

Identification of grapevine accessions from Argentina introduced in the ampelographic collection of Domaine de Vassal

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Abstract. The study of accessions from Argentina may provide a valuable testimony on the origins of the different genetic resources and varieties which were sought and used to develop the vineyard of this country. 54 accessions introduced in the Vassal collection were analyzed using 20 microsatellite markers and ampelographic descriptors. Among them, 43 distinct varieties have been identified: 22 correspond to old traditional wine or table grape varieties from Europe and Middle East, 12 are probably varieties selected in Argentina or South America and are mostly descendants of Muscat of Alexandria and Mission, 4 are seedlings obtained in Italy, USA and Bulgaria, 2 are specific mutants and 3 are still currently original and of undetermined origin. These results highlight the links and help to trace the flows that have existed between the ancient world and Argentina. They are a particularly good example of the interest of the 2 traditional ways of multiplication which may exist for the vine, cuttings and seedlings. Some of these resources are now also highly original and rare and must be preserved.

1. Introduction

In most of the countries of the new world, the viticulture has started to be introduced between the 16th century and the 18th century. In such countries, one of the main issues to develop successfully the viticulture was to find the varieties the most adapted to these specific environmental conditions. To achieve this goal, many trials, testing and introductions of material had to be done. Thereby, different varieties according to the countries have been introduced and have allowed the development of the viticulture, sometimes by luck, but also by the work and the insight of some growers, researchers, enthusiasts or personalities. The analysis and identification of accessions from Argentina may provide a valuable testimony on the origins of the different genetic resources and varieties which have been sought and used to develop the vineyard and the grape production specificity of this country. It may also provide a special light on the mode of distribution of the grapevine varieties and the respective viticultural influences of countries from which they come from [1,2].

2. Material and methods

54 accessions from Argentina were introduced in the Vassal collection between 1952 and 1996. They come from the old collections of INTA and from different vineyards of this country (Table 1). These accessions have been analyzed using 20 microsatellite markers according to Laucou et al [3]. The profiles obtained were compared

to the profiles previously referenced in the data base of INRA with a specific query created to detect the duplicates and to identify the samples. Today the dataset represents 2722 unique profiles of *Vitis vinifera* varieties. When similarities between DNA profiles were detected, they were then checked at the phenotypic and ampelographic levels to confirm the identifications by morphological comparisons following the code of description proposed by OIV [4].

3. Results

Finally, of the 54 accessions, 43 distinct varieties have been identified after DNA genotyping and ampelography checking (Table 2).

Among them, 22 varieties correspond to old traditional wine or table grape varieties from Spain, France, Italy [5], but also from Hungary, Greece, Turkey, Syria and Lebanon. 12 varieties are probably varieties selected in Argentina or South America and are mostly descendants of Muscat of Alexandria and Mission [6–8] (Table 3). In this category Torrontes mendocino is an exception and for the moment none of its parents were found. 4 varieties (Moscato Cerletti, Gold, Ruby Cabernet, Yubiley) are seedlings obtained in Italy, USA and Bulgaria. 2 varieties are specific mutants (Almeria rosada, Mission mutant floral) and 3 varieties (Arvina di Petralia, Santa Paula faux, Sauvignon piccolo faux) are still original and of undetermined origin.

Table 1. List of the accessions introduced from Argentina in the collection of Vassal.

Accession name	Accession code	Year of entry	Provenance
Agostenga	649Mtp6	1990	Rio Negro
Almeria rosada	0Mtp18	1970	Mendoza
Angelina	0Mtp28	1990	Rio Negro
Arvina di Petralia	0Mtp42	1990	Rio Negro
Balsamina	0Mtp74	1988	Rio Negro
Balsamina	150Mtp28	1968	Mendoza
Bonarda	157Mtp15	1968	Mendoza
Cereza	2121Mtp1	1968	Mendoza
Cereza	2121Mtp2	1971	Vineyard
César	225Mtp6	1968	Mendoza
Criolla chica n°2	2116Mtp1	1952	Vineyard
Criolla grande	2118Mtp2	1968	Mendoza
Criolla mediana n°2	2117Mtp1	1952	Vineyard
Criolla n°1	0Mtp276	1996	Mendoza
Criolla n°2 = n°125	0Mtp277	1996	Mendoza
Criolla n°3 = Criolla blanca	0Mtp278	1996	Mendoza
Criolla n°5 = Criolla Grande	0Mtp279	1996	Mendoza
Criolla n°6	0Mtp280	1996	Mendoza
Criollina San Juanina	2118Mtp1	1952	Vineyard
Faux Trebbiano	45Mtp7	1972	San Rafael
Folle blanche	317Mtp12	1968	Mendoza
Gibi	45Mtp6	1971	San Rafael
Gobernador Benegas	1248Mtp3	1968	Mendoza
Gold	0Mtp424	1990	Rio Negro
Graciano	9Mtp12	1968	Mendoza
Grossa da serra	0Mtp461	1990	Rio Negro
Jubilé	2624Mtp1	1970	Mendoza
Malvoisie musquée	2425Mtp3	1972	San Juan
Moscatel negro du Pérou	2571Mtp2	1970	Mendoza
Moscatel rosado	2120Mtp1	1952	Vineyard
Moscatel rosado	2120Mtp3	1968	Mendoza
Moscato Cattaratto Cerletti	715Mtp1	1970	Mendoza
Muscat d'Alexandrie	308Mtp36	1971	San Juan
Pedro Gimenez	0Mtp863	1968	Mendoza
Pinot gris	458Mtp18	1968	Mendoza
Pis de chèvre rouge	0Mtp907	1990	Rio Negro
Raboso piave	352Mtp10	1968	Mendoza
Refosco	2047Mtp3	1968	Mendoza
Riesling italico	199Mtp39	1968	Mendoza
Ruby Cabernet	2313Mtp2	1968	Mendoza
San Francisco	2119Mtp1	1952	Vineyard
Sangiovetto grosso	1354Mtp4	1968	Mendoza
Santa Morena	848Mtp1	1970	Mendoza
Santa Paula	1365Mtp6	1970	Mendoza
Sauvignon	334Mtp7	1971	Mendoza
Sauvignon (Arizu)	334Mtp12	1972	San Rafael
Sauvignon Piccolo	0Mtp1042	1990	Rio Negro
Sauvis	0Mtp1044	1990	Rio Negro
Sultana	1678Mtp6	1968	Mendoza
Torrontel riojano	2425Mtp2	1971	Vineyard
Torrontes mendocino	2421Mtp1	1965	Vineyard
Torrontes riojano	2425Mtp1	1965	Vineyard
Torrontes sanjuanino	2420Mtp1	1965	Vineyard
Uva anis	0Mtp1157	1989	Mendoza

Table 2. List of the varieties identified with their supposed country of origin (codes according to the ISO 3166-1 alpha 3 standard) and the corresponding accessions.

Variety name	Origin	Accession name	Accession code
Ahmar Derani	SYR	Santa Morena	848Mtp1
Almeria rosada		Almeria rosada	0Mtp18
Arvina di Petralia		Arvina di Petralia	0Mtp42
Balsamina faux (collection Rio Negro)		Balsamina	0Mtp74
Béquignol	FRA	Raboso piave	352Mtp10
Bonamico	ITA	Sangiovetto grosso	1354Mtp4
Canari	FRA	Pinot gris	458Mtp18
Cereza		Cereza	2121Mtp1
		Cereza	2121Mtp2
César	FRA	César	225Mtp6
Chardonnay	FRA	Riesling italico	199Mtp39
Corbeau	FRA	Bonarda	157Mtp15
Criolla 5		Criolla n°2 = n°125	0Mtp277
		Criolla n°5 = Criolla Grande	0Mtp279
Criolla blanca		Criolla n°3 = Criolla blanca	0Mtp278
Criolla grande sanjuanina		Criolla n°1	0Mtp276
		Criollina San Juanina	2118Mtp1
		Criolla grande	2118Mtp2
Folle blanche	FRA	Folle blanche	317Mtp12
Gibi	ESP	Gibi	45Mtp6
		Faux Trebbiano	45Mtp7
Giro sardo	ITA	Sauvis	0Mtp1044
Gold	USA	Gold	0Mtp424
Kecskecsescu rosasz piros	HUN	Pis de chèvre rouge	0Mtp907
Kichmich rond	TUR	Sultana	1678Mtp6
Lambrusco Maestri	ITA	Refosco	2047Mtp3
Madeleine Salomon = Agostenga blanc	ITA	Agostenga	649Mtp6
Mission	ESP	Criolla n°6	0Mtp280
		Moscatel negro du Pérou	2571Mtp2
Mission mutant floral		Criolla chica n°2	2116Mtp1
Morastel	ESP	Graciano	9Mtp12
Moscatel rosado		Moscatel rosado	2120Mtp1
		Moscatel rosado	2120Mtp3

Table 2. Continued.

Variety name	Origin	Accession name	Accession code
Moscato Cerletti	ITA	Moscato Cattaratto Cerletti	715Mtp1
Muscat d'Alexandrie	GRC	Muscat d'Alexandrie	308Mtp36
Nielluccio	ITA	Angelina	0Mtp28
Pascale = Pascale di Cagliari	ITA	Grossa da serra	0Mtp461
Pedro Gimenez faux		Pedro Gimenez	0Mtp863
Rosa del Peru		Criolla mediana n°2	2117Mtp1
		San Francisco	2119Mtp1
Ruby Cabernet	USA	Ruby Cabernet	2313Mtp2
Santa Paula faux (collection Mendoza)		Santa Paula	1365Mtp6
Sauvignon piccolo faux		Sauvignon Piccolo	0Mtp1042
Sauvignonasse	FRA	Sauvignon (Arizu)	334Mtp12
		Sauvignon	334Mtp7
Syrah	FRA	Balsamina	150Mtp28
Torrontès mendocino		Torrontes mendocino	2421Mtp1
Torrontès riojano		Torrontes riojano	2425Mtp1
		Torrontel riojano	2425Mtp2
		Malvoisie musquée	2425Mtp3
Torrontès sanjuanino		Torrontes sanjuanino	2420Mtp1
Uva anis		Uva anis	0Mtp1157
Yubiley	BGR	Jubilé	2624Mtp1
Zeini abiad	LBN	Gobernador Benegas	1248Mtp3

Table 3. Parentage of the varieties selected in South America according to the results obtained by [6–8].

Variety name	Parent 1	Parent 2
Balsamina faux (collection Rio Negro)	Cot	Torrontes mendocino
Cereza	Muscat d'Alexandrie	Mission
Criolla 5	Muscat d'Alexandrie	Mission
Criolla blanca	Muscat d'Alexandrie	Mission
Criolla grande sanjuanina	Muscat d'Alexandrie	Mission
Pedro Gimenez faux	Muscat d'Alexandrie	Mission
Rosa del Peru	Muscat d'Alexandrie	Mission
Torrontès riojano	Muscat d'Alexandrie	Mission
Torrontès sanjuanino	Muscat d'Alexandrie	Mission
Uva anis	Muscat d'Alexandrie	Mission
Moscatel rosado	Muscat d'Alexandrie	?

4. Discussion and conclusion

These results highlight the links and help to trace the flow and the relationships that have existed between the ancient world and Argentina, which led to the specificity of the present Argentina vineyard. They are a particularly good example of the interest of the 2 traditional ways of multiplication which may exist for the vine: cuttings to introduced already existing and possibly interesting varieties and seedlings to select new genotypes adapted to the specific environmental conditions of the country. Some of these resources are now also highly original and relatively rare that is why some effort must be done to preserve them by the best possible way.

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