

Supplementary material

Table S1. Plan of *Achillea atrata* L. cultivation in Germany in the years 2015 to 2019. Composition of cultivation soil I: 32% wood fibre, 64% compost and 4% sand. Composition of soil variant 1: 20 % sand, 25 % volcanic granulate, 25 % wood fibre, compost and 30 % limestone gravel. Composition of soil variant 2: 30 % sand, 35 % volcanic granulate, 35% wood fibre.

Cultivation plan 2015/2016	
November 2015	Seeding of <i>A. atrata</i> in seed trays (broadcast seeding; cultivation soil I, covered with 1 mm quartz sand)
January 2016	Due to poor germination, <i>A. atrata</i> was reseeded (broadcast seeding, cultivation soil I, covered with 1 mm quartz sand)
February 2016	Planting of seedlings in small pots (dimensions: 7 x 7 x 8 cm) with cultivation soil I
April 2016	Planting of seedlings in pots (dimensions: 11 x 11 x 12 cm) with 2/3 cultivation soil I and 1/3 sand
June 2016	Transplanting of 20 juveniles into the field (soil variant 1) Transplanting of 6 juveniles in clay pots with different substrate composition (variant 1 and 2)
September 2016	Harvesting seeds from one plant in the generative phase
October 2016	13 plants from the field survived and were planted in a cold frame for hibernation Vegetative reproduction of the greatest plant from the clay pots (1 mother plant with 7 clones) Hibernation of the remaining clay pot plants and the novel clones in the cold frame
Cultivation plan 2017	
	Vegetative reproduction and establishment of a stable plant population in pot cultures and in cold frames Entire plant population dies off
Cultivation plan 2018	
April 2018	Reseeding of <i>A. atrata</i> (seeds collected in 2016; broadcast seeding; cultivation soil I, covered with 1 mm quartz sand) Planting of 55 seedlings in small pots with cultivation soil I
June 2018	Planting of 51 juveniles in pots with 2/3 cultivation soil I and 1/3 sand
July 2018	35 juvenile plants survived and were transplanted into the field trial for hibernation (soil variant 1)
Cultivation plan 2019	
April 2019	Reseeding of <i>A. atrata</i> (seeds collected in 2016 / seeds from University Zurich; broadcast seeding; cultivation soil I, covered with 1 mm quartz sand)
May 2019	Planting of seedlings in small pots with cultivation soil I

June 2019	Planting of 37 juveniles in pots with 2/3 cultivation soil I and 1/3 sand	Table S2. Plan of <i>Achillea at-</i>
July 2019	25 juvenile plants were transplanted into the field (soil variant 1)	
August 2019	8 plants survived, one plant reached the generative phase Complete harvest of the plant population for phytochemical analyses	

rata L. cultivation in Switzerland in the years 2016 to 2019. Composition of cultivation soil II: 2/3 peat-free soil consisting of bark humus and mineral structural materials and 1/3 sand. Soil composition for the field: 70% compost, 15% wood fibres, 5% clay, 5% lava granules and limestone.

Cultivation plan 2016	
May 2016	Seeding of <i>A. atrata</i> in cold frames (broadcast seeding; cultivation soil II)
June 2016	Planting of 8 seedlings in small pots (cultivation soil II)
	Reseeding of <i>A. atrata</i> in cold frames, due to poor germination
September 2016	Planting of 19 juvenile plants in clay pots with 3/4 cultivation soil II and 1/4 sand and gravel
October 2016	Transplanting of 19 juveniles into the field with a soil composition of 70% compost, 15% wood fibres, 5% clay, 5% lava granules and limestone
	Hibernation of <i>A. atrata</i> in the field
Cultivation plan 2017	
May 2017	14 plants survived the winter season
August 2017	13 plants survived
September 2017	Vegetative reproduction 13 plants and their 78 shoots were planted in pots (dimensions: 9 x 9 x 10 cm) with cultivation soil II
October 2017	13 plants and 33 shoots were transplanted into the field with a soil composition of 70% compost, 15% wood fibres, 5% clay, 5% lava granules and limestone
Cultivation plan 2018/ 2019	
May 2018	1 plant and 4 shoots survived the winter season
July 2018	Renewed seeding of <i>A. atrata</i> remained unsuccessful
October 2018	Hibernation of 5 plants in the field
August 2019	Harvest of all surviving plants