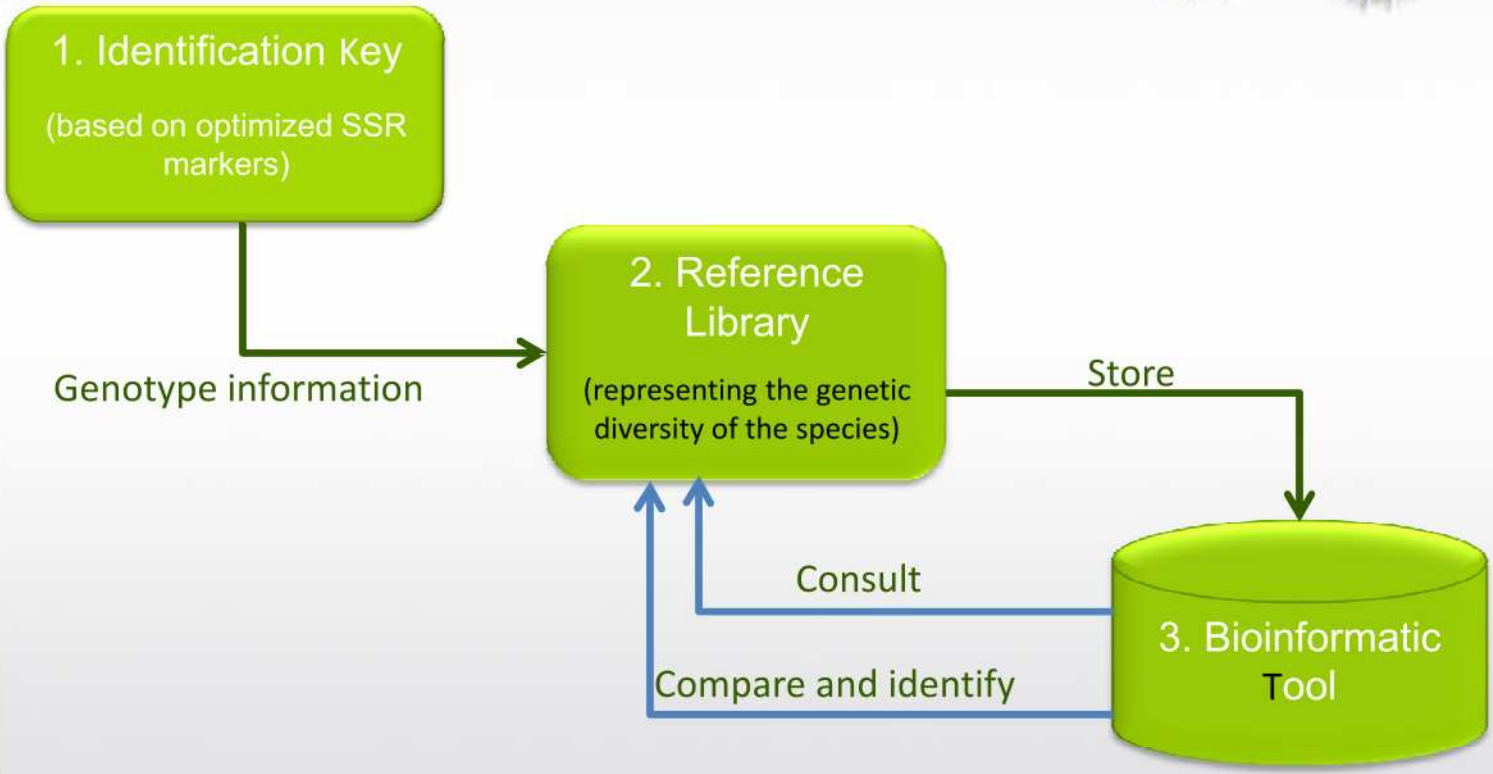
Institut de recherche pour le développement

PHOENIX DB

A database for date palm identification based on SSR markers

Karina Castillo Perez (IRD Montpellier, France)
Jean-Christophe Pintaud (IRD Montpellier, France)
Christine Tranchant (IRD Montpellier, France)
Isabelle Mougenot (LIRMM/UMII, France)
Frédérique Aberlenc-Bertossi (IRD Montpellier, France)

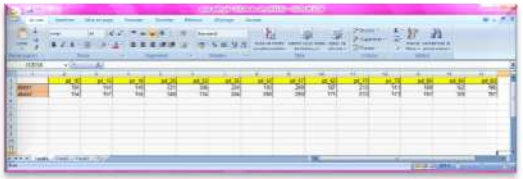
The project **"PhoenixDB "** has three components:



PHOENIX DB

http://phoenixdb.mpl.ird.fr

Data file of unknown genotype



1

7

send

2

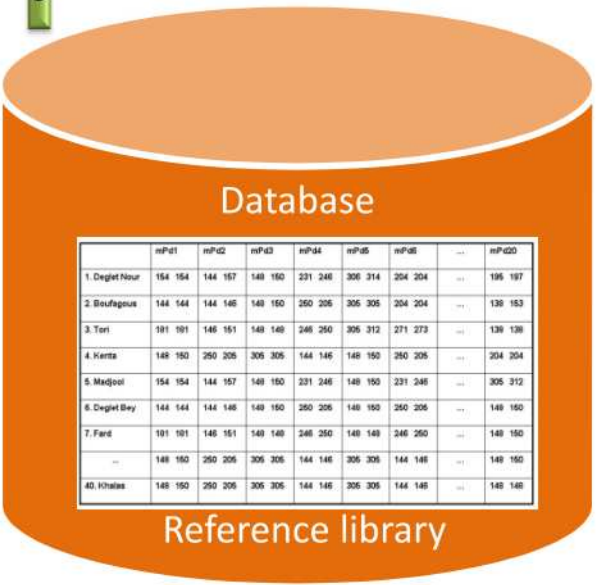
3

« Identification tool »
Script PHP

4

Comparison of data with the reference library

5



	mPd1	mPd2	mPd3	mPd4	mPd5	mPd6	...	mPd20
1. Degiet Nour	154 154	144 157	148 150	231 246	306 314	204 204	...	195 197
2. Boufageus	144 144	144 146	149 150	250 205	305 305	204 204	...	139 153
3. Tori	191 191	146 151	149 149	246 250	305 312	271 273	...	139 139
4. Kenta	148 150	250 205	305 305	144 146	148 150	250 205	...	204 204
5. Madjool	154 154	144 157	148 150	231 246	148 150	231 246	...	305 312
6. Degiet Bey	144 144	144 146	149 150	250 205	148 150	250 205	...	149 150
7. Fard	191 191	146 151	149 149	246 250	148 149	246 250	...	149 150
...	148 150	250 205	305 305	144 146	305 305	144 146	...	149 150
40. Khalas	148 150	250 205	305 305	144 146	305 305	144 146	...	149 149

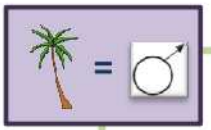
6

Results

Table with identification results of your genotype compared with PhoenixDB

Genotype accession	Scientific name	Cultivar	% Likelihood	Differents loci
JCP 429	Phoenix dactylifera	yes	100 %	0
JCP 188	Phoenix reclinata	no	80 %	4
JCP967 P2_168	Phoenix canariensis	no	60 %	8
P2_141	Phoenix canariensis	no	50 %	10
D76 - P3_284	Phoenix dactylifera	yes	25 %	15
D67 - P3_281	Phoenix dactylifera	yes	0 %	20

PhoenixID:
« Identification of date palm genotypes »



Results :
Sex identification

Users
•Plantations
•Laboratories

Send sample

Results

Table with identification results of your genotype compared with PhoenixDB

Genotype accession	Scientific name	Cultivar	% Likelihood	Differents loci
JCP 403	Phoenix dactylifera	yes	100 %	0
JCP 188	Phoenix reclinata	no	80 %	4
JCP007 P7 108	Phoenix canariensis	no	00 %	6
P2 141	Phoenix canariensis	no	50 %	10
025 - P3 194	Phoenix dactylifera	yes	25 %	16
D67 - P3 291	Phoenix dactylifera	yes	0 %	22

Results :
Genotype identification

Sex markers

Partners

PHOENIX DB

Sex identification

Genotypes identification

Projet PhoenixID

Context

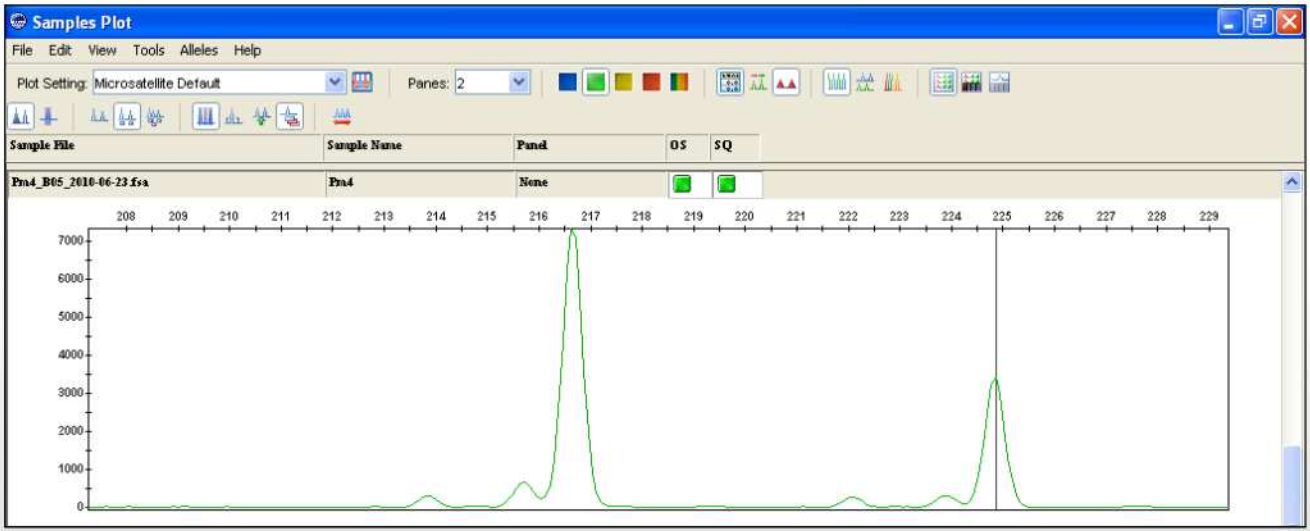
Identification of date palm genotypes by different approaches : problem to compare results.

Objective

Develop a complete set of tools allowing standardization of identification procedures at international level.

Identification Key

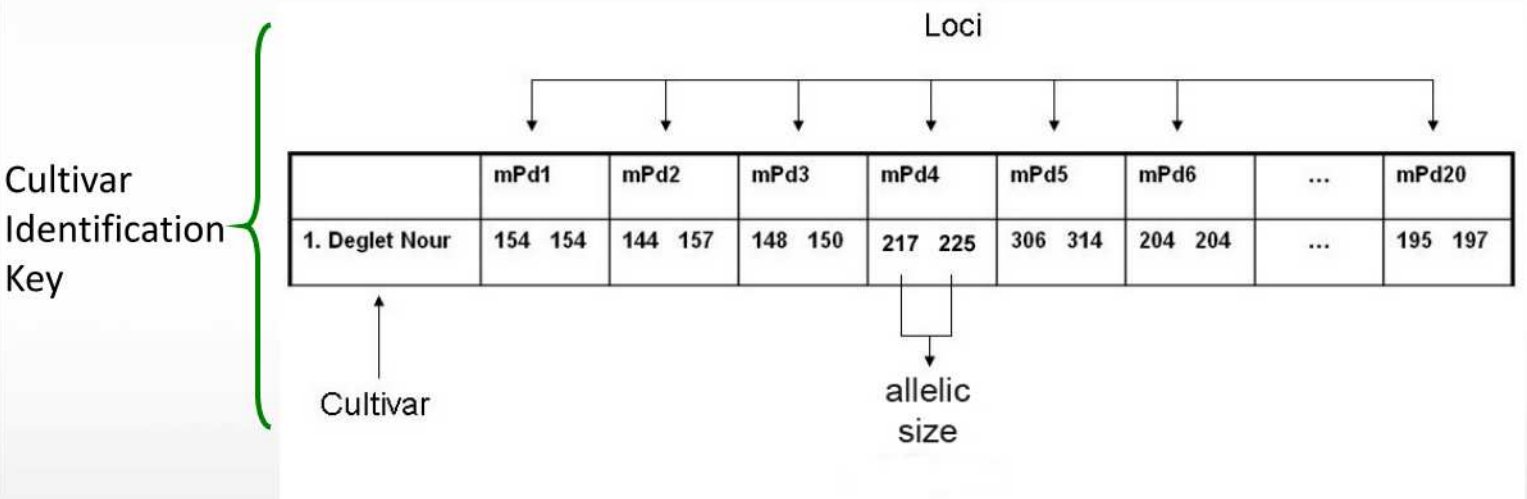
Previous work (Zehdi et al, 2004) showed that microsatellite markers are relevant to the identification of date palm genotypes.



Locus mPd4 217 225

Genetic diversity of Tunisian date palms (*Phoenix dactylifera* L.) revealed by nuclear microsatellite polymorphism
ZEHDI et al, Hereditas 2004,141:278-287

PHOENIX DB



- ✓ Search a new SSR set
- ✓ SSR markers polymorphism test

→ A new SSR markers optimized and more reliable

PHOENIX DB

SSR Search

Phoenix dactilyfera L.
Whole genome sequence
Qatar.

*SSR pipeline program:
- SSR and primers
- Non redondants

Filters:
- 3pb-6pb
- Within genes
- others

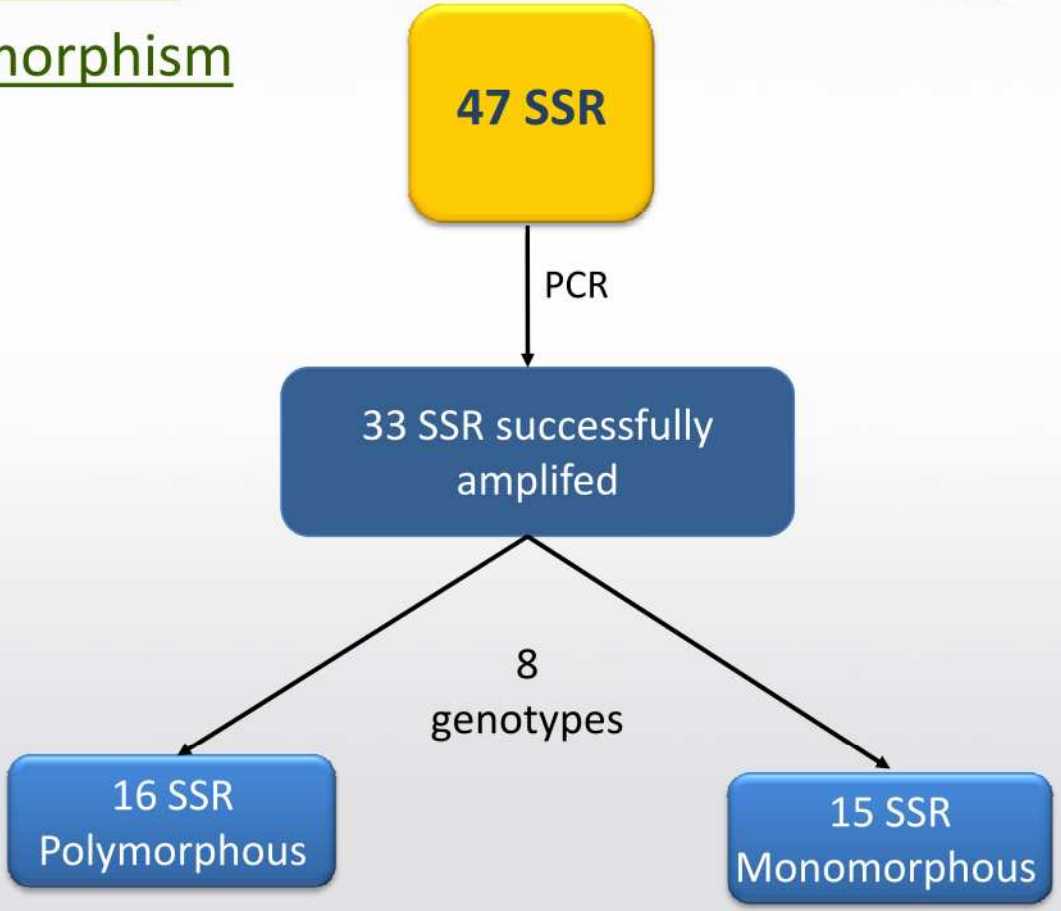
47 SSR

For polymorphism test

* SSR mining in coffee tree EST databases: potential use of EST-SSRs as markers for the *Coffea* genus
Poncet et al, Mol Gen Genomics 2006, 276(5):436-449.

PHOENIX DB

SSR Markers Polymorphism test



Reference Library

PHOENIX DB

Genotype informations based on the SSR identification key of individuals covering the **genetic diversity of the species**

	mPd1	mPd2	mPd3	mPd4	mPd5	mPd6	...	mPd20
1. Deglet Nour	154 154	144 157	148 150	231 246	306 314	204 204	...	195 197
2. Boufagous	144 144	144 146	148 150	250 205	305 305	204 204	...	138 153
3. Tori	181 181	146 151	148 148	246 250	305 312	271 273	...	138 138
4. Kenta	148 150	250 205	305 305	144 146	148 150	250 205	...	204 204
5. Madjool	154 154	144 157	148 150	231 246	148 150	231 246	...	305 312
6. Deglet Bey	144 144	144 146	148 150	250 205	148 150	250 205	...	148 150
7. Fard	181 181	146 151	148 148	246 250	148 148	246 250	...	148 150
...	148 150	250 205	305 305	144 146	305 305	144 146	...	148 150
40. Khalas	148 150	250 205	305 305	144 146	305 305	144 146	...	148 148

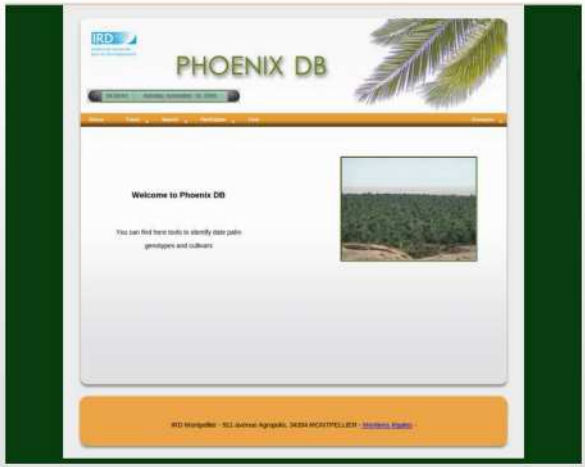
« PhoenixDB »
Bioinformatic tool

PHOENIX DB

A new bioinformatic tool for data palm identification

- A Database (SGBD PostgreSQL)
- A PHP script

A Web interface



- ✓ An easy access to markers, genomics and cultivars data
- ✓ The comparison of the unknown genotypes with the reference library for identification.
- ✓ Data easily downloadable and usable in any lab

IRD
Institut de recherche pour le développement

PHOENIX DB

16:21:2 monday november 15 2010

Home | Tools | Search | Participate | Link | Contacts

Genotype Identification

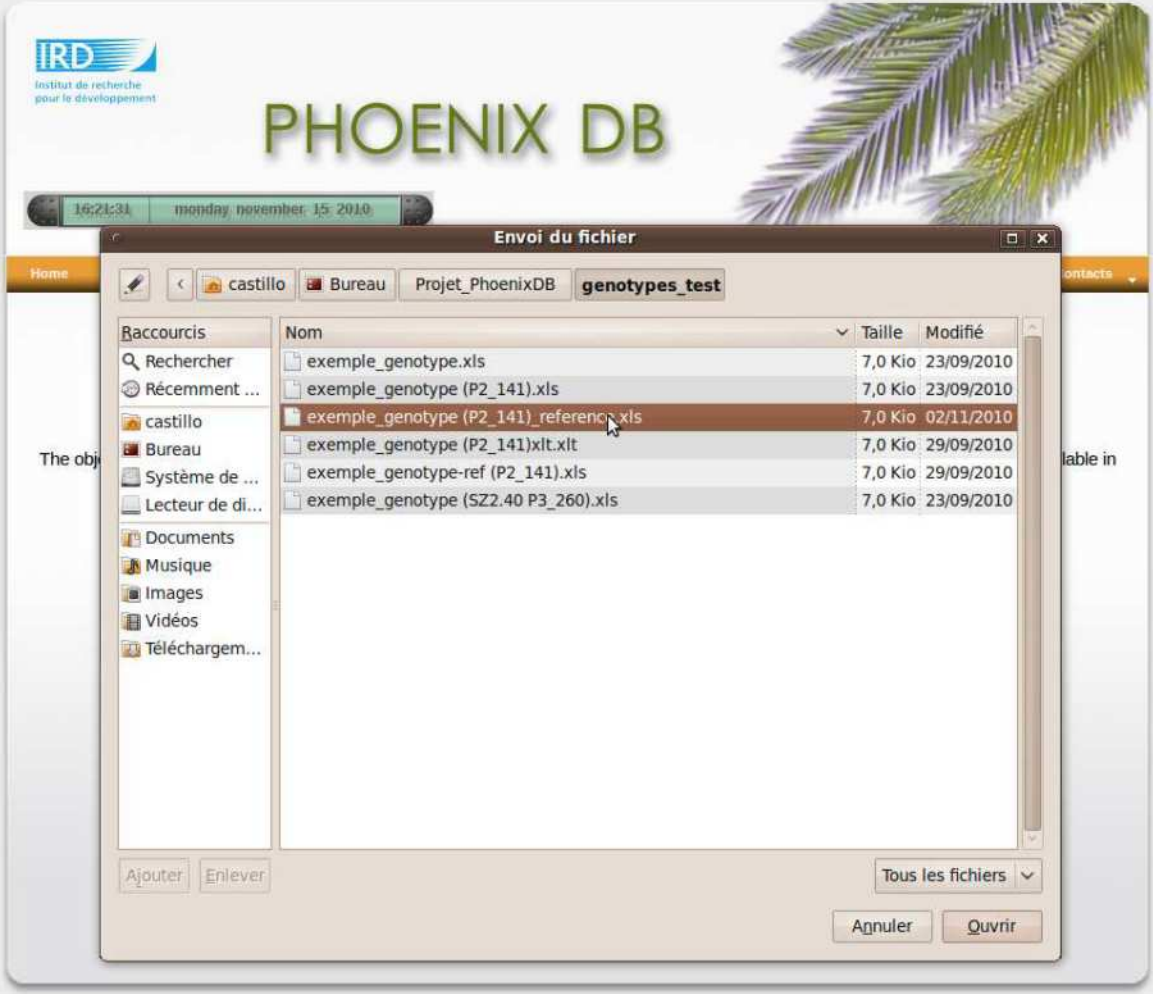
In this page you can identify your genotypes importing your data in Excel format.

The objective is to compare your genotype with reference ones, either with the cultivars exiting genotypes or with all data base available in PhoenixDB.
The results will be display in a table in descending order by percentage of likelihood.

Parcourir...

- Cultivar
- All base

Search


IRD
Institut de recherche pour le développement
PHOENIX DB
16:21:31
monday november 15 2010
Home
Envoi du fichier
castillo
Bureau
Projet_PhoenixDB
genotypes_test
Raccourcis
Rechercher
Récemment ...
castillo
Bureau
Système de ...
Lecteur de di...
Documents
Musique
Images
Vidéos
Téléchargem...
Nom
Taille
Modifié
exemple_genotype.xls 7,0 Kio 23/09/2010
exemple_genotype (P2_141).xls 7,0 Kio 23/09/2010
exemple_genotype (P2_141)_reference.xls 7,0 Kio 02/11/2010
exemple_genotype (P2_141)xlt.xlt 7,0 Kio 29/09/2010
exemple_genotype-ref (P2_141).xls 7,0 Kio 29/09/2010
exemple_genotype (SZ2.40 P3_260).xls 7,0 Kio 23/09/2010
Ajouter
Enlever
Tous les fichiers
Annuler
Ouvrir

IRD
Institut de recherche pour le développement

PHOENIX DB

16:25:28 monday november 15 2010

Home | Tools | Search | Participate | Link | Contacts

Results

Table with identification results of your genotype compared with PhoenixDB

Genotype accession	Scientific name	Cultivar	% Likelihood	Differents loci
JCP 429	Phoenix dactylifera	yes	7.14285714286 %	13
JCP 188	Phoenix reclinata	no	7.14285714286 %	13
JCP967 P2_168	Phoenix canariensis	no	21.4285714286 %	11
P2_141	Phoenix canariensis	no	100 %	0
D76 - P3_284	Phoenix dactylifera	yes	0 %	14
D67 - P3_281	Phoenix dactylifera	yes	0 %	14
P2_171	Phoenix dactylifera	yes	0 %	14
D48 - P3_276	Phoenix dactylifera	yes	0 %	14
D44 - P3_275	Phoenix dactylifera	yes	0 %	14
D38 - P3_273	Phoenix dactylifera	yes	0 %	14
JCP 214	Phoenix sylvestris	no	0 %	14
MWC 1400	Phoenix roebelenii	no	0 %	14
JCP 376	Phoenix reclinata	no	0 %	14
SZ2.40 - P3_260	Phoenix dactylifera	no	0 %	14
SZ 01_P3-254	Phoenix dactylifera	no	0 %	14
P2_174	Phoenix dactylifera	no	0 %	14
P25_M	Phoenix dactylifera	no	0 %	14
SH 54	Phoenix atlantica	no	0 %	14
SH 37	Phoenix atlantica	no	0 %	14
SH 10c	Phoenix atlantica	no	0 %	14

Download

PHOENIX DB

- Phoenix DB (optimized SSR set, reference library, bioinformatic tool)
- A complete set of tools for identification
- Access for the scientific community
- Standardization of identification procedures

✓ Caracterisation of genetic diversity of date palm plantation (Tunisia, Algeria, Italy, Djibouti, Pakistan and Egypt - MeRSI 2011)

✓ Management and preservation of date palm genetics resources