

Ornamental Horticulture of South Africa®

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INTRODUCTION

Last year I was fortunate to be an official guest of the Republic of South Africa, and also a guest of Mr. Keith Kirsten [Horticulture International, Johannesburg, South Africa] for 3 weeks. Mr. Kirsten is a well known public South African personality who has owned several garden centers in Johannesburg. He has been the host of his own television show and a successful author. I went to one of his book signings and during my 3-week tour he was continually approached as a public figure. [His current business is to locate, trial, and promote new cultivars].

My hosts made sure that in 3 weeks I would experience South Africa in their cultural and horticultural setting. As we traveled the country I was privileged to meet many very important people, such as the owner of the DeBeer Diamond Mines, and was a guest at their homes, gardens, stud farms, and dinner parties. The highlight of my trip was attending a banquet hosting President Nelson Mandela given by the South Africa Business Council where I heard Mr. Mandela speak. To pretend to be an expert on South Africa would be untruthful. The richness and vastness of South Africa's culture, geography, and plant species is beyond the scope of my talk. However, I will attempt to convey my experiences and how it relates to plant propagation and the nursery industry of South Africa.

SOME SOUTH AFRICAN HISTORY

The history of South Africa certainly has had an impact in today's horticulture. Furthermore, the rich biological and plant diversity of the country made my travels that more exciting. South Africa was naturally populated by native Africans who have, until recently endured apartheid. Free from the oppression of apartheid the native peoples are largely poor, uneducated, and culturally different than the white population. Many live in communities which are rural and are largely unchanged from previous generations. Many have left the countryside and live in large, depressing townships close to the major cities of Durbin, Johannesburg, and Cape Town.

The European peoples who immigrated and ruled South Africa were of Dutch and English ancestry, and compromise a significant portion of the South African population. Another important immigrant group was from India whose culture also influences modern South Africa.

The Dutch and British settlers ruled and the Indians later immigrated as laborers for sugar cane production.

The English and Dutch tradition and love of gardening has had a major impact on establishment of private and public gardens in South Africa. The richness of South African native plants has only added to their horticultural opportunities and the impact is felt worldwide.

Typically European South Africans are able to employ gardeners as well as housekeepers since unemployment is 60% and labor is affordable. The availability of plant material is plentiful from production nurseries similar to those in our country. Generally the nurseries and markets are small, but the market is sophisticated.

The largest nursery in the South Hemisphere, Malanseuns Nursery, is located in South Africa. Malanseuns Nursery employs people from the countryside and house them in dormitories, much like U.S.A. nurseries house guest laborers from other countries. From my observations they employ four times the labor that we would. Containers are carried 91 m (100 yd) two at-a-time. There is very little mechanization. Plants are produced in plastic (poly) bags, and more expensive, rigid plastic containers are new to the industry. The garden centers are very modern, and would compare very favorably with the finest garden centers in our country. The plants are merchandized, beautifully tagged, and of high quality. The public can purchase the latest introduction from Europe, the United States, Australia, and New Zealand. Homeowners are avid consumers of horticulture magazines, television shows, and horticultural exhibits.

South Africa has a diverse climate. The Cape is totally unique as the most southern point of Africa, separating the Indian and Atlantic Oceans. The ocean influence and moderate temperatures around the Cape create a very unique climate for plant communities. The Atlantic is much cooler than the Indian Ocean. Much of the North Western coast is very humid, warm, and tropical allowing sugar cane and cycads to flourish. The central South African city of Johannesburg reminds me of my home area west of Fort Worth, Texas, or areas around San Antonio. North of Johannesburg in the Kruger National Park area, where rainfall is low, rivers periodically flood, and wildlife are in abundance. If we in the U.S.A. had to deal with browsing giraffes and elephants, we would not complain so much about our current deer situation.

The flora of South Africa is very diverse and considered among the richest in the world. The Cape peninsula contains more than 2500 plant species. Those are beautifully displayed at the Kirstenbosch Gardens in Cape Town. Several of those genera are commercially important in the U.S.A. and around the world.

From the rich flora of South Africa I have selected several of the most important species to highlight their attributes and method of propagation.

SEVERAL OF THE MOST IMPORTANT SPECIES

Agapanthus. *Agapanthus*, commonly called lily of the Nile or African lily, is a herbaceous perennial with lush, fleshy narrow leaves and huge blue or white pom-pom flowers on tall elegant stems. *Agapanthus* is perhaps the most popular and widely used ornamental from South Africa. Africans equate this plant with love and health. Bantus people used the plant for magic and medicine, while brides wore pieces of the root to ensure fertility and easy childbirth. The genus has 10 species, both evergreen and deciduous. Deciduous types are hardier than evergreen types. All species are summer flowering and are drought resistant. Typically, clones are propagated by tissue culture or vegetative division in the spring. Seeds can be sown in autumn or spring. Seed are sown in organic substrate and germinate in 3 to 12 weeks. Seedlings take up to 3 years to flower.

Agathosma. *Agathosma* species are commonly called buchu and the genus is in the Rutaceae family. Buchu is a low attractive shrub native to the Cape region of South Africa. Originally buchu was used by the native peoples as a health remedy for the stomach, arthritis, and bladder problems. *Agathosma* leaves and fruit emit a pleasant fragrance caused by the presence of volatile oils. Mass flowering occurs during winter and spring; its flowers are white, creme, soft pink, or lavender. The

genus has about 140 species which occur in the Western Cape on mountain slopes and foothills. *Agathosma* makes an attractive border plant in rock gardens or as a topiary specimen. Bees and butterflies are attracted to the flowers. The flowers and foliage add fragrance to the garden and it can be used in potpourri.

Propagation is done by seed sown in April and seedlings flower in several years. Plants propagated from cuttings flower the 1st year and grow more rapidly than do seedlings. Heel or tip cuttings are treated with auxin. Cuttings are taken August through September after flowering and root in 5 to 8 weeks. Bottom heat is recommended.

***Aloe*.** Many species of *Aloe* are native to South Africa. Native people use *Aloe* for skin treatment. *Aloe* is commercially farmed for cosmetic, hair, and skin products, as well as for ornamental uses. The Zulu people use powders from the *Aloe* as a protection against storms. Other applications are for sick calves, aids to childbirth, stomach ache, and to prevent illness in chickens.

Aloe species in the landscape are always a focal point and architecturally important in the landscape. The plant produces a large colorful flower spike and flowers profusely generally during the cold months. The flower's nectar attracts many kinds of birds. The *Aloe* species are low-maintenance plants which can survive and thrive in arid conditions. They require a well drained soil and full sun site.

Seed are harvested 2 months after flowering. Seeds are planted in a well-drained medium and germinate in 10 to 14 days. Seedlings should be kept moist, but over-watering causes rot. Propagation by division of off-shoots is easy.

***Clivia*.** *Clivia*, a member of the Amaryllidaceae family, is also endemic to South Africa. *Clivia* includes four species. The native populations have been decimated by local people who use roots in traditional medicine. The *Clivia* is popular in China, Japan, Europe, and the United States as an ornamental. *Clivia* is a clump-forming herbaceous perennial with dark green strap-shaped leaves arising from a flesh underground stem. Typically, the flowers are brilliant orange and rarely yellow. The native habitat ranges from subtropical coastal forest to ravines at high altitudes.

Clivia taxa make beautiful container specimens. When massed in shade to semi-shade they are useful and low maintenance. They prefer soils which are high in organic matter.

Typically propagated by seed, the seed are mature when they turn bright orange. The pulp is removed and seeds are sown fresh. The pulp is toxic, so hands need to be protected and washed after cleaning seed. Seeds are tapped gently but left uncovered in well-drained media. Germination is high (95%) and occurs in 4 to 6 weeks. Seed germination is aided by a heated mist bed. Care is taken not to damage the roots during transplanting. Seedlings flower in 3 to 4 years. Large clumps can be divided.

***Dietes (African iris)*.** *Dietes* is a commonly used landscape plant in the Southeast Coastal U.S.A. *Dietes grandiflora* flowers are blue and white. *Dietes bicolor* is yellow and white. I wear the root as a charm, for protection and strength. *Dietes* flowers from October until January in South Africa, their warm season. Flowers last only 1 day but new ones appear the next day. *Dietes* naturally occurs along the eastern coastal areas of the Southern Cape and Kwazulu. Plants grow in full sun, partial shade at forested areas, in the shelter of tall shrubs, or on exposed slopes near the sea.

African iris is in almost every garden because they are easy to grow and beautiful. Widely adapted to sites, they help control erosion and thrive in poorly drained sites. African iris is evergreen, spreading, and a long-lasting groundcover. They multiply rapidly and clumps can be divided after flowering. Seeds germinate easily and rapidly. Sown seed can be transplanted in 9 to 12 weeks. Germination is aided by well drained soil and high humid warm conditions.

Kniphofia. *Kniphofia* is a member of the Liliaceae family. They are native to vast areas of South Africa and are popular in the U.S.A. perennial market. Several species exist but the most common in commerce are *K. uvaria*, *K. linearifolia*, and *K. xpraecox*. Widely adapted in most all soil types throughout the country they have sword-like, grey-green long leaves. Their inflorescence is tall on a stout stalk, generally red-orange or yellow. They attract birds, bees, and butterflies.

Commonly called the torch lily, they are fast and easy as a garden plant when planted in moist, but well drained soils. They do poorly in shade or partial shade conditions. Popular with the British, *Kniphofia* can be a cut flower. They are especially striking when mass-planted in gardens.

The propagation is either by seed or by division. Seeds should be sown in a well drained medium. Seeds germinate in 3 to 4 weeks. Dwarf taxa flower in 8 to 9 months while larger types take 12 to 18 months. Divisions should be made in late winter.

Oxalis. *Oxalis* is a winter-flowering bulb. While dormant during the dry months, it grows and flowers during the wet cool winter season. While oxalis is a weed in the U.S.A., a few species make beautiful garden plants. The bulbs are used in rock gardens and are popular in Europe as a pot plant.

Ornamental oxalis produces few seed. In nature and in culture oxalis are propagated by offset bulbs at the end of the dormant period. The most successful method is tissue culture. In the lab, temperatures are raised to initiate and simulate summer dormancy. Bulblets will form and grow while they are dormant. Bulblets are removed and placed in a sterilized seedling mix just before temperatures begin to drop.

Protea. More than 330 species of *Protea* have been identified in the Cape Floral Kingdom. *Protea* is useful as a landscape plant in the adapted Mediterranean climates of New Zealand, Australia, Europe, and California. The cut flower is a favorite of florists around the world.

Protea are native to areas that experience natural fires every 10 to 30 years. The seed require fire treatment to germinate. They survive fires by their thick underground stem which contain dormant buds. The flowers attract birds, insects, and baboons with its high nectar content. The woody shrub has thick stems and large dark green glossy leaves. The plant typically is 0.9 m (3 ft) tall but can grow to 1.8 m (6 ft). The strikingly beautiful flowers are actually flower heads with a collection of flowers in the center surrounded by large colorful bracts. Large vigorous plants produce 6 to 10 flower heads per season. The color range of the bracts can be creme to deep crimson. Each flower head can be 10 to 30 cm (4 to 12 inches) across. *Protea* can be dried for floral arrangements. It is the national flower of South Africa.

Protea species thrive in well drained soils with pH of 4.5 to 6.5. Propagation is best by cuttings. Tip cuttings treated with a fungicide and auxin are stuck into a deep container containing peat, sand, and polystyrene (1 : 1 : 2, by volume). Containers are placed under mist on heated beds. Cuttings root within 8 weeks and are hardened-off under shade for 4 weeks. *Protea* make poor small-container nursery

plants — those grown on to larger containers are attractive. Protea are resistant to most pathogens, except *Phytophthora*.

Restio. *Restio* is another interesting species, which is a perennial, evergreen, grass-like plant. They mature in a height range of 10 cm (4 inch) to 2.1 m (7 ft), and mostly occur in the Western Cape dominating the vegetation in large areas. There are over 330 species in Africa. The stems are referred to as clums and are the only part of the plant which is green. Hence, the clums are responsible for photosynthesis. There are no leaves and their habitats are in the marshes, sandy plains, and mountain summits. *Restio* can be planted in any garden site. They prefer sunny spots and perform even in the hot African summers. They have an upright habitat that is beautifully graceful in gardens as it sways in the wind. Used by Africans for reed houses and hut construction for centuries, today they are a common landscape plant. The Dutch used them for thatching and brooms. In the landscape they are water efficient and architecturally beautiful.

Restio can be propagated by rhizome division or by seed. Early winter is the best time to divide. The favored method of propagation is by seed. The germination medium needs to be a mixture of coarse bark and sand. Smoke is required for germination. Smoke can be provided by a small fire with the smoke directed to the seed flat located in the smoke tent. Seeds germinate in 4 weeks and in another 6 weeks can be transplanted. Moist conditions should be maintained for 6 months after transplanting.

Calla Lily. The calla lily, *Zantedeschia*, is a member of the arum family and used in the U.S.A. as a funeral flower. The arum lily grows wild and abounds in South Africa. Domesticated, it is almost in every garden. The long-petioled, basal leaves arise from a thick fleshy rhizome. Adapted widely from the desert to the tropical coastal areas, the calla lily is prolific along most rivers and dams.

The calla lily prefers moist soil but can thrive in wet soils because of stomata which discharge excess water. In the garden they should be watered during drought. They flourish in the shade and are good under shade trees with their bright flowers. Calla lily is popular world wide as a cut flower foliage or flowering plant.

Seed are harvested when the fruit has turned yellow and soft. The pulp is removed and the seed dried. Seed is sown at a depth of 0.6 cm ($\frac{1}{4}$ inch) and spaced 1.3 cm ($\frac{1}{2}$ inch) apart.

Propagation by division after flowering is possible. Rhizomes are cut with a sharp blade into sections that should be planted 5 cm (2 inches) deep.

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