



# European Wine Market Observatory

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## ***Grape Production Costs: Forecasting for the growing year 2021-22***

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CENTER FOR AGRO-FOOD ECONOMICS  
AND DEVELOPMENT

# Objectives

1. Present the grape production costs (updated to 2020) obtained from FADN data (XCAC) (2016-2020), & for selected case studies (varieties & designations of origin).
2. Describe the forecasting method
3. Predict the cost of grape production destined for sparkling wine for the growing season 2021-22.

# Sampling Analysis

- The sample consists of data for the production of Macabeu, Parellada & Xarel·lo (3 most important sparkling varieties) mainly produced in 3 production regions: Penedès, Conca de Barberà & Tarragona.
- Analysis of the distribution of total cost/kg for each production year (2016 – 2020)
- Presenting statistical moments (standard deviation, asymmetry & kurtosis) to determine the confidence levels of production cost .
- Removing outliers from the final sample

# Handling & Removing Outliers

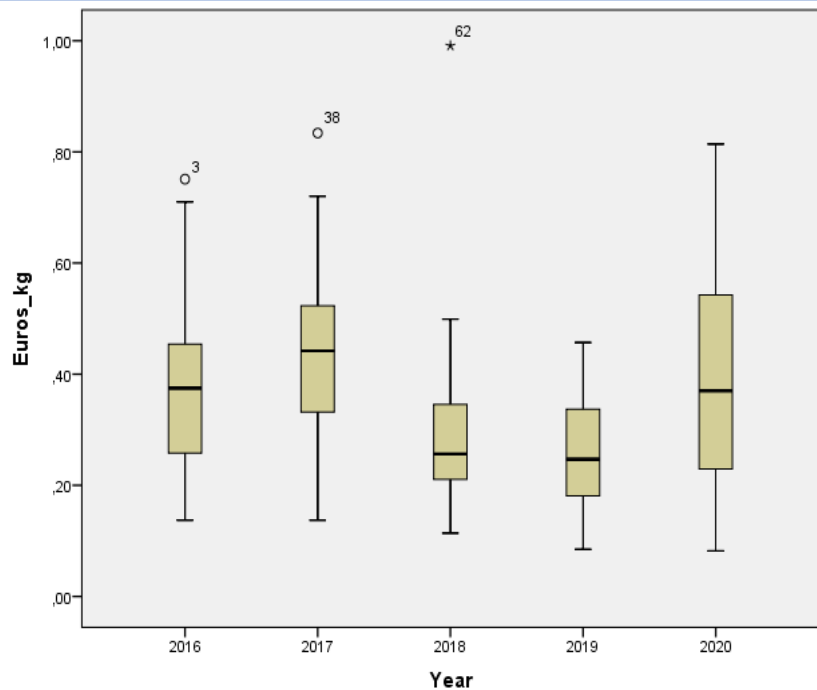
The identification of extreme values relies on Tukey's method taking as a reference the difference between the first quartile (Q1) & the third quartile (Q3), i.e. the interquartile range.

On a box plot, an outlier is any value located at 1,5 times the distance to one of the abovementioned quartiles (minor outlier) or, located 3 times that distance (extreme outlier\*):

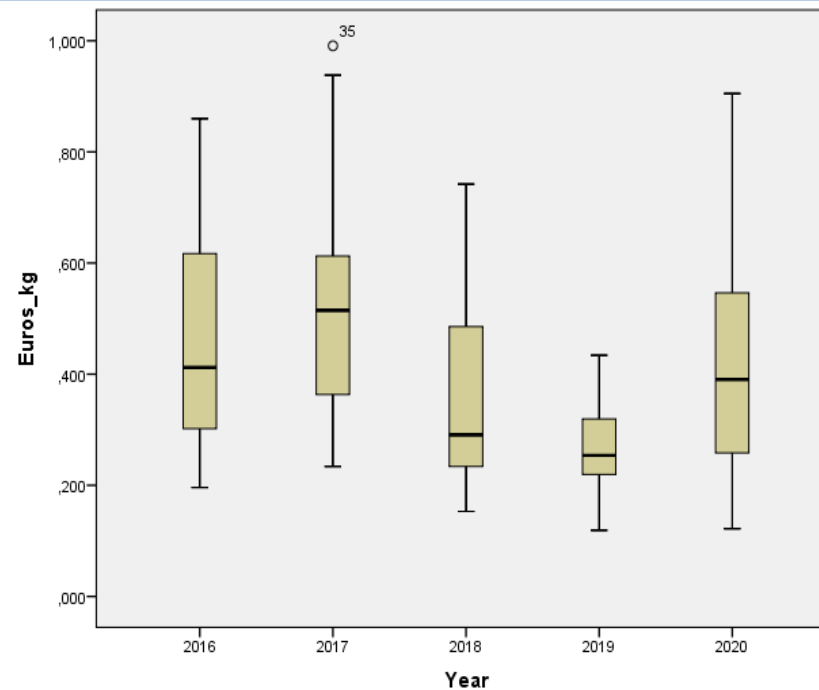
$Q3 + 1.5 \times \text{interquartile range}$

$Q1 - 1.5 \times \text{interquartile range}$

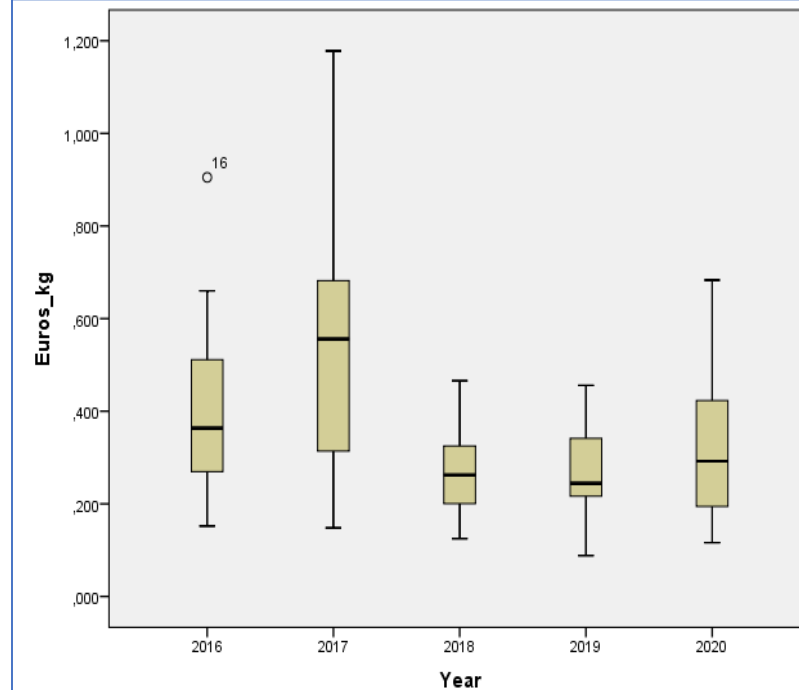
**Macabeu**



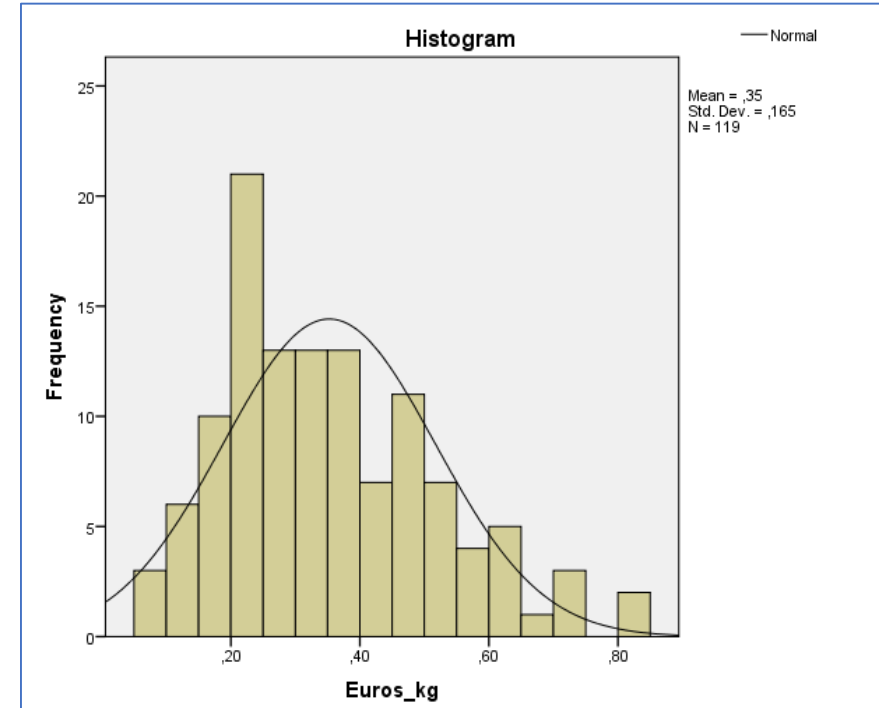
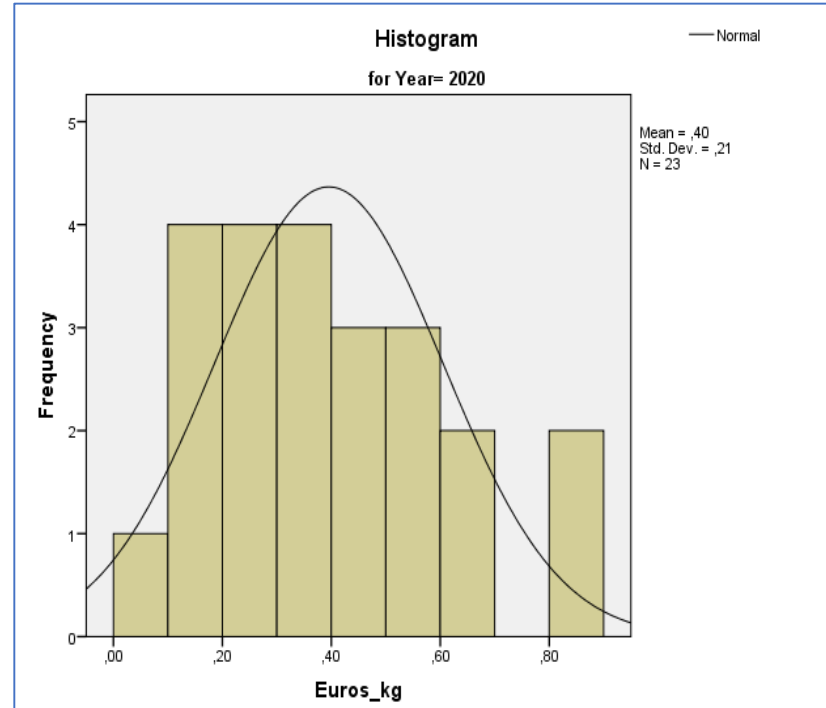
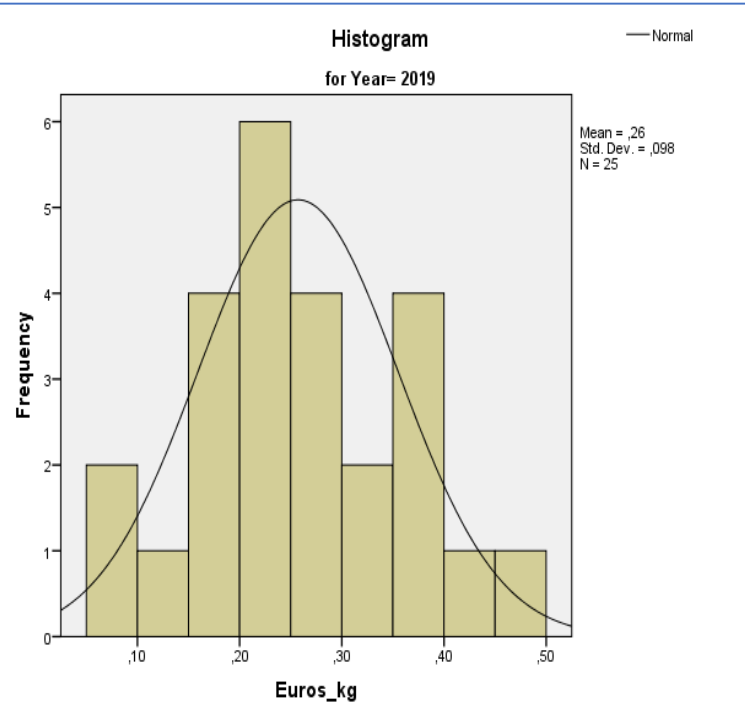
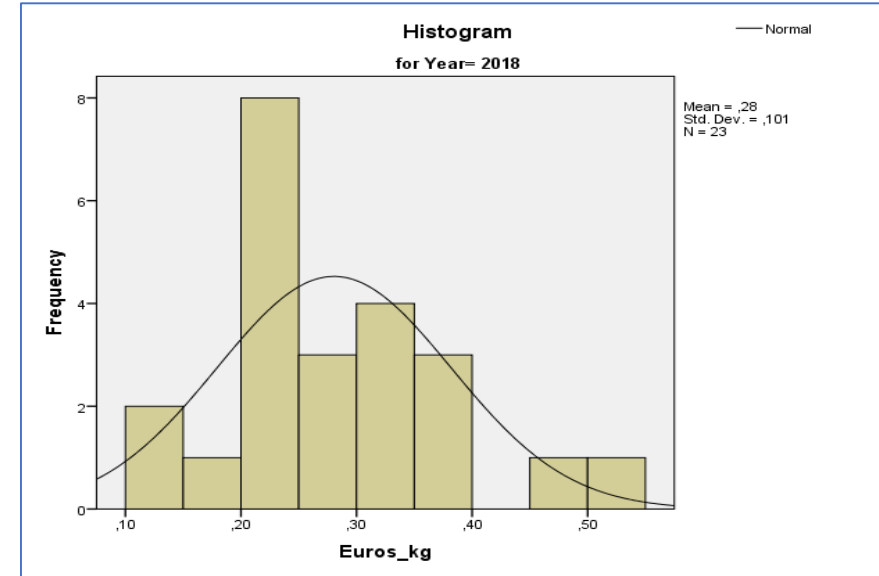
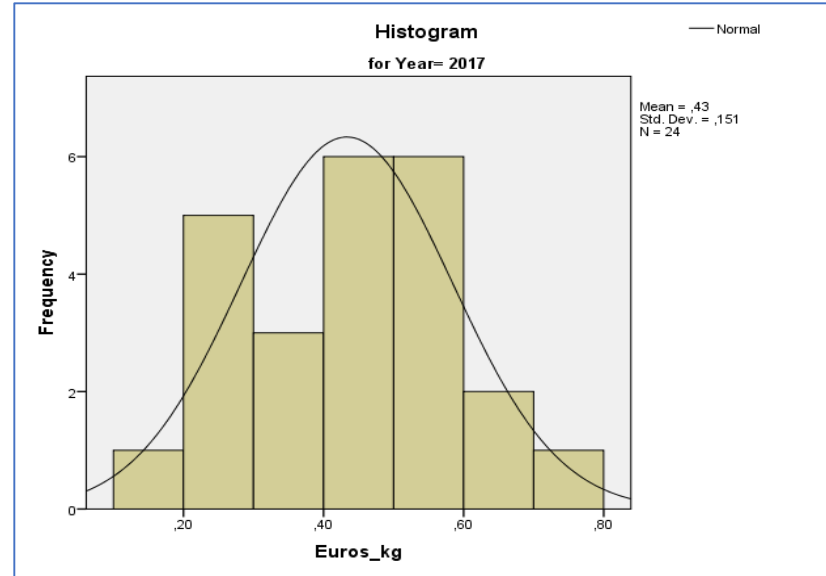
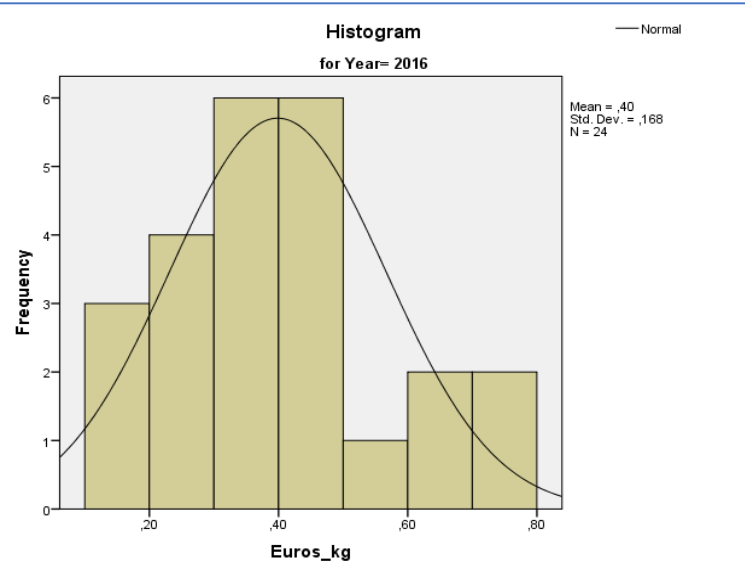
**Parellada**



**Xarel·lo**

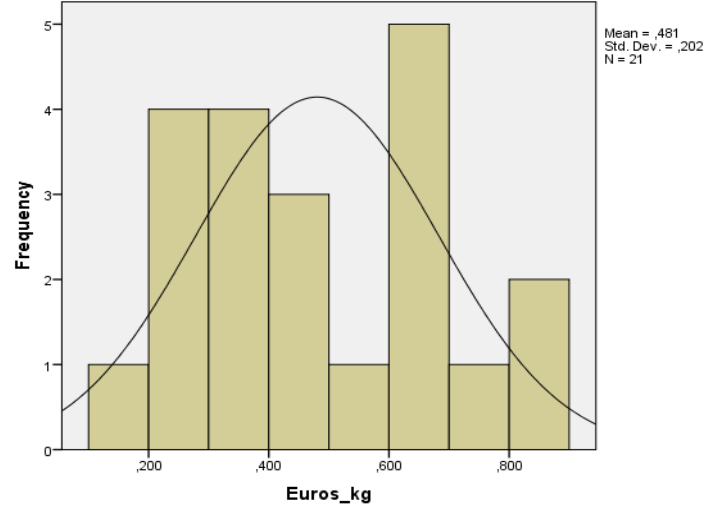


# Unit Costs Distribution: Macabeu

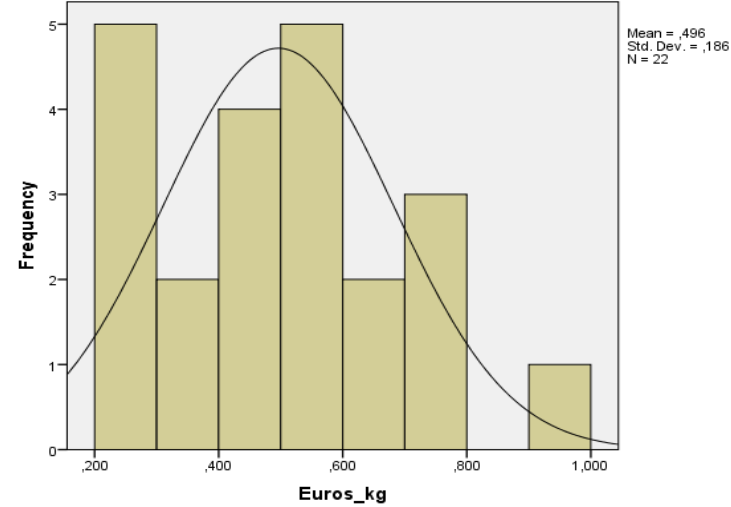


# Unit Costs Distribution: Parellada

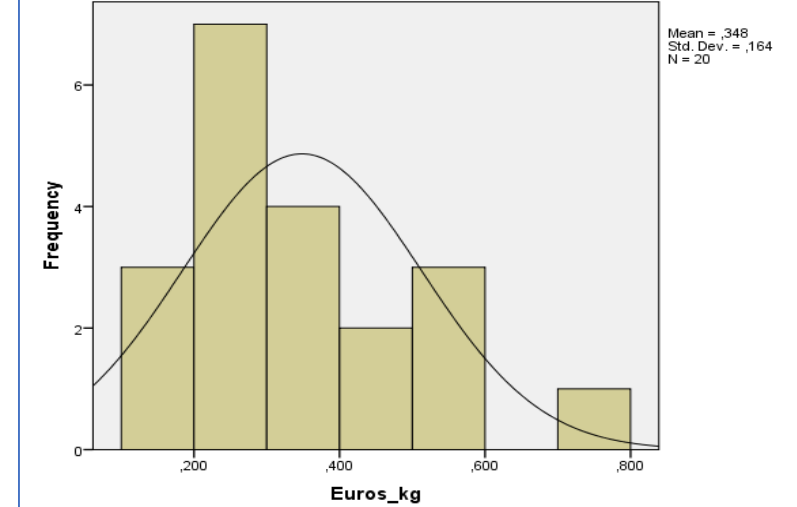
Histogram  
for Year= 2016



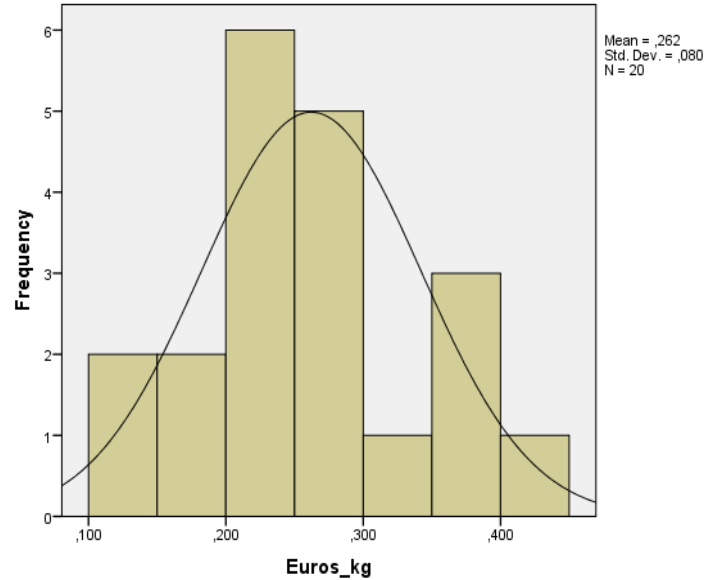
Histogram  
for Year= 2017



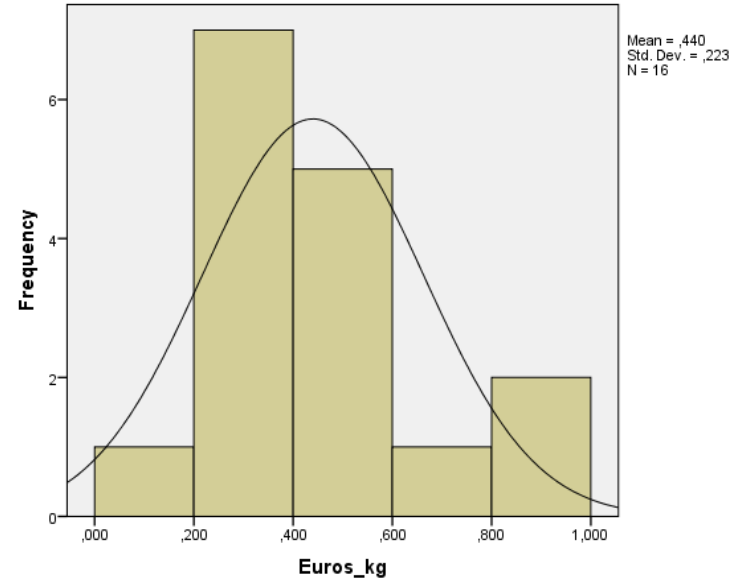
Histogram  
for Year= 2018



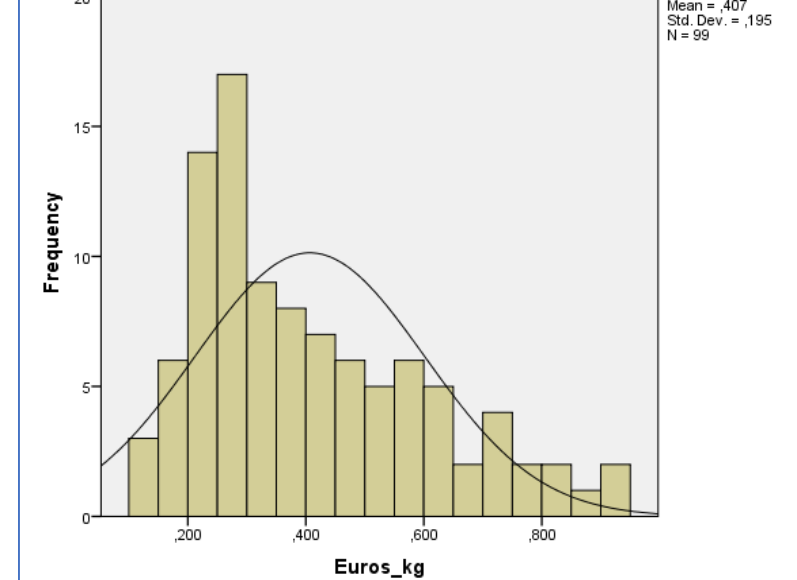
Histogram  
for Year= 2019



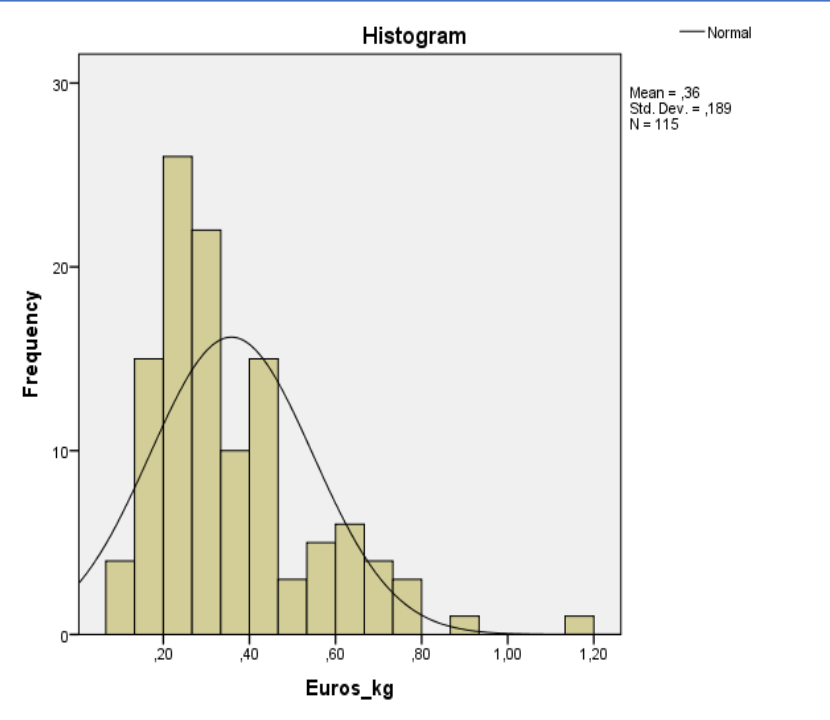
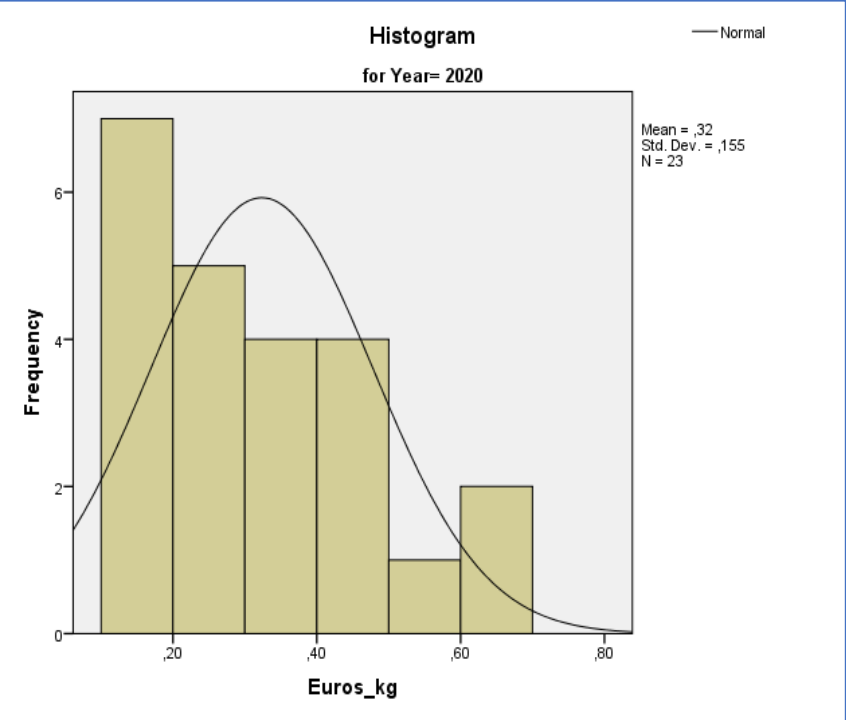
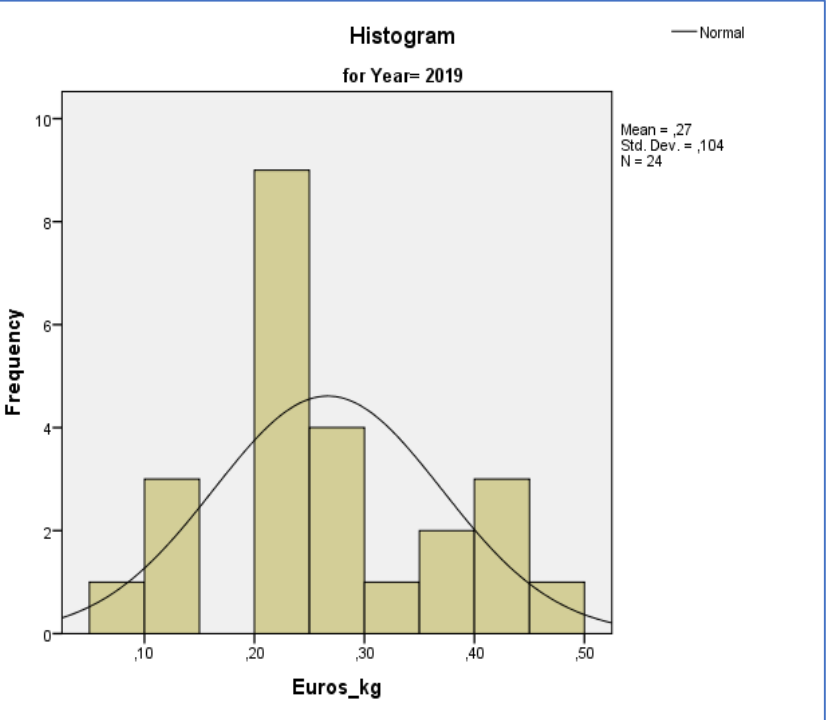
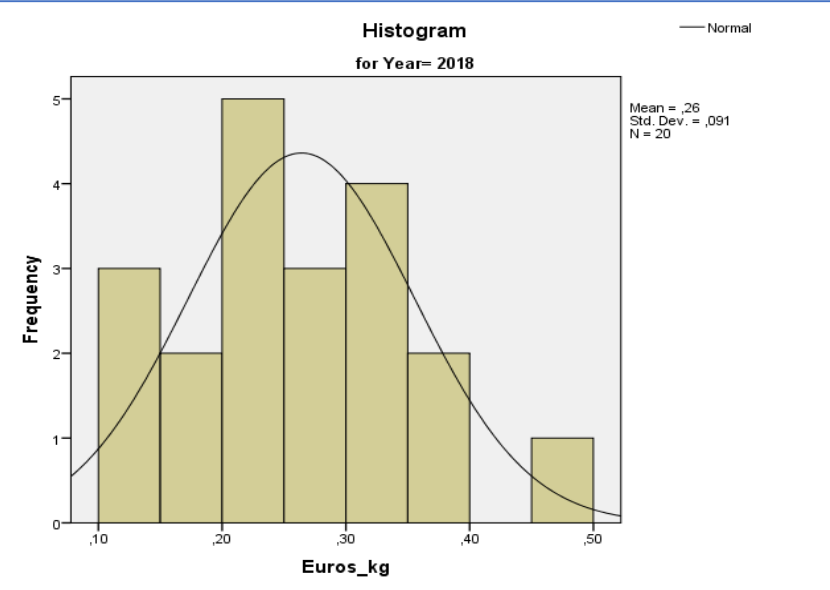
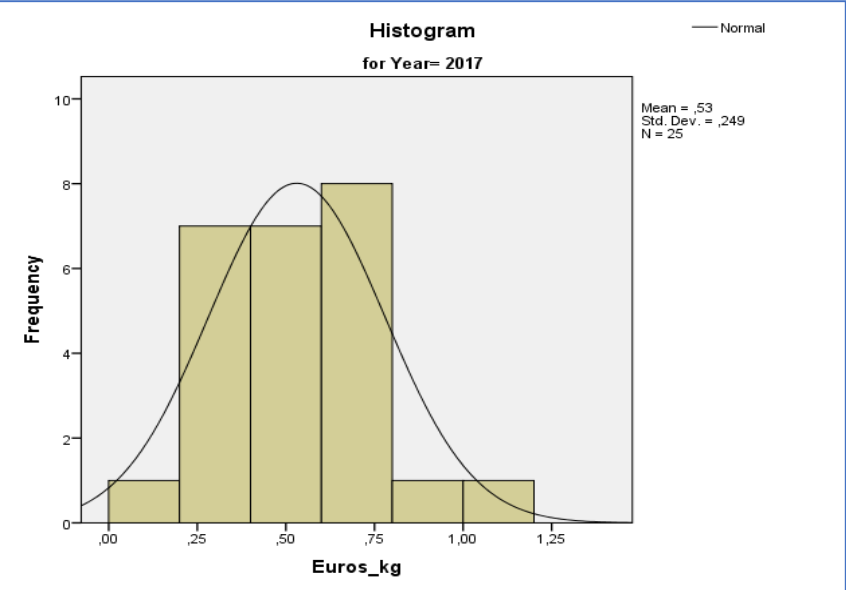
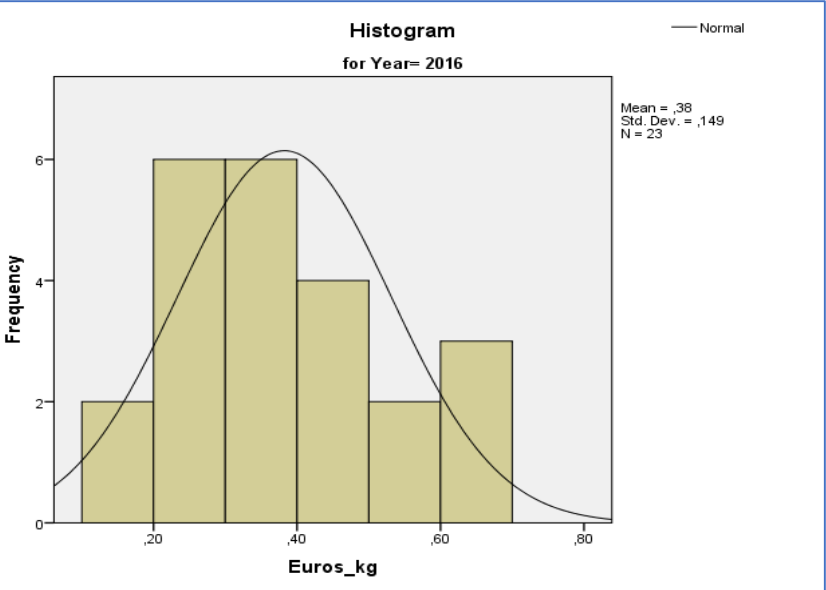
Histogram  
for Year= 2020



Histogram



# Unit Costs Distribution: Xarel-lo



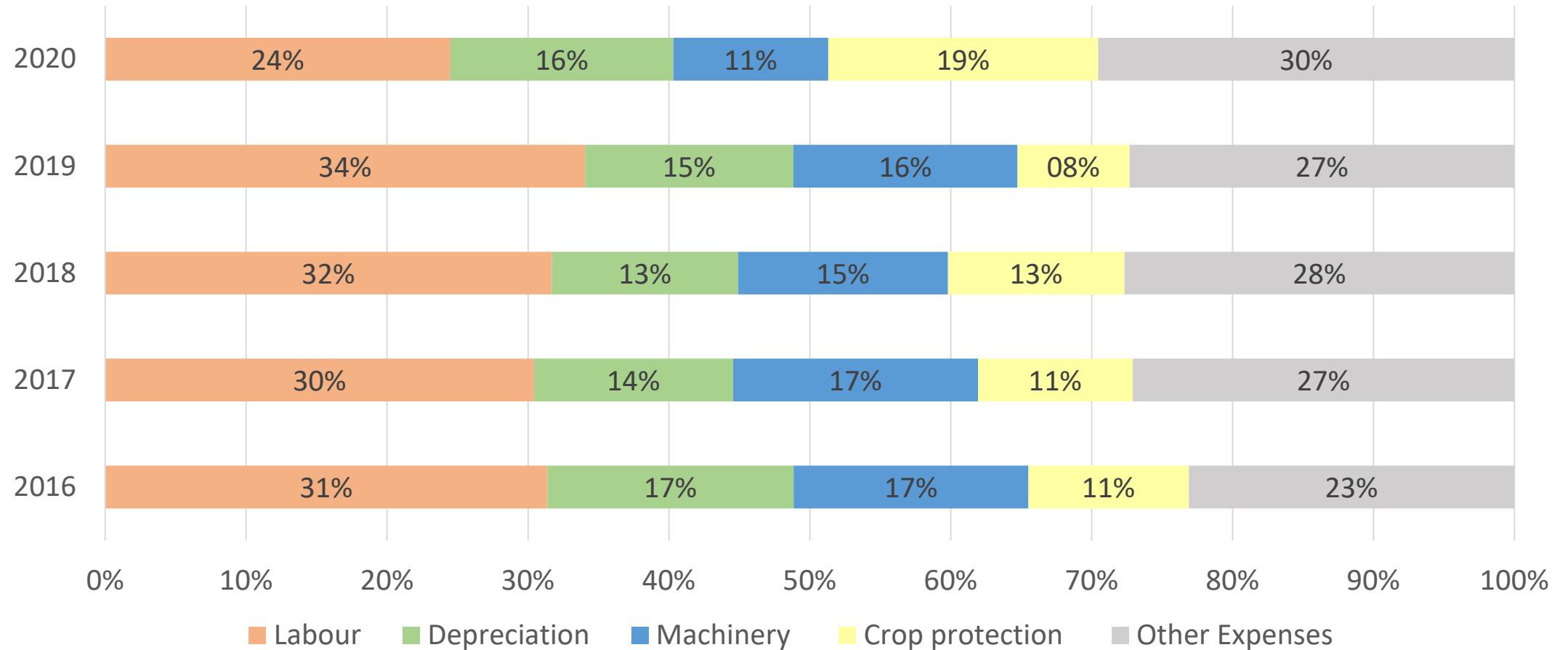
# Cost Structure Analysis

Presenting the cost structure (% over the total cost) from the main production inputs :

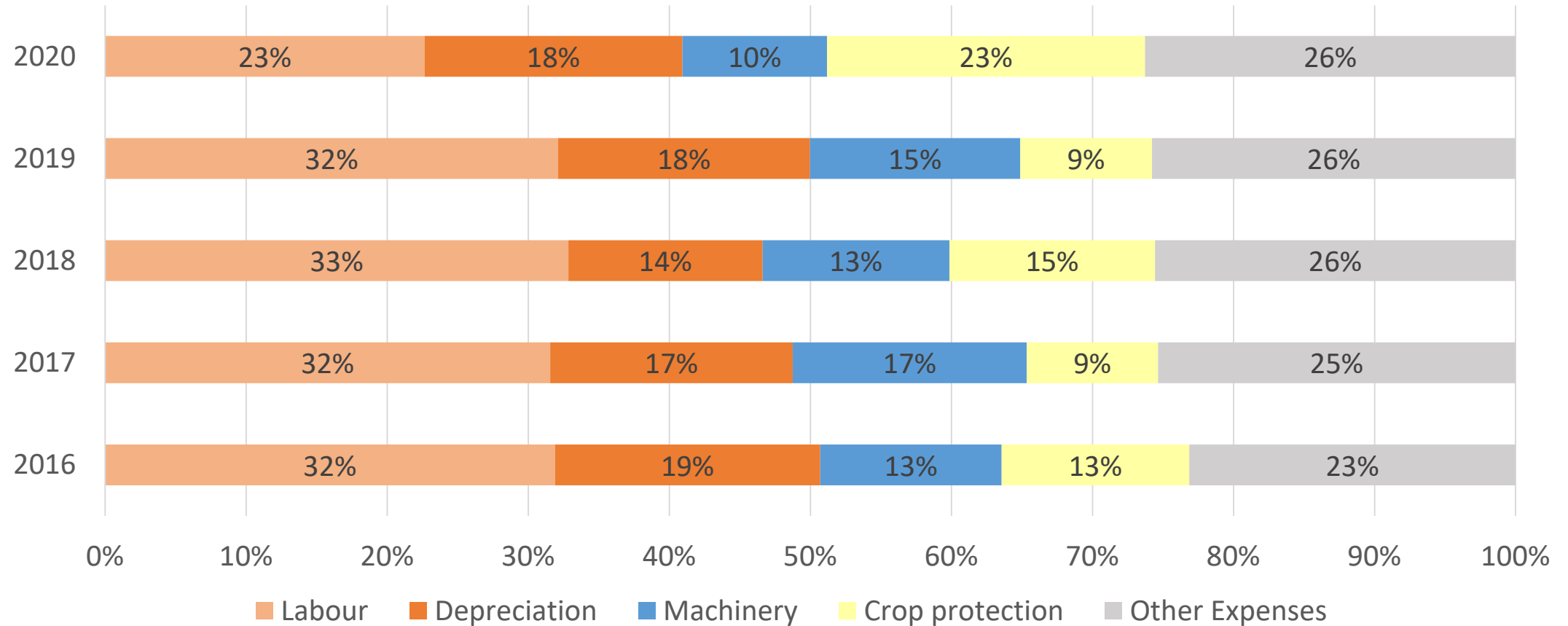
- ☐ Labour
- ☐ Depreciation
- ☐ Machinery expenses
- ☐ Crop protection
- ☐ Other expenses



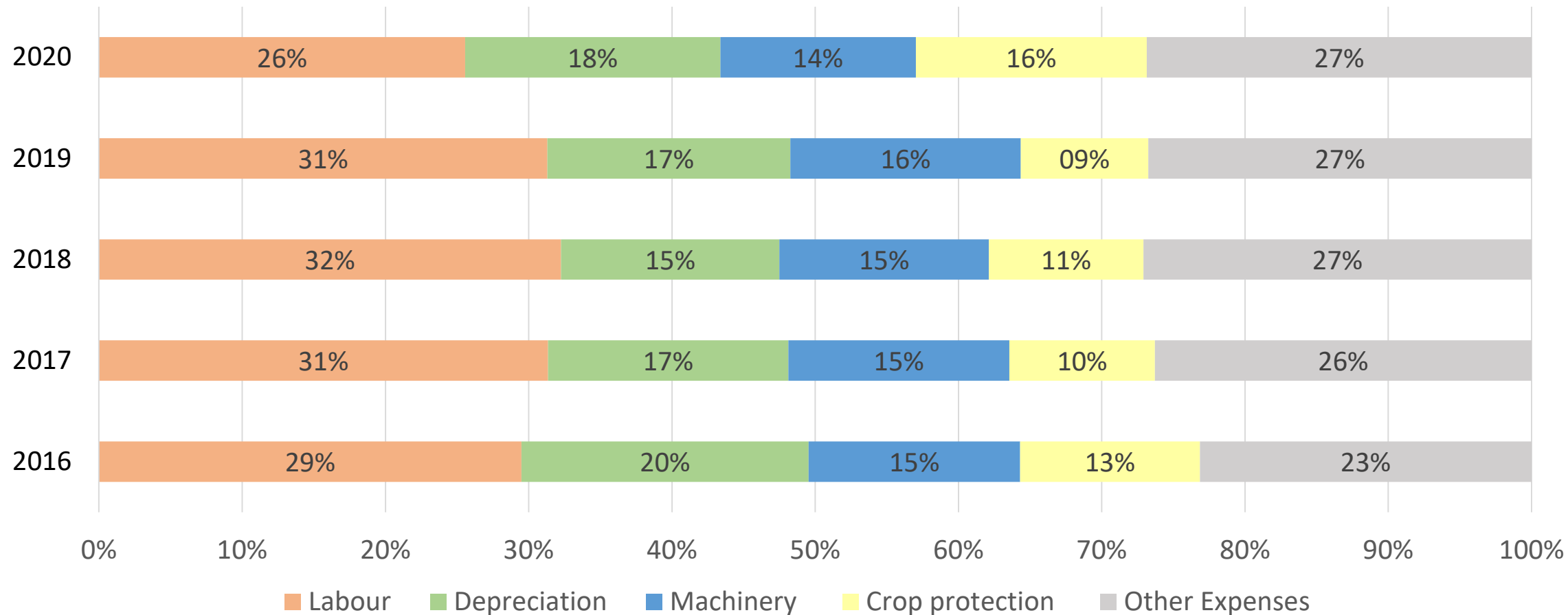
# Costs Structure: MACABEU



# Costs structure: PARELLADA



# Costs structure: XAREL-LO

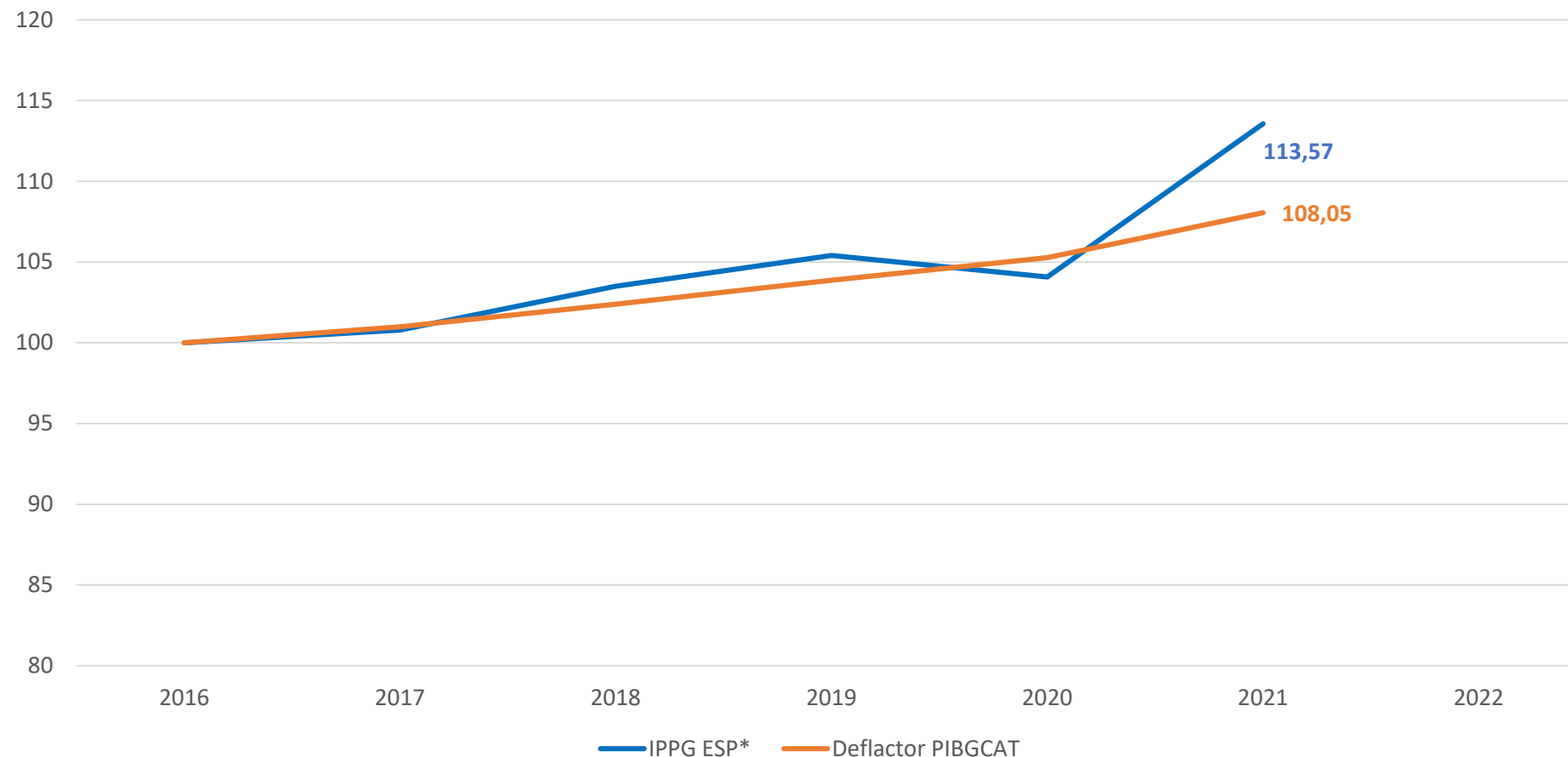


# Main Indices Evolution

To refer the real costs to the same year, we used :

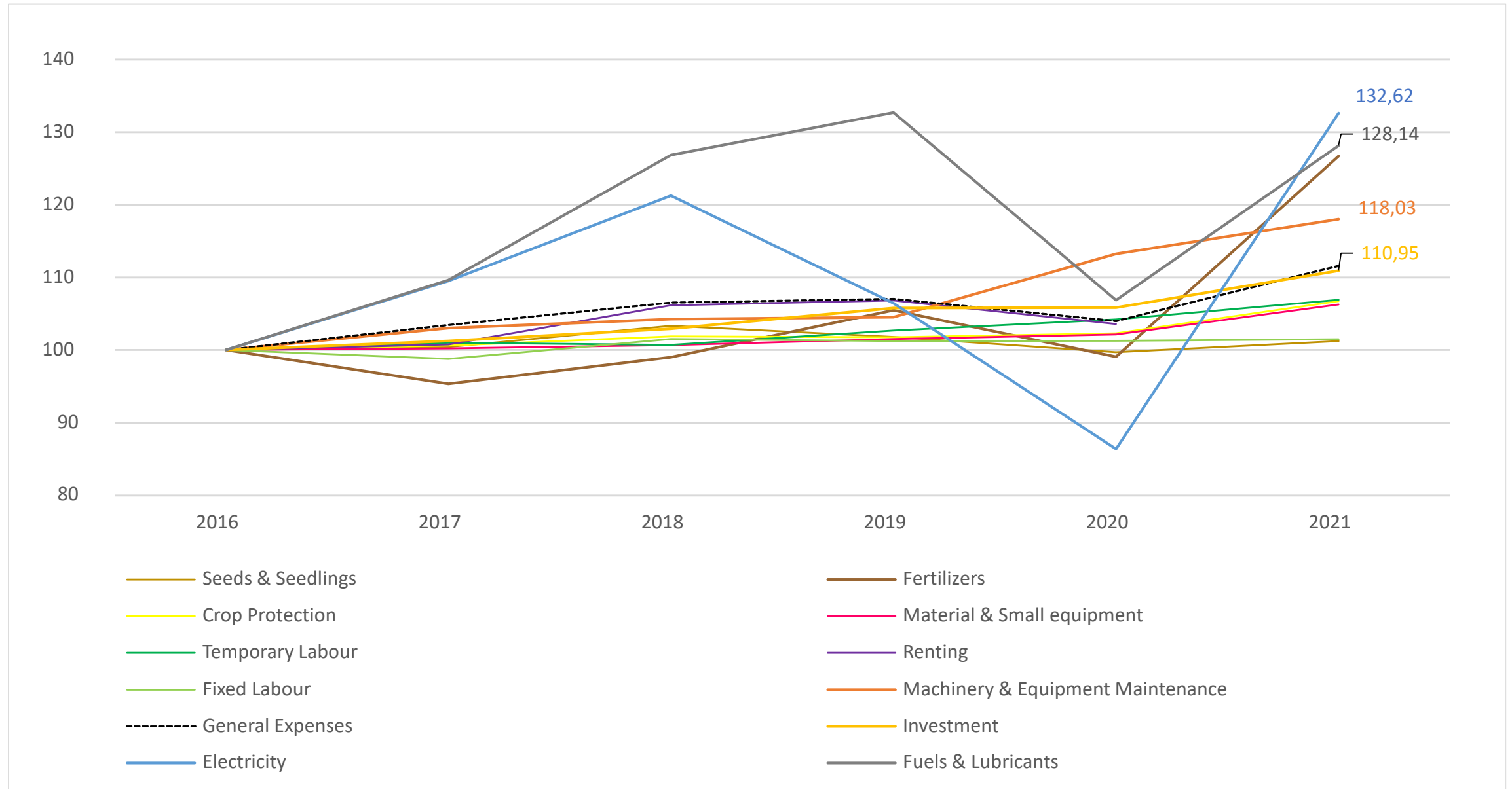
- ❑ Farm Product Price Index (IPPG in the Catalan acronym) per input category
- ❑ Source: MAPA, Ministry of Agriculture, Spain

# Main Indices Evolution



*General IPPG (for Spain) vs. Catalan GDP deflator*

# IPPG Evolution per input category



# Results: Mean (€/kg)

- The average costs are calculated for the period 2016-2020 (€/kg)
- The average cost for the growing year 2022-2023 is calculated in two steps:
  1. Every input item is updated by using its correspondent index from till December 2021.
  2. As previous index is not further available (after December 2021), each input item is updated using the average inflation index during 2022 (8.1%) , while adding their results for a total cost.

Note: Assuming the same amount of input quantities due to data availability.

# Average Total cost (€/kg): Macabeu

	Mean	Range	
Cost 2016-20 (using IPPG2020 PER INPUT ITEM)	0.35	0.27*	0.43*
Cost 2022 (using the inflation index 2022 )	0.40	0.31*	0.48*

\*The confidence interval is calculated based on *Bootstrapping technique*



# Average Total cost (€/kg): Parellada

	Mean	Range	
Cost 2016-2020 (using IPPG2020 PER INPUT ITEM)	0.41	0.30*	0.50*
Cost 2016-2020 (using the inflation index 2022)	0.46	0.35*	0.57*

\*The confidence interval is calculated based on *Bootstrapping technique*

# Average Total cost (€/kg): Xarel·lo

	Mean	Range	
Cost 2016-20 <i>(using IPPG2020 PER INPUT ITEM)</i>	0.35	0.27*	0.41*
Cost 2022 <i>(using the inflation index 2022 )</i>	0.40	0.30*	0.48*

\*The confidence interval is calculated based on *Bootstrapping technique*



**Thank you very much for your  
attention**

