

Pear Production in Chile: Situation and Trends

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Abstract

Pear production is concentrated in the central zone of the country (32°-36°33' S), under temperate climatic conditions. Pear is the fifth largest fruit crop in the Chilean export basket, representing 5% of the planted area of fruit trees (approximately 10 000 ha), 200 000 t of total production in 2003 and a 60% packout for the export market, valued at US \$65 207 000. Chile's pear exports comprise 7% of the world's pear exports and 22% of the Southern Hemisphere's exports (average for the years 2001-2002). Fruit is exported mostly to Europe, USA and Latin America. However, because of lower crop profitability, the planted area and total yield have been decreasing since 1991 to an estimated 7 700 ha for the 2003/2004 season, of which 94% are European pear and 95% are mature, bearing orchards. The main cultivar has been 'Packham's Triumph', which represented 55% of the total Chilean pears exported in 2003, followed by 'Beurre Bosc' (11%) and other minor cultivars such as 'Coscia', 'Abate Fetel', 'D'Anjou' and 'Bartlett'. The main problems facing commercial pear production in Chile are low orchard productivity, poor precocity and some quality problems that are being detected in the export market. The aim of this study was to analyse the pear production in Chile, in terms of evolution of the planted area, cultivars and technical management aspects.

INTRODUCTION

The Chilean fruit industry has developed strongly over the past 30 years. It is characterised by a great diversity of species and varieties and there has been a rapid increase in the fruit exports.

In 2001-2002 Chile had approximately 7% of the world's pear exports and 22% of the Southern Hemisphere's exports (FAOSTAT, 2003; ODEPA, 2004). Pears are the fifth largest fruit crop in the Chilean export market, planted area covers approximately 10 000 ha, representing 5% of the planted area of fruit trees, and in 2003 the total production was about 200 000 t, comprising an output of 60% for the export market, valued in US\$ 65 207 000 (CIREN-ODEPA, 2004; ODEPA, 2004).

However, due to low international pear prices and orchard productivity, crop profitability has declined. As a result, ever since 1991, pear cultivation, in terms of planted area has decreased.

The aim of this study was to analyse the pear production in Chile, in terms of planted area, varieties and technical management aspects.

DISCUSSION

Planted Area and Production

Pear production is concentrated in the central region of the country - 98% of the planted area is located between the V and VII Regions (32°-36°33' S), under temperate climatic conditions (CIREN-ODEPA, 2004).

In the 1980s there was a great increase in the planted area, reaching 16 300 ha in 1991. Later, however, because of lower crop profitability, many hectares formerly devoted to pears began to be switched to other crops. Thus, by 1997 hectareage had

decreased to 15 000 ha (Fig. 1). Since then the decreasing trend has continued unabated. Estimates for the 2003/2004 season are about 7 700 ha, of which 94% are European pear and 95% are mature bearing orchards.

Pears are exported mostly to Europe, USA and Latin America. The main cultivar has been 'Packham's Triumph', which represented 55% of the total Chilean pears export in 2003, followed by 'Beurré Bosc' (11%). Other minor cultivars are 'Coscia', 'Abate Fetel', 'D'Anjou' and 'Summer Barlett', amongst others (Table 1) (Gámez, 2003).

Growing Conditions

The soil, climate and water availability are conducive to the growing of pears. Possible cold spring, rain during the flowering period and frost do however affect fruit set and crop.

Most old plantings are of low density (400-500 trees/ha) while new ones are mainly of medium density (800-1200 trees/ha). The majority of rootstocks are of the moderate vigour type, predominantly QA, but rarely QC. Sido and BA-29 rootstocks are being used for new plantings of medium-high density orchards. The average yield is estimated as 20 t·ha⁻¹. The situation is however very heterogeneous, since there are well managed orchards yielding approximately 50-60 t·ha⁻¹.

Problems and Management

The main problems facing commercial pear production in Chile are low orchard productivity and precocity. Some quality problems have also been detected in the export market.

Low productivities are due to several factors. Problems with plant density have been an important management factor. Sometimes the density is very low and trees cannot effectively occupy planted areas. On the other hand, in higher density orchards, excessive vigour is experienced and at 6-7 years there is excessive shading, resulting in a reduced yield. In many cases blossoms are meagre due to insufficient reproductive shoots, and trees grow upright, moderately vigorous. Pollination fails frequently in some cultivars due to lack of synchronization with the cross pollinator, especially in Packham's Triumph when pollinated by Winter Nellis. In addition, trees often set inadequately, notwithstanding heavy blossom and normal cross-pollination, due to competition between reproductive and vegetative growth, causing excessive fruitlet drop.

Low precocity is generally a problem, mostly because of the typical development of the species: the growth habit is upright, with few side scaffolds in young trees. Other factors have also contributed to this situation, for example, the poor quality of the planted trees (poorly developed, none or few side branches) and the use of moderate vigour rootstocks. Use of the following should therefore be considered for new plantings: dwarfing rootstock, slender spindle-type training systems as well as hardened-off 2- to 3-year-old trees.

With regards to fruit quality, it is the presence of russeting detected on the non-export fruit (fruit which is destined for the domestic market) that is the main problem, especially in 'Packham's Triumph'. On the other hand, lack of russeting occasionally appears as a problem in 'Bosc' pears.

Orchard phytosanitary problems have generally been well managed and controlled. The most important pests are codling moth (*Cydia pomonella*), San Jose scale (*Quadraspidiotus perniciosus*), mealy bugs (*Pseudococuss* sp.), and red mite (*Panonichus ulmi*). The main diseases are European pear scab (*Venturia pirina*) and bacterial blossom blast (*Pseudomonas syringae*). Many integrated pest management techniques have been applied successfully. Post harvest fruit decay is frequently significant; most losses are caused by mould (*Botrytis cinerea*) and blue mould (*Penicillium expansum*).

GENERAL COMMENTS

The world's pear production area and yield have increased consistently over the last 10 years, exceeding 17 millions tons in 2002 (FAOSTAT, 2003). This general

increase is mainly due to China's industry, while the rest of the world has shown a much lower rate, decreasing in many cases. Chile still has a good place in the Northern Hemisphere market, shipping fruit in the off-season. However, the Chilean pear industry will have to become increasingly competitive to either preserve markets or gain new ones. The highest priority is to increase orchard profitability and fruit quality. There are several production aspects to work on (training, pollination, harvest and postharvest) and new research must be done, especially in the areas of productivity and integrated production techniques.

Modernisation of pear production must also be enhanced. Higher planting densities and dwarfing rootstocks need to be considered. Particular differences in growth and fruiting habits and climatic requirement between cultivars must be considered to assess the planting and training of new orchards. Attention must be given to the upright growth habit of pear trees, preventing high vigour and exposing branches to allow well illuminated branches. Competition between shoot and fruit growth must be reduced.

Fruit quality can be significantly improved with appropriate orchard management. This could result in a reduction in insecticide and, in many cases, nitrogen fertilisation and irrigation levels. The use of good post-harvest practices and the strict supervision of sorting and packing will further improve fruit quality.

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Tables

Table 1. Pear cultivars export to different markets (Sep 2002- Aug 2003).

Cultivar	Europe	USA	Far-East	Middle East	Latin America	Total
Packham's Triumph	38,3	3,6	0,8	0,1	19,7	62,5
BemTeBosc	2,0	8,8	0	0	1,3	12,1
Coscia	1,8	0	0	2,8	0,1	4,7
Abate Fetel	4,9	0	0	0	0	4,9
D'Anjou	2,2	0	0	0,7	1,1	4
Summer Brutlett	0,2	3,3	0	0	1,8	5,3
Red Bartlett	2,2	0,4	0	0	0,1	2,7
BemTe d'Anjou	0,6	0	0	0,6	0,3	1,5
Others	8,1	2,9	0	0,5	6,9	18,4
Total	60,3	19	0,8	4,7	31,3	116,1

Source: Gamez, 2003. ODEPA.

Figure

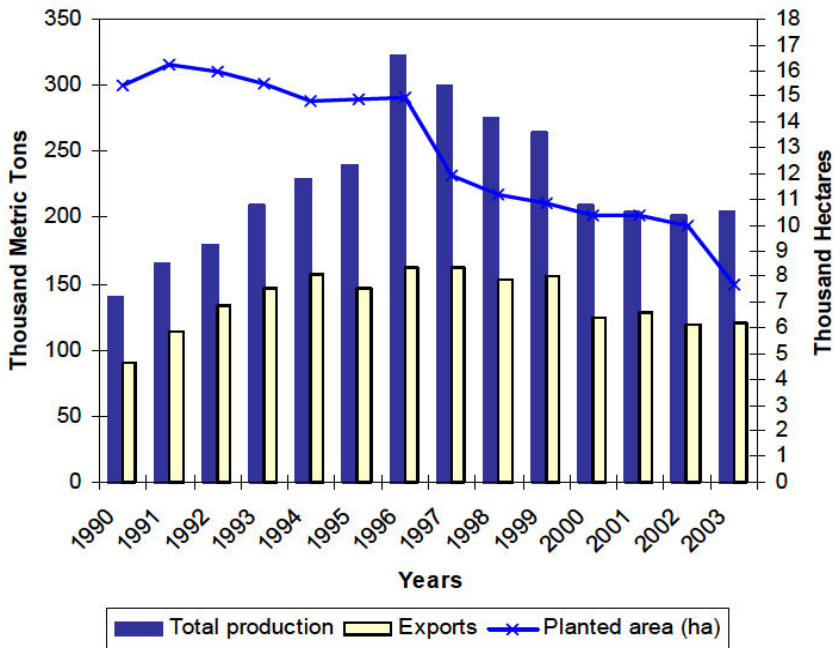


Fig. 1. Chile's pear production, export and planted area. (Source: ODEPA, 2004)