spp., and *Cylindropuntia* spp. Given the fear of repeating prickly pear invasions, there is general resistance amongst South African government officials and farmers alike to introduce new species.

As a result, there has been a focus on developing and promoting suitable cultivars of the existing spineless variety, *O. ficus-indica* only. Germplasm banks have been established in the Limpopo, Free State, Eastern and Western Cape provinces, where 42 varieties or types of *O. ficus-indica* have been introduced via research projects. Until recently, research has focused extensively on the use of Cactus Pear as drought fodder. However, this is now beginning to shift, with growing interest in the intensive production of spineless cactus pear for animal feed and human consumption.



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High production potential

Recent research examining the use of cactus for food processing and fodder at the University of the Free State acknowledges the potential of this important resource. Under investigation are the adaptability, production potential, and quality of cladodes and cactus fruits. A selection program will produce a list of varieties suited for either fruit production or cladode yields.

As shown in Table 1, Cactus Pear has a high production potential and water-use efficiency (WUE), which makes it a valuable crop in arid and semi-arid regions. In terms of dry matter yields, productivity is approximately six times higher than natural rangeland species. Judicious combinations of Cactus Pear plant material (fresh cladodes, fruit, and dried material), with available but highly variable rangeland vegetation, will stabilise fodder flows and livestock production systems in southern Africa.



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	Water-use efficiency (kg DM ha ⁻¹ mm ⁻¹)	Dry Matter (DM) Production (t ha ⁻¹)	Fruit Production (t ha ⁻¹)
Cactus Pear	7.87	06-Oct	20 - 30
Rangeland	2-5	01-Feb	

Table 1. Productivity of Cactus Pear compared to rangeland vegetation (Snyman, 2013)

Further Reading

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Contact

Prof. HO de Waal, University of the Free State, South Africa
E-mail: dewaalho@ufs.ac.za

Dr. Herman Fouché, Agricultural Research Council, South Africa
E-mail: fouchehj@ufs.ac.za

Dr. Maryna de Wit, University of the Free State, South Africa
E-mail: dewitm@ufs.ac.za

Dr. H.G. Zimmermann, Helmuth Zimmermann & Associates, South Africa.
E-mail:zimmermannhelmuth@gmail.com

Dr. Mounir Louhaichi, International Center for Agricultural Research in the Dry Areas (ICARDA)
E-mail: m.louhaichi@cgiar.org

Cactusnet is an international technical cooperation network on cactus created in 1993 by FAO and ICARDA. It aims to collect and disseminate information related to cactus production, facilitate the collection and utilization of germplasm, and promote the ecological and social benefits of cactus pear. It also works with national partners to improve technical capability.