

# SEED BANK OF AZORES: PRESERVING THE AZOREAN FLORA



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# WHY PRESERVING THE AZOREAN FLORA IN A SEED BANK?

- Human activities are the main threat to biodiversity and ecosystems:
  - Direct destruction;
  - Indirect destruction.
- Endemic species are particularly vulnerable to threats;
- In the Azores the distribution of endemic and native species is threatened;
- Seed banks are a success conservation strategy:



## GOAL OF SEED BANK OF THE AZORES

- Preserve all Azorean endemic and native flora;
  - Preserve 80% of all endemic flora possible to bank by 2020;



# THE COLLECTION OF SEED BANK OF AZORES

- 10 years of project:
  - 53 endemic and native *taxa*;
  - 8 million seeds storage;
  - 400 samples;
- International projects:



GLOBAL  
SEED  
CONSERVATION  
CHALLENGE



# CONSERVATION METHODOLOGY IN SEED BANK OF AZORES

- ENSCONET
- Planning seed collecting:
  - Selecting the species to be collected;
  - Selecting the populations to sample.
- Seed collecting;
- Processing:
  - Seed drying;
  - Seed cleaning;
- Long-term seed storage;
- Seed germination testing.





# ASSESSMENT OF THE EFFECT FROM THE STORAGE CONDITIONS IN SEED GERMINATION CHARACTERISTICS – *Azorina vidalii* AND *Lotus azoricus*

*Azorina vidalii*



*Lotus azoricus*



- Seed collecting;
  - Seed drying:
    - 1 month;
    - 15°C e 15% RH.
  - Seed cleaning;
  - Packaging;
  - Seed storage:
    - 1 month;
    - -15°C.
- *Azorina vidalii*
    - 4 x 100 seeds;
    - 20°C and 16h of photoperiod.

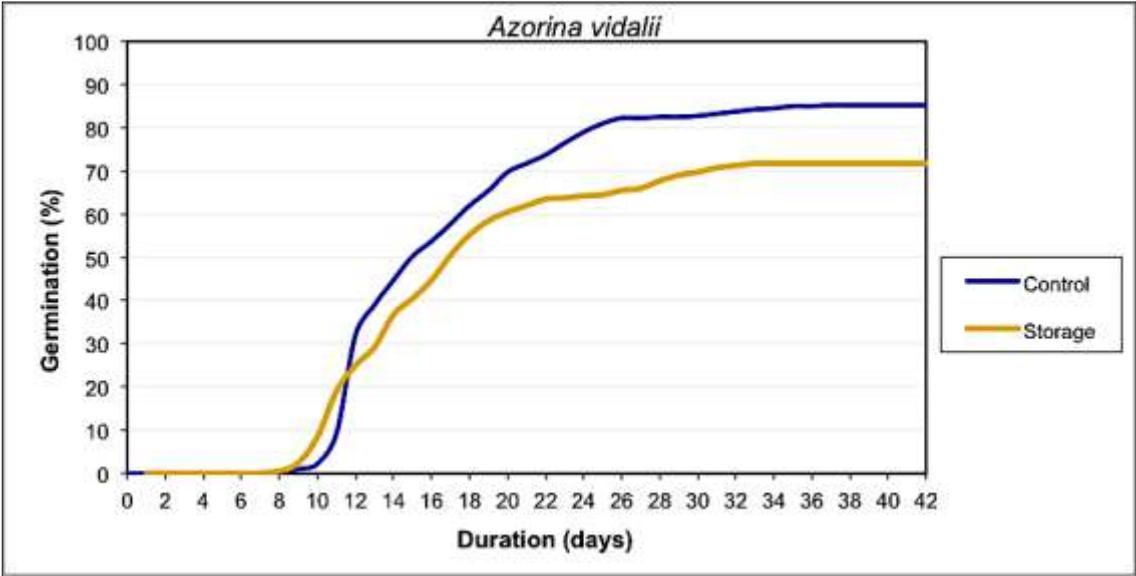


- *Lotus azoricus*
  - 400 seeds;
  - Chemical scarification;
  - 15°C and 8h of photoperiod.

Azorina vidalii

Seed Bank of the Azores. *Azorina vidalii* seed germination characteristic: non-storage seeds and 1 month storage seeds at -15°C. Average values ± standard deviation. Assay duration: 42 days. For each variable the averages affected by same letter do not differ significantly (p < 0,05).

Storage duration (month)	Temperature / Photoperiod	N	Latency (days)	TMG (days)	Germination (%)
0	20°C / 16h	4x100	8,50 ± 0,58a	16, 08 ± 3,08a	85,3 ± 4,7a
1	20°C / 16h	4x100	9,00 ± 2,5a	14,95 ± 3,6b	71,8 ± 2,2b

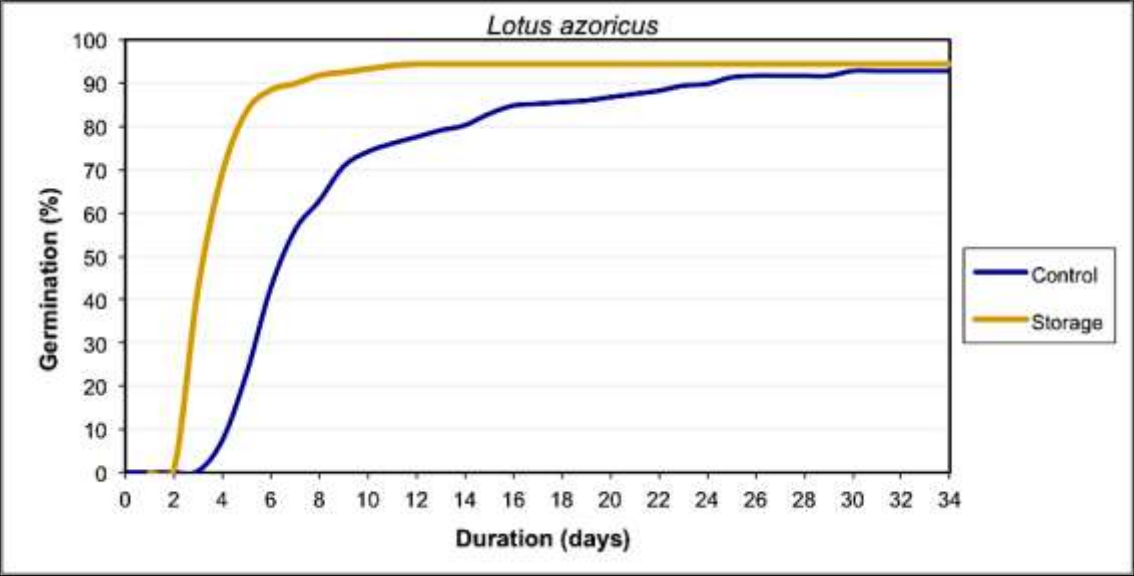




Lotus azoricus

Seed Bank of the Azores. *Azorina vidalii* seed germination characteristic: non-storage seeds and 1 month storage seeds at -15°C. Average values ± standard deviation. Assay duration: 34 days. For each variable the averages affected by same letter do not differ significantly (p < 0,05).

Storage duration (month)	Temperature / Photoperiod	N	Latency (days)	TMG (days)	Germination (%)
0	20°C / 16h	4x67	3,75 ± 0,50a	8,73 ± 0,90a	92,8 ± 1,92a
1	20°C / 16h	4x67	1,50 ± 0,58b	4,09 ± 0,13b	94,4 ± 0,82a



# OPTIMIZATION OF SEED GERMINATION TESTS – *Myosotis azorica*

*Myosotis azorica*



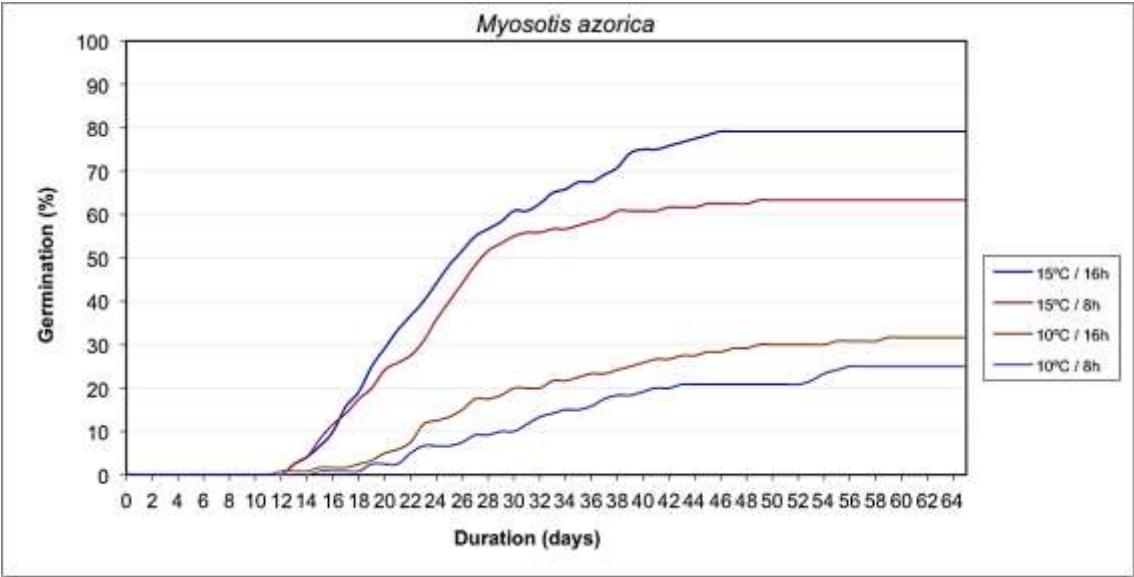
- Seed collecting;
- Seed cleaning;
  - Stainless steel sieves;
  - 15°C e 15% RH.
- Germination test:
  - 4 x 30 seeds;
- Germination conditions:
  - 15°C and 16h of photoperiod;
  - 15°C and 8h of photoperiod;
  - 10°C and 16h of photoperiod;
  - 10°C and 8h of photoperiod.



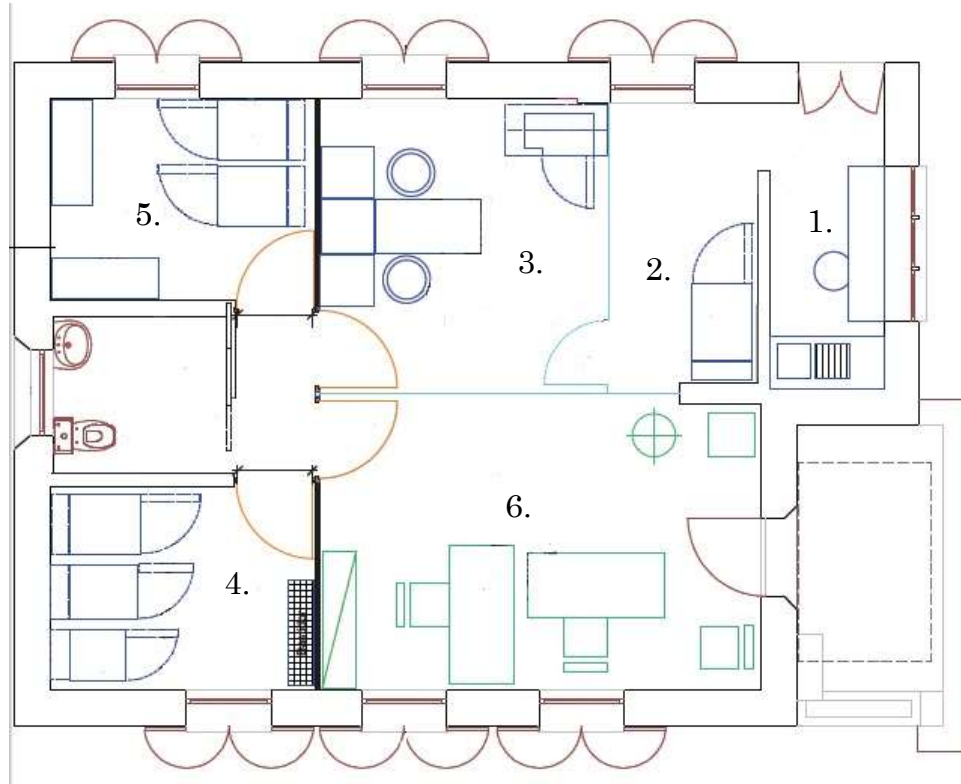
Myosotis azorica

Seed Bank of the Azores. *Myosotis azorica* seed germination characteristic under different temperature and photoperiod. Average values  $\pm$  standard deviation. Assay duration: 43 days. For each variable the averages affected by same letter do not differ significantly ( $p < 0,05$ ).

Temperature / Photoperiod	N	Latency (days)	TMG (days)	Germination (%)
15°C / 16h	4x30	13,75 $\pm$ 0,96 a	25,07 $\pm$ 1,84 a	79 $\pm$ 6,87 a
15°C / 8h	4x30	14,25 $\pm$ 1,5 a	23,92 $\pm$ 0,96 a	63,33 $\pm$ 17,85 a
10°C / 16h	4x30	16,75 $\pm$ 4,27 ab	29,75 $\pm$ 4,36 ab	31,67 $\pm$ 6,94 b
10°C / 8h	4x30	20,50 $\pm$ 3,7 b	33,89 $\pm$ 5,44 b	25 $\pm$ 8,39 b



# THE FUTURE OF SEED BANK OF AZORES



1. Receiving plant material;
2. Drying;
3. Processing;
4. Storage;
5. Germination;
6. Office.





Thank you for your attention!