

**Pericarp-Mediated Chemical Dormancy Controls the Fruit Germination of the
Invasive Hoary Cress Weed *Lepidium draba*, but not of *Lepidium appelianum***

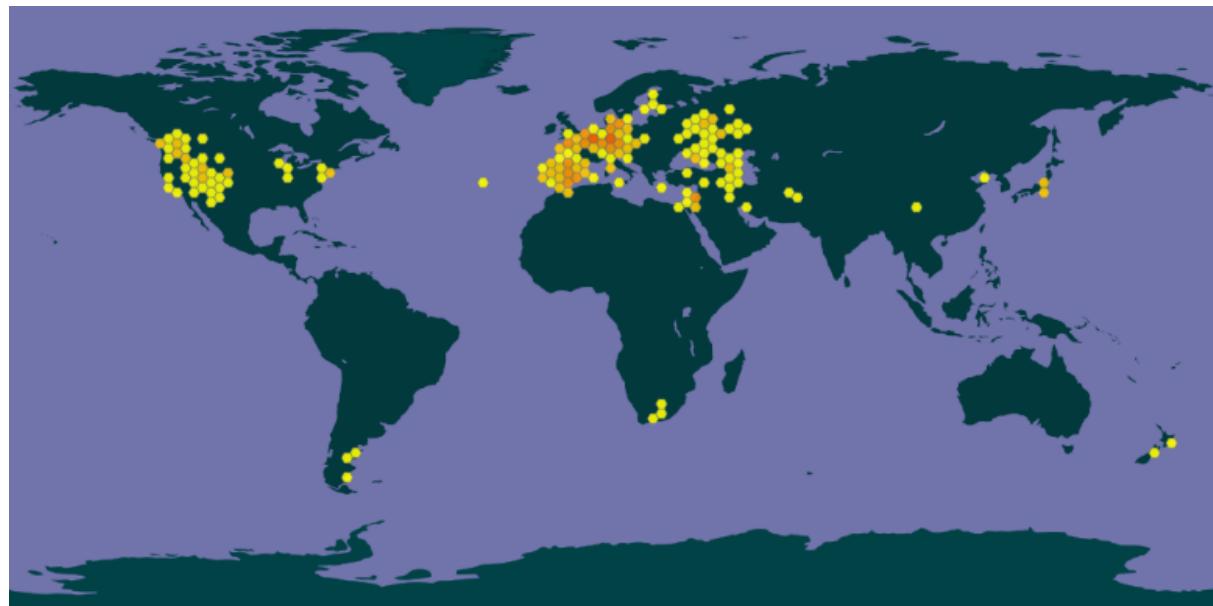
**Said Mohammed, Veronika Turečková, Danuše Tarkowská, Miroslav Strnad, Klaus
Mummenhoff*, Gerhard Leubner-Metzger***

*contributed equally

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Supplemental Material

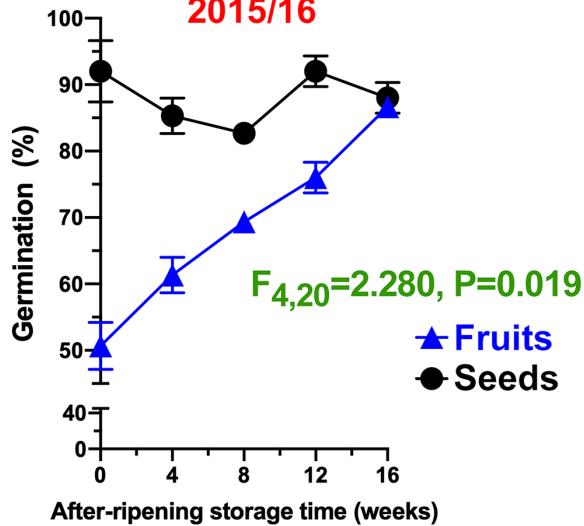
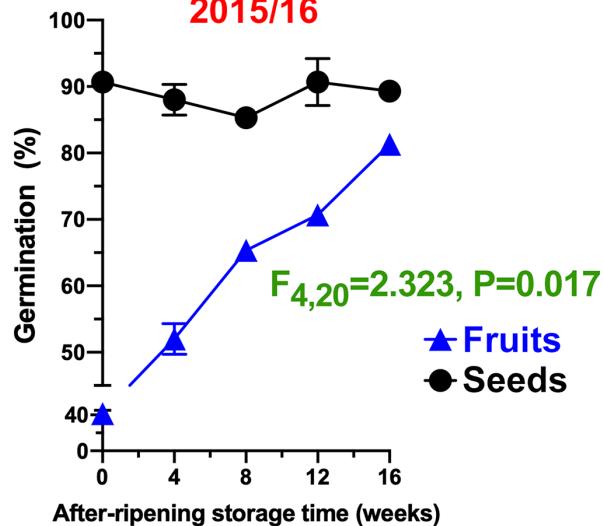
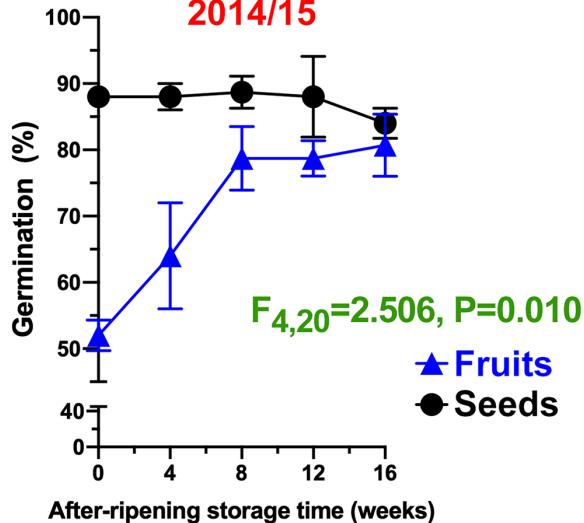
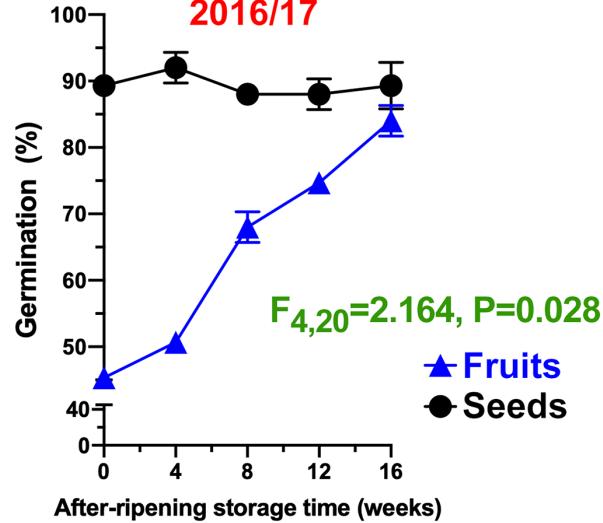
A *Lepidium draba*



B *Lepidium appelianum*



Supplemental Figure S1. The global distribution maps of *Lepidium draba* and *Lepidium appelianum* were generated using the Global Diversity Life website (www.discoverlife.org) which accesses the Global Diversity Information Database (www.gbif.org). (A) *Lepidium draba* syn. *Cardaria draba* (L.) Desv. in GBIF Secretariat (2017): GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei> accessed via GBIF.org on 2019-05-29. (B) *Lepidium appelianum* Al-Shehbaz in GBIF Secretariat (2017). GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei> accessed via GBIF.org on 2019-05-30.

Lepidium draba* after-ripening - Effects of accessions (location) x year*KM1269 (Malheur, Oregon, USA)****2015/16****KM1568 (Hayesdorf, Austria, EU)****2015/16****KM1269 (Malheur, Oregon, USA)****2014/15****KM1568 (Hayesdorf, Austria, EU)****2016/17**

Supplemental Figure S2. The effect of after-ripening on the germination of *Lepidium draba* isolated seeds and indehiscent fruits (seeds within pericarp) compared between two accessions and three years. Note that for both accessions, KM1269 (USA) and KM1568 (Austria), and for the three years (2014/15, 2015/16, 2016/17) the maximal germination percentage of fruit populations increased during after-ripening from ca. 45% for freshly harvested fruits to ca. 90% for after-ripened fruits. In contrast to this, the maximal germination percentage of populations of isolated seeds was ca. 90% in the freshly harvested as well as the after-ripened state. Mean values \pm SE ($N=3 \times 25$) at optimal germination assay conditions are presented. **Detailed statistical analysis (see Supplemental Table 1)** confirmed that there are no statistically significant differences between the germination of isolated seeds of accessions over years, as well as between fruits germination of accessions over years means as determined by Tukey pairwise multiple comparison test ($P > 0.05$). The finding that fresh mature fruit populations exhibit only ca. 45% germination versus ca. 90% germination in after-ripened fruit populations is also statistically different as determined by Tukey pairwise multiple comparison test ($P < 0.05$). See Supplemental Table 1 for details of the statistical analyses.

<i>Lepidium draba</i>	Metabolite concentration [pmol/g dry weight]						
tissue x treatment	ABA	PA	DPA	neoPA	7OHABA	ABAGE	
fresh seeds	267.1 ^a ± 13.9	<LOD ^a	632.4 ^a ± 79.4	14.3 ^a ± 4.0	280.9 ^a ± 12.0	<LOD ^a	
after-ripened seeds	255.2 ^a ± 25.8	<LOD ^a	362.8 ^a ± 45.8	11.8 ^{ac} ± 1.0	287.8 ^a ± 26.5	41.1 ^{ab} ± 4.7	
fresh pericarp (nonwashed)	1053.7 ^b ± 41.8	1099.7 ^b ± 66.0	12129.5 ^b ± 392.9	27.6 ^b ± 3.2	189.9 ^b ± 11.5	290.1 ^b ± 18.8	
after-ripened pericarp (nonwashed)	58.7 ^c ± 1.2	<LOD ^a	348.9 ^a ± 13.9	8.0 ^c ± 0.6	53.1 ^c ± 8.4	13.5 ^{ab} ± 4.1	
fresh pericarp washed for 6h	42.1 ± 5.5	<LOD	147.4 ± 21.1	2.3 ± 0.3	22.9 ± 3.3	12.7 ± 2.6	
fresh pericarp washed for 12h	38.7 ± 2.3	<LOD	111.4 ± 19.3	2.3 ± 0.3	42.1 ± 12.3	17.3 ± 6.9	
fresh pericarp washed for 18h	27.2 ± 1.5	20.8 ± 1.6	81.1 ± 6.8	1.8 ± 0.1	15.4 ± 2.1	9.1 ± 0.1	
fresh pericarp washed for 24h	13.5 ± 1.5	<LOD	68.0 ± 12.7	1.8 ± 0.2	16.9 ± 0.8	11.0 ± 2.3	

Supplemental Table 2. The contents of *cis*-S(+)-abscisic acid (ABA) and its catabolites in *Lepidium draba* seed and pericarp tissues. Phaseic acid (PA), dihydrophaseic acid (DPA), neophaseic acid (neoPA), 7'-hydroxy-ABA (7OHABA), and ABA glucose ester (ABAGE). Means values ± SE for N = 4 samples (each 20 mg dry weight). Statistics: Different letters designate significantly different means as determined by Tukey pairwise multiple comparison test (P<0.05). In addition, using the same statistical test, the washed fresh pericarp tissue means for ABA, PA, DPA and ABAGE differed significantly from the nonwashed fresh pericarp tissue; for neoPA and 7OHABA this is also the case for the 18h and 24h washed pericarp tissues. LOD = Limit Of Detection.