Technical report

TITLE OF AGREEMENT	CWR in EURISCO
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IMPLEMENTATION PARTNER	INIAV-BPGV
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TYPE OF REPORT	Interim report (January 2022 – October 2023)
ABSTRACT (Maximum 200 words)	During the timeframe of the project, the necessary steps towards the preparation of the *In situ* CWR National Inventory for Portugal were carried out: (i) a national Task Force was formed to contribute to and supervise the preparation of the national inventory, (ii) a second iteration of the national CWR checklist was prepared for the three Portuguese geographic units (Azores archipelago, Madeira archipelago, and mainland Portugal), (iii) the prioritization criteria and method were discussed, (iv) the national CWR checklist was annotated with the information related to the prioritization criteria, (v) CWR priority lists were obtained for each geographic unit, (vi) sources of occurrence data for the priority CWR were identified, and (vii) occurrence data was compiled for the priority CWR were compiled and verified for subsequent diversity analyses to identify populations for active *in situ* conservation. The identification of priority populations for active *in situ* conservation that will be integrated into EURISCO will be carried out until the end of December 2023. These will then be sent to EURISCO via the Portuguese *In Situ* National Inventory Focal Point.
Keywords	Country**: Portugal** Crop(s): Crop wild relatives Subject**:** *In situ* CWR National Inventory for Portugal

During the timeframe of this project, the Portuguese *In Situ* CWR National Inventory has been developed. The methodology used for this purpose was adapted from Magos Brehm *et al.* (2017) which, in summary, mainly entails:

- Developing a national CWR checklist;
- Prioritizing the CWR checklist for conservation action;
- Diversity analyses to identify sites for the *in situ* conservation of priority CWR.

This methodology was applied independently to the three geographic units of the Portuguese territory (Azores archipelago, Madeira archipelago, and mainland).

1. Establishment of a national Task Force for developing the *In Situ* CWR National Inventory

A Task Force including experts from the three geographic units of the Portuguese territory was formed with the aim of providing taxonomic expertise and supervising the development of the CWR checklist, priority list of CWR for conservation and identifying sites for active *in situ* conservation. The Task Force includes members of the Instituto Nacional de Investigação Agrária Veterinária, I.P. (INIAV) (1), Universidade de Lisboa (UL) (2), Universidade da Madeira (UMA) (2), Universidade dos Açores (UAC) (2), and the Instituto da Conservação da Natureza e das Florestas (ICNF) (1), covering the plant genetic resources community, academia and the biodiversity *in situ* conservation community. The members of the Task Force were involved in (i) establishing the scope of the national CWR checklist and its validation, (ii) identifying the prioritization criteria and method to identify priority CWR for active conservation as well validating the priority taxa, and (iii) identifying sources of occurrence data for priority CWR. For this purpose, two background documents about the various options for preparing the CWR checklist and their prioritization were prepared, circulated and feedback was requested.

2. Development of an updated version of the national CWR checklist

Magos Brehm *et al.* (2008, 2010) prepared a Portuguese CWR checklist and list of priority CWR for conservation. However, that study did not consider the Azores and Madeira archipelagos and there was no floristic checklist of the three Portuguese geographic units at the time that study was carried out. Additionally, since that study resulted purely from an academic exercise, we felt the need to involve national experts in every step of conservation planning so that conservation of CWR would be taken forward more effectively.

The second version of the national CWR checklist was therefore obtained by matching the digital version of the *Checklist da Flora de Portugal (Continental, Açores e Madeira)* (Menezes de Sequeira 2015) (complemented with *Flora-On* (https://flora-on.pt/) and the *Portal da Biodiversidade dos Açores* (https://azoresbioportal.uac.pt/pt/) with the crop genera lists compiled by Kell (unpublished) which includes aromatic and medicinal, forestry, ornamental, major and minor food crop genera and the Annex 1 taxa of the International treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The checklist was compiled using the *Checklist and Inventory Data Template* (Thormann *et al.* 2017).

Invasive species were identified and highlighted in the checklist, as well as those species which are only cultivated, only exist in the wild and those which are both cultivated and in the wild in each of the geographic units. Sources of information regarding the invasive status of the species include: the citizen-science website www.invasoras.pt, the Annex II of the Decreto-Lei n.º 92/2019 (https://dre.pt/home/-/dre/123025739/details/maximized, the *Lista de Espécies Exóticas Invasoras que Suscitam Preocupação na União* (https://www.icnf.pt/api/file/doc/12914868383491bc), the publication by Almeida (2012) specifically for mainland Portugal, the Annex IX of the Decreto Legislativo Regional n.º 15/2012/A for the Azores (https://dre.pt/application/conteudo/553893), and

the list of invasive species made available by the Secretaria Regional de Ambiente, Recursos Naturais e Alterações Climáticas of the Governo Regional da Região Autónoma da Madeira (https://ifcn.madeira.gov.pt/biodiversidade/projetos/controlo-de-plantas-invasoras.html#principais%20esp%C3%A9cies).

The national checklist of CWR includes a total of 2993 taxa in all three Portuguese geographic units, out of which 456 taxa are related to food, forage and agricultural crops (163 in the Azores, 177 in Madeira, and 360 in mainland Portugal).

3. Prioritizing Portuguese CWR for active conservation

The Task Force identified as priorities the following CWR:

- Native taxa to the geographic unit in consideration (criterion 1: native status);
- Wild relatives related to food, beverage and animal food crops OR related to crops with national socio-economic value (criterion 2: economic category of the related crop);
- Taxa belonging to GP1B and GP2 or TG1B and TG2, or in GP3 or TG3 and TG4 that have already been used as gene donors or have shown promise for crop improvement (criterion 3: potential use in crop improvement).

The national CWR checklist was therefore annotated with the information related to the criteria above. Sources of information for each criterion included those in Table 1. The CWR checklist of each geographic unit was then filtered for the abovementioned criteria and priority CWR lists in each geographic unit were identified and were subjected to discussion amongst the members of the Task Force.

In the Azores archipelago only criterion 1 and 2 were applied because the application of criterion 3 resulted in very few number of taxa. This priority list was then discussed with the Task Force representatives from the Azores and a few introduced species were included (*Apium graveolens* and *Trifolium arvense*).

Table 1 Sources of information for each prioritization criterion.

PRIORITIZATION CRITERIA	SOURCES OF INFORMATION
Native status	Menezes de Sequeira (2015)
Economic category of the related crop	Kell (unpublished), which includes the following sources: Groombridge and Jenkins (2002), Annex I of the International Treaty on Plant Genetic Resources for Food and Agriculture (FAO 2001), the FAO statistics (FAOSTAT, https://www.fao.org/faostat/en/#home) on agricultural production value and energy supply derived from crops consumed
Potential use in crop improvement	USDA, Agricultural Research Service, National Plant Germplasm System (2023) and Vincent *et al.* (2013)

A total of 27 species (29 taxa) were identified as priorities for conservation in the Azores archipelago, 53 species (56 taxa) in the Madeira archipelago, and 150 species (167 taxa) in Portugal mainland (Table

2). These priority CWR then correspond to native taxa that are related to food, beverage or animal food crops and that are closely related to the crops (i.e., belonging to GP1B and GP2 or TG1B and TG2) or that have potential or confirmed uses in crop improvement, except for the Azores where priorities refer to native taxa that are related to food and beverage or animal food crops.

Whenever possible, i.e., when all subspecies/varieties were identified as priorities or where the subspecies/variety was the only one occurring in that geographic unit, subsequent diversity analyses were carried out at the species level since there were several occurrence records that were not identified to the infra-species level (see next section). Therefore, a total of 27 taxa were analysed for the Azores archipelago, 53 taxa for the Madeira archipelago, and 150 for mainland.

Table 2 Number of CWR taxa per each crop genera and for each Portuguese geographic unit.

GENERA	AZORES ARCHIPELAGO	MADEIRA ARCHIPELAGO	MAINLAND
Aegilops	0	0	3
Agrostis	7	0	1
Allium	1	0	1
Alopecurus	0	0	1
Apium	1	1	1
Arrhenatherum	0	1	2
Asparagus	0	0	3
Atriplex	0	0	1
Avena	0	3	5
Barbarea	0	0	1
Beta	1	2	2
Brassica	0	1	4
Capsella	0	1	1
Carthamus	0	1	2
Cichorium	0	1	2
Coincya	0	0	3
Coronilla	0	0	1
Corylus	0	0	1
Cynara	0	1	4
Dactylis	0	1	2
Daucus	1	2	5
Diplotaxis	0	0	5
Echinchloa	0	0	1
Elymus	0	0	1
Eragrostis	0	0	1
Eruca	0	1	1
Festuca	2	0	3
Ficus	0	0	1
Foeniculum	0	1	1
Fragaria	1	1	1
Hordeum	0	1	1
Humulus	0	0	1
Ilex	1	0	0
Ipomoea	1	0	0
Isatis	0	0	1
Lactuca	1	1	3

GENERA	AZORES ARCHIPELAGO	MADEIRA ARCHIPELAGO	MAINLAND
Lathyrus	0	4	11
Lens	0	0	2
Lepidium	0	0	1
Linum	0	1	1
Lolium	0	0	2
Lotus	2	0	3
Lupinus	0	0	5
Malus	0	0	1
Medicago	0	3	9
Melilotus	0	1	3
Mentha	2	3	4
Olea	0	1	1
Ornithopus	1	1	1
Panicum	0	0	1
Papaver	0	2	2
Pastinaca	0	0	1
Patellifolia	0	2	1
Phalaris	0	1	1
Phleum	0	0	2
Pistacia	0	0	2
Pisum	0	0	1
Poa	0	1	1
Prunus	1	0	5
Pyrus	0	0	2
Raphanus	0	1	1
Rorippa	0	1	1
Rubus	2	1	2
Salsola	0	0	2
Setaria	0	0	2
Sinapis	0	1	2
Solanum	0	1	1
Trifolium	1	6	12
Vaccinium	1	0	2
Vicia	3	5	11
Vitis	0	0	1
TOTAL	29	56	167

4. Diversity analyses to identify sites for the *in situ* conservation of priority CWR

This second task included: (i) identifying sources of occurrence data for the priority CWR in each geographic unit for subsequent diversity analyses to identify populations for active *in situ* conservation (Table 3), (ii) adapting existing R scripts to download and "clean" the occurrence data from the sources identified, downloading the data manually or requesting the data (Table 4), (iii) occurrence data were then collated into three different Excel files (in the CAPFITOGEN format) corresponding to each of the three geographic units, (iv) developing an ecogeographic land characterization (ELC) map for each geographic unit, and (v) identifying priority populations, across their ecogeographic diversity range, within the existing network of protected areas, that are currently being passively conserved but are good candidates for active conservation.

Table 3 Sources of occurrence data for priority CWR.

GEOGRAPHIC UNIT	SOURCES OF OCCURRENCE DATA	
Azores archipelago		• Global Biodiversity Information Facility (https://www.gbif.org/) • Genesys PGR (https://www.genesys-pgr.org/) • Flora-On (https://flora-on.pt/) • EURISCO (https://eurisco.ipk-gatersleben.de/apex/eurisco_ws/r/eurisco/home) (for accessions not from BPGV)
Madeira archipelago	ISOPlexis – GRIN-Global (https://isoplexis.uma.pt/gringlobal/search.aspx)	
Mainland Portugal	Banco Português de Germoplasma Vegetal – GRIN-Global (http://bpgv.iniav.pt/gringlobal/)	

Table 4 Means of obtaining the occurrence data from the different sources.

BPGV	Data sent by Carlos Gaspar (staff)
EURISCO	Downloaded manually from the website
Flora-On	Data requested 3 months ago but have not been sent yet; coordinates obtained by extracting the middle point of the UTM from .KML files downloaded from the website in Google Earth (only for taxa with less than 20 records)
GBIF	Data was downloaded and "cleaned" adapting two different R scripts developed by Tobias Fremout and Hannes Gaisberger (Bioversity International)
Genesys PGR	Downloaded manually from the website
ISOPlexis	Data sent by Humberto Nóbrega (staff)

Data verification and "cleaning" included (i) removing data older than 1950, (ii) deleting duplicates (same species name, latitude, longitude, and source), (iii) removing records with missing coordinates, (iv) removing records with imprecise coordinates (i.e., records with zero decimal places for latitude OR longitude, and records with only 1 decimal place in latitude AND longitude), and (v) removing data outside the modelling extent.

After data verification, a total of 26,638 records from 23 taxa (out of 27 taxa) for the Azores archipelago, 1820 records from all 53 taxa for the Madeira archipelago, and 74,988 records from 149 taxa (out of 150) for mainland Portugal, were compiled (see Appendix 1 for the number of records for each taxon).

5. Next steps

Until December 2023, the following steps will be carried out: (i) data quality will be evaluated using the GEOQUAL tool of the CAPFITOGEN3 tools (Parra-Quijano *et al.* 2021), (ii) ELC maps for each geographic unit will be developed using the ELCmapas tool of CAPFITOGEN3, (iii) analysis of the ecogeographic diversity within each CWR taxon will be carried out using the Representa tool of CAPFTITOGEN3 (following Rubio-Teso *et al.* 2021 and Magos Brehm *et al.* 2022), (iv) ecogeographically

diverse populations will be identified within existing protected areas as priorities for active *in situ* conservation using the Complementa tool of CAPFITOGEN3. These populations will then form the *In Situ* CWR Inventory for Portugal and will be sent to the EURISCO database via the Portuguese *In Situ* National Inventory Focal Point.

6. Challenges

The first challenge related to this project was to obtain feedback from the Task Force regarding the CWR checklist and priority lists which took a considerable time.

The second main challenge referred to the difficulty in obtaining the occurrence data from the main database of Portuguese plant populations, Flora-On (https://flora-on.pt/). Contacts were made in order for these data to be sent with sufficient and accurate geographic precision, but replies were extremely slowly. Therefore, these data was not be incorporated in the current priority CWR occurrence dataset and will not be used in identifying the priority populations for *in situ* conservation.

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Appendix 1 Number of verified records for each CWR taxon in each Portuguese geographic unit from each occurrence data source

AZORES ARCHIPELAGO					
Crop Wild Relative	**Taxonomic Notes**	**Genesys**	**GBIF**	**Flora-On**	**TOTAL**
Agrostis azorica		0	0	0	0
Agrostis castellana		0	2687	-	2687
Agrostis congestiflora	It includes: A. congestiflora subsp. congestiflora, A. congestiflora subsp. oreophila	0	852	-	852
Agrostis gracililaxa	It includes: A. gracililaxa var. gracililaxa, A. gracililaxa var. mutica	0	580	-	580
Agrostis reuteri subsp. botelhoi	Only subsp. within the species that occurs in the Azores	0	280	-	280
Apium graveolens		0	590	-	590
Beta maritima		0	268	-	268
Daucus carota subsp. azoricus	Only priority subsp. amongst a total of 2	11	2389	-	2400
Festuca francoi		0	1799	-	1799
Festuca petraea		0	2095	-	2095
Fragaria vesca		0	2244	-	2244
Ilex perado subsp. azorica	Only subsp. within the species that occurs in the Azores	0	2578	-	2578
Ipomoea imperati		0	35	-	35
Lactuca watsoniana		0	545	-	545
Lotus azoricus		11	144	-	155
Lotus creticus		17	43	-	60
Mentha aquatica		0	1331	-	1331
Mentha pulegium		0	1588	-	1588
Ornithopus pinnatus		0	1259	-	1259
Prunus lusitanica subsp. azorica	Only subsp. within the species that occurs in the Azores	0	0	9	9
Rubus divaricatus		0	0	0	0
Rubus hochstetterorum		0	1871	-	1871
Trifolium arvense		0	558	-	558
Vaccinium cylindraceum		3	2652	-	2655
Vicia bithynica		0	199	-	199
Vicia dennesiana		0	0	0	0
Vicia lutea		0	0	0	0
TOTAL		42	26587	9	26638

MADEIRA ARCHIPELAGO						
Crop Wild Relative	**Taxonomic Notes**	**IsoPlexis**	**Genesys**	**GBIF**	**Flora-On**	**TOTAL**
Apium graveolens		1	0	6	7	14
Arrhenatherum elatius subsp. bulbosum	Only subsp. within this species that occurs in Madeira	2	0	6	0	8
Avena barbata		19	4	53	-	76
Avena fatua		1	2	33	-	36
Avena sterilis		1	0	18	-	19

MADEIRA ARCHIPELAGO						
Crop Wild Relative	**Taxonomic Notes**	**IsoPlexis**	**Genesys**	**GBIF**	**Flora-On**	**TOTAL**
Beta maritima		31	1	30	-	62
Beta patula		166	0	22	-	188
Brassica nigra		1	0	1	0	2
Capsella bursa-pastoris		1	0	8	0	9
Carthamus lanatus		1	0	19	-	20
Cichorium endivia subsp. divaricatum	Only subsp. within this species that occurs in Madeira	1	0	3	12	16
Cynara cardunculus		1	0	138	-	139
Dactylis glomerata subsp. hispanica	Only priority subsp. amongst a total of 2	7	0	0	0	7
Daucus carota	It includes: D. carota L. subsp. carota, D. carota L. subsp. hispidus (Arcang.) Heywood	2	2	14	0	18
Eruca vesicaria subsp. sativa	Only subsp. within this species that occurs in Madeira	1	0	14	2	17
Foeniculum vulgare		11	0	96	-	107
Fragaria vesca		1	0	36	-	37
Hordeum marinum subsp. marinum	Only priority subsp. amongst a total of 2	10	1	1	0	12
Lactuca virosa		1	0	6	0	7
Lathyrus annuus		7	6	5	0	18
Lathyrus aphaca		1	0	2	0	3
Lathyrus clymenum		14	10	42	-	66
Lathyrus sylvestris		4	3	2	0	9
Linum bienne		1	0	12	1	14
Medicago italica		1	0	3	1	5
Medicago littoralis		3	6	6	0	15
Medicago truncatula		1	2	22	-	25
Melilotus indicus		2	0	53	-	55
Mentha aquatica		1	0	8	0	9
Mentha pulegium		1	0	45	-	46
Mentha suaveolens		1	0	9	1	11
Olea maderensis		1	0	8	3	12
Ornithopus compressus		1	9	16	-	26
Papaver rhoeas	It includes: P. rhoeas subsp. rhoeas, P. rhoeas subsp. strigosum	2	0	49	-	51
Patellifolia patellaris		25	1	0	-	26
Patellifolia procumbens		1	0	50	-	51
Phalaris canariensis		1	0	2	0	3
Poa pratensis		1	0	1	0	2
Raphanus raphanistrum	Only subsp. within this species that occurs in Madeira	1	0	56	-	57
Rorippa nasturtium-aquaticum		1	0	1	1	3

MADEIRA ARCHIPELAGO						
Crop Wild Relative	**Taxonomic Notes**	**IsoPlexis**	**Genesys**	**GBIF**	**Flora-On**	**TOTAL**
Rubus ulmifolius		1	0	71	-	72
Sinapis arvensis		1	0	12	0	13
Solanum nigrum	Only subsp. within this species that occurs in Madeira	1	0	97	-	98
Trifolium angustifolium		4	0	77	-	81
Trifolium dubium		1	0	21	-	22
Trifolium fragiferum		1	0	3	0	4
Trifolium repens		7	0	100	-	107
Trifolium resupinatum		1	0	18	0	19
Trifolium subterraneum	Only subsp. within this species that occurs in Madeira	1	13	17	-	31
Vicia angustifolia		1	0	2	0	3
Vicia cordata		1	0	0	0	1
Vicia hirsuta		13	0	30	-	43
Vicia lutea	It includes: V. lutea subsp. lutea, V. lutea subsp. vestita	4	2	19	-	25
TOTAL		367	62	1363	28	1820

MAINLAND PORTUGAL						
Crop Wild Relative	**Taxonomic Notes**	**BPGV**	**GBIF**	**Genesys**	**Flora-On**	**TOTAL**
Aegilops geniculata		128	331	108	-	567
Aegilops neglecta		15	653	10	-	678
Aegilops triuncialis		87	785	75	-	947
Agrostis capillaris		0	23	0	-	23
Allium ampeloprasum		15	329	1	-	345
Alopecurus arundinaceus		0	50	0	-	50
Apium graveolens		30	552	0	-	582
Arrhenatherum elatius	It includes: A. elatius subsp. bulbosum, A. elatius subsp. elatius	3	777	0	-	780
Asparagus acutifolius		0	1056	0	-	1056
Asparagus albus		0	850	0	-	850
Asparagus aphyllus		0	1266	0	-	1266
Atriplex halimus		0	414	0	-	414
Avena barbata		1	1021	23	-	1045
Avena fatua		0	146	0	-	146
Avena longiglumis		0	14	2	3	19
Avena sterilis	It includes: A. sterilis subsp. ludoviciana, A. sterilis subsp. sterilis	1	233	5	-	239
Barbarea verna		0	4	0	5	9
Beta macrocarpa		16	26	2	-	44
Beta maritima		11	134	14	-	159
Brassica barrelieri		18	805	3	-	826

MAINLAND PORTUGAL						
Crop Wild Relative	**Taxonomic Notes**	**BPGV**	**GBIF**	**Genesys**	**Flora-On**	**TOTAL**
Brassica nigra		0	19	0	-	19
Brassica oxyrrhina		1	40	0	-	41
Brassica tournefortii		3	1	0	5	9
Capsella bursa-pastoris		0	1037	0	-	1037
Carthamus lanatus	It includes: C. lanatus subsp. baeticus, C. lanatus subsp. Lanatus	1	778	0	-	779
Cichorium endivia subsp. divaricatum		0	0	0	25	25
Cichorium intybus		25	1310	2	-	1337
Coincya monensis	It includes: C. monensis subsp. cheiranthos, C. monensis subsp. orophila, C. monensis subsp. puberula	1	681	0	-	682
Coronilla scorpioides		1	114	1	-	116
Corylus avellana		0	304	0	-	304
Cynara algarbiensis		0	157	0	-	157
Cynara cardunculus		1	362	0	-	363
Cynara humilis		1	1103	2	-	1106
Cynara tournefortii		0	15	0	19	34
Dactylis glomerata	It includes: D. glomerata subsp. hispanica, D. glomerata subsp. lusitanica	182	1575	117	-	1874
Daucus carota	It includes: D. carota subsp. carota, D. carota subsp. gummifer, D. carota subsp. halophilus, D. carota subsp. maximus	43	2091	28	-	2162
Daucus crinitus		18	703	1	-	722
Diplotaxis catholica		7	727	0	-	734
Diplotaxis erucoides		0	2	0	1	3
Diplotaxis muralis		0	2	0	4	6
Diplotaxis siifolia		0	35	0	-	35
Diplotaxis tenuifolia		1	15	0	5	21
Echinochloa crus-galli		0	682	3	-	685
Elymus elongatus		0	8	0	5	13
Eragrostis pilosa		0	499	0	-	499
Eruca vesicaria		0	72	0	-	72
Festuca rubra	It includes: F. rubra subsp. litoralis, F. rubra subsp. pruinosa, F. rubra subsp. rubra	0	39	2	-	41
Ficus carica		0	1793	0	-	1793
Foeniculum vulgare		101	2144	1	-	2246
Fragaria vesca		0	236	0	-	236
Hordeum marinum		0	21	0	-	21

MAINLAND PORTUGAL						
Crop Wild Relative	**Taxonomic Notes**	**BPGV**	**GBIF**	**Genesys**	**Flora-On**	**TOTAL**
Humulus lupulus		102	761	0	-	863
Isatis tinctoria		0	2	0	1	3
Lactuca saligna		0	58	0	-	58
Lactuca serriola		1	987	5	-	993
Lactuca virosa		6	702	3	-	711
Lathyrus amphicarpos		0	35	0	-	35
Lathyrus annuus		0	141	0	-	141
Lathyrus aphaca		0	154	0	-	154
Lathyrus cicera		1	224	0	-	225
Lathyrus clymenum		2	1072	5	-	1079
Lathyrus hirsutus		1	577	0	-	578
Lathyrus latifolius		1	681	0	-	682
Lathyrus ochrus		0	360	3	-	363
Lathyrus setifolius		0	559	0	-	559
Lathyrus sylvestris		0	56	1	-	57
Lathyrus tingitanus		1	188	0	-	189
Lens lamottei		0	2	0	11	13
Lens nigricans		0	13	0	4	17
Lepidium sativum		0	2	0	1	3
Linum bienne		0	1233	0	-	1233
Lolium multiflorum		9	77	13	-	99
Lolium perenne		29	600	88	-	717
Lotus conimbricensis		0	564	6	-	570
Lotus corniculatus		0	693	6	-	699
Lotus ornithopodioides		0	7	1	6	14
Lupinus angustifolius		115	1636	68	-	1819
Lupinus cosentinii		18	145	9	-	172
Lupinus hispanicus		0	125	0	-	125
Lupinus luteus		117	1223	115	-	1455
Lupinus micranthus		13	29	8	-	50
Malus sylvestris		1	22	0	-	23
Medicago doliata		8	35	83	-	126
Medicago falcata		0	7	0	2	9
Medicago italica		2	35	27	-	64
Medicago littoralis		0	137	29	-	166
Medicago marina		0	448	0	-	448
Medicago murex		0	18	4	-	22
Medicago rigidula		3	85	7	-	95
Medicago scutellata		0	27	6	-	33
Medicago truncatula		4	102	112	-	218
Melilotus albus		0	47	0	-	47
Melilotus indicus		0	191	3	-	194
Melilotus officinalis		0	6	0	12	18
Mentha aquatica		14	637	0	-	651
Mentha longifolia		0	2	0	0	2

MAINLAND PORTUGAL						
Crop Wild Relative	**Taxonomic Notes**	**BPGV**	**GBIF**	**Genesys**	**Flora-On**	**TOTAL**
Mentha pulegium		87	1167	0	-	1254
Mentha suaveolens		1	1770	0	-	1771
Olea europaea var. sylvestris		0	0	0	247	247
Ornithopus compressus		146	1227	150	-	1523
Panicum repens		0	103	0	-	103
Papaver rhoeas	It includes: P. rhoeas subsp. rhoeas, P. rhoeas subsp. strigosum	0	1407	0	-	1407
Pastinaca sativa		0	5	0	1	6
Patellifolia patellaris		0	4	0	3	7
Phalaris arundinacea		0	57	0	-	57
Phleum pratense	It includes: P. pratense subsp. bertolonii, P. pratense subsp. pratense	0	9	0	38	47
Pistacia lentiscus		0	3954	0	-	3954
Pistacia therebinthus		0	14	0	-	14
Pisum sativum subsp. elatius		0	100	1	-	101
Poa pratensis		0	14	1	-	15
Prunus avium		0	726	0	-	726
Prunus insititia		0	47	0	-	47
Prunus mahaleb		0	87	0	-	87
Prunus padus		0	7	0	0	7
Prunus spinosa		0	914	0	-	914
Pyrus bourgaeana		0	260	0	-	260
Pyrus cordata		0	654	0	-	654
Raphanus raphanistrum		0	1673	0	-	1673
Rorippa nasturtium-aquaticum		0	201	0	-	201
Rubus caesius		0	4	0	14	18
Rubus ulmifolius		0	1406	0	-	1406
Salsola soda		0	20	0	-	20
Salsola vermiculata		0	120	0	-	120
Setaria verticillata		0	82	1	-	83
Setaria viridis		0	497	1	-	498
Sinapis alba		0	688	0	-	688
Sinapis arvensis		0	106	1	-	107
Solanum nigrum		0	1321	0	-	1321
Trifolium angustifolium		1	1571	7	-	1579
Trifolium dubium		1	769	0	-	770
Trifolium fragiferum		0	122	4	-	126
Trifolium nigrescens		0	255	5	-	260
Trifolium occidentale		2	6	17	-	25
Trifolium pratense		15	1231	42	-	1288

MAINLAND PORTUGAL						
Crop Wild Relative	**Taxonomic Notes**	**BPGV**	**GBIF**	**Genesys**	**Flora-On**	**TOTAL**
Trifolium repens	It includes: T. repens var. giganteum, T. repens var. nevadense, T. repens var. repens	0	1872	237	-	2109
Trifolium resupinatum		0	982	28	-	1010
Trifolium subterraneum	It includes: T. subterraneum subsp. oxaloides, T. subterraneum subsp. subterraneum	214	805	381	-	1400
Vaccinium myrtillus		0	41	0	-	41
Vaccinium uliginosum		0	1	0	1	2
Vicia amphicarpa		0	0	0	0	0
Vicia angustifolia		0	967	1	-	968
Vicia articulata		0	16	0	5	21
Vicia bithynica		0	30	5	-	35
Vicia cordata		1	569	3	-	573
Vicia hirsuta		0	615	9	-	624
Vicia lathyroides		0	76	9	-	85
Vicia lutea	It includes: V. lutea subsp. lutea, V. lutea subsp. vestita	0	1097	9	-	1106
Vicia narbonensis		0	14	9	-	23
Vicia sativa		0	550	2	-	552
Vitis vinifera subsp. sylvestris		0	0	0	46	46
TOTAL		1627	70972	1925	464	74988