



## The citrus industry in Northwestern Argentina

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With approximately 140,000 ha, the citrus industry in Argentina produced 3.1 million tons of fruit in 2006, 50 % of which was lemon. In fact, Argentina is the largest lemon producing country in the world.

Citrus is grown in Argentina in two different regions: the northeast (Corrientes, Entre Ríos, Misiones and northern Buenos Aires) and the northwest (Salta, Jujuy, Tucumán and Catamarca). These regions yield 33% and 64% of the country's total production, respectively. Oranges and tangerines are cultivated principally in the northeast and lemons, oranges and grapefruit in the northwest. These two regions are separated by a wide expanse of arid forest and pasture land.

The lemon growing area in Argentina reaches 42,197 ha, 37,401 ha of which corresponds to the northwestern region (88.6% of the total cultivated area in the country). Tucumán has 33,921 ha cultivated with lemon, Salta 1,900 ha and Jujuy 1,580 ha (Table 1, Federcitrus, 2007).

Lemon production in the northwest represents 95.6% of total national production, with Tucumán yielding 87.5%, Salta 5.7% and Jujuy 2.4% (Table 2).

The citrus area in Tucumán is located between

**Table 1. Lemon growing area in Argentina in 2006.**

Province	Area (Ha)	Area (%)
Tucumán	33,921	80.4
Salta	1,900	4.5
Jujuy	1,580	3.7
<b>Total NWA region</b>	<b>37,401</b>	<b>88.6</b>
<b>Total Argentina</b>	<b>42,197</b>	<b>100</b>

Source: Federación Argentina del Citrus, 2007.

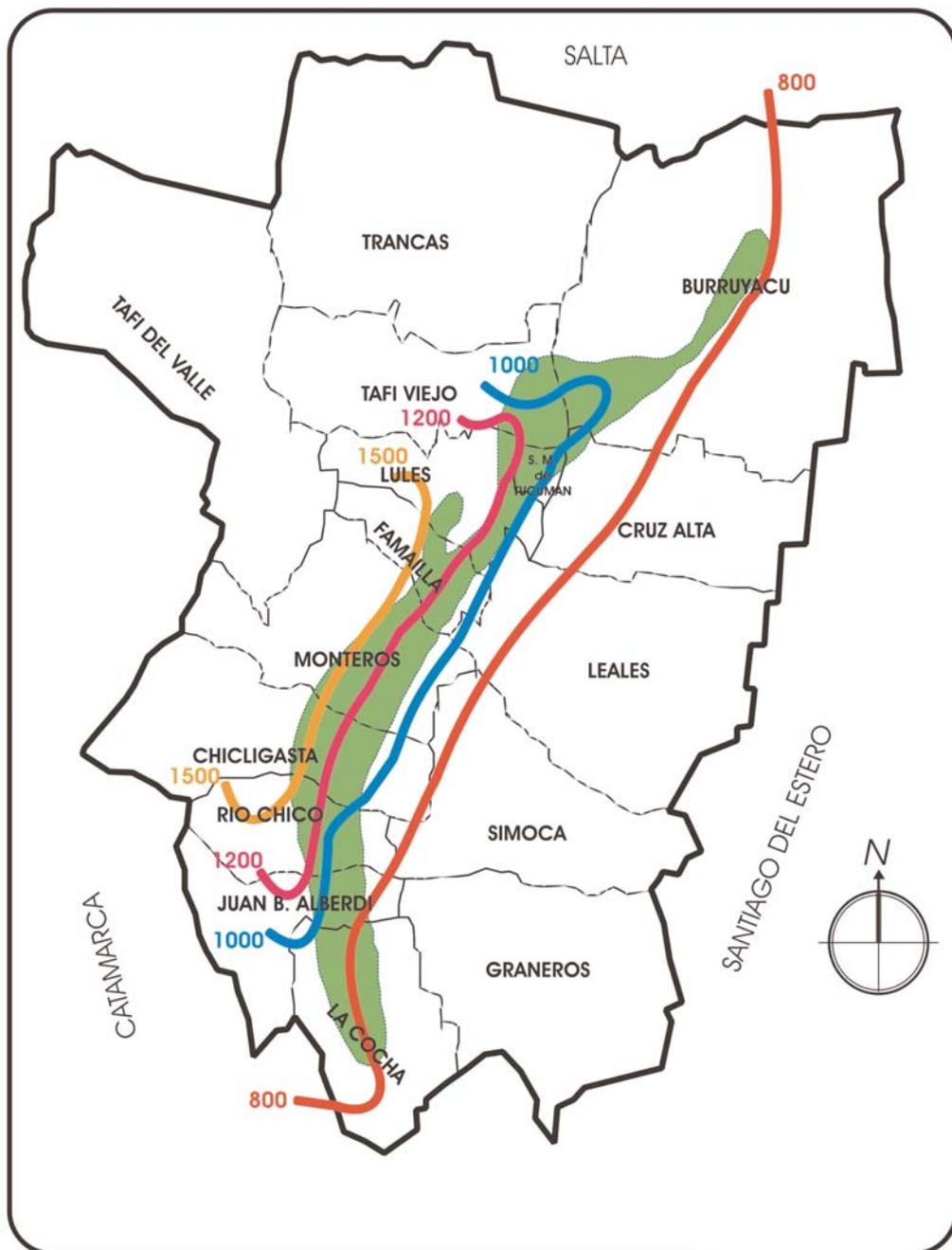
26° and 28° S latitude, and lies at the hillside of mountains, at an average altitude between 300 and 500 m (Figure 1). The climate is moderate and dry in Winter and early Spring, and is hot

**Table 2. Lemon production in Argentina in 2006.**

Province	Production (Tn)	Production (%)
Tucumán	1,316,300	87.5
Salta	85,550	5.7
Jujuy	36,320	2.4
<b>Total NWA region</b>	<b>1,438,170</b>	<b>95.6</b>
<b>Total Argentina</b>	<b>1,504,204</b>	<b>100</b>

Source: Federación Argentina del Citrus, 2007.

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Source: J. L. Foguet, 2007.

Figure 1. Citrus growing area in Tucumán province

and humid in summer with an average annual temperature of 19°C. Annual rainfall in the citrus area ranges from 800 to 1500 mm and occurs mostly in summer. This climatic feature makes this area different from the traditional Mediterranean lemon growing areas of California, Spain and Italy (Foguet, 2000).

Lemon varieties grown are Frost Eureka (35%), Frost Lisbon (24%), 8 A Limoneira (24%), and Genoa EEAT (11%), the last of which is a local selection (Tucumán Province Citrus Survey,

2006). A wide number of rootstocks are used, including Sour orange (*Citrus aurantium*), Cleopatra tangerin (*C. reshini*), Rangpur (*C. limonia*), Volkamer lemon (*C. volkameriana*), Flying Dragon Trifoliolate and Trifoliolate hybrids, such as Troyer Citrange and Swingle Citrumelo.

Lemons produced are devoted to two main economic activities: industrial processing and fresh fruit exports. Seventy percent of production (1,000,000 tons) was destined to factories and 25% (343,000 tons) to exports in 2007.

Argentina is playing an increasingly important role in international trade, by providing off-season citrus fruit to the northern hemisphere. Major destinations for fresh lemon exports are the European Union and East Europe countries, with shipping lasting between 25 and 50 days.

Tucumán concentrates 96.5% of Argentina's total fresh lemon exports, whereas the provinces of Salta and Jujuy jointly contribute with 2% (Table 3).

**Table 3. Fresh lemon exports Argentina in 2007.**

Province	Exported fruit (Tn)	Exported fruit (%)
Tucumán	343,217	96.5
Salta	2,165	0.6
Jujuy	5,233	1.4
<b>Total NWA region</b>	<b>350,615</b>	<b>98.5</b>
<b>Total Argentina</b>	<b>355,665</b>	<b>100</b>

Source: Federación Argentina del Citrus, 2007.

In order to fulfill the requirements of very demanding markets and keep fruit fresh and in good condition despite long shipping periods, harvest and post-harvest management practices remain under strict control.

Lemons for export are harvested from April up to the end of September (fall and winter in the southern hemisphere). Fruit should be well formed, intact, undamaged, firm, free from decay, mature, and its peel should be dry.

Maturity requirements for lemons are a minimum of 35% of juice (IASCAV, 1993). Picked lemon size depends on local conditions and on market demands. In Argentina, lemons for export are picked when their diameter ranges from 56 mm minimum to 80 mm maximum.

Lemon is harvested carefully with clipper, avoiding fruit damage and wounds. Fruits are carefully placed in wooden or plastic bins and are promptly transported to the packing house. There, they are accurately sorted by quality, size and color.

Under the conditions prevailing in the northwestern region, fruit color at harvest is a very important aspect and constitutes a good index of fruit resistance and potential destination. Accordingly, there is a color gradient for reference from green (beginning of export lemon harvesting) to yellow, which signals export lemon harvesting deadline. From that point onwards, fruit presents little post-harvest resistance and can only be devoted to industrial processing.

Argentina has had its share in lemon international markets for more than 30 years. Successful exports of high quality fresh fruit have been accomplished thanks to careful, meticulous, responsible and systematic work at all production stages, in the field, at harvesting and during fruit packing and transportation to harbors. All these activities are regulated and controlled by the Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA) and have benefited from research work conducted by experimental stations. It is worthwhile remarking that Tucumán boasts a long tradition of exporting fresh fruit to overseas markets, which dates back from 1971 (Foguet, 1996).

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