

Salsola kali L. Prickly Saltwort

GB Red List Status: Vulnerable

Salsola kali (family Amaranthaceae) is a coastal annual found in vegetated shingle along the strandline all around the UK. Declining numbers in the UK are due to habitat loss, increased pressure on habitat from disturbance and the changing climate, particularly with regards to increasing storm damage.

Seed harvest

S. kali flowers June and July and seeds develop and disperse July to October. Each fruit contains a single seed and as the corky exterior is difficult to remove, whole fruits are stored at the Millennium Seed Bank. For ease of processing, make collections into paper bags rather than cotton to avoid the spines catching. The approximate dry weight of 1000 fruits is 11.59g. Collections conserved at the Millennium Seed Bank were harvested between mid-September and early October.



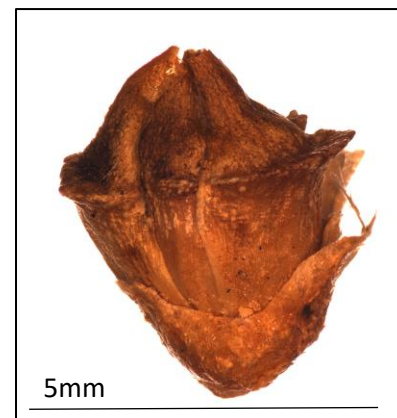
S. kali in flower

Propagation

The best trial results were achieved with an autumn sow in equal parts sand, Petersfield Peat-Free Supreme compost and Sinclair Special Seed perlite. Germination started within a week; however, the majority of germination took place in the following spring.

Although laboratory trials found that scarification was needed for optimum germination, in the nursery, plants grew stronger and straighter when the fruit was left whole. Similarly, the seedlings developed best when anchored by a surface layer of horticultural grit and grown outside, in a cold frame. Trays were watered from below to avoid disturbance to the seeds.

The majority of the seeds germinated in early spring when the temperature was approximately 18°C.



S. kali fruit

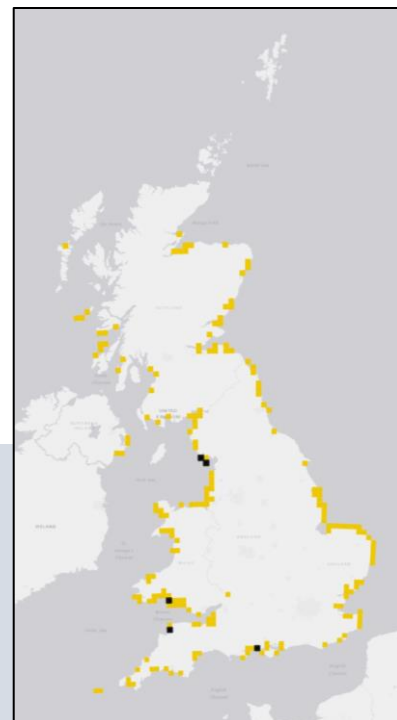
Ex situ conservation

As of December 2023, the Millennium Seed Bank conserves over 8,000 seeds from the UK in five collections over five different hectads. Seeds are maintaining viability in conventional seed bank conditions (15%RH/ -20°C) with one collection achieving 100% germination after 11 years of storage.

This map shows the distribution of native *Salsola kali* records since 2000 (BSBI) in yellow and MSB conserved collections in black.

Propagation trials for S. kali took place at Wakehurst, West Sussex in spring 2022 as part of the UK Threatened Flora Project (2020-2023) and investigated the requirement of seed coat removal.

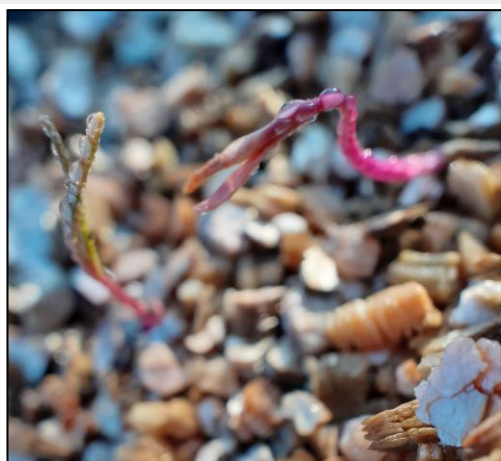
A maximum conversion rate of 82% (seed sown to adult plant) was achieved with an autumn sow with the seed coat still intact. See reverse for methodology and results of the best tests in the laboratory and nursery.



Germination and Propagation: best tests in laboratory and nursery

The seeds tested were stored in the Millennium Seed Bank since collection in West Glamorgan in October 1997

	Laboratory method	Nursery method
Date sown:	June 2008	November 2021
Pre-treatments:	External structure partially removed	None
Germination media:	1% Agar	Equal parts sand, Petersfield Peat-Free Supreme compost and Sinclair Special Seed perlite with a covering of Melcourt horticultural potting grit.
Germination conditions:	20°C (8 hrs light/16 hrs dark)	Outside in cold frame
Days until germination:	7 days (7 days to peak germination)	7 days to first germination (4 months to peak germination)
Germination duration:	7 days	5 months
Germination percentage:	100%	95%
Growing conditions:	N/A	Remain outside in cold frame. Water from below.
Growing media:	N/A	Equal parts sand, Petersfield Peat-Free Supreme compost and Sinclair Special Seed perlite with a covering of Melcourt horticultural potting grit
Seedling survival:	N/A	87% of seeds sown (93% of seeds germinated)
Replicates:	1 x 50 seed	3 x 33 seed



Images from l-r: *S. kali* seedlings first week after germination - seedlings benefit from anchoring with horticultural grit; *S. kali* seedlings approx. 2 weeks after germination with toothpick markers for scale; seedlings approx. 1 month after germination).

References and Resources

- The Vascular Plant Red Data List for Great Britain. Species Status 7: 1-116. Joint Nature Conservation Committee, Peterborough (Revised 2021)
- *Salsola kali* L. in BSBI Online Plant Atlas 2020, eds P.A. Stroh, T. A. Humphrey, R.J. Burkmar, O.L. Pescott, D.B. Roy, & K.J. Walker. <https://plantatlas2020.org/atlas/2cd4p9h.q7f> [Accessed 13/12/2023]

Please note: Anyone collecting seeds must do so legally and sustainably. Site conditions and management should be suitable for the sustainability of the population prior to any (re)introduction of seed or plants.

For more information on data, protocols and standards at the Millennium Seed Bank, see our website: www.brahmonline.kew.org/msbp

Follow the UK Team on Twitter: @Kew_MSBUK