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Comments to Loewe et al. - Growth of Stone pine (*Pinus pinea* L.) European provenances in central Chile

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The author replies to the article by Loewe Muñoz et al. (2016), published on Aug 29, 2016 in iForest - Biogeosciences and Forestry, shortly commenting the choice of a Lombardy provenance of *Pinus pinea* L. used in the field trial experiment test at issue.

Keywords: Stone pine, Productivity, Growth, Provenances

Introduction

The article by Loewe Muñoz et al. (2016), recently appeared as Short Communication in iForest, concerns the high interest in Italian stone pine (*Pinus pinea* L.) as an alternative forest tree crop for the Mediterranean zone of Chile. In that country the species is included in afforestation and rural development programs (Loewe & Delard 2012) with special reference to its role in agroforestry for pine nuts production (http://www.chilenut.cl/index.php).

It is widely accepted that Italian stone pine is a relevant Mediterranean conifer for ecological characteristics and the high landscape values of forest stands (Gasparella et al. 2016). However, the attention paid to this forest species is even greater for edible seeds with increasingly added value (Loewe Muñoz 2015). They are the world's most expensive dried nuts, with very appreciated characteristics as gourmet and healthy food for excellent dietetic values compared to other nut pine seeds (Mutke et al. 2013a, Pettenella et al. 2014). During last years, a decrease of pine nut yield and cone production has been observed throughout the Mediterranean countries, due to the spread of attacks of the western conifer seed bug (*Leptoglossus occidentalis* Heidemann – Bracalini et al. 2013) causing the so called Dry Cone Syndrome (Elvira-Recuenco et al. 2016).

Considerations

In their paper Loewe Muñoz et al. (2016) reported the findings of a research carried out in central Chile, where growth and cone production of six European Stone pine provenances (two from Italy, three from Spain and one from Slovenia) were analyzed in a field trial experiment test.

The two Italian provenances considered refer to Tuscany and Lombardy, respectively, and the latter was used for the first time in a provenance trial. The literature concerning Italian stone pine does not give explicit information regarding this Lombardy provenance, although in the topological map of *Pinus pinea* L., published by EUFORGEN (Fady et al. 2004), a very small area could be geographically referred to Lombardy. However, that provenance is not included in the list of Italian seed forests, that can be currently retrieved by the Ricercaforestale.it website (Ricercaforestale 2016).

With regard to the Italian provenances generally used for other trials, we can find a Portuguese research where seed lots came from the sites of Cecina, Tomboli di Cecina and Duna Feniglia (Tuscany). Cecina e Duna Feniglia were signaled among the top five provenances of trial (Carrasquinho & Gonçalvez 2013). Moreover, the main findings of another provenance test carried out in France and Spain (Mutke et al. 2013b), also indicated that the Italian provenance from Duna Feniglia (one of the certified Italian stone pine forest for seed production) achieved the highest growth along with those from inner Spain and France.

Conclusions

It would be very interesting to know something more about the characteristics of Lombardy provenance that motivated the authors' choice to use it in their trial (*e.g.*, site quality, seed and cone production, tree features, historic background of stone pine plantations in that site).

Further details in this regard would be very appreciated, because *Pinus pinea* L. has been protagonist of an ancient, articulate and fascinating history – from forestry, economic and human point of view – which has not yet ended.

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