



*Department of Science
for Nature and
Environmental
Resources of the
University of Sassari*



*Forestry and Wood
Research Centre of the
Italian Council for
Agricultural Research and
Economics*



ISE
Istituto per lo Studio
degli Ecosistemi

*Institute of Ecosystem Study of the
National Research Council,
organization unit of Sassari*



INTERNATIONAL CONGRESS ON CORK OAK TREES AND WOODLANDS

**Conservation, Management, Products
and Challenges for the Future**



3° National Congress of Cork

Sassari, May 25 – 26 2017

SPONSORSHIP



REGIONE AUTONOMA DE SARDIGNA
REGIONE AUTONOMA DELLA SARDEGNA



Comune di Sassari



Fondazione
di Sardegna



CONFINDUSTRIA
Centro Nord Sardegna



CORPO FORESTALE
E DI VIGILANZA AMBIENTALE

Forestas

*Agenzia forestale regionale pro s'isvilupu de
su territòriu e de s'ambiente de sa Sardinia*
Agenzia forestale regionale per lo sviluppo
del territorio e dell'ambiente della Sardegna



REGIONE AUTONOMA DE SARDIGNA
REGIONE AUTONOMA DELLA SARDEGNA



EFI

European Forest Institute



Accademia Italiana Scienze
Forestali



Società Italiana di Selvicoltura
ed Ecologia Forestale



Società di Ortoflorofrutticoltura
Italiana

ISBN **978-88-907678-0-7**

DOI **<https://doi.org/10.14275/978-88-907678-0-7>**

Tipiditappi



*Sughero d'albero fatto a pezzetti,
tipi di tappi , quelli che vuoi.
Tagliali lunghi, tagliali stretti,
tipi di tappi, fatti da noi.
Taglialo bene, taglialo tondo,
tipi di tappi, quanti ne vuoi.
Tappi di sughero per tutto il mondo,
tipi di tappi fatti da noi.*
(Cecchi-Tognolini, Filastrocche e Canzoni)

Dettoni S., Fligheddu M.R., Cillara M. Editors

Printed by
Università degli Studi di Sassari
Centro Stampa

POSTER

Session 5: Cork supply chain technology, supply chain arrangements, markets and trade foresight, product and process innovation



MONITORING RAW CORK TCA CONTENT IN SARDINIAN WOODLANDS

Urgeghe PP.^{1*}, Zucca G.M.², Dettori S.², Filigheddu MR.², Usai A.², Canu S.³, Motroni A.³, Petretto G.⁴

¹ Department Agraria, University of Sassari

² Department of Science for Nature and Environmental Resources

³ Agenzia regionale per la protezione ambientale della Sardegna (ARPAS)

⁴ Dipartimento di Chimica e Farmacia, University of Sassari

*Corresponding Author: purgeghe@uniss.it

The studies on stopper contamination by TCA have focused on manufacturing phase and on relations between the wine and the cork. Less numerous are the forest and environmental monitoring research useful to evaluate whether different management models of the cork stands may have an influence on the process. In Sardinia, critical levels of raw cork contamination were reached in the last decade in an increasing number of forests thus increasing the contribution of technical corks and micro-granulation on the overall industrial production. In addition, industries owners push their suppliers to limit the presence of undergrowth forest vegetation, lowering relative humidity inside the forest in order to contain the action of biotic agents such as *Armillaria*. The use of heavier machinery for the shrubs thinning leads to soil compaction, new vegetation destruction, loss of cork forest biodiversity favoring, inter alia, the lepidopteran defoliating pulses, but reducing the risk of fire. Global climate change may enhance the action of fungal agents in the formation of TCA in the raw material.

This study involved the collection of ten-year-old cork samples from six public cork oak forests (with a high and rich undergrowth) vs a private no-bushy (silvopastoral) woodland. The raw cork planks were immediately transformed into cylinders having the dimensions of the standard stoppers, and then used for the TCA determination in accordance with the ISO 20752 protocol (GC-MS). The results show a wide variability between both trees and forests, with values generally lower than a fixed threshold of attention in 4 ng L^{-1} , but with the presence of outliers plus variants trees that have content in TCA higher than 20 ng L^{-1} . The microclimate monitoring of the main cork oak woodlands of Central and Northern Sardinia (the seven years 2010-2016 versus the thirty years 1971-2000) highlights an increase in maximum air temperature of December up to $4 \text{ }^\circ\text{C}$ and in mean temperature of April up to $3 \text{ }^\circ\text{C}$.

Keywords: cork taint, TCA, raw cork, shrubs thinning, forest monitoring and management