

SOUTH AFRICA'S Seedless Valencia success story

Midnight oranges bear one of SA's most distinctive citrus success stories. By Jan de Wit



Jan de Wit

The Midnight cultivar is a South African selection of Valencia orange. It was first noticed around 1927 in the Addo area of the Eastern Cape Province, where A. P. Knight observed unusual trees in a Valencia planting. Over time, the selection became known as Midnight Valencia, combining the discoverer's name with its position in the Valencia season.

The cultivar earned a robust reputation because the fruit is virtually seedless, medium to large in size, very juicy, and well suited to both fresh consumption and juicing. While the trees can be somewhat slower growing and more sensitive to frost, Midnight's high juice percentage and attractive fruit have made it one of the most important mid to late orange types produced in SA.

The success of Midnight helped stimulate wider interest in seedless Valencia breeding and clonal selections in SA. In the years that followed, additional seedless or low-seeded Valencia types were selected locally, most notably Delta, followed by newer South African selections such as Wonder Why, Gusocora and Gie5 (early Gusocora).

These cultivars are better understood as clonal selections or bud mutations within

the Valencia group, each identified for commercially useful traits such as improved seedlessness, fruit size, internal quality, maturity timing, and production consistency.

South African growers and researchers increasingly recognised that seedless Valencia oranges could meet export demand more effectively because consumers prefer fruit with few or no seeds, while processors value high juice content and dependable internal quality. Within this group, Delta became known as an important seedless Valencia selection. And Gusocora – a seedless mutation selected in the Malelane area of Mpumalanga – gained attention for consistent cropping, good fruit size,

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strong internal quality and maturity slightly earlier than Delta. Selections such as Gie5 (early Gusocora), Wonder Why, AB Seedless Valencia and Beli Valencia reflect the continuing refinement of Valencia material toward earlier maturity and other commercially advantageous characteristics that can widen harvest windows and improve orchard performance. Together, these selections show how South African citrus development moved from the discovery of a single outstanding mutation to a broader programme of identifying,

evaluating and commercialising improved seedless Valencia material for different production regions and marketing periods.

Today, Midnight and the seedless Valencia selections that followed it remain central to SA's citrus identity. This illustrates the strength of South African orchard observation, clonal selections and export-focused innovation.



Young seedless
Valencia tree



THE CRITICAL ROLE OF bee pollination IN FRUIT PRODUCTION

Pollination is one of the most important biological processes in fruit production. By Rob Elfick

Its direct influence on fruit set, yield, fruit quality, and orchard profitability ranks pollination extremely high in fruit production.

Globally, approximately 75% of leading food crops depend – to some degree – on animal pollination, with commercial fruit orchards relying heavily on managed honeybee colonies.

Pollination success is influenced by a range of environmental and biological factors, including weather conditions, flower attractiveness, orchard layout, and bee activity. As growers strive for greater yield consistency and improved orchard performance, pollination management is becoming an increasingly important part of production planning.

How pollination drives pack-out and profitability

As they forage, honeybees transfer pollen between flowers, enabling fertilisation and fruit development. Well-pollinated flowers are more likely to produce commercially valuable fruit with improved size, shape uniformity, and more consistent maturity at

harvest. Research has shown that adequate cross-pollination can increase fruit set by at least 20–30% in pollination-dependent crops such as pears and apples. It simultaneously improves seed count, which is a key driver of fruit size and symmetry.

Conversely, inadequate pollination often results in reduced fruit set, misshapen or undersized fruit, and increased fruit drop. These challenges affect not only yield, but also harvesting efficiency, packing operations, and compliance with market quality standards.

The pollination window and its risks

The effective pollination window in most deciduous fruit crops lasts only five to seven days per flower, making bloom conditions especially critical. Unfavourable weather – including rain, wind and cold temperatures – can significantly reduce bee activity and limit pollination success. For example, honeybee foraging declines sharply at temperatures below 13°C and may stop entirely during wet or windy conditions.

This is particularly important for areas such as the Western Cape, where much of SA's deciduous fruit is produced. Here, spring flowering often coincides with late winter rainfall and unstable weather patterns. Even short periods of poor weather during bloom can hinder pollination and negatively affect yield outcomes later in the season.

Subtropical crops such as avocados, macadamias, litchis, and certain citrus varieties also face pollination challenges. Avocado flowers rely heavily on repeated bee visits due to their complex flowering behaviour, while macadamias often compete poorly with alternative forage sources because of their relatively low nectar rewards. Some crops, such as citrus, do not depend on pollination, due to self-fertilisation and the presence of seedless cultivars. However, insect pollination can still improve fruit set, size, and juice content, even in self-fertile cultivars. Thus, the challenge is balancing pollination needs with desired production outcomes.

Early-season detection of poor pollination can also be challenging. Orchards can exhibit healthy development yet yield poorly, due to inadequate bee visitation during the flowering stage. Some signs of poor pollination include prolonged flowering or increased flower abortion, empty seed cavities, premature fruit drop, and stunted fruit development.

Pressure on bee colonies

There are several factors that impact the success of honeybee colonies and the pollination services that they provide to farmers.

Firstly, agricultural environments and farming practices are not always suitable for maintaining healthy pollinator populations. For example, the pollination period often overlaps with essential pest- and disease-management programmes. Orchards frequently require pesticide applications during the blooming period to control early season threats such as thrips, botrytis, and bollworm. However, spraying while bees are actively foraging can reduce visitation through direct toxicity, impaired navigation, or repellent effects. Therefore, growers should carefully coordinate spray programmes with pollination activity by applying products later in the day, selecting lower-risk products where possible, and following recommended withholding periods before hive introduction.

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Simultaneously, beekeepers face mounting pressure on managed honeybee colonies. In SA, the parasitic mite, *Varroa destructor*, can weaken colonies, increase disease outbreaks and reduce brood production and foraging efficiency. Beekeepers in the northern, central, and eastern parts of SA are at risk from invasions by the Cape honeybee (*Apis*

mellifera capensis), which can disrupt hives of the African savannah honeybee (*Apis mellifera scutellata*) through social parasitism, leading to total colony collapse. Habitat loss, pesticide exposure, and increasingly erratic weather patterns place further strain on colony health and availability. As healthy hives become more limited, maximizing the pollination value of each deployed hive becomes increasingly important.

Pollination management: getting the basics right

Effective pollination management involves far more than simply placing hives in orchards. Hive density, placement, timing of introduction, and orchard conditions during bloom all play an important role.

Industry guidelines generally recommend between six and 12 hives per hectare for deciduous fruit, depending on crop type and cultivar. Distributing hives evenly throughout orchards encourages better bee coverage and flower visitation across all blocks.

Introducing hives when approximately 10–20% of flowers are open helps ensure that colonies are actively foraging during peak bloom rather than establishing alternative forage sources.

Enhancement strategies: beyond hive placement

Beyond hive management, growers are increasingly adopting pollination enhancement strategies aimed at stimulating bee foraging activity and increasing flower visitation during bloom.

One common approach is the use of bee attractant formulations applied during flowering. These products contain compounds that mimic floral scent signals or pheromone cues, encouraging bees to visit treated flowers preferentially. Field observations suggest these products can increase bee activity in crops such as macadamias and avocados, where natural nectar rewards are relatively low.

Additional practices include supplementary

feeding of colonies with sugar syrup or pollen substitutes, before bloom, to stimulate brood production and increase forager numbers. Pollen dispensers placed at hive entrances are another emerging tool. They coat departing bees with compatible pollen to improve cross-pollination, particularly in orchards where polliniser rows are widely spaced. Increasing habitat diversity, using pollinator corridors, cover crops, intercropping and hedgerows can increase availability of natural food sources within cropping systems and further enhance pollination services.

These enhancement strategies aim to maximise successful fertilisation during a short flowering window while helping growers reduce the risks associated with poor weather, inconsistent bee activity, and low attractiveness in crops.

Pollination as a strategic input

Bee pollination remains the cornerstone of successful fruit production, influencing not only fruit set, but also crop quality, uniformity, and profitability. While growers cannot control every environmental factor during flowering, proactive pollination management and targeted enhancement strategies can significantly reduce risk and improve production outcomes.

As the South African fruit industry continues to evolve, pollination should increasingly be viewed as a strategic production input rather than a passive natural process. Orchards that prioritise effective pollination management are better positioned to achieve consistent yields, improved fruit quality, and stronger long-term production performance. 🍌



Effective pollination relies on consistent and active bee visitation during flowering

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