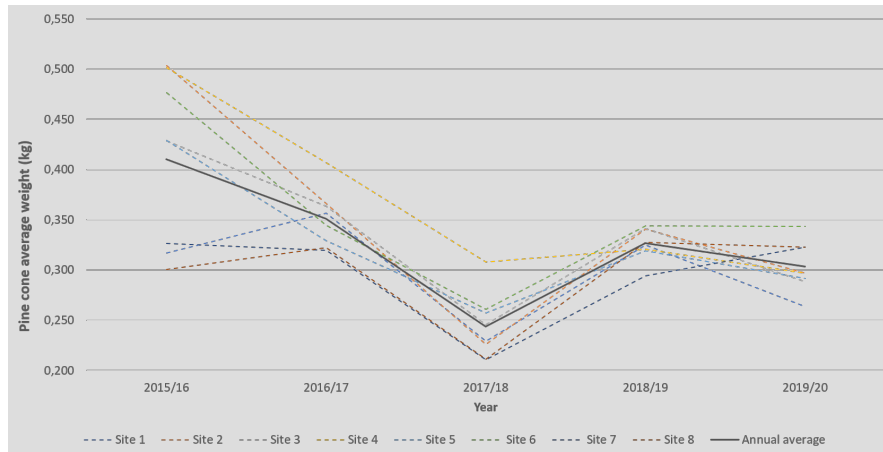


## Pine cone weight interannual variation



APFC, 2020

### Keywords

Pinus pinea

orchard plantation

forest nuts

Pine Cone

### NWFP

Wild Nuts & Berries

### Scale

National

## Context

The amount of pine cone traded is determined not only by the number of pine cones obtained, but also by their weight. For all those who commercialize, the high annual heterogeneity of pine cone production is not a surprise. The average weight of the pine cone varies from year to year, usually referring to the value of 300 g / pine cone (fresh weight).

Climatic factors and the characteristics of the stands influence the production of pine cones and the number of pine nuts / pine cone. In the latter case, the density (number of trees / ha), the age of the pines and the quality site indexes of each location are some of the parameters of the stands considered most relevant.

## Objective

This factsheet aims to highlight the interannual variation of the pine cone dimensions and present some factors that explain it, in order to contribute for the future establishment of silvicultural measures than can lead to a decrease in that variation, by promoting the conditions for bigger pine cones or selecting more suitable Forest Reproduction Materials (FRM) .

## Results

The main conclusions mentioned in the bibliography are:

- The number and size of pine cones varies year to year;
- The average weight of the pine cone is related to the climatic conditions in the spring of the last year of pine cones maturation (mainly with the precipitation);
- The amount of shelled pine nuts depends on the number and size of pine cones produced;
- The larger the pine cones, the greater the number of pine nuts they contain;
- The number of shelled pine nuts per pine cone is positively related to the total number of pine cones, that is, in years of high production, pine cones tend to be larger and have a higher number of pine nuts.



## Recommendations

- Monitor and record the amount (total weight) of pine cones produced on your farm every year;
- With those responsible for pine cone harvesting, annually identify the best producing stone pine trees - those that produce the largest amounts of pine cones and/or larger pine cones;
- Improve the knowledge on the kernel yields of your pine cones;
- Contact your Local Producers Association to find out about annual trends in terms of size and quality of pine cones in your region;
- Register your best producing trees in the National Catalog of Forest Reproduction Materials for the sale of forest reproductive material.



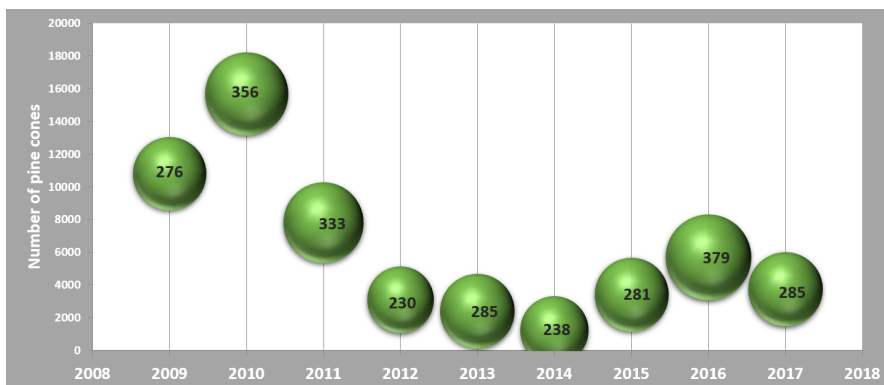
## Impacts and weaknesses

Improving the knowledge on the factors that can increase pine cone production is one of the main expected impacts. Although some factors can be manipulated, for instance through watering techniques, grafting or fertilizing, a cost-benefit analysis must be done to demonstrate the profitability of these techniques in the long term. Another relevant item to consider is the impact of these silvicultural treatments in terms of the pine cone pests presence and intensity.



## Future developments

Several studies are being carried out about fertilization and fertirrigation in stone pine plantations and its effects in terms of pine cone productivity and average weight, namely in an operational group named "[GO Fertipinea](#)" in order to establish a guide on stone pine fertilization.



Annual average pine cone weight and total production (n.º) in a site located in the Coruche County, Portugal. APFC, 2018. The numbers inside the spheres represent the pine cone annual average weight.

## Further information

GO FertiPinea - [www.unac.pt/index.php/id-i/grupos-operacionais-accao-1-1-pdr2020/fertipinea](http://www.unac.pt/index.php/id-i/grupos-operacionais-accao-1-1-pdr2020/fertipinea)

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Author	Rapporteur	Published on
Contact <b>Conceição Santos Silva,</b> <a href="mailto:mcsilva@unac.pt">mcsilva@unac.pt</a> , <a href="http://www.unac.pt/">http://www.unac.pt/</a>	Name <b>Conceição Santos Silva</b>	<b>30 June 2020</b>
Organisation <b>UNAC - Forest Mediterranean UnionAPFC - Coruche Private Forest Landowners Association</b>	Organisation <b>União da Floresta Mediterrânica (UNAC)</b>	
Country and region <b>Portugal, Ribatejo</b>	Email <b>(hidden)</b>	

### About INCREDIBLE Project

INCREDIBLE project aims to show how Non-Wood Forest Products (NWFP) can play an important role in supporting sustainable forest management and rural development, by creating networks to share and exchange knowledge and expertise. 'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) promotes cross-sectoral collaboration and innovation to highlight the value and potential of NWFPs in the region.



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