

European *Corylus avellana* L. germplasm collections

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Abstract

The main aim of this work is to gather the maximum information on hazelnut germplasm existing in different European collections. Each Research Centre keeps its hazelnut material according to its own interest: native varieties, suitable material from abroad and promoting the exchange of plant material among research centers from all over the world.

At first, a complete list of 264 hazelnut accessions existing in 13 different collections was elaborated: one collection in France and Greece, two in Slovenia and Spain, three in Portugal and four in Italy. The material of each collection was accurately observed, morphologically characterized and also identified by molecular markers (SSR). Some mistakes on cultivar spelling have been noticed. Characterization of hazelnut collections allowed to detect some synonyms in the germplasm studied and correct the spelling mistakes.

A final list of 209 cultivars and 40 selections, growing in 13 European hazelnut collections, was elaborated. Cultivars were originated from the following countries: Albania (1 cultivar), Balkan area (2 cvs.), Belgium (1 cv.), England (12 cvs.), USA (7 cvs.), France (7 cvs.), Germany (5 cvs.), Greece (1 cv.), Hungary (1 cv.), Italy (61 cvs.), Portugal (3 cvs.), Romania (4 cvs.), Slovenia (3 cvs.), Spain (83 cvs.) and Turkey (7 cvs.). Eleven cultivars from unknown origin were listed.

INTRODUCTION

This work has been carried out in the frame of the SAFENUT project: “Safeguard of almond and hazelnut genetic resources: from traditional uses to novel agro industries opportunities” (<http://safenut.casaccia.enea.it>). Hazelnut collections existing in different countries, gather material from European countries as France, Greece, Italy, Portugal, Romania, Slovenia and Spain; also, Turkish and American material is represented. Each Research Center keeps its hazelnut material according to its own interest: native varieties, relevant cultivars from abroad, promoting the exchange of plant material among researchers worldwide. A comprehensive list of all the accessions maintain in the European collections is needed to know the existing material in European collections and it is essential to observe and characterize this material accurately to verify the trueness to type of different accessions, detect possible erroneous spelling in any of the cultivars or references and remove synonyms. The main aim of this study is to gather the maximum information on hazelnut germplasm existing in European collections and harmonizing the standard descriptors for a common characterization of cultivars. Working together in this SAFENUT project, each partner needs to know the material that the other partners have in their collections to make the exchange of material and information easier. The knowledge of this material and its valorisation will enable us to conserve it.

MATERIAL AND METHODS

The study has been carried out during three years (2008-2009-2010), and data were collected from 13 European hazelnut collections (Table 1). At the beginning a complete list of 264 hazelnut accessions has been elaborated. A chart with the specific descriptors for hazelnut, following hazelnut descriptors (Thompson et al., 1978, UPOV, 1979), has been harmonized and standardized among partners, to characterize hazelnut material including: general characteristics, tree traits, flowering traits and nut and kernel traits. During the study the material of each collection was accurately observed and morphologically characterized.

Hazelnut material from different collections (young leaves in spring and/or immature catkins in september-october) were collected to identify the accessions by molecular markers (10 SSR loci), following the methodology proposed by (Bocacci et al., 2005 and 2006, Bassil et al., 2005).

RESULTS AND DISCUSSION

Characterisation of hazelnut collections (morphological and molecular) allowed detecting some homonymous and synonymous cultivars in the germplasm studied and correcting the spelling mistakes that have been noticed in the study. Finally, a list of 209 cultivars and 40 selections was elaborated. Cultivars come from the following countries: Albania (1 cultivar), Balcany area (2 cvs.), Belgium (1 cv.), England (12 cvs.), EEUU (7 cvs.), France (7 cvs.), Germany (5 cvs.), Greece (1 cvs.), Hungary (1 cvs.), Italy (61 cvs.), Portugal (3 cvs.), Romania (4 cvs.), Slovenia (3 cvs.), Spain (83 cvs.), Turkey (7 cvs.). Eleven cultivars from unknown origin were also listed. Most of this material is present in different European collections (Table 2).

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Table 1. Number of hazelnut collections studied in European countries.

Number of collections	Countries
1	France: Montesquieu (Conservatoire Végétal régional d'Aquitaine) Greece : NAGREF-Athens
2	Slovenia : National collection (Ljubljana) and ex-situ collection (Maribor) Spain : IRTA-Constantí (Catalonia), SERIDA-Villaviciosa (Asturias)
3	Portugal: Vila Real, Felgueiras (North), Viseu (Centre)
4	Italy: Cravanzana (Cuneo), Chieri (Torino), Le Cese (Viterbo), Caserta(Campania)

Table 2. Number of cultivars and selections present in different European hazelnut collections.

	France	Greece	Slovenia	Spain		Portugal			Italy				
	Montesquieu	NAGREF	Nat. Collection	Maribor	IRTA	SERIDA	Vila Real	Viseu	Felgueiras	Le Cese	Cravanzana	Chieri	Caserta
Cvs.	14	8	31	15	116	13	19	15	26	44	53	29	75
Sel.	-	-	14	-	24	-	-	-	-	-	12	-	2

Cvs: Cultivars; Sel: Selection