

## INTRODUCTION

The Catamarca Province with warm winter conditions unlike olive growing areas of the Mediterranean Basin, becomes relevant as an area of study for the context of climate warming. Among the studies of the responses of olive (*Olea europaea* L.) flowering to environmental temperature, the effect on the synchrony of flowering became important.

## OBJECTIVE

To provide information about the relationship between environmental temperature and synchrony of flowering.

## MATERIALS AND METHODS

Phenology information: 2003/2004 to the present (2018/2019 by Delgado, I and Prenol L. V.)

2 sites, Sumalao and Capayán, in Central Valley of Catamarca.

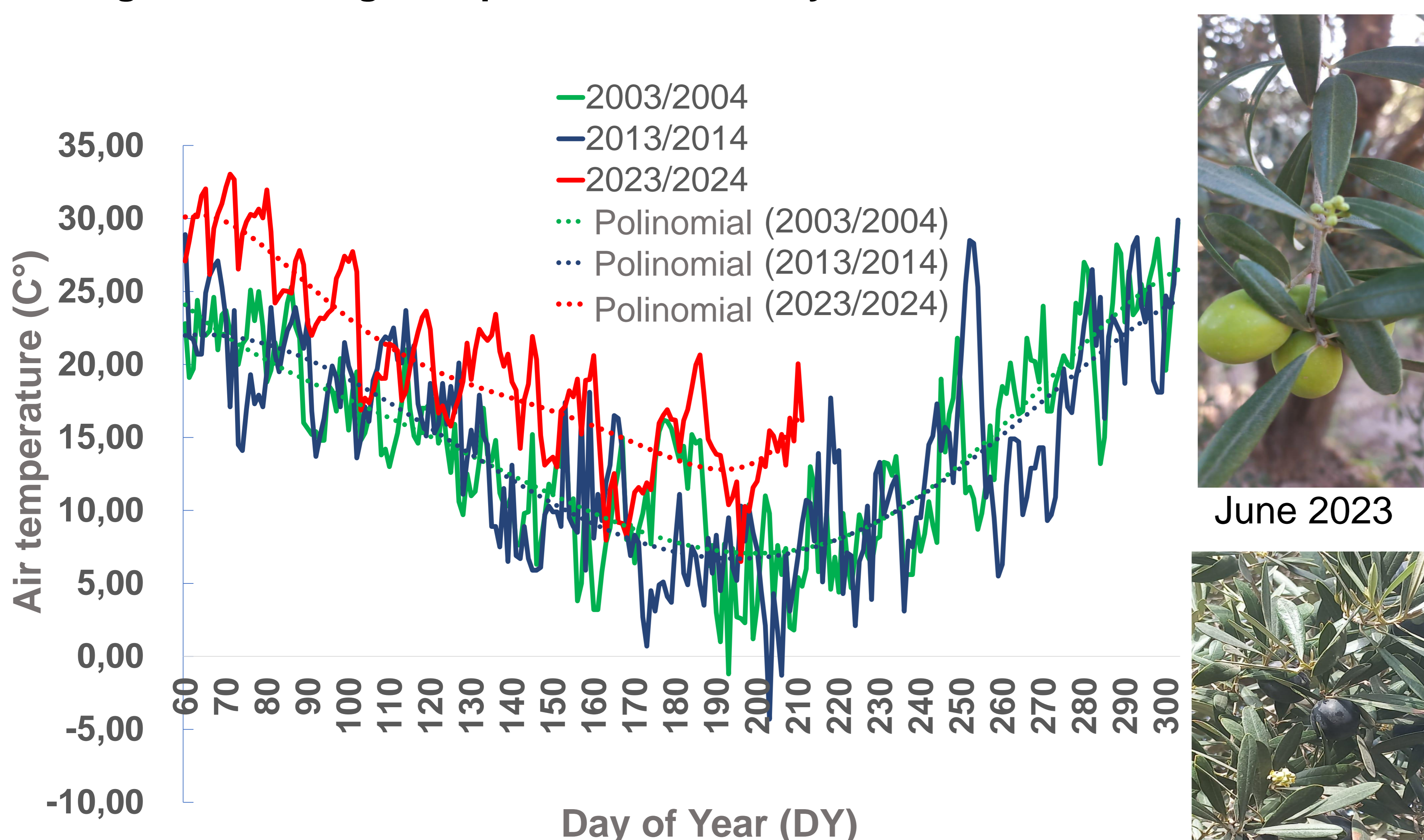
Cultivars (**C**) and selected materials from breeding program of INTA Catamarca (**INTA Sel**).

Meteorological Data: INTA (2012 a 2023) National Meteorological Service (1973 a 2023).

Synchrony of the flowering: length of flowering period in number of days (**LF**) and number of bloom in the same production cycle (**NB**), were analyzed.

## RESULTS AND DISCUSSION

Figure 1: Average temperature between years 2003 to 2023



The year 2023 presented higher average temperatures between March 1 (DY 60) and October 31 (DY 304) respect to equal periods of the historical data series. (Figure 1)

The Central Valley of Catamarca does not present a trend of change in LF in a period of 19 years for commercial varieties (Table 1). INTA Sel 1 presents more extensive LF in the comparative analysis with Arbequina (Table 2), a variety with the largest area planted in Argentina and Catamarca.

Notable changes in LF are reported for the INTA Sel 1 in relation to increases in air temperature, which recorded two flowering cycles at the same time in 2023, coinciding with recent works. Recent works mention the importance of the synchrony of olive tree flowering in understanding the response to air temperature; these refer to both LF and NB. The report of early flowering in autumn for the olive is unique in Argentina.

## CONCLUSIONS

The correspondence between the increase in air temperature (especially between March and October) and the synchrony of flowering is recorded in one of the olive genetic materials (INTA Sel 1) under monitoring in the Central Valley of Catamarca. More studies are being conducted on this report of early flowering, to test hypotheses about threshold temperatures, physiological mechanisms and gene expression and nutritional management and irrigation of the crop, which affect the flowering of the olive tree.

Table 1: Synchrony of flowering

Years	Number C and INTA Sel	LF Average	LF St.Dev.	NB
2003/04	11	10,33	3,51	1
2013/14	36	8,25	3,96	1
2018/19	11	13,36	5,14	1
2023/24	11	-	-	2*

\* Observed in INTA Sel 1 (June 2023).

Table 2: Length of flowering (LF)

	N° of years	LF Average	LF Min	LF Max
Arbequina	5	12,4	8	16
INTA Sel 1	5	20,2	7	29