



Deliverable title	D2.2 Catalogued and stored seeds from Mediterranean spontaneous thistle populations
Deliverable Lead:	ISA-CM
Related Work Package:	WP2 Characterization of spontaneously grown thistle populations
Related Task:	T2.3 Sampling, cataloguing and storing of seeds
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Dissemination level	Public
Due Submission Date:	01.01.2020 (Month 9)
Actual submission:	31.10.2019
Start date of project	01.05.2019 (after project end extension: 48 months)
Duration	36 months
Abstract	Seeds of <i>Cynara humilis</i> , <i>Onopordum platylepis</i> and <i>Onopordum tauricum</i> have been catalogued according to international protocols (ISTA, 2018) and further temporary stored in dry-room at controlled temperature (16°C) and relative humidity (15%) and in freezer cabinets at -20°C.

Versioning and Contribution History

Version	Date	Modified by	Modification reason
v1.0	29/09/2019	Bouthaina Dridi Al Mohandes	First version
V2.0	31/10/2019	Bouthaina Dridi Al Mohandes	Comments after peer reviewing process

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1. Cataloguing of seeds

The objectives of the deliverable were the sampling, cataloguing, and storing of seeds belonging to the following species: *Onopordum tauricum*; *Cynara humilis*; *Onopordum platylepis*. During Summer 2019 (July-August-September) the sampling campaign was carried out as follows:

- *Onopordum tauricum*: the seeds were sampled at Cupi di Visso (MC) – Italy and Colfiorito (PG) - Italy
- *Cynara humilis*: the seeds were sampled at Alcaraz (Castiglia-La Mancia) - Spain
- *Onopordum platylepis*: the seeds were sampled at Chott Meriem in the central-eastern regions of Tunisia

1.1 Orto Botanico Selva di Gallignano Seed Bank

Mature seeds of the three thistle species were stored by the Orto Botanico Selva di Gallignano Seed Bank (UNIVPM, Ancona, Italy). Unique access code has been attributed to the different seed collections, with each code corresponding to the date and the locality of collection:

- *Onopordum tauricum*: MSB VEGGIE19A01 (Cupi di Visso)
- *Onopordum tauricum*: MSB VEGGIE19A02 (Colfiorito)
- *Cynara humilis*: MSB VEGGIE19A03
- *Onopordum platylepis*: MSB VEGGIE19A04

Approximately 5000 seeds per species were cleaned, counted, weighed, and stored at controlled temperature (16°C) and humidity (15%). An aliquot (1000) of the seeds was used for the germination tests and the production of plants; the remaining seeds were kept for further studies. A sample of each accession of seeds, after the appropriate preparatory stages, was archived for long-term storage in a freezer at -18 ° C, in the Majella seed Bank (Parco Nazionale della Majella) and in Orto Botanico Selva di Gallignano Seed Bank (UNIVPM)



Fig.1. *Onopordum tauricum*: seed.



Fig.2. *Onopordum tauricum*: seed with pappus.

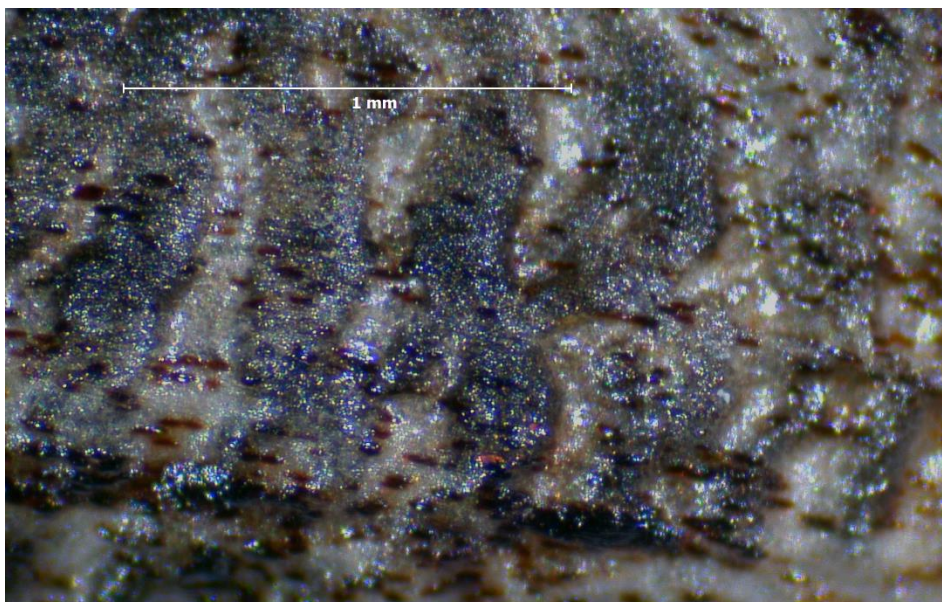


Fig.3. *Onopordum tauricum*: seed tegument.



Fig.4. *Cynara humilis*: seed.



Fig.5. *Cynara humilis*: seed with pappus



Fig.6. *Cynara humilis*: flower head with seeds.



Fig.7. *Onopordum platylepis*



Fig.8. *Onopordum platylepis*: seed with pappus

1.2 Experimental station of High Agronomic Institute of Chott Meriem – Sousse – Tunisia

The mature seeds of *onopordum platylepis* were cleaned, counted, weighed, and stored at controlled temperature (16°C) and humidity (15%). The viability of the seeds of *O.platylepis* was tested, after that different germination tests were performed using manual, chemical and physical scarification. An hormonal treatment using gibberellic acids combined with physical treatment (cold stratification) was also performed. Cypselas were used for the production of plants in a complete randomized blocks with 4 replications and stored for further studies.



Fig 1. *Onopordum platylepis* seed with pappus



Fig 2. *Onopordum platylepis* seed showing cross stripes

Achene are obvoid (flattened at the end), striated (cross stripes) with short bristles (light beige in color, 1,3 cm in length on average).

Collection data

Species	Date Collected	Collector's Name	Locality	Fuse	Longitude	Latitude	GPS Datum	Altitude (m)
<i>Onopordum tauricum</i> Willd.	08/08/2019	Di Cecco V., Di Martino L., Casavecchia S., Zitti S.	Loc. Cupi (Visso, MC), Marche Region, Italy	33T	346305	4762402	WGS 84	979
<i>Onopordum tauricum</i> Willd.	08/08/2019	Di Cecco V., Di Martino L., Casavecchia S., Zitti S.	Loc. Colfiorito (MC) Marche Region, Italy	33T	329957	4768517	WGS 84	761
<i>Cynara humilis</i> (L.)	05/09/2019	Di Cecco V., Di Martino L.	Alcaraz - Castiglia- La Mancia, Spain	30S	543628	4279897	WGS 84	920

Seeds data

Species	Accession number	Locality	Collection weight [g]	Weight of 100 seeds[g]	Number of seeds collected
<i>Onopordum tauricum</i> Willd	MSB VEGGIE19A01	Loc. Cupi (Visso, MC), Marche Region Italy	176.5815	1.0401	16977
<i>Onopordum tauricum</i> Willd	MSB VEGGIE19A02	Loc. Colfiorito(MC, Marche Region Italy	123.7419	1.3023	9502
<i>Cynara humilis</i> (L.)	MSB VEGGIE19A03	Alcaraz - Castiglia- La Mancia Spain	43.35	5.0081	866
<i>Onopordum platylepis</i>	MSB VEGGIE19A04	Chott Meriem, central-eastern region of Tunisia	14.9842	1.6795	892