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SATELLITE SURVEY OF TUCUMAN CROPS

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Fruit growing area

2024 Pecan Nut planted area in Tucumán, Argentina

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2024 Pecan Nut planted area in Tucumán, Argentina

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Abstract

The pecan nut production is an alternative for traditional fruit trees in our province. Information about planted area, as well as the age of the groves, are an important starting point to estimate the productive area, yields and its evolution trend.

In this work we present the results obtained from satellite survey in Tucumán pecan area until March 2024. This estimate arises from the information generated by the use of remote sensors and data provided by leading growers in the activity and by the Clúster del Pecan.

In 2024, Tucumán has had 465 pecan hectares. The crop is being developed mainly in three departments, two of them located in the northern area of the province: Burruyacú with the largest area, followed by Trancas and La Cocha.

Methodology

We used for this work images from Sentinel 2A and 2B satellites and high-resolution images from Google Earth Pro, from 2009 to March 2024, mainly in the months of July and January.

A multi-temporal analysis was carried out, applying visual, digital (multispectral classification), and Geographic Information Systems (GIS) methods and complemented by field surveys.

2024 planted area

The total pecan area planted in Tucumán until 2024 was estimated in 465 hectares. Figure 1 shows detailed information by department.

*Fruit growing area, **Remote Sensors and GIS area, EEAOC.

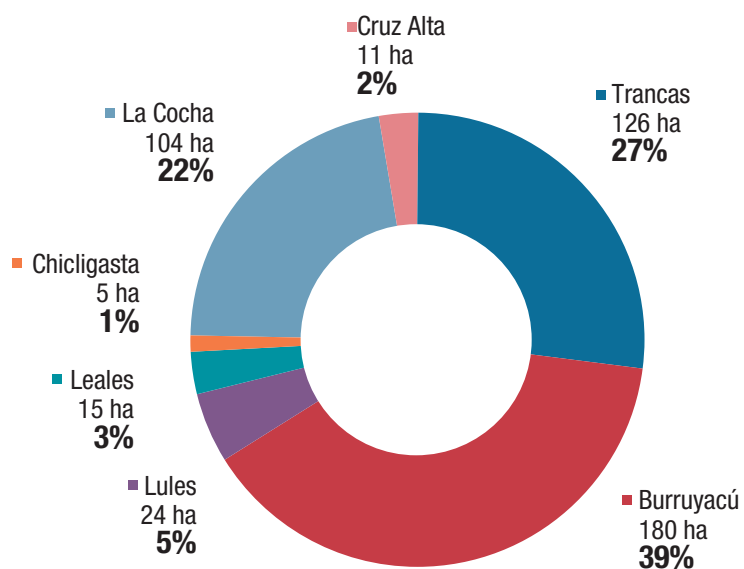


Figure 1. Departmental distribution of the area cultivated with pecan in Tucumán by 2024.
Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

Figure 2 shows the spatial distribution of pecan crops in Tucumán.

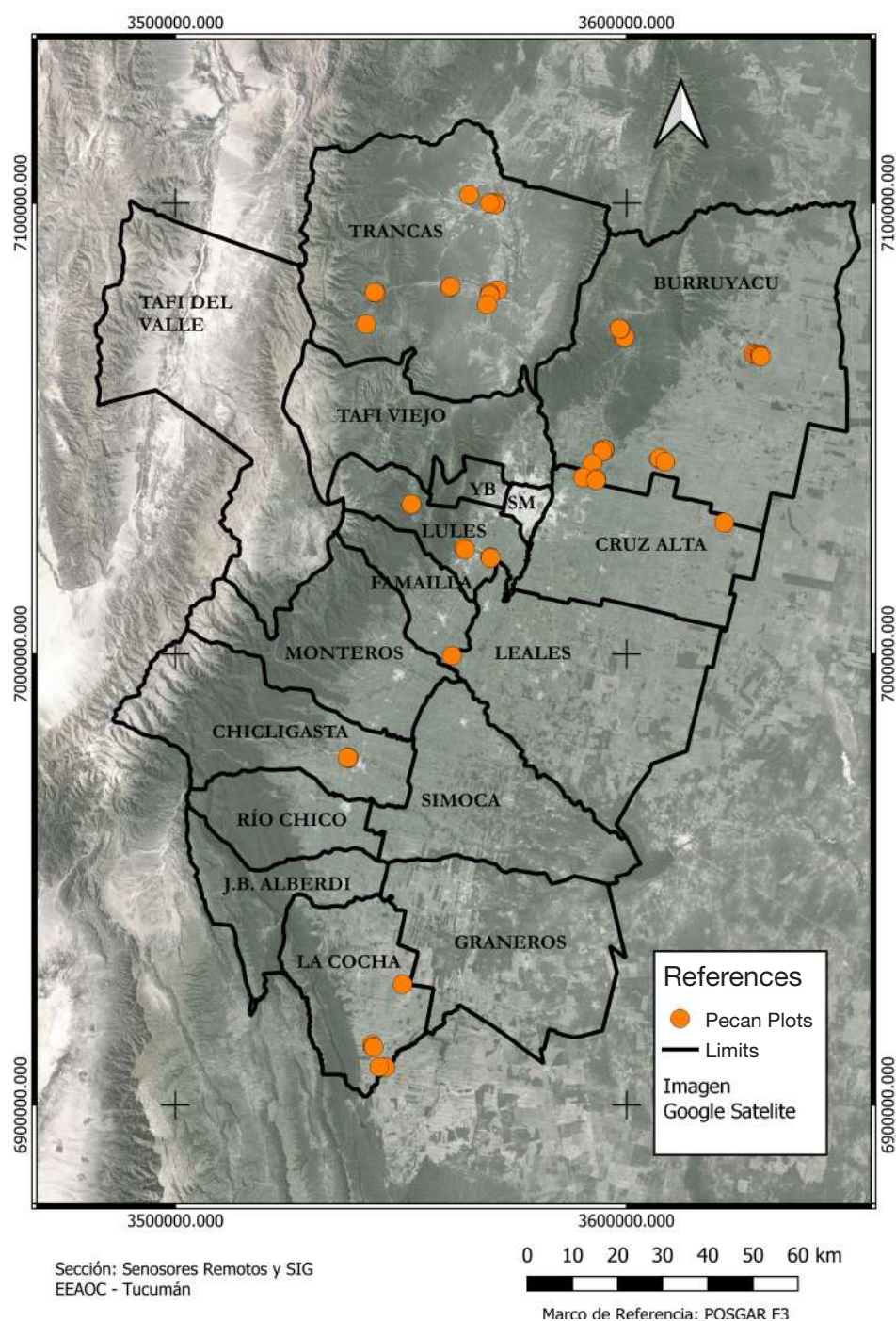
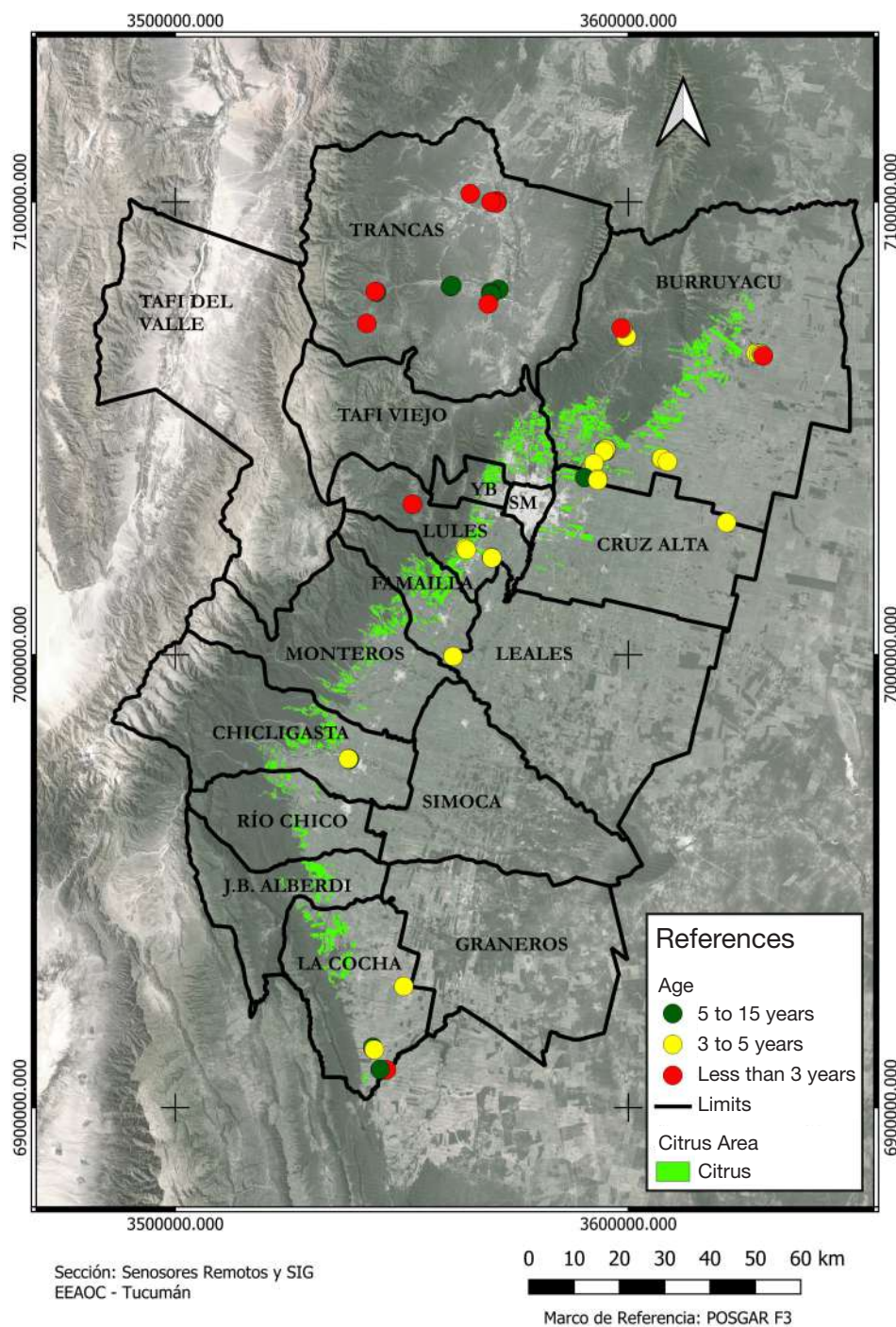


Figure 2: Spatial distribution of pecan plots in Tucumán by 2024.
Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

Age ranges distribution

In order to visualize the trend of the pecan planted area, plots were discriminated by plantation age of the last 15 years (2009 to 2024, Figure 3). The age ranges covered plantations during 5-15 years, 3-5 years and fewer than 3 years.



2024 spatial distribution of pecan plantations by age range in Tucumán
Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

From this last image it can be highlighted that the departments with the youngest plantations are Burruyacú and Trancas. This can be explained due to the great plasticity that the crop has and the productive potential in dry areas, as long as they have quality water in sufficient quantities for irrigation. In addition, the nut quality is usually superior due to fewer fungus pressure of those areas. Also, areas with pecan were incorporated where citrus and other crops productions turned out complex due to agro ecological conditions, mainly frost. In turn, this growth was accompanied by real estate values of the land, which tend to be cheaper in marginal areas for the aforementioned fruit trees.

Figure 4 shows the surface area with plants of different planting ages. Plantations in the age ranges of 3 to 5 years and younger than 3 years represent 72% of the surface area by 2024 (229 ha and 107 ha, respectively).

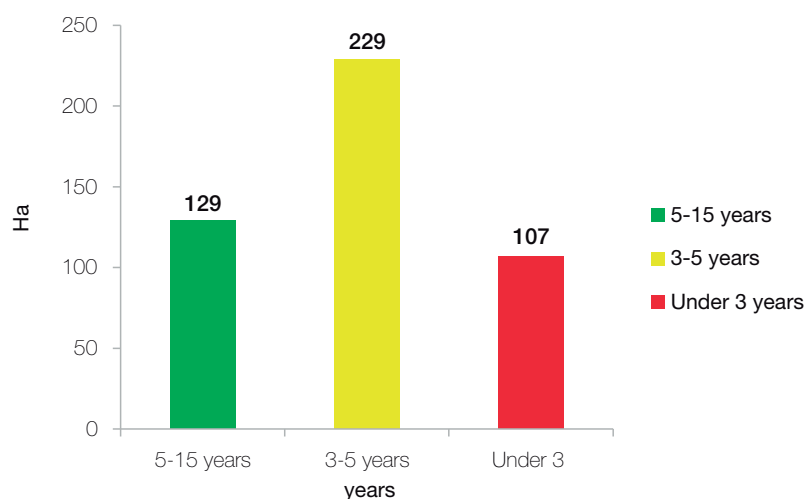


Figure 4. Area cultivated with pecan according to age range in Tucumán in 2024.

Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

When analyzed by department, it is observed that La Cocha, Trancas and Burruyacú have the oldest pecan plantations (range 5 to 15 years), and a small enclave of this range in the Chicligasta department of 3 hectares.

Burruyacú has the major pecan area in the 3 to 5 year range (149 ha), followed by La Cocha with 39 ha, Leales and La Cruz with 15 and 11 respectively. The other departments show a value between 7 and 2 ha.

Regarding the range of plants under 3 years old, Trancas stands out with 75 ha, then Lules with 17 ha, La Cocha with 9 ha and finally Burruyacú with 6 ha. In the other departments, no plantations younger than 3 years were identified (Figure 5).

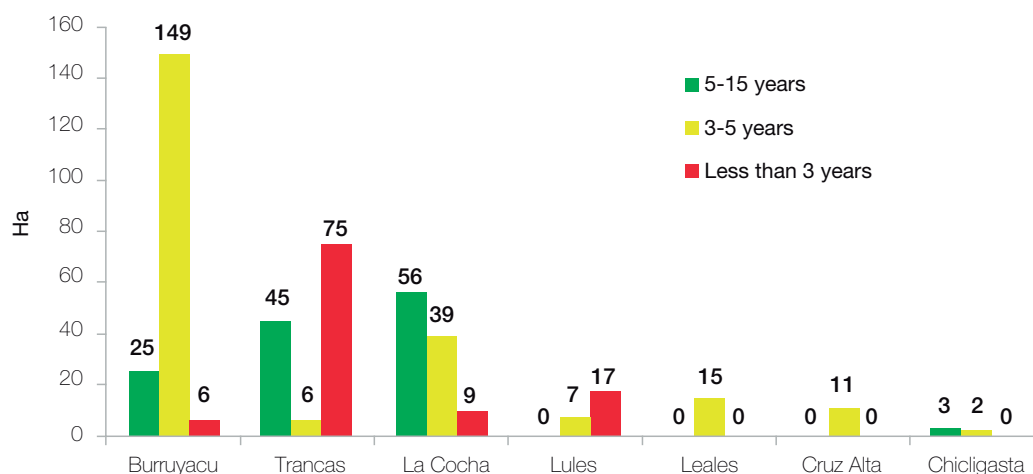


Figure 5. Area cultivated with pecan by department and by age range in Tucumán by 2024.
Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

Figure 6 shows the evolution of the pecan planted area in Tucumán, according to the applied methodology.

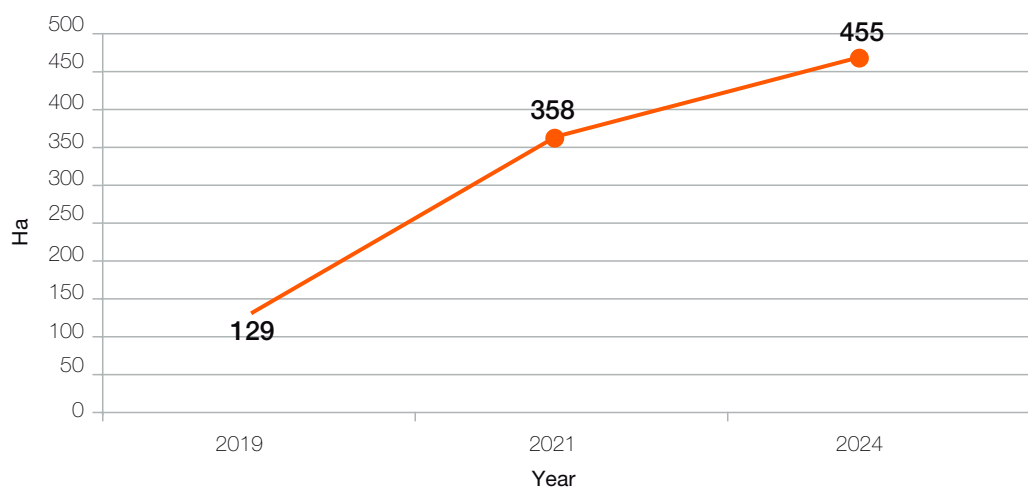


Figure 6. Evolution of the area cultivated with pecan in Tucumán from 2019 to 2024.
Source: Fruit growing area and Remote Sensors and GIS area, EEAOC.

Conclusions

The estimated pecan area in Tucumán province is 465 ha.

Burruyacú stands out with the major pecan surface implanted by department with 180 ha, which represents 38.7% of the province surface followed by Trancas with 126 ha and La Cocha with 104 ha (27% and 22% respectively) Considering the age ranges described in this work, it was found that the departments of La Cocha, Trancas and Burruyacú have the oldest pecan plantations, which together add up 126 ha (27% of the provincial surface).

In the range from 3 to 5 years, Burruyacú stands out with 149 ha, followed by La Cocha department with 39 ha. The others departments range between 15 and 2 ha.

In the range younger than 3 years, Trancas department possesses the major implanted area (75 ha), followed by Lules (17 ha), La Cocha (9 ha) and Burruyacú (6 ha).

Pecan crop area under 5 years represents 72% of the area until 2024.

It is important to notice that the increase of the area could be, in part by an increasing interest, due to the nutritional value of the nut, coupled by the alimentary changes post pandemic and the international product price. Also, the decrease profitability of the citrus activity during the last years may have encouraged the interest in alternative crops.