



ΔΙΑΠΕΡΙΦΕΡΕΙΑΚΟ ΣΕΜΙΝΑΡΙΟ/ INTERREGIONAL WORKSHOP

Μανιτάρια και τρούφες: τρόποι βελτίωσης της ποιότητας και κατάστασης της αγοράς

Mushrooms and truffles: how to improve quality and market status

The INCREDible project. Collecting knowledge from research and practice

Dr Kalliopi Stara

Scientific collaborator of the University of Ioannina /Project INCREDible H2020

Laboratory of Ecology, Departement of Biological Applications and Technology, University of Ioannina



PALASE /University of Ioannina Lambriadios Research Station

Ano Pedina, 8 . 6 . 2019

Non Wood Forest Products (NWFPs) & Non Timber Forest Products (NTFPs)

NWFPs are of “biological origin other than wood derived from forests, other wooded land and trees outside forests”.

NWFPs can be derived from trees, understory plants, fungi or animals. They are collected from natural forests, or produced in plantations and agroforestry systems.

Examples include mushrooms, truffles, bark (e. g. cork), nuts, acorns and other tree fruits, resin, understory berries, medicinal and aromatic plants, fodder and litter for livestock, honey and game (FAO 1999),

NWFPs

Exclude all wood

NTFPs

Do not exclude wood other than timber such as fuel-wood, artisanal use of wood or charcoal

In Greece we also use the term «secondary harvests of forest ecosystems»





Wild Forest Products Fair



**WILD FOREST
PRODUCTS FAIR**
GLYNLLIFON, NORTH WALES
FRIDAY 27TH MAY 2016

1

Καρποί κέδρου -
Juniper berries



2

Χειροτεχνήματα από ιτιά-
Willow crafts



3

Μελάνι από
κηκίδες
βελανιδιάς -
Oak gall ink



4

Βαφές από λειχήνες -
Lichens dye



5

Squirrel pâté



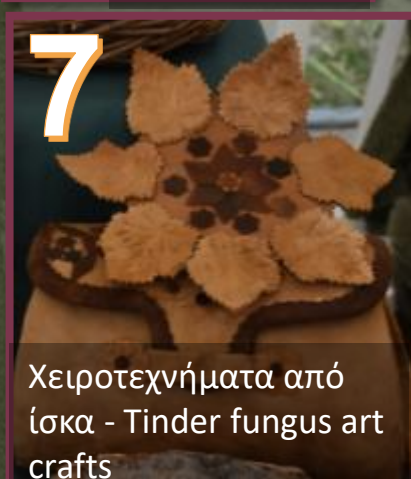
6

Wild bluebells are harvested
legally under licence



7

Χειροτεχνήματα από
ίσκα - Tinder fungus art
crafts



8

Βούρτσες και δερμάτινες θήκες από
αγριογούρουνο - Wild boar brushes and leader

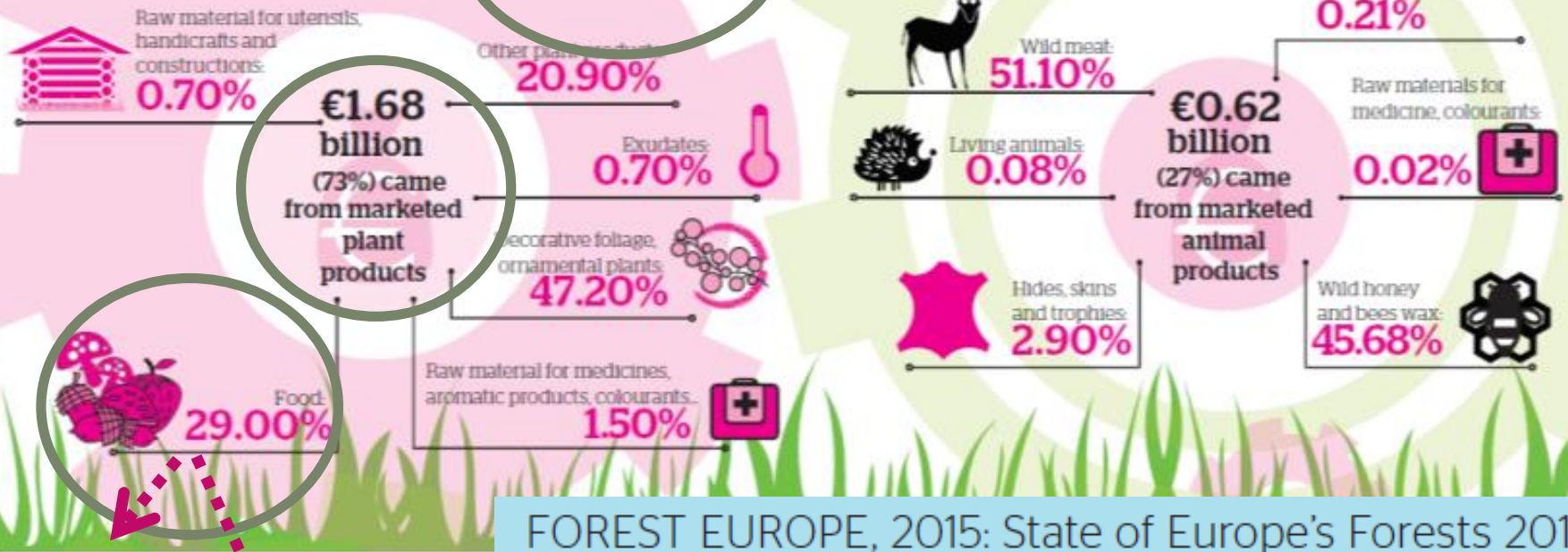


9

Χυμός από σημύδα - Birch sap



Total value of marketed non-wood goods reached **€2.3 billion** in Europe, of which:



FOREST EUROPE, 2015: State of Europe's Forests 2015.



USEFUL FUNGI

THE GLOBAL MARKET FOR EDIBLE MUSHROOMS IS ESTIMATED TO BE WORTH

US\$42 BILLION
PER YEAR

Kew Royal Botanic Gardens 2018. State of the world's fungi.

Mycophilic or Mycophobic?

Lack of a legislative framework
specialized on mushrooms at the
national level in Greece

Greece

England

Germany

Spain (Castile)

France

Italy

Russia

Poland

Slovakia

Czech republic

Spain (Catalonia)

Spain (Basque country)

France (Provence)

Mycophobia:

the fear of mushrooms and fungi

Mycophilia/ Mycolatria:

the hobby of hunting and foraging
wild edible mushrooms

VALENTINA PAVLOVNA WASSON AND R. GORDON WASSON 1957.

Mushrooms, Russia and history. Volume II Pantheon Books, New York.



Stara K, Bonet JA, Wong JLG, ... Zgrablić Ž. Non Timber Forest products linguistic diversity. The case of mushrooms. Wild Forest Products in Europe, [Star Tree](#) conference. Barcelona, Spain, 13-14 October 2016.

Mycophilic or Mycophobic?



FUNGAL CONSERVATION IN A CHANGING EUROPE: The Challenges Ahead

Ohrid, Former Yugoslav Republic of Macedonia [FYROM], 1 - 6 October 2017

The taste of the wild. Conceptualizations of mushrooms in modern Greece

Dr. Kalliopi Stara

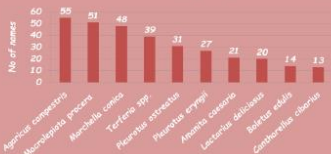
Department of Biological Applications and Technology, University of Ioannina/kstara@cc.uoi.gr

Mushrooms as a food

Wild forest mushrooms are among the most important Non Timber Forest Products. They have been collected by humans worldwide for thousands of years to be used as medicine, tinder, handicrafts, cloths, but most notably as food. It has been estimated that there are over 200 mushroom genera, which contain species of use to people worldwide, of which 46% (a total of 1,154 species recorded from 65 countries) are used as food (Bao 2004).

Edibility is culturally dependent and in different cultures mushrooms are conceptualized as desirable or forbidden, luxurious or famine food. In Ancient Greece and Rome mushrooms were a desirable food, in Byzantium and Medieval Europe were considered as the food of the rural and the poor, while from the end of the 18th century they reappeared in French and Italian cuisines as rare, sophisticated and fashionable dishes.

Mushroom local names in Greece (adapted by Keltelmidis 1993)



Mushroom picking

Nowadays, wild edible mushrooms represent a significant growing dietary supplement for many Europeans, but also an opportunity for visiting the forest. E.g. in Catalonia/Spain, wild mushroom picking is the favorite forest activity of the locals, attracting more than 20% of the population; 12 million people pick mushrooms at least once per year (Bonet et al. 2016).

In Greece the first mushroom club was established in 1998. Today there are 1 national and 8 regional associations that organize annual meetings, mushroom hunting and public awareness events. Moreover there is an increase in publications concerning mushrooms, mushroom products and museums. Lastly the town of Greece (13137 int.) in West Macedonia is building the first 20 years mushroom museum.



The poor man's food... the rich man's dainties

Mushrooms for rural populations used to be an occasional food. In prewar Greece they use to call mushrooms "the meat of the poor people". Past mycophagy could be underestimated as mushrooms used to be an everyday dish or famine food, never present in special meals or feasts (Vrachionidou 2007).

Recently we have a turn to wild / traditional foodies that are advertised as natural, healthy, organic and imagined as coming from "pristine forests", thus opposite to the global industrial food system. What also makes a difference are new preferred species and new ways of cooking.



Mediterranean forests challenges

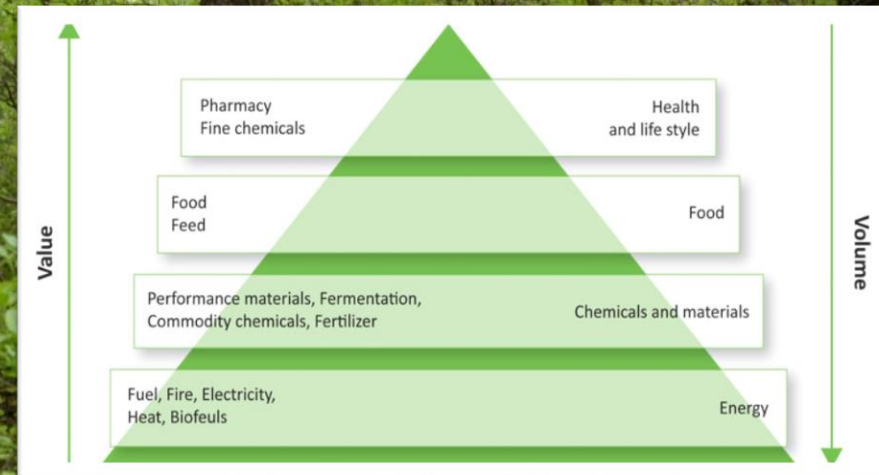
Rural abandonment
Rapid expansion of unmanaged forests
Increased risk of catastrophic forest fires

Rural and peri-urban populations
Pressure on forest resources

Lack of well-developed forest products value chains

Non-Wood Forest Products (NWFP):
Bio-based economy

Combining material production, with territorial marketing strategies and innovative commercialization channels for goods and services will be necessary



What is INCREdible?



- A Thematic Network to bridge knowledge, innovation and practice
- Is about mobilising knowledge and making innovation happen!
- Funded by EU Commission's H2020
- November 2017 to October 2020



It is organised in iNets

Scoping Seminars

iNet	Location	Contact
Resin	Valladolid, Spain	Javier Calvo (CESEFOR): javier.calvo@cesefor.com
Mushrooms & truffles	Soria, Spain	José A. Bonet (CTFC) jantonio.bonet@ctfc.cat
Nuts & berries	Lisbon, Portugal	Sven Mutke (INIA) mutke@inia.es
Cork	Sardinia, Italy	Nuno Calado (UNAC) ncalado@unac.pt
Aromatic & medicinal plants	Tunis, Tunisia	Ibtissem Taghouti (INRGREF) ibtissem.taghouti@gmail.com



INCREDIBLE Partners



-  **Cork iNet**
-  **Resins iNet**
-  **Wild nuts & berries iNet**
-  **Mushrooms & truffles iNet**
-  **Aromatic & medicinal plants iNet**

Coordinator



Partners



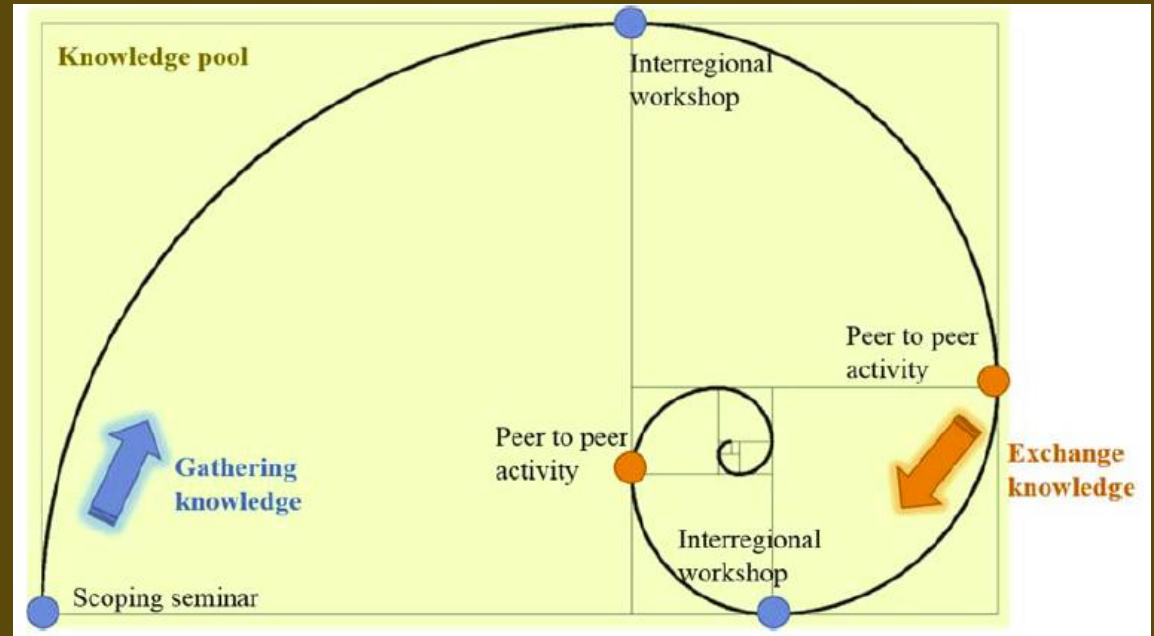
From Science to Practice

Interregional workshops

Collection of knowledge from research & practice

Innovation challenges

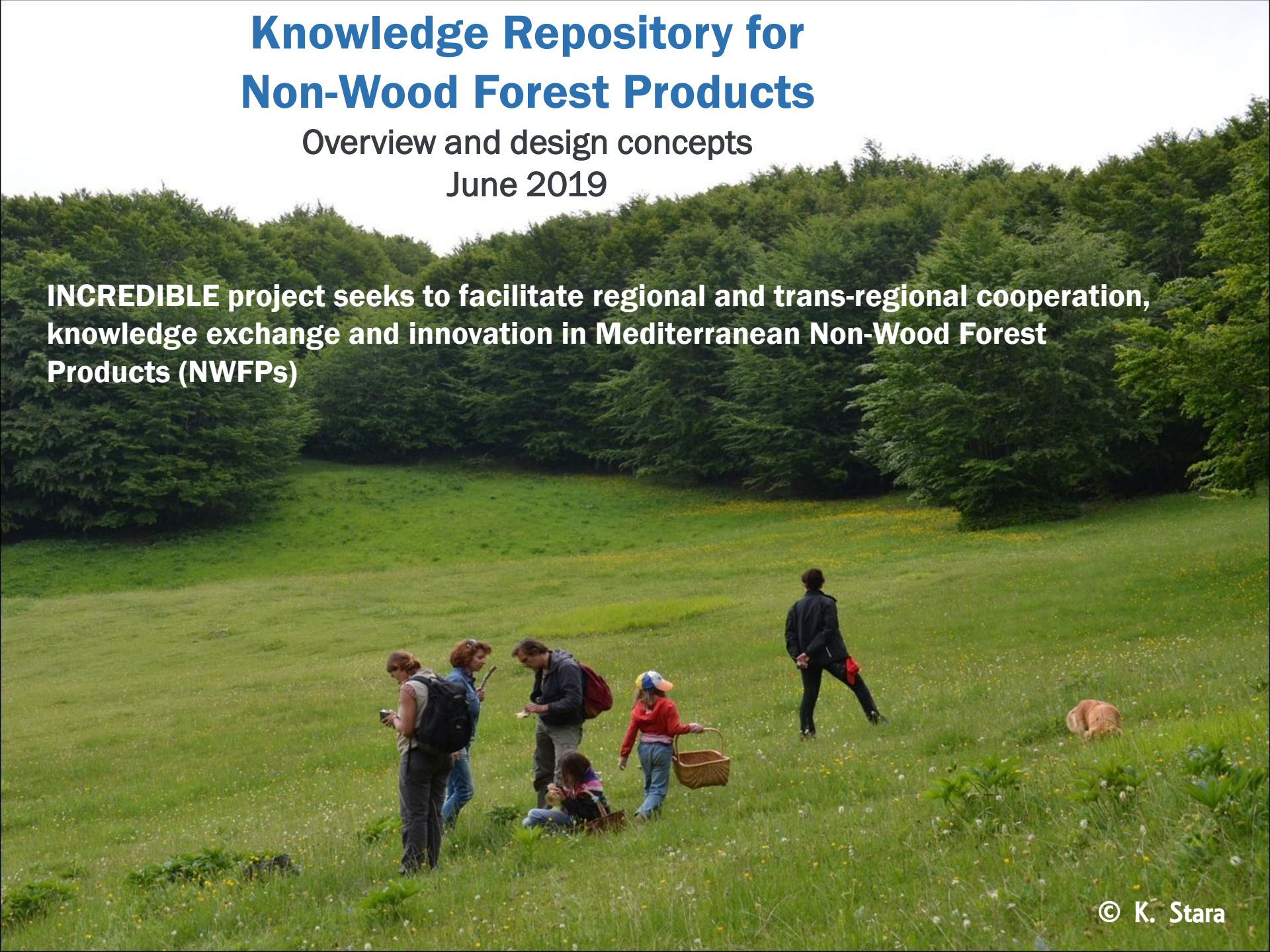
Policy




Knowledge Repository for Non-Wood Forest Products

Overview and design concepts
June 2019

INCREDIBLE project seeks to facilitate regional and trans-regional cooperation, knowledge exchange and innovation in Mediterranean Non-Wood Forest Products (NWFPs)




INCREDIBLE Factsheets (PDF)



Theme 4 Climate change adaptation & forest health
Position in the Value Chain Forestry
Factsheet type Practice

Postponing cork extraction under severe and prolonged drought events



Cork sampling is vital to inform decisions on when to carry out cork debarking. Photo: Joana A. Paulo

NWFP
Cork

Keywords
Precipitation Cork caliper Cork age
Debarking Cork

Scale
National Subnational

Objective

Increase the cork market price of the extracted cork and the equivalent annual annuity of the farm

Context

Cork thickness is one of the parameters considered for industrial classification of cork quality. This variable is directly related to cork price. The increase of cork thickness implies the increase of annual cork growth and/or the increase of the cork debarking rotation period. Ultimately, this will have an impact on the equivalent annual annuity of the farm. Cork sampling is crucial for evaluating cork thickness, and for accessing the need of delaying the cork debarking period, in order to increase cork thickness and ultimately the cork price.

Results

For discount rates of 0.5% and 2% the impact of different cork debarking rotation (CDR) on equivalent annual annuity (EAA) from 9 to 14 years is low. In stands characterized by high to average site index values or high to medium cork quality characteristics, CDR of 9 and 11 years are associated with similar values of EAA. The variation of the CDR in stands characterized by low site index values and/or low cork quality characteristics did not have a relevant effect on the variation of EAA. For the simulations carried out with a discount rate of 5% the EAA decreases with the increase of CDR, indicating that the minimum legal value of 9 years for CDR should be applied.

Recommendations

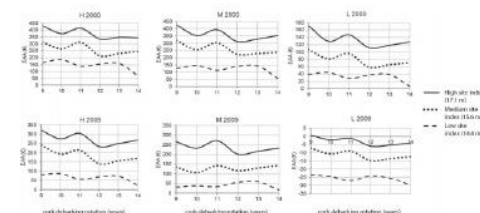
Climate is known for affecting cork annual growth and ultimately cork thickness. During the last years an increase of the frequency of severe drought events was observed in Portugal. As a result, for the same debarking rotation period, cork production shows a decreasing trend of average cork thickness. Detailed knowledge of cork and stand characteristics obtained by the collection of cork samples in a forest inventory, the consideration of climate conditions, namely precipitation regimes, during the period of cork growth, and the collection of updated information on cork prices structure and values, are essential drivers for the farmer's decision on the accomplishment or delaying of the debarking operation.

Impacts and weaknesses

Although cork annual growth is known to be much related to climate, namely precipitation regimes, it is also highly variable between farms, in different areas of one single farm, and even between trees geographically close. The importance of site conditions such as soil depth and texture, management practices and tree genetic variability implies that management operations, such as the cork debarking, should be decided for homogeneous management areas. This entails an increase investment in monitoring activities such as forest inventory and cork sampling. Cork price fluctuations and uncertainty are also a relevant driver for farmer's, that may affect the decision on cork debarking or postponing.

Future developments

Increase knowledge, that allows the quantification of the impact of soil and topographic characteristics and management operations (e.g. fertilization) on cork growth, is needed. This knowledge may be included in the management and decision support tools such as forest growth models and simulators, that should be accessible for managers.



Equivalent annual annuity (EAA) for discount rate of 0.5% as a function of cork debarking rotation for stands with different site index (14.4 m, 15.6 m or 17.1 m).

From: Paulo, J. A., Tomé, M. 2017 Using the SUBER model for assessing the impact of cork debarking rotation on equivalent annual annuity in Portuguese stands. Forest systems 26(1) e0008.

Contact	Author
Organisation ISA Country Portugal Lead Joana Amaral Paulo joanaap@isa.ulisboa.pt https://fenix.isa.ulisboa.pt/qubEdu/homepage/isa14126/	Name Margarida Tomé Organisation ISA e-mail magatome@isa.ulisboa.pt

Further information

Paulo, J. A., Tomé, M. 2017 Using the SUBER model for assessing the impact of cork debarking rotation on equivalent annual annuity in Portuguese stands. -09931Forest systems. 26(1), e008, 11 pages.
<https://doi.org/10.5424/fs/2017261>

Paulo, J. A., Tomé, M. 2017 Using the SUBER model for assessing the impact of cork debarking rotation on equivalent annual annuity in Portuguese stands. -09931Forest systems. 26(1), e008, 11 pages.
<https://doi.org/10.5424/fs/2017261>

Paulo, J. A., Tomé, M. 2017 Using the SUBER model for assessing the impact of cork debarking rotation on equivalent annual annuity in Portuguese stands. -09931Forest systems. 26(1), e008, 11 pages.
<https://doi.org/10.5424/fs/2017261>

About INCREDIBLE Project

INCREDIBLE 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. This project has received funding from the European Union's H2020 research and innovation programme under grant agreement No. 774652.

Knowledge repository for Non-Wood Forest Products (NWFP)



Description of the repository... Elecaborem que parions edipsapis sam, coribus deliquis iunt occusda doloribus por maximagnatur serum debis endaes sunt et, nis exerciassit autem evelles enisquibus rese ressunt quuntem con proris ut ut ma simodi incia enimet qui ius si dolut.

CORK



Postponing cork extraction under severe and prolonged drought events

30 May 2019

Increase the cork market price of the extracted cork and the equivalent annual annuity of the farm.

[READ MORE](#)

AROMATIC & MEDICINAL PLANTS



New techniques on cultivating aromatic & medicinal plants for essential oils...

[READ MORE](#)

CORK



Genetic variation of cork oak: a tool for regeneration of cork oak woodlands...

[READ MORE](#)

RESINS



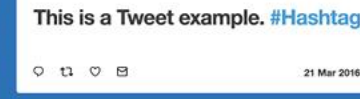
Resin extraction as a building block of sustainable forest multifunctionality...

[READ MORE](#)

WILD MUSHROOMS & TRUFFLES

WILD NUTS & BERRIES

AROMATIC & MEDICINAL PLANTS



INCREDIBLE repository will be developed as a microsite

Content will be stored in the Oppla platform

This means that:

- The INCREDIBLE repository will have its own design and structure.
- INCREDIBLE content will be stored in Oppla and appear seamlessly the INCREDIBLE repository.
- Content can also be shared with other websites via the Oppla API.
- All content is archived in Oppla and made available after the project has ended.



Oppla is a **community**

Oppla is also
a marketplace

A place where
ideas can grow



The EU repository of **Nature-Based Solutions**



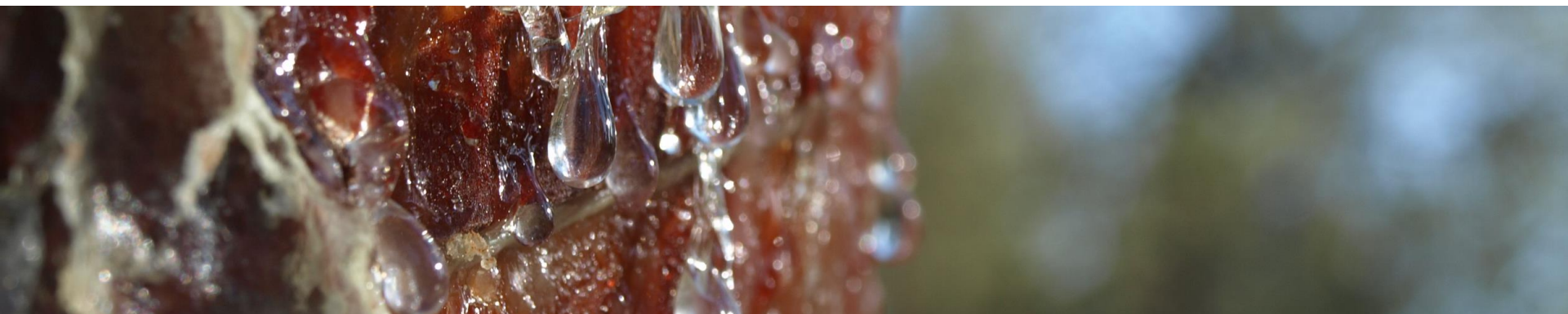
www.oppla.eu

 info@oppla.eu

 [@OpplaCommunity](https://twitter.com/OpplaCommunity)

Send contributions to your local iNet contact point:

Name	email	country



Share your knowledge on the repository!

Thank you for your attention