

## FYNBOS EXPORTS FROM THE WESTERN CAPE PROVINCE: A PROBLEM OF LOGISTICS

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*During 1997 research was conducted on trends in factors that affect the supply and demand for airfreight space for fynbos exports from South Africa. The aim was to sensitise decision-makers to probable trends in those factors that will shape cargo space availability. The main finding was that the supply of airfreight to South African producers is aggravated by the unbalanced availability of cargo space on southbound and northbound trips originating from Cape Town. If the price and quantity of cargo space were determined by supply and demand, an imbalance couldn't arise in a perfect market, as prices would balance cargo space supplied and demanded. However, airfreight tariffs are rigid per weight level. The result is that items with a higher mass per volume unit represent a higher income per palette, and are therefore preferred by export agents. This finding has implications for future growth in the industry.*

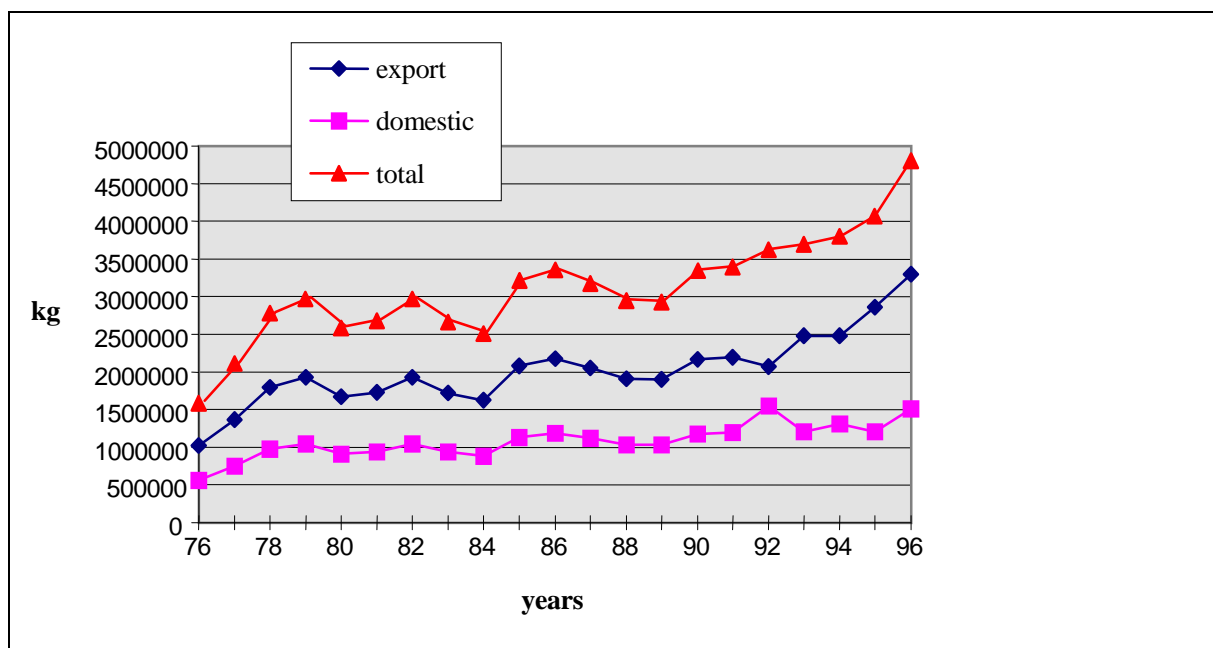
### THE FYNBOS INDUSTRY<sup>1</sup>

The indigenous flower industry has grown steadily and today forms an integral part of the agricultural sector of the Western Cape. About 700 producers are involved, the majority of whom still pick the material from its natural habitat, although around 200 producers cultivate proteas and other fynbos. It is estimated that industry turnover is around R25m per year, including R20m in foreign exchange earnings (out of total flower industry exports of R70m) (Abstract, 1988). The main importing countries are the Netherlands (38%), West Germany (30%), Switzerland (10%), France (6%) and Italy (6%). Demand for proteas is highest during the European winter, peaking over Christmas.

Figure 1 shows that production increased from about 1.6m kg of fresh fynbos products in 1976 to 4.8m kg in 1996, an increase of 203%. Exports in 1996 were 3,3m kg. Although most fynbos is produced in the Western Cape (61% of the estimated 658 cultivated hectares), there is considerable production in the Eastern Cape (18%), the highlands of KwaZulu/Natal and in Gauteng. These latter regions are less susceptible to natural diseases.

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Source: ARC Fynbos Unit, 1997

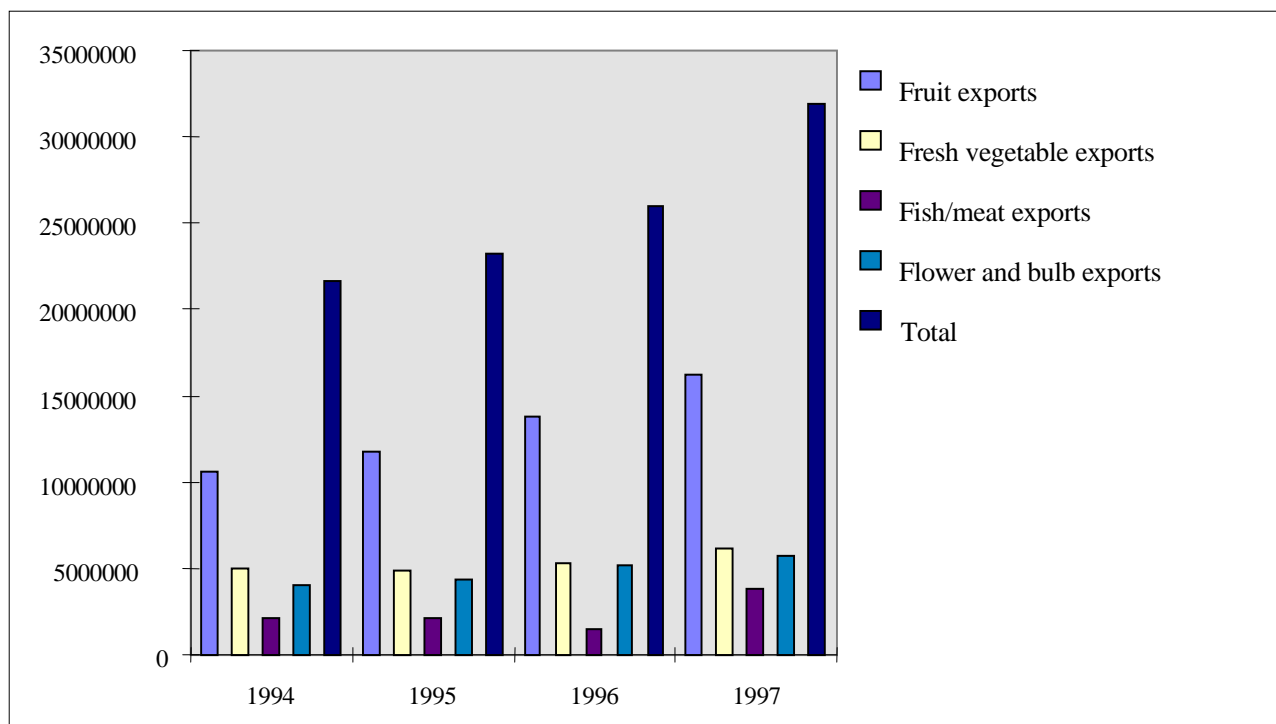
Figure 1: Production of fynbos flowers in South Africa 1976-1996

## FACTORS DETERMINING THE AVAILABILITY OF CARGO SPACE FOR FYNBOS EXPORTS

### The time constraint

The critical period for fruit exports normally falls between the 44th and 50th week of the year. During this period exporters of especially seedless grapes and plums transport early fruit to Europe by aeroplane, and continue to do so until the first cargo boats arrive. As the latter take about two weeks to sail from South Africa to Europe, producers who get into the market first can get premium prices that are high enough to warrant airfreight rates. Outside of this period producers of high quality fruit will keep on using airfreight profitably, but mostly by cargo charter from the Upington airport.

of fynbos are faced with three distinct problems as a result of these arrangements. **First**, they are also heavily reliant on this period of the year for the bulk of their sales, which are targeted on the festive season in Europe. **Second**, air charter rates are at their highest during the last week of December and the first week of January, because it is difficult to find products to send on the southbound leg of flights between Europe and South Africa. As a result, freight tariffs for northbound flights have to cover the cost of both legs of the flight.



**Figure 2: Exports of perishable products from South Africa**

**Third**, the cargo space on an aircraft is limited by both weight (the payload factor) and by volume (the equipment load factor). An aeroplane filled with fruit gives a payload factor of close to 100%, while an aeroplane filled with fynbos will reach the limits of its equipment load factor long before it reaches its payload limit. As airfreight rates are charged per kilogram within the volume constraint, it is more profitable for airlines to transport fruit rather than fynbos. In addition, fruit exporters are more easily able to enter into long term freight contracts, as they work with larger volumes, and can use fruit kept in storage to honour their contracts.

### Exporters

Exporters and importers use airfreight principally because of its speed, despite the high cost of this mode of transport. The unit costs per kilogram of fynbos on a northbound passenger airliner<sup>2</sup> is in the order of R8,15 per kg for consignments of larger than 500kg, while the tariff for southbound cargo is around R13-15 per kg. Currently, cargo charters handle 60% of the total exported cargo, but the demand for cargo space is not constant throughout the year.

### **Airfreight capacity**

Johannesburg International airport is the principal gateway to South Africa. It is the country's largest airport, and handled more than 90 000 flights, approximately 7m passengers and 160 000 tons of freight in 1995/6. By contrast, Cape Town International handled 3 million passengers and less than 10% of the number of international flights during the same period.

The Airports Company estimates that the Johannesburg, Cape Town and Durban airports will handle 40% more domestic passengers and 66% more international passengers by the year 2000. However, in this study a further estimate was made, based on data provided by the South African Tourism Board. The results of this estimate show that, by the year 2000, 2,6 million overseas passengers will arrive in South Africa annually compared to 1,3 million in 1996, giving an annual increase of 18%.

Passenger flights currently handle 40% of the total air cargo to and from South Africa. Increased passenger traffic brings an increase in total cargo space. However, the trend towards using smaller aeroplanes may mean that the rate of growth in cargo space is smaller (although smaller aeroplanes may bring lower freight rates, as they are cheaper to operate).

### **DETERMINANTS OF CARGO SPACE FOR FYNBOS EXPORTS**

It was not possible to estimate the demand for fynbos flowers for the purposes of this research. Hence, the supply estimates reported below should be treated with caution, as it is entirely feasible that increased exports will lead to a substantial drop in prices realised as fynbos loses its novelty value. Nevertheless, in this section the main determinants of fynbos export supply are identified as the profitability of production, the supply response of producers, and the availability of cargo space (Agrifutura, 1998).

#### **Supply forecasts for 2005**

Two forecasts were used to estimate the supply of fynbos flowers for export (i.e. the demand for cargo space):

- A projection based on export growth in the past few years; and
- Predictions based on a survey of new plantings of fynbos products.

The projection is based on statistics on the volume of fynbos products that South Africa has exported in the last twenty years. Data were obtained from

the Perishable Products Export Control Board. These data show that output has tended to peak every three years (Figure 4) for reasons that are not quite clear. For the purposes of this extrapolation, a three-year moving average was first calculated.

Both a linear and a polynomial function were fitted to the three-year moving average. For the linear analysis, the ordinary least squares fit was:

$$Y = 55040 X + (10)^6 \quad (1)$$

The corresponding regression co-efficient of determination is  $R^2 = 0,8225$ .

The polynomial fit gave the following result:

$$Y = 2764.2 X^2 - 11300X + 2(10)^6 \quad (2)$$

With a regression co-efficient of determination of  $R^2 = 0,8719$ .

While both of these represent a good fit, the latter was used because of its slightly higher  $R^2$ . Taking this trend line, the prediction is that the volume of fynbos exports will grow by 25,7% in the period 1996-2005. However, it is always dangerous to extrapolate from the past in a country such as South Africa, where the future is expected to differ radically from the past. Hence, scenarios based on current and planned planting should give a more accurate picture of future trends.

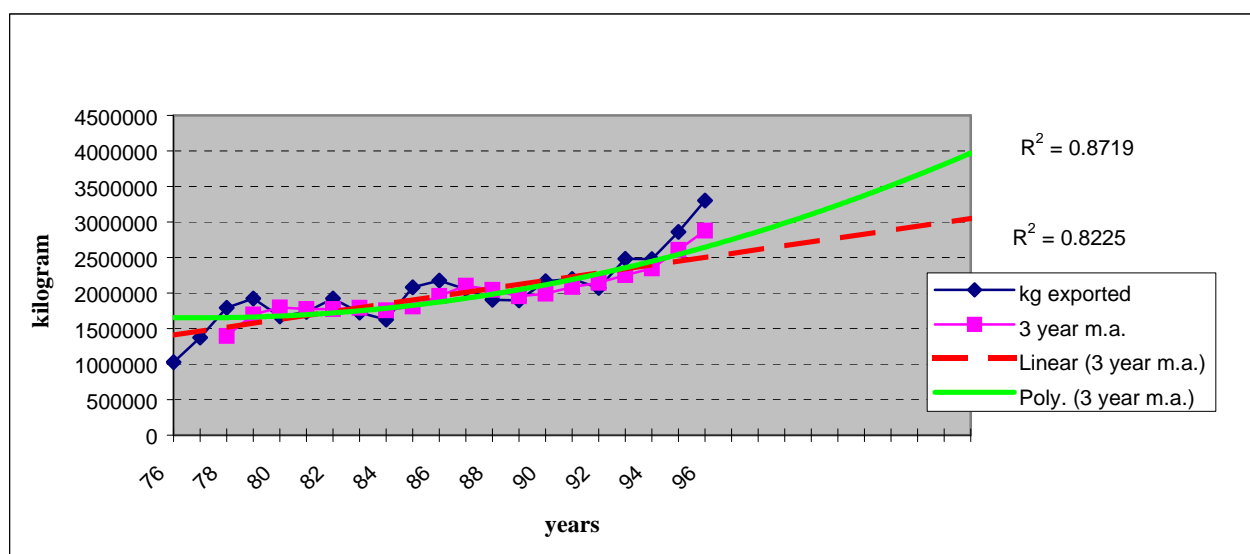
These scenarios were based on a detailed inventory of current and planned planting of fynbos products (ARC Fynbos Unit, 1997). From this, it is estimated that an additional 635 hectares will be developed for the production of fynbos in the next 5 - 10 years, on a current base of 654 hectares<sup>3</sup> of fynbos. The greatest growth is expected to be in non-traditional producing areas, such as Gauteng, Mpumalanga and KwaZulu/Natal. However, the largest crop, and the majority of the exports, is still expected to come from the Western Cape during the forecast period.

The two scenarios of future production of fynbos in South Africa assume either:

- That the current trend of exporting 50% of the total production of fynbos was retained, i.e. that half of the production gained from the new planting would be exported; or

- That the total exportable production from the new planting would be exported based on the view that the domestic market was not a preferred alternative to exports. Here it was assumed that 70% of total production would be of sufficient quality for exporting.

The results of the first scenario show that fynbos exports will increase by 3,461m kg by 2005, while under the second scenario exports will increase by 6,923m kg.



**Figure 4: Export fynbos products 1976 - 1996 and the forecast for 2005**

Table 2 summarises the results of the three scenarios of future exports of fynbos products that were developed from the projections reported above.

**Table 2: Expected exports of fynbos products, 2005**

Scenario	Description	Total exports, 2005 (million kg)
1	Extrapolated historical trend	4,149
2	Conservative estimate from additional planting	6,761
3	Aggressive estimate from additional planting	10,233

**Cargo space availability in 2005**

The implication of the analysis of the airfreight space availability is that the total amount of air cargo capacity will increase by between 8 and 10% per year for South Africa as a whole, and by 3,5% for flights leaving from Cape Town International. This calculation is based on expected increases in

international passenger arrivals. If it is assumed that the profitability of fynbos exports does not change relative to the profitability of other perishable exports, the following conclusions can be drawn regarding the three scenarios of future fynbos exports:

- If scenario 1 is realised, there will be no shortage of cargo space from any of the country's airports. This will be the case in the longer term too if, as expected, increased exports lead to a fall in prices, and therefore a greater concentration on export of the highest quality products only.
- If scenario 2 is realised, the supply of and demand for cargo space should be in balance at least until 2005. As the largest proportion of the increased production will come from outside the Western Cape and Johannesburg International has the largest capacity, the industry as a whole will not face any problems. However, Western Cape producers may face problems towards the end of the period.
- If scenario 3 is realised, fynbos producers will face a severe constraint in finding sufficient cargo space at all the airports in the country by 2005. For supply and demand to balance, a growth rate of 13,4% in cargo space is required. This can be achieved only if passenger numbers grow faster than assumed, or if increased economic growth results in more southbound cargo over the critical period as imports increase.

## **RECOMMENDATIONS**

This study focuses on a possible logistical bottleneck in the fynbos export industry, namely a lack of sufficient cargo space. While a drop in the prices of fynbos products may limit the quantity offered for export to the extent that the projected growth in cargo space may be sufficient to meet the industry's needs under conservative assumptions about fynbos exports, it is likely that the logistical problem may manifest first. As tariffs for cargo on passenger flights are officially determined and do not result from a free market, no bidding for the price of cargo space takes place. Even the most cost-efficient producer of fynbos who can absorb higher transport costs will not get the opportunity to do so. Economic theory indicates that under conditions such as these, a black market could develop. Therefore, the following recommendations can be made:

- A strategic investigation into the determinants of such a possible lack of cargo space is fully justified. Such a strategic investigation should start with an assessment of expected future prices in the international market

for the different types of fynbos products. Depending on the outcome, strategic intervention to ensure that the cargo space is actually available may, therefore, also be justified.

- South Africa has a comparative advantage in its fynbos flora, and the industry should take advantage of this. The ARC-Fynbos Unit must continue to develop new cultivars, and conduct research on the genetic improvement of other species to supply products with a high novelty value, which obtain higher prices on export markets. Genetic improvement and management practices should also aim to schedule production to avoid the peak period of fruit export, but still attain high prices on the flower markets. Products with a high novelty value and therefore higher prices will make the fynbos production more competitive in relation to other export goods (perishable or non-perishable) to obtain favourable contracts with airlines.
- Air companies prefer long term contracts and high volumes per consignment. To supply high volumes per consignment regularly, fynbos farmers need to cooperate. This can also lead to a better bargaining position to compete for available cargo space.
- The bottleneck with respect to the availability of cargo space for fynbos in the Western Cape offers opportunities for fynbos production areas in other provinces. Production in new areas can also be less susceptible to diseases.
- Research on ways of maintaining high quality when exporting fynbos by ship under controlled conditions should also be investigated. A breakthrough in this regard can reduce transport costs significantly.
- Currently the Dutch auction absorbs the largest proportion of South African fynbos exports. To avoid a possible lack of cargo space that will inhibit the growth of the fynbos industry, the markets in other areas, such as the Middle East, Asia and the USA, must be exploited. In the case of the USA efficient post harvest treatment will be needed to meet their strict sanitary and phytosanitary requirements.
- South African fynbos producers must try to achieve the same favourable tariffs in Europe as other African countries. This will lead to a reduction in import costs, enabling them to carry higher transport costs.



**NOTES:**

1. *This description was taken largely from Malan, 1994.*
2. *The ruling tariffs of KLM and SAA were taken as benchmarks.*
3. *Fynbos harvested from the veld is excluded, as it is only on rare occasions that this is exported.*

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