



Instituto Nacional de Investigación Agropecuaria  
U R U G U A Y

## CARINATA

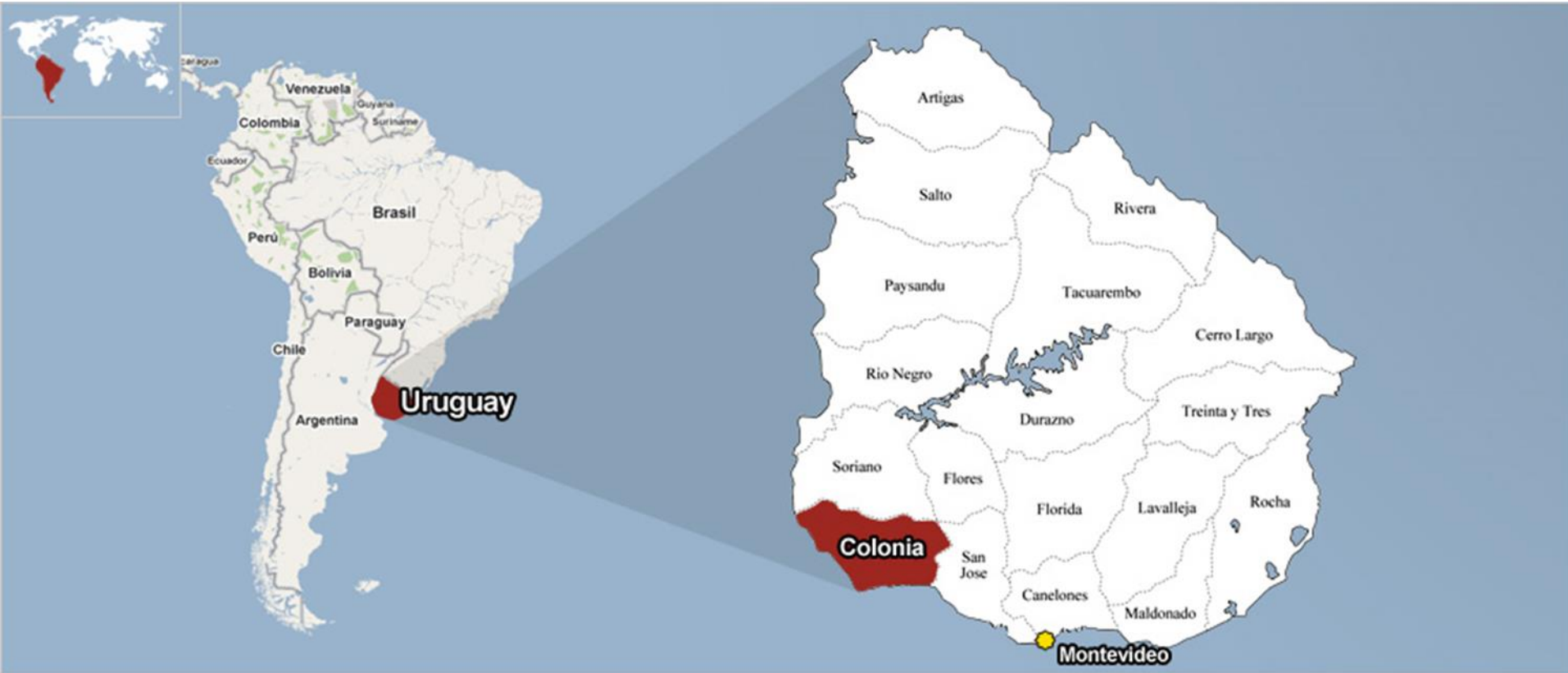
# An option for agriculture diversification in Uruguay, South America?



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Carinata Summit, FL, March 2019

**Uruguay** - between 30° - 34° S latitude; 54° - 58° W longitude  
**Quincy (FL)** - 30° N 84° W; **Hartselle (AL)** 34° N 86° W

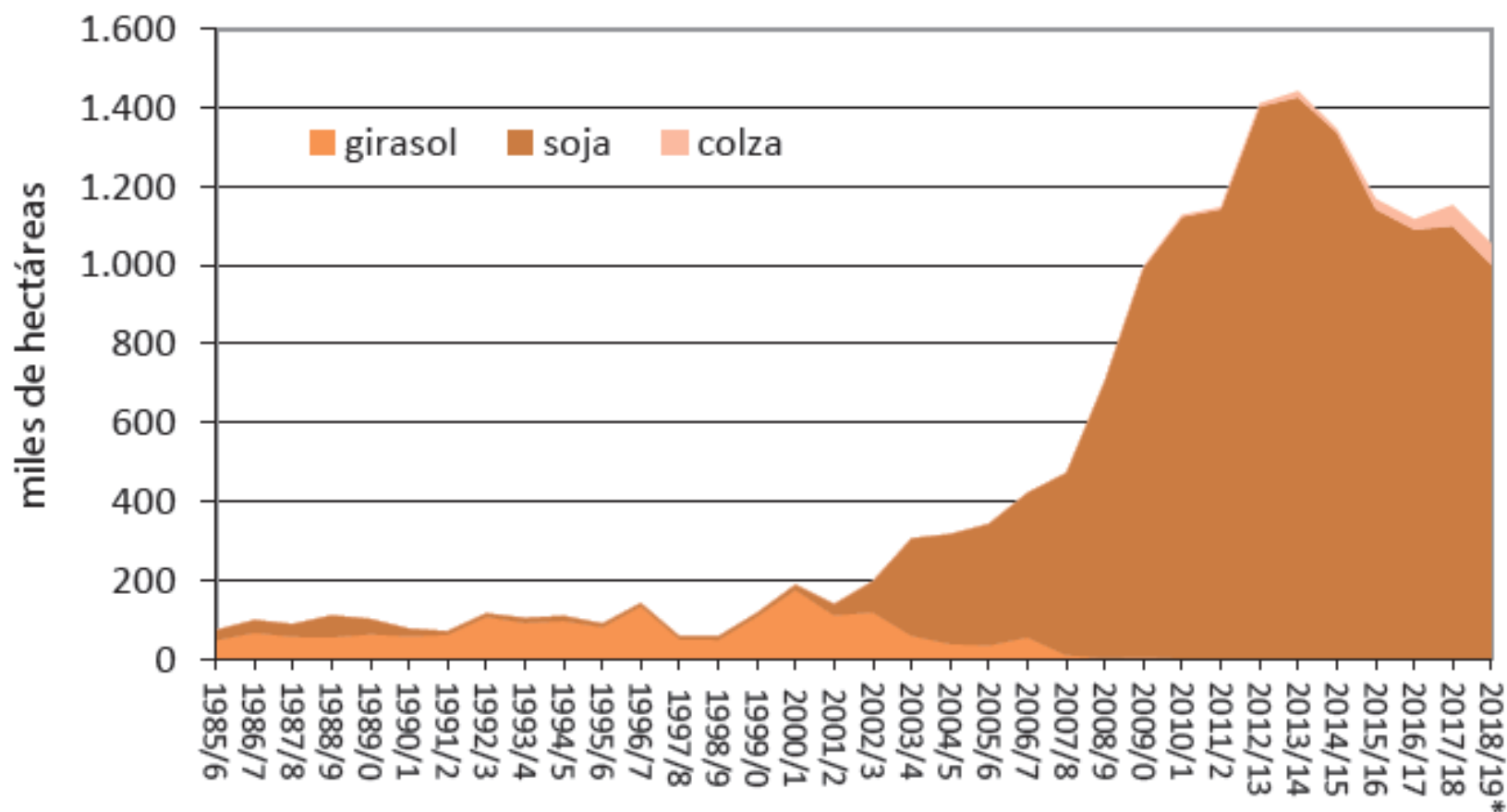


<b>Inhabitants</b>	3.5 millions
<b>Cattle</b>	12 millions
<b>Sheep</b>	6.5 millions

## GRAIN CROPS AREA



Soil intensity use 1.3 crops/year



(\*) proyeccion.

Fuente: OPYPA con base en datos de DIEA-MGAP.

- **Canola (*Brassica napus*) is increasing its area in Uruguay (53 thousand ha), complementing wheat and barley area.**
- **Low implantation levels, diseases like *Phoma lingam*, and shattering are main problems for this crop.**
- **Carinata (*Brassica carinata*), a species used for renewable diesel, has shown a very good adaptation to Uruguayan conditions, solving problems found in canola.**
- **Shortening its cycle it can fit in a rotation of a double crop per year system, for example preceding soybean.**

# CARINATA Experimental Results

years 2014 - 15 - 16 - 17- 18

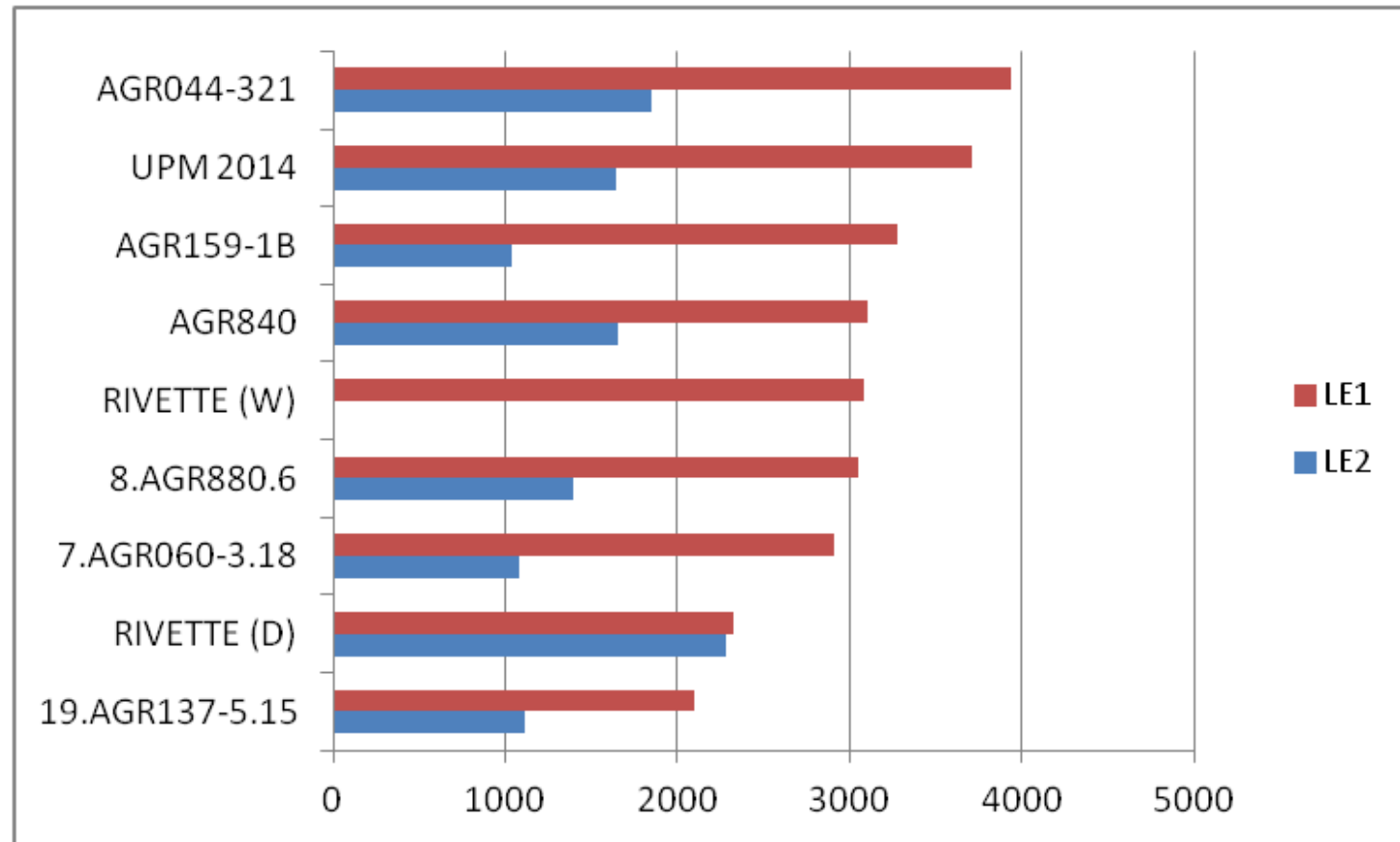
**INIA – UPM (AGRISOMA)**



# Planting dates – 2014

**Early – 8<sup>th</sup> May (harvest Nov) 2974 kg ha<sup>-1</sup>**

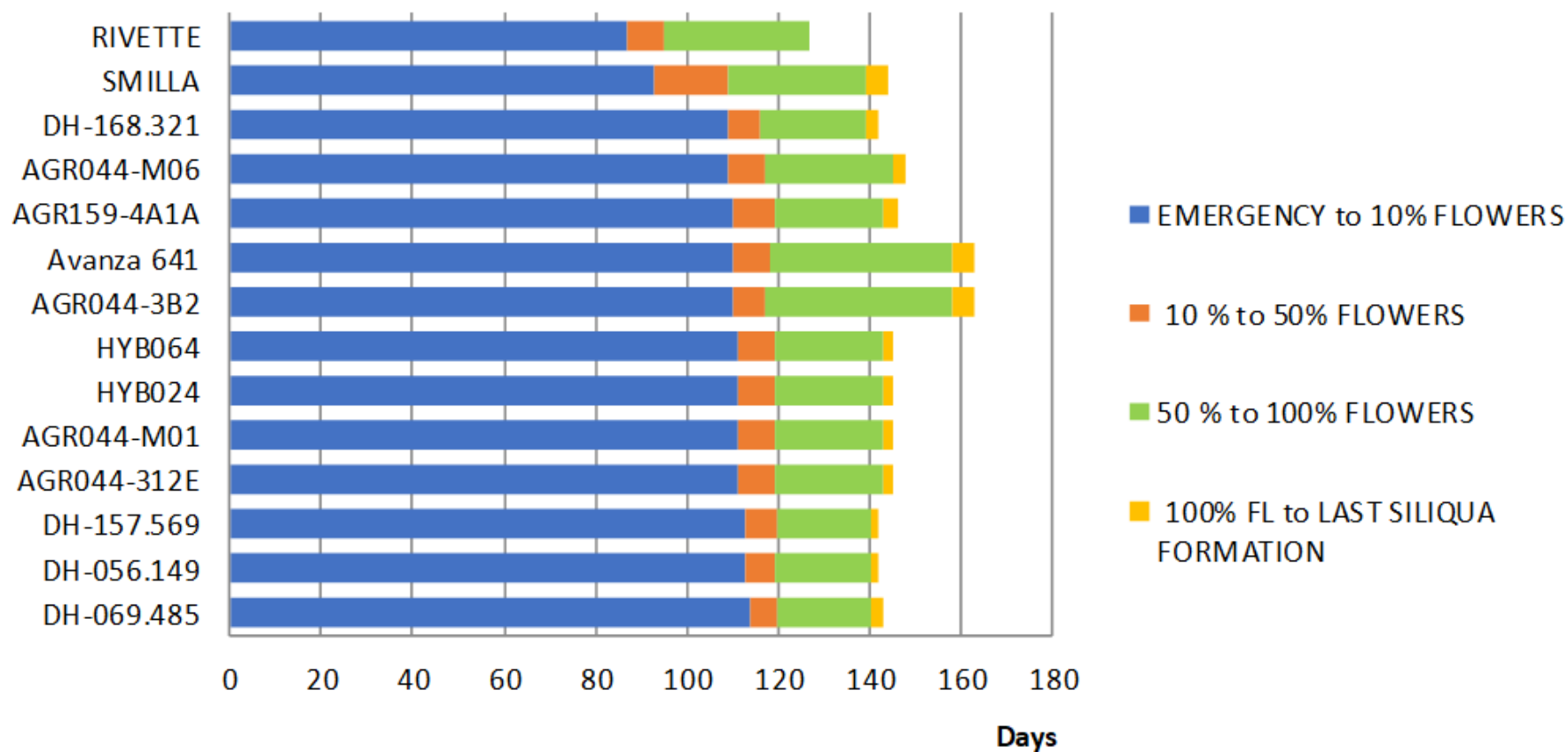
**Late – 2<sup>nd</sup> July (harvest Dec) 1508 kg ha<sup>-1</sup>**



kg ha<sup>-1</sup>



## Phenological cycles in AYT LE



# RESISTANCE TO DISEASES

## *Phoma lingam* in stems (%)

60

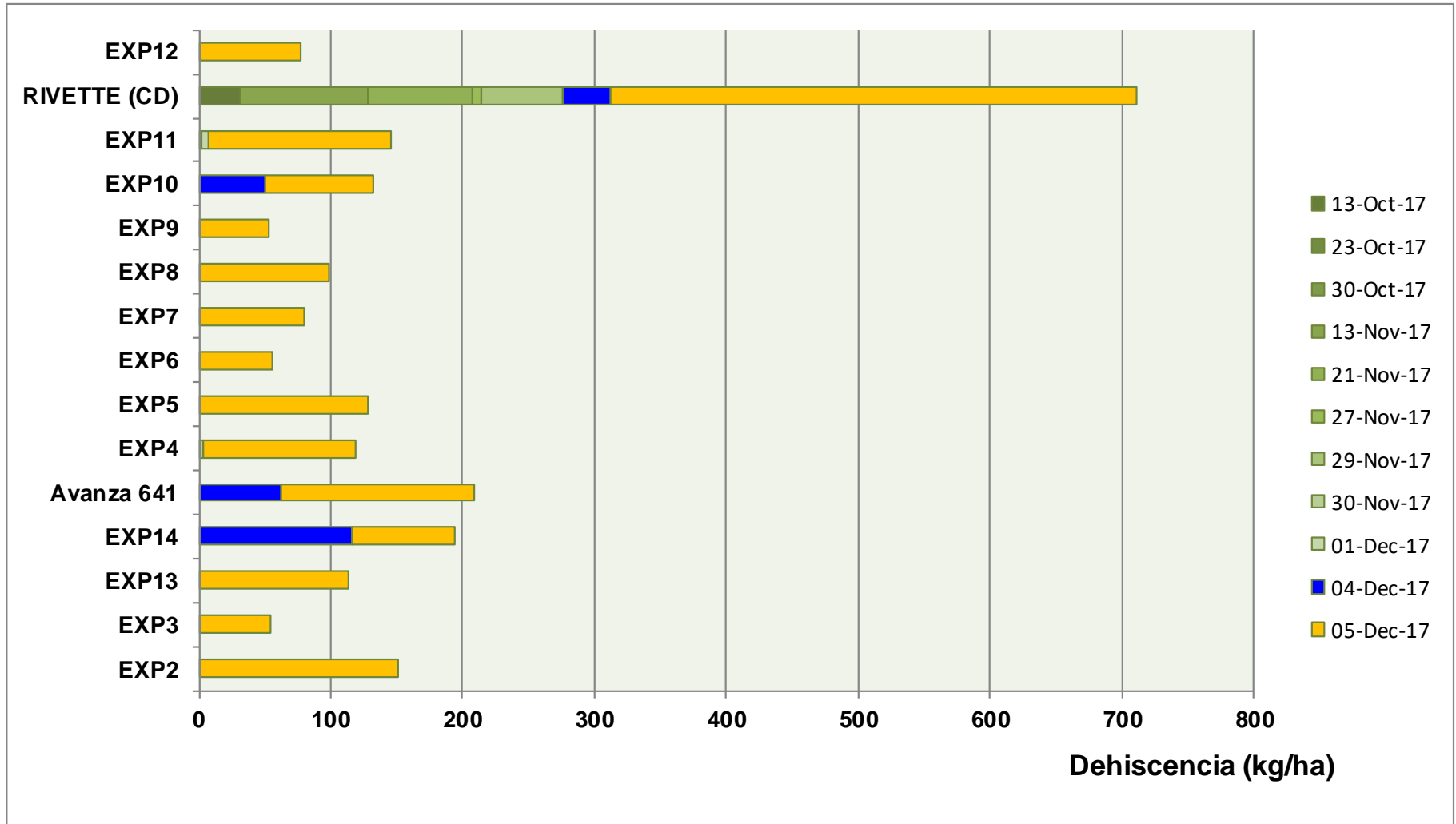


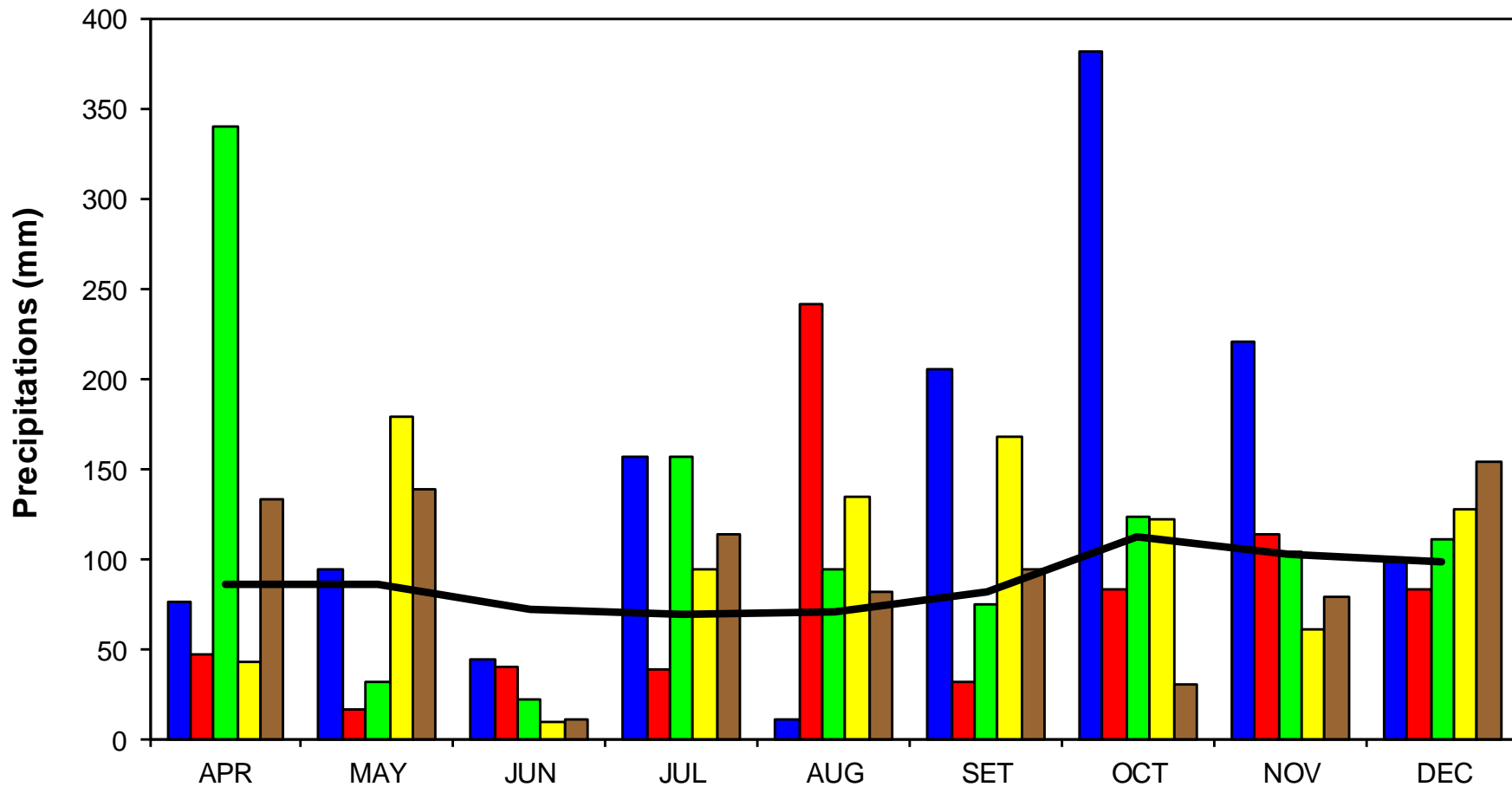
# Natural Shattering and Harvest losses



# Natural Shattering and Harvest losses (2017)

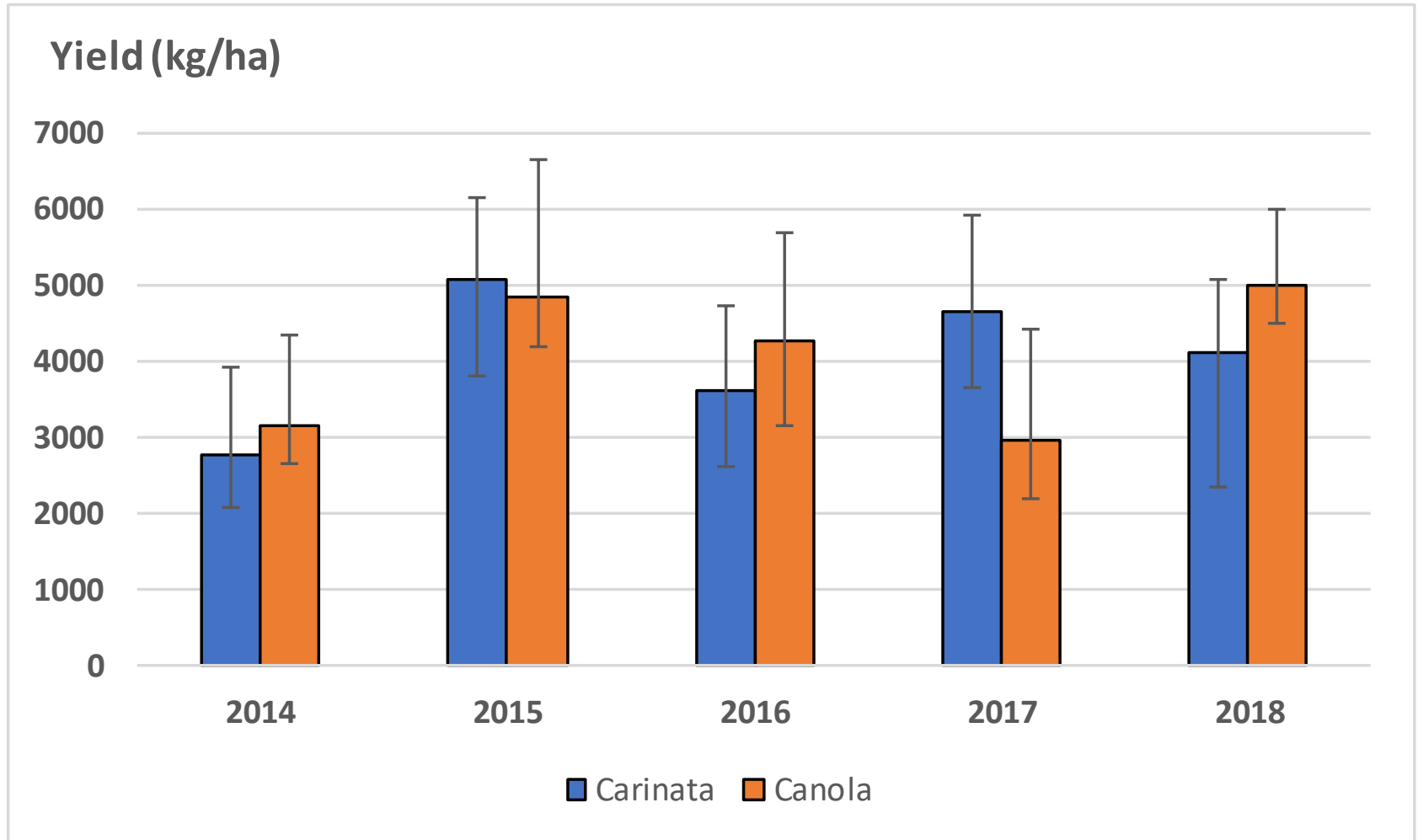
Promedio = 4440 kg/ha



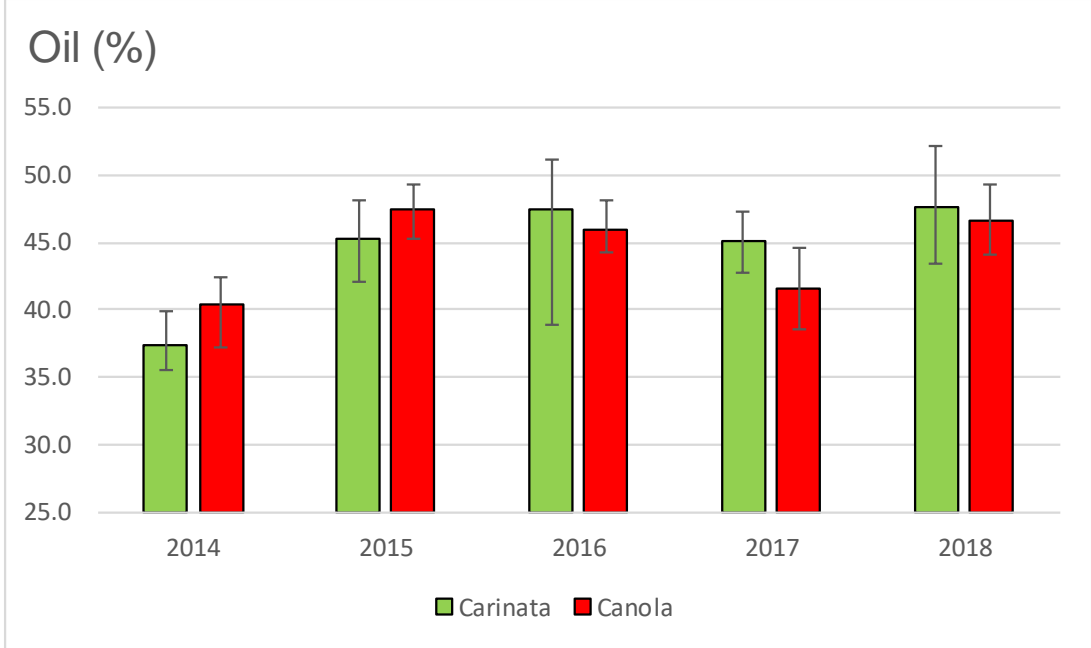
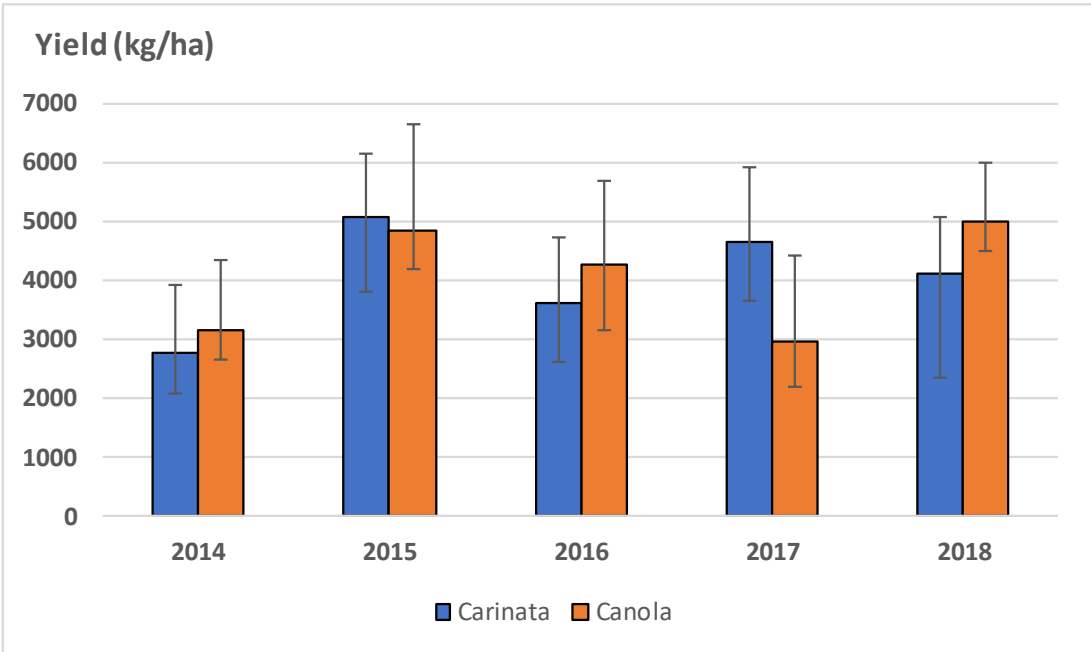


■ 2014   
 ■ 2015   
 ■ 2016   
 ■ 2017   
 ■ 2018   
 — Historical average  
 La Estanzuela (1965 - 2013)

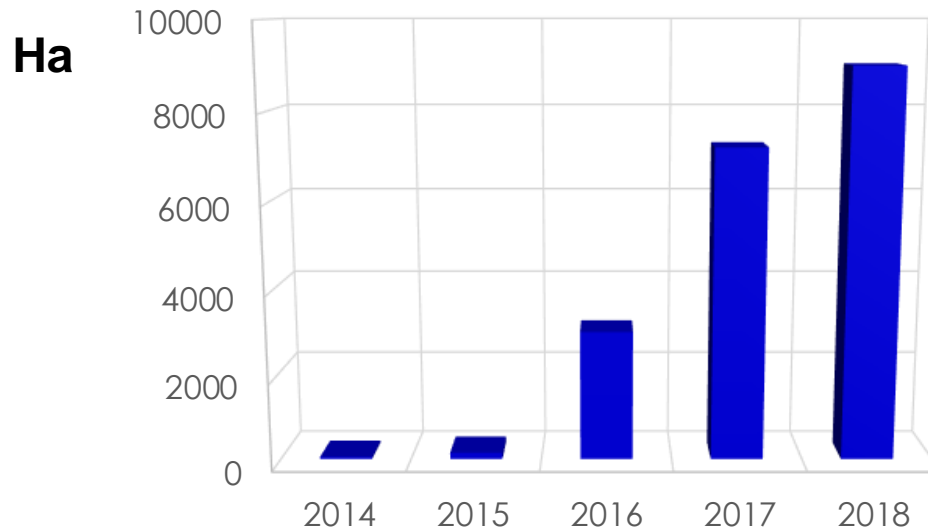
# Average, min and max Experimental Yield (kg/ha)



# OIL



# COMMERCIAL AREA in URUGUAY



## Round Table Sustainable Biomateriales Certification:

Biodiversity

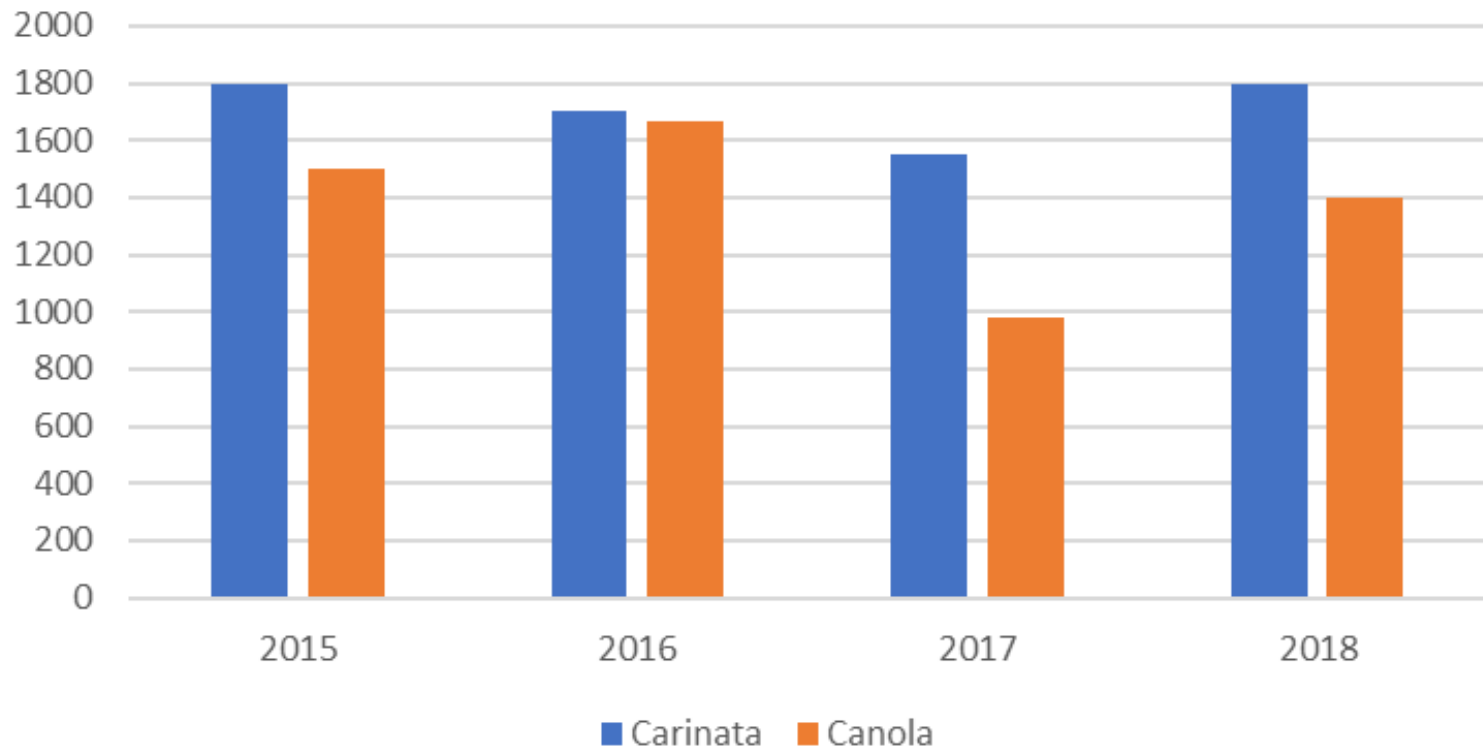
Human rights

Environmental and social responsibility

GHG (still under calculations)



## COMMERCIAL YIELD (kg/ha)



## FINAL COMMENTS

- **Genetics** – improvement (yield, oil)
- **Diseases** – low incidence of *Phoma lingam*
- **Low shattering** – direct harvest
- **Meal** – it can be used for animals in mixtures
- **Plague birds** – not a problem
- **Brassicas** – Carinata and Canola should complement wheat and barley area for a sustainable rotation in agriculture.



**THANK YOU**

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