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Fig. 1 *S. cauticola* makes a satisfying display with saxifrage and sempervivum.

Sedums comprise about 500 species, most of them succulents. The genus includes annuals, sub-shrubs and shrubs, deciduous perennials and evergreens. In their natural habitat most species are found in dry ground and rocky areas, often in mountainous regions – so it's not surprising that they're commonly known as stonecrops. A few species grow in wetland, lowland and coastal areas, also as epiphytes. Sedums are widely distributed throughout northern temperate regions; a few species colonise areas in the southern hemisphere and tropical mountains.

Sedums are xerophytes, species which have adapted to survive in an environment with little liquid water, and established plants thrive under dry conditions as a result of a specialised process of photosynthesis<sup>1</sup> which reduces transpiration. (Most of our garden plants are mesophytes, which benefit

from watering in times of drought.)

In the main sedums are not demanding in cultivation: most simply require a site that is well drained and in full sun.

I wanted to put a number of low-growing species through their paces during the winter months to assess their hardiness. I intended growing them with alpines in sink-garden displays dressed with stone chippings, in miniature gardens, and planted into the tops of stone walls (fig. 1). Many low-growing sedums can also be attractive planted in old chimney pots. Sedums are the most widely used species on 'green roofs', particularly *S. acre* and *S. album*<sup>2</sup>.

### Propagation

Experiments were undertaken with cuttings and plant divisions in the glasshouse, propagation tent, cold frame, and directly outside.

## Propagating stonecrops for creative planting

Kevin Line



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Fig. 2 Divisions of *S. spurium* 'Coccineum'.



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Figs 3 & 4 *S. spathulifolium* 'Cape Blanco' divisions did better outside than under glass.



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<sup>1</sup>Most sedums have a Crassulacean Acid Metabolism, also known as CAM photosynthesis. This carbon-fixation pathway has evolved in some plants as an adaptation to arid conditions, whereby the stomata in the leaves remain shut during the day to reduce transpiration but open at night to collect carbon dioxide. *Sedums, Cultivated Stonecrops*; Stevenson; Timber Press.

<sup>2</sup>*The Plantsman*, March 2015.



Fig. 5 The varied seed germination rate and seedling development.



Fig. 6 Pricking out *S. forsterianum* seedlings.



Fig. 7 These are cuttings from a plant labelled *S. 'Princess'* – I'd welcome advice on its true identity. It has proven to be outstanding in flower with 30cm stems in pots outside.

### Plants grown from divisions and cuttings:

- *S. spurium* 'Coccineum' (fig. 2)
- *S. spathulifolium* 'Cape Blanco' (fig. 3)
- *S. 'Princess'* (fig. 7)
- *S. rupestre* 'Angelina' (fig. 8)
- *S. spurium* 'Schorbuser Blut', syn. 'Dragon's Blood' (fig. 8)
- *S. hispanicum* var. *minus* (syn. *S. glaucum*) (figs 8 & 14)
- *S. acre* 'Aureum' (fig. 10)
- *S. x rubrotinctum*, the Banana Cactus or Christmas Cheer (fig. 11)
- *S. spurium* 'Fuldaglut' (fig. 12)

All of the divisions/cuttings were put in a very gritty mix, 50/50 grit sand and peat-free compost. A valuable lesson I learned is not to water cuttings immediately after insertion, as soaking them can cause

the stems to rot within the growing mix – when after ten days I lifted a few cuttings of each species the stem tissue was very soft.

As an experiment, I took cuttings of some of the slightly thicker-stemmed species, including the Jelly Bean Plant, or Pork and Beans, *Sedum x rubrotinctum*. I put the cuttings on paper in a cool utility area, and after a few days I noticed a callus forming over the cut end of the stem. Only from this point, or after about two weeks, should we consider starting to water the cuttings in the compost.

Sedums generally tolerate a large diurnal temperature range. In the course of propagating I have observed varied growth in response to hot and cold conditions, both under glass, and propagation/cultivation in the open.



Fig. 8 Plants lined up for division or cuttings. From the top: *S. rupestre* 'Angelina', *S. hispanicum* var. *minus* & *S. spurium* 'Schorbuser Blut' (syn. 'Dragon's Blood').

The species most affected by variations in temperature was *S. spurium*. In pots under glass the foliage becomes lacklustre in appearance on warm winter/spring days. Shade netting was required in order to sustain the waxy/glossy appearance of the plants. The divisions of *S. spurium* placed outside remained glossy and healthy in appearance and produced strong basal shoots from the centre of the plants, unlike plants under glass.

The large majority of cuttings and divisions taken last autumn rooted and grew on with very little watering. The outright failures were those placed directly outside without any watering before cold winter nights. The combination of cold and dry around the roots caused some plants, but not all, to die in these freeze-dried conditions.

The worst affected were the *S. spurium* group, though *S. spurium* 'Coccineum' performs extremely well as an edge of the border plant throughout the winter when planted in the autumn as a pot-rooted plant. Plants outside were not affected if they were watered in the evening prior to cold nights.

With the correct cultivation, all species proved hardy down to the coldest recorded temperature of  $-7^{\circ}\text{C}$ , hardiness rating H4,



Fig. 9 Seen here thriving on the slate roof of our Victorian cottage, Wall Pepper, or *S. acre*, is a mat-forming plant for dry stone walls and rockeries.

though previously I have seen most of them survive harsher temperatures.

#### Plants grown from seed:

- *S. acre* 'Oktoberfest'
- *S. spurium* 'Purpurteppich' (syn. 'Purple Carpet')
- *S. Mixed Species* (from Chiltern Seeds)
- *S. spurium* 'Coccineum'
- *S. acre*
- *S. forsterianum* subsp. *elegans* 'Silver Stone'
- *S. selskianum* 'Goldilocks'
- *S. spurium* 'Summer Glory'

The seeds were sown in late October 2014. I wasn't able to pay them much attention, but even despite my negligence and some dry periods the seeds germinated in 6 weeks. The young plants have been grown on in modular seed trays under glass; pricking out started in late July. The hardiness of the young plants at the seedling stage is impressive, not covered by fleece at  $-7^{\circ}\text{C}$  under glass.

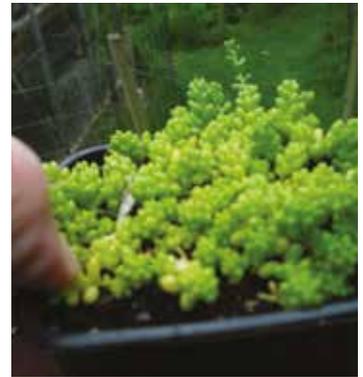


Fig. 10 Although Goldmoss Stonecrop, *S. acre* 'Aureum', looks fragile, it's extremely hardy and makes excellent ground cover.



Fig. 11 *S. x rubrotinctum* has beautiful, glossy, succulent leaves. But although it was labelled hardy, it didn't survive the winter outside.



Fig. 12 *S. spurium* 'Fuldaglut' flowering in late July this year.



Fig. 13 *S. cauticola* is impressive in flower.



Fig. 14 *S. hispanicum* var. *minus* looks as if it would be tender, but has proven hardy.

### Outstanding sedums for flowering display

Two species of sedums proved to be outstanding performers under exposed conditions in outdoor beds, the pots placed in trays in their outdoor positions: *S. spathulifolium* from divisions, and *S. rupestre* 'Angelina' from cuttings.

*S. spathulifolium* 'Cape Blanco' has been the most outstanding performer propagated from plant divisions. It is indigenous to the coastal ranges of California, inhabiting rocky slopes and sandy soils where competition from other plants is minimal. In the wild, spirally arranged leaves form at soil level, and rootless rosettes are produced from straight stolons so the increased weight causes the rosettes to cling on to bare rock. Short, compact inflorescences of bright golden yellow flowers are produced in early summer. The form 'Cape Blanco' is commonly seen in North American gardens.

Divisions were made in late August 2014 and placed in 9cm square pots in the cool glasshouse, the propagation tent, and directly outside. The roots were still set within a firm plug of compost after being divided from the parent plant. Unlike the cuttings, I watered the divisions directly after repotting but minimal watering was given once the divided plants began to establish.

At the time of flowering in May/June 2015, the most outstanding results are from divided plants placed outside in trays. Cold spring temperatures combined with high rainfall have enhanced flowering performance. Plants under glass have less foliage compared to plants in the propagation tent and plants placed outside in the trays.

There is a noticeable difference in the yellow inflorescences of the divided plants propagated under varying conditions. The plants propagated outside have more open and colourful inflorescences compared with those raised under glass; also their stems are half red and half yellow.

*S. rupestre* 'Angelina' is a native of Central and Western Europe. This sturdy plant can grow in extreme conditions in sand dunes within coastal regions and up to 200m in the Pyrenees. Known as the Crooked Stonecrop, it produces bright golden yellow inflorescences and its succulent leaves are stiff to the touch.

Cuttings were taken in late November 2014 and placed in 7cm round pots. The cuttings were not watered for about two weeks to allow the stems to callus within the compost. Interestingly, at the time of taking the cuttings the leaves were entirely yellow, but by mid- to late autumn half of the leaf surfaces had turned red. The red deepened after rain.



Fig. 15 Kevin with pots of *S. spathulifolium* divisions.

All the cuttings outside survived the winter and produced stems twice the length of those plants propagated under glass – 14cm compared to 7cm (except for *S.* ‘Princess’), the stems growing longer in wet conditions. This has not been matched by any of the other species, whether grown under glass or outside.

*S. rupestre* ‘Angelina’ is described as quite rampant

in growth, but not unruly. I plan to plant it in pockets on the top of the Cotswold stone walls within the garden.

Although I didn’t divide or take cuttings of *S. cauticola*, the Cliff-dwelling Stonecrop (fig. 13), I would certainly recommend it for its colourful reddish-pink flowers in early autumn combined with glaucous foliage. Interestingly, from late

autumn/early winter when it has apparently died back, the plant produces small basal shoots which provide the next season’s display.

I’ve enjoyed propagating and cultivating alpine sedums for our miniature garden displays and dry stone walls. Researching and collecting species of moss for under-planting them in semi-shaded conditions is my next project. 🌱

**Kevin Line** started gardening at the age of 7 and has worked in horticulture all his life, including freelance gardening, glasshouse crop production, BBC Gardeners’ World and the National Trust. For ten years he’s been Head Gardener/Plantsman at Barton House historic garden in the Cotswolds, which has Arbutus and Catalpa National Collections. See Kevin’s blog on plant propagation at [www.hardy-plant.org.uk](http://www.hardy-plant.org.uk)