



RHS Plant Trials and Awards

Hyacinthaceae – little blue bulbs

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RHS Trial of *Hyacinthaceae* – little blue bulbs

Compared to the more 'traditional' spring-flowering bulbs, such as daffodils, crocuses and snowdrops, the smaller, frost-hardy, blue-flowered members of the *Hyacinthaceae* family are perhaps much less familiar as garden plants. With the exception of a few of the grape hyacinths (*Muscari*) and squills (*Scilla*) most of the species in this group are uncommon in gardens, and yet when grown under the right conditions some can be of considerable garden value and interest.

Amongst the many specialists on the Rock Garden Plant Trials Sub-committee, the RHS is fortunate to have the bulb experts Brian Mathew and Chris Brickell, who enthusiastically supported the idea to conduct a trial of the smaller, hardy *Hyacinthaceae*. In addition to the desire to raise the profile of this interesting group of 'little blue bulbs', they considered that a comparative trial might shed light on some of the problems associated with the identification and naming of certain species and forms of hardy *Hyacinthaceae*.

The family *Hyacinthaceae*

In the 1980s a botanical review of the large family *Liliaceae* resulted in the proposal that it should be split up into many smaller families, one of which was *Hyacinthaceae*. Common characters of the genera in *Hyacinthaceae* are: a superior ovary, six stamens, basal leaves, 'scaly' bulbs and relatively small flowers in simple racemes (flowers with pedicels) or spikes (flowers with very small or no pedicels). The tepals of the flowers may be more or less free, seen in *Hyacinthoides italica* with its star-shaped flowers, or fused along part or nearly all their length, such as the bell-shaped flowers of *Muscari azureum*. The leaves are often narrowly linear or strap-shaped and may either emerge at around flowering time or in some cases long before, in the autumn/winter prior to spring flowering. Nearly all the really frost-hardy species belonging to the family *Hyacinthaceae* originate from the Mediterranean region eastwards through Turkey to Asia. They belong mainly to the genera *Muscari*, *Scilla*, *Hyacinthoides*, *Chionodoxa*, *Puschkinia*, *Brimeura*, *Hyacinthella*, *Bellevalia*, *Hyacinthus* and *Ornithogalum*.

Front cover: *Muscari armeniacum* 'Christmas Pearl' (Photo: Wendy Wesley)
Right: *Scilla persica* (Photo: Wendy Wesley)

The following is a guide to the most commonly cultivated genera of smaller, hardy *Hyacinthaceae*:



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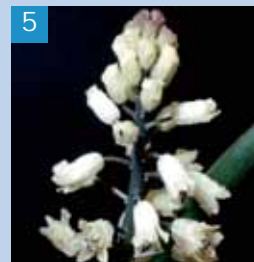
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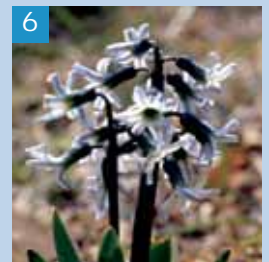
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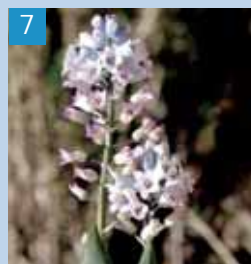
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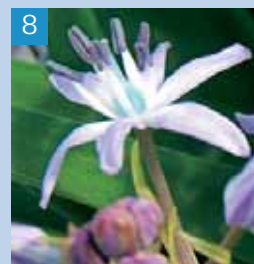
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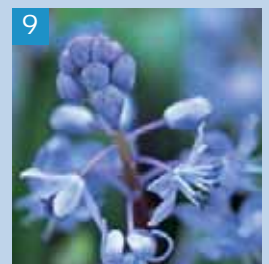
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MS

Parts of the flower joined together almost to the apex

- 1 Flower globular, tubular or bell-shaped with six tiny 'teeth' or lobes at the mouth: *Muscari*

Parts of the flower joined into a tube only in the lower portion and with six obvious lobes:

- 2 Flower bell-shaped, pale blue with deeper blue stripes and having a small cup (corona) at its centre: *Puschkinia*
- 3 Flower flat or saucer-shaped with a conspicuous white eye in the centre: *Chionodoxa*
- 4 Flower tubular or bell-shaped with a long bract (small leaf-like structure) at the point where the flower stalk joins the main stem, the bract longer than the flower stalk itself: *Brimeura*
- 5 Flower off-white or brown at maturity (but blue in *B. paradoxa*

and *B. forniculata*), bell-shaped, not highly scented; bract tiny, much shorter than the flower stalk: *Bellevalia*

- 6 Flower large (to 25 mm long), blue (pink or white), very fragrant, bell-shaped with six spreading lobes; bract tiny, much shorter than the flowers stalk: *Hyacinthus*
- 7 Flower very small (usually less than 1 cm long) in varying shades of blue or violet: *Hyacinthella*

Parts of the flower separate from each other, not joined into a tube and appearing as six separate lobes:

- 8 Each flower with two obvious, long (but narrow) bracts at the point where its stalk joins the main flower stem: *Hyacinthoides*
- 9 Each flower with only one bract, often very tiny, sometimes absent altogether: *Scilla*



Award of Garden Merit (AGM) 🏆 (H4) 2004

Brimeura amethystina

× *Chionoscilla allenii* 'Fra Angelico'

Hyacinthoides italica

Muscari armeniacum 'Christmas Pearl'

Muscari armeniacum 'Saffier'

Muscari 'Jenny Robinson' (syn. 'Baby's Breath')

Muscari latifolium

Scilla bithynica

Scilla litardierei

Scilla mischtschenkoana (syn. *S. tubergeniana*)

Scilla persica

Award of Garden Merit (H4) 1993
re-confirmed

Chionodoxa luciliae

Chionodoxa sardensis

Chionodoxa siehei

Muscari azureum

Scilla bifolia

Scilla siberica

Award of Garden Merit
subject to availability

Chionodoxa albescens

Scilla bifolia 'Praecox'

(H4) = hardy throughout the UK

The Award of Garden merit requires a plant to be:

- excellent for garden decoration
- commercially available
- of good constitution
- not subject to specialist care
- not susceptible to pest or disease
- not subject to reversion

The Trial

The criteria for inclusion in the trial specified that entries must be hardy, less than 30cm (1ft) tall at flowering and bear 'blue' flowers, which generally includes shades of lavender, violet or purple. However, a few white and pink variants of species were also included where available as was the delightful yellow-flowered *Muscari macrocarpum*. *Ornithogalum*, which generally have white flowers, and the Spanish and English bluebells (*Hyacinthoides hispanica* and *H. non-scripta*) which were considered too robust for the trial, were excluded, as were the many cultivars of hyacinth (*Hyacinthus*).

Trial Entries

There were around 80 species and cultivars (from eight genera) entered to trial from senders in the UK, Denmark and The Netherlands; a total of 326 entries.

Trial Objectives

The aims of the trial included:

- The identification of the best and most distinctive species and cultivars for the RHS Award of Garden Merit
- The establishment of the correct nomenclature
- Demonstration of cultivation techniques
- The collection of representative herbarium and photographic records together with descriptions, as a permanent record.
- To generate interest in this somewhat over-looked group of plants.

The trial was planted in autumn 2000 in the Portsmouth Field trials ground at RHS Garden Wisley, which is a free-draining, south-facing, open site. Five bulbs per entry were planted except for a few of the rarer species where only three bulbs per entry were available. After planting the trial plot was mulched with approximately 5cm (2in) of medium-textured bark. Fertilizer was not applied during the three-year trial period.

The trial entries were grouped into autumn-flowering species (20 entries) and spring-flowering species (approx. 300 entries). The spring-flowering entries were further divided into those that require protection from extreme heat/drought during the summer dormancy period to prevent the bulbs from shrivelling (referred to as the 'shade-loving' species) and a smaller group that are able to tolerate a more open, drier planting site. As there is no natural shade on the trials field, an additional 5cm (2in) mulch of bark was applied to the shade-loving entries after flowering each year, to keep the bulbs cool and moist.

Over the three year period of the trial, the Rock Garden Plant Trials Sub-committee visited several times each year during flowering to assess the entries. In the last year the Sub-committee judged the plants and made its recommendations for the Award of Garden Merit 🏆.



M. macrocarpum
(Photo: Brian Mathew)

The Trial's Field
(Photo: Brian Mathew)



Botanical and nomenclatural notes

Several of the queries raised in this trial were investigated and the findings are as follows:

Scilla mischtschenkoana (syn. *S. tubergeniana*)

Confusion over the correct name of this species dates back to 1931 when six bulbs of a 'remarkable and free-flowering *Scilla*' were found in a wild collected batch of *Puschkinia*, sent to the Dutch bulb firm Van Tubergen. The bulbs were imported from north-western Iran and at the time were believed to be an undescribed species, which was named *Scilla tubergeniana*. However, it is now accepted that *S. tubergeniana* is the same as *S. mischtschenkoana*, which had previously been described in 1927. As such, under the International Code of Botanical Nomenclature, priority is given to *Scilla mischtschenkoana*, the first name given to the species. From the originally introduced stocks two clones were selected; these are now known as *S. mischtschenkoana* 'Tubergeniana' a common form in cultivation with very pale flowers, and 'Zwanenburg' which is slightly deeper blue and rare in gardens. Both cultivars were included in the trial. Full details can be found in *The Plantsman New Series* Vol.4, Part 2, pp.114-115 (June 2005)

Muscari 'Jenny Robinson' (syn. 'Baby's Breath')

Plants of this cultivar were entered in the trial as 'Baby's Breath', however, this is a translation of a Greek vernacular name for the plant and as such is unacceptable under the rules of the International Code of Nomenclature for Cultivated Plants. After discussion with the former *Muscari* National Plant Collection® holder, Jenny Robinson, who introduced this form from Cyprus, it was agreed to name it after her. The species to which this cultivar belongs has not yet been established; its origin suggests it should be a variant of *M. neglectum*, although it looks more like a form of *M. armeniacum* which is not known to grow in Cyprus!

Chionodoxa

Seven of the eight species of *Chionodoxa* were represented in the trial (*C. lochiaie* was absent) and fortunately some of the entries were of known wild origin, against which the long-cultivated stocks could be assessed. Although it was possible to attribute some of these stocks to particular species, others were less obvious and may well have been of hybrid origin. Some botanists consider that *Chionodoxa* cannot be separated as a genus from *Scilla*. However, it is useful for communication purposes to continue to use the name *Chionodoxa* for these eight species as they are instantly recognisable as a group; they all have flowers with an obvious perianth tube (which *Scilla* has not) and wide, flattened filaments forming a central cone around the ovary and style.

Chionodoxa species

Unfortunately there is some nomenclatural confusion within *Chionodoxa*; *C. siehei* was for many years known incorrectly as *C. luciliae* and more recently has been merged (although arguably so) with *C. forbesii*. However, the plants that are widely grown in cultivation do not belong to the true species *C. forbesii* but are mostly variants of *C. siehei*. Indeed, several entries in the trial were submitted incorrectly as *C. forbesii* and later identified as *C. siehei*. These species differ as follows:



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C. forbesii – few, small, upward facing flowers in an intense deep blue with a clearly defined white eye around the stamens



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C. siehei – larger and more numerous flowers than *C. forbesii*, outward-facing and of a more violet shade of blue with a much larger conspicuous white eye



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C. luciliae – few, but even larger flowers than *C. siehei*, upward-facing and of a pale, more lavender shade also with a large but diffused-margined white eye.



WW

C. sardensis – has several outward facing flowers of a similar intense blue colour to *C. forbesii* but with an indistinct white central eye surrounding the stamens.

However, the situation in plants of garden origin is often confused because these species can hybridise making the distinguishing characters less discernible. The trial was valuable in drawing attention to such problems of identification and nomenclature which were then addressed and clarified. There were also several incorrectly named entries sent to trial, which the Sub-committee was able to correctly identify. The senders were then informed of the changes so they could update their records.

Autumn flowering species

On the whole the Sub-committee was uninspired by the autumn-flowering entries, such as *Scilla autumnalis* and *Scilla scilloides*, and there were no recommendations for the AGM. These plants are probably best grown in the alpine house in pots, where their ornamental value can be more fully appreciated.

Cultivation

The bulbs are best planted in late summer or early autumn, whilst still dormant, at a depth of 8-10cm (3-4in) in well-cultivated soil. In very light soils incorporate well-rotted organic matter to improve moisture retention. Those that prefer an open site, such as *Scilla litardierei*, look good at the front of borders or in open grass, as long as the leaves are given time to die down naturally after flowering. Once established and left undisturbed species such as *Chionodoxa luciliae*, *Scilla siberica* and *S. bifolia* will naturalise in short grass. However, the more familiar grape hyacinth *Muscari neglectum*, which spreads by both seed and bulbils, can be too invasive for small gardens.

The shade-loving species thrive particularly well under trees and in dappled shade and are effective under deciduous, spring-flowering shrubs, which provide the summer shade the bulbs need. These small blue-flowered bulbs also look excellent in rock gardens and in borders when planted in association with other spring bulbs. Some, such as *Muscari armeniacum* and *M. 'Valerie Finnis'*, provide a good spring show when planted in patio tubs and window boxes.

Some species, including *Muscari armeniacum* and its variants, produce their leaves in the autumn, four to five months before flowering. Over this period they can become weather damaged and unattractive, an aspect of the plant which should be borne in mind when considering where in the garden to plant them. To some extent this can be alleviated by planting (and re-planting) the bulbs later, even into November. On the other hand, the broad foliage of *Muscari latifolium* is in itself attractive and this species makes a handsome display at the front of a low border.

Pot Cultivation

Most of the easily grown garden varieties also make good subjects for pot cultivation, providing colour from early spring through to early summer depending on variety. Bulbs are available from suppliers during their dormant period in late summer to early autumn, so this is the time to plant. To provide a good display, several bulbs (except for the very largest types) can be planted together in a pot, requiring no more than half an inch spacing between the bulbs. Use a loam-based compost such as John Innes No. 3, mixing two parts of this with one or two parts of grit (3 to 6mm diameter particles i.e. not sand.) This mix will provide good drainage, which is important for most bulbs. Plant the bulbs so they are covered by about 5cm of compost. A topping of grit improves the appearance and also helps prevent the compost from splashing onto the plants when watering.

Once potted, they should be kept somewhere cool, such as a cold-frame or unheated greenhouse. Watering should commence in September – give an initial thorough soaking then keep moist but not too wet through the winter. Watering can be increased as required once the leaves appear. Liquid feeding approximately every seven to ten days is beneficial while they are in active growth, using a high potash (high K) type fertiliser as used for example for tomatoes. As the leaves turn yellow in late spring or early summer, watering is reduced and finally stopped as the plants become dormant. While dormant, the pots should be given a little water now and again to keep the bulbs plump. If they are in clay pots then these can be plunged in sand and just the sand watered. Repotting is advisable at least every second year as many varieties soon bulk up and become overcrowded, especially if they were closely planted originally.

Diseases and pests

Fortunately this group of bulbs is, in general, free of serious pest and disease problems.

On *Muscari* and *Scilla*, bluebell rust (*Uromyces muscari*) and anther smut (*Ustilago vaillantii*) are rare, but may occasionally be a problem especially where bulbs are growing in a situation which is too damp. Control is best done by removing infected foliage followed by application of a systemic fungicide to limit further infection. Products containing myclobutanil and penconazole are currently available to amateur gardeners. They are labelled for rust control and may also give some control of smuts. The smut is systemic and growers should not propagate from infected bulbs.

Infection by tobacco rattle virus usually manifests itself as leaf mottling, although frost damage can sometimes also produce such effects. This virus is transmitted by soil-inhabiting nematodes. Infected plants should be destroyed and the soil should not be replanted with bulbs. Other viruses may infect bulbs, causing symptoms such as stunting, distortion, patterns of yellowing, chlorosis or necrosis in the leaves and flower 'breaking'. There is little information available about virus infection in these genera, but suspect bulbs should be destroyed promptly to prevent spread by aphids or other vectors.



*Hyacinthoides
reverchonii*

RHS Award of Garden Merit descriptions

- Colour codes refer to the RHS Colour Chart see page 11.
- Botanical flower terms see page 10.



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Brimeura amethystina

Leaves: 3-7, upright to lax, to 24cm long, to 0.5cm wide, strap-shaped, mid to dark green, lightly glaucous on both surfaces.

Flowering stem: 1, upright to nodding, to 27cm long.

Scape: to 16cm long.

Raceme: loose, to 11cm long, 5cm wide bearing up to 14 flowers.

Pedicels: to 1.6mm long, bracts to 1.8cm long.

Flowers: bell-shaped, tube up to 1cm long, free part of tepals 0.4cm wide, very pale blue (97D), striped darker (97A), flushed richer blue (96A), lightly tinged pink at maturity.



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Chionodoxa albescens

Leaves: 2, upright to lax, to 9.5cm long, 1.2cm wide, linear to narrowly oblanceolate, mid green (137B), slightly glaucous on reverse.

Flowering stem: 1, upright to nodding, to 15cm long.

Scape: to 2.5cm long, yellow-green (144A).

Raceme: one-sided, quite loose, to 12.5cm long, 4.5cm wide bearing up to 10 flowers.

Pedicels: to 4cm long, ascending, yellow-green (144A). Bracts absent.

Flowers: star-shaped, tepals reflexing; tepals 1cm long, 0.5cm wide, oblong to lanceolate, white, flushed pale violet to dark violet-blue (85A-91B) towards apex of tepals, reverse with mid-vein stripe of violet-blue (96D). Filaments white, anthers yellow.



BM

Chionodoxa luciliae

Leaves: 2, upright to lax, to 8cm long, 2cm wide, oblong, tip cucullate, slightly glaucous, mid green (137C), reverse paler yellow-green (144A), edges greyed-purple (187B).

Flowering stem: 1, upright to 10cm long.

Scape: to 4.5cm long, yellow-green (144C).

Raceme: loose, pyramidal, to 5.5cm long, 7cm wide bearing 2-3 flowers.

Pedicels: to 3cm long, ascending, yellow-green (144C). Bracts absent.

Flowers: broadly funnel-shaped to flattish, upward facing, 3.5cm wide; tepals 1.5cm long, 0.9cm wide, oval

(almost rhombic); in bud mid violet-blue (97A), opening to darker violet-blue (96C) becoming white at base of tepals, reverse of tepals mid violet-blue (97A) with a paler violet-blue (96B/C) mid vein. Filaments white, anthers yellow.

Chionodoxa siehei

Leaves: 2, upright to slightly arching, to 12cm long, 2cm wide, strap-shaped/oblong with cucullate tip, slightly glaucous, mid green (137C), reverse darker green (137A) suffused greyed-purple (187A).

Flowering stem: 1, curved to lax, to 10.5cm long.

Scape: greyed-orange (165A).

Raceme: broadly pyramidal, bearing up to 12 flowers.

Pedicels: to 3.5cm long, ascending, greyed-orange (165A), bracts to 0.4mm long.

Flowers: bowl to star shaped, to 3cm across, the lower ones outward-facing, the upper ones upward-facing; tepals 1.3cm long, 0.6cm wide, oblong/oval recurving with age, basal half of tepals white, apical half violet (87A) fading to violet-blue (96B). Filaments white, anthers yellow.



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Chionodoxa sardensis

Leaves: 2-3, upright to lax, to 13.5cm long, 1.5cm wide, linear to narrowly oblanceolate, green (138B), reverse darker green (137B), sulcate, tip strongly cucullate with indistinct red edging.

Flowering stem: 1, upright to lax, to 14cm long.

Scape: to 6.5cm long, brown-red (200B).

Raceme: loose, pyramidal to one-sided, to 8.5cm long, 7cm wide bearing up to 22 flowers.

Pedicels: to 4cm, horizontal at base to ascending at apex, brown-red (200B). Bracts to 0.3cm, very slender.

Flowers: bell to star-shaped, to 2.5cm wide; tepals to 1.5cm long, 0.8cm wide, oblanceolate to elliptic; suffused purple-violet (82B/C) in bud, violet (87C) at first opening, becoming violet-blue (96A/B) when fully open, base violet-blue (97B/C). Filaments violet-blue (97B/C).



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× *Chionoscilla allenii* 'Fra Angelico'

Leaves: 2-3, upright to lax, to 10cm long, 0.7cm wide, linear to narrowly strap-shaped, cucullate tip, mid green (137C) above, darker green (137A) reverse.

Flowering stem: 1, upright, to 11cm long.

Scape: to 6.5cm long.

Raceme: 4.5cm long, 2.5cm wide, narrow, bearing 2-6 flowers.

Pedicels: to 3cm long, upright.

Bracts: to 0.4cm long.

Flowers: star to shallow bowl shaped; tepals 1cm long, 0.4cm wide, narrowly elliptic, violet-blue (96C) fading slightly towards base.



MD

Hyacinthoides italica

Leaves: 8-10, lax, to 6cm long, 0.7cm wide, broadly linear to narrowly lanceolate, glaucous, dark green (137A).

Flowering stem: 1, upright, to 16cm long.

Scape: 7-10cm long, pale yellow-green (148C).

Raceme: neat, conical, quite dense, to 5cm long, 3cm wide bearing approx. 40-50 flowers.

Pedicels: to 2.2cm long, ascending, blue (102D).

Flowers: star-shaped, to 1.5cm wide; tepals 0.5cm long, 0.3cm wide, oval, violet-blue (91A) with a wide stripe dark violet-blue (95B/C) on reverse. Filaments violet-blue (91A), anthers blue (102A) to green (126A), ovary violet-blue (98B/C).



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Muscari armeniacum 'Christmas Pearl'

Leaves: 4-10, linear, lax, to 30cm long, 1cm wide, mid yellow-green (138B) above, darker (137C) on reverse.

Flowering stem: 1-2, upright to slightly angled, to 20cm long.

Scape: strong yellow-green (144C) to 16cm long.

Raceme: narrowly pyramidal, to 4.5cm long, 2cm wide, bearing up to c. 60 fairly densely packed flowers.

Pedicels: horizontal in bud becoming pendulous upon opening, light greenish-blue (122B), short (3mm long).

Flowers: urn-shaped, to 6mm long, 5mm wide, strong violet-blue (96A/B, tinged 94B), small white recurved teeth (91D).

Muscari armeniacum 'Saffier'

Leaves: 5-7, upright becoming arching, to 35cm long, 0.7cm wide, linear, margin strongly curved upwards, glaucous mid green (138B), reverse yellow-green (146A).

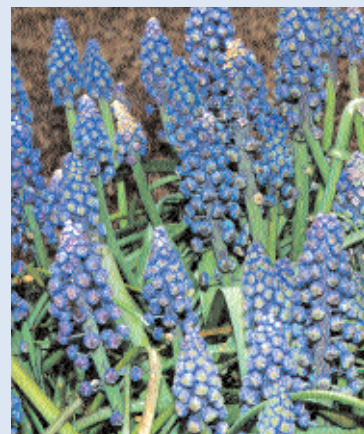
Flowering stem: 1, upright to slightly bent, 21cm long.

Scape: to 15cm long, yellow-green (144B).

Raceme: very narrowly conical, to 9cm long, 3cm wide bearing approx. 25 sterile, 50 fertile flowers.

Pedicels: variable, to 0.8cm long, slightly curving downwards, those of sterile flowers blue (104B), those of fertile flowers greyed-green (189A) at base becoming blue-green (122A) towards apex. Bracts minute.

Flowers: globular, narrow apical opening, flowers facing outwards and downwards; tepals 0.2cm long, 0.3cm wide. Flower base violet blue (96D) at first fading to paler blue (98D), yellow-green (144C) towards apex.



Muscari azureum

Leaves: 2-4, oblanceolate, channelled, upright to horizontal, 9cm long, 1.7cm wide, lightly glaucous, yellow-green (137B/C), darker green (137A/B) on reverse.

Flowering stem: 1-2, upright, to 10cm long.

Scape: yellow-green (152A/B), tinged brown (165A), to 8cm long.

Raceme: narrowly pyramidal, to 2.5cm long, 1.5cm wide, bearing 20-50 densely packed flowers.

Pedicels: horizontal (slightly pendulous at the base of raceme), short (1mm), translucent to strong blue (111A).

Flowers: bell-shaped, 5mm long, 4mm wide, light to pale purplish blue (101C/D) at the base (and when young), strong purplish blue (94B) at the apex with a stripe of vivid purplish blue (99B) running down the centre of each tepal.





WW

Muscari 'Jenny Robinson' (syn. 'Baby's Breath')

Leaves: 5-6, lax, to 15cm long, 1cm wide, linear, slightly recurved edges, glaucous mid green (138B), reverse darker green (137B).

Flowering stem: 2, upright to lax, to 22cm long.

Scape: to 12cm long.

Raceme: tubular, to 9cm long, 2cm wide, bearing approx 30 sterile and 60 fertile flowers.

Pedicels: to 0.3cm long, horizontal to arching on sterile flowers, nodding on fertile flowers, pale yellow-green (144C). Bracts tiny, white.

Flowers: urn-shaped, tepals fused to a narrow apical opening; sterile flowers pure white, fertile flowers pale blue (106C) becoming pure white towards apex.



BM

Muscari latifolium

Leaves: 1(-2), upright, enclosing base of flowering stem, to 11.5cm long, 4.5cm wide, strap-shaped, tip cucullate, mid green above (137C), darker (137A/B) reverse.

Flowering stem: 1, upright, slightly curved, to 15cm long

Scape: to 11cm long, mid green (143A).

Raceme: narrowly conical, dense, to 4cm long, 2cm wide at base, bearing 30-40 fertile flowers and 10-15 sterile flowers at apex.

Pedicels: 0.2cm at base (longest), sterile flowers held horizontally at apex of raceme, fertile flowers becoming more pendulous towards base. Bracts miniscule.

Flowers: urn-shaped, dark violet-blue (79A), with paler lilac-coloured teeth. Sterile flowers paler blue (82B).



BM

Scilla bifolia

Leaves: upright to arching, 12cm long, 0.8cm wide, mid to dark green.

Flowering stem: upright, 10cm long.

Scape: 5cm long.

Raceme: 5cm long, domed.

Pedicels: 4cm long.

Flowers: star-shaped, bright violet blue (96B), slight pink tinge to buds. Tepals 0.7cm long, 0.2cm wide.

Scilla bifolia 'Praecox'

Leaves: 2-4, angled (20-40°), sheathing scape, 12.5cm long, to 1.5cm wide, oblanceolate to oblong, strong yellow green (144A) with a narrow purple-red edging (59B).

Flowering stem: 1, nodding/angled, 15cm long.

Scape: green at base (144A), suffused grey-purple (183A) towards tip, to 7cm long.

Raceme: loose, conical, 8cm long, 7cm wide bearing approx. 20 flowers.

Pedicels: to 5cm long, upright to spreading, deep grey-purple (183A).

Flowers: star-shaped, 2.5cm wide; tepals 1.2cm long, 0.5cm wide, elliptic, violet-blue (96B). Filaments violet-blue (96B), anthers grey-blue, ovary base blue (103C) becoming violet-blue (90B) at apex.



BM

Scilla bithynica

Leaves: up to 6, arching, 10cm long, 2cm wide, strap-shaped with a cucullate tip, dark yellow-green (147A), reverse paler (146A/147A).

Flowering stem: 1-3, upright, 11cm long.

Scape: dark yellow-green (152A), to 7.5cm long.

Raceme: conical to narrow dome, to 3.5cm long, 4cm wide bearing approx. 25 flowers.

Pedicels: to 2cm long, mid violet-blue (88C), ascending in bud to horizontal when open.

Flowers: star to cup shaped with recurved tepals; tepals 1cm long, 0.5cm wide, elliptic, pale blue (100C) with narrow midvein of blue (105C). Filaments white, anthers greyed-orange (116), ovary pale blue (107C).



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Scilla litardierei

Leaves: 8-10, upright to horizontal, to 13cm long, 1cm wide, linear to strap-shaped, mid green (138A) above, slightly paler (137B) reverse.

Flowering stem: 1-2, upright, 9.5-17cm long.

Scape: yellow-green (144A), 5-13.5cm long.

Raceme: conical, 2.5-5cm long, 2.5-4cm wide bearing approx. 50 flowers.

Pedicels: to 1.5cm long, purple-violet (82D to 94D), horizontal to slightly ascending.



BM

Flowers: star-shaped, open/flat; tepals 0.5cm long, 0.2cm wide, elliptic, edges recurved at base, pale violet-blue (94D). Filaments pale violet-blue (91C), anthers dark violet (86A), ovary violet-blue 95C.



BM

Scilla mischtschenkoana
(syn. *S. tubergeniana*)

Leaves: 3-5, upright to lax, bent 90° near tip, 12cm long, 1.4cm side, oblong, apex acute, tip cucullate; green (137B), reverse shiny, dark yellow-green (144A), very lightly sulcate.

Flowering stem: 1-2, upright, to 12cm long.

Scape: pale yellow-green (150D), tinged red towards apex (144C suffused 59A), to 3cm long.

Raceme: open, pyramidal, 8cm long, 4cm wide bearing 6-7 flowers.

Pedicels: to 2cm long, mid blue (104B) fading to yellow-green (150D) with age, ascending at base of raceme, spreading at apex.

Flowers: star-shaped, open/flat, facing upwards; tepals 1.7cm long, 0.7cm wide, oblanceolate, very pale purple (92D) with a light blue (paler than 109A) midvein on outer surface. Filaments white, anthers blue, ovary yellow-green (144A).

Scilla persica

Leaves: 5-6, lanceolate, strongly keeled, upright to lax, to 30cm long, 1.5cm wide, mid yellow-green (144A).

Flowering stem: 1-2, upright to nodding, to 38cm long.

Scape: mid yellow-green (144A/B), to 16cm long.

Raceme: conical, open, to 22cm long, 9cm wide bearing up to 70 loosely arranged flowers.

Pedicel: to 3cm long, mid yellow-green (144A/B), ascending in bud, becoming horizontal as flowers open.

Flowers: star-shaped, 2cm wide; tepals slightly reflexed, narrowly ovate to elliptic, violet-blue (92B) becoming paler (92A) with age, narrow stripe of blue-green (114D) along midvein.



WW

Scilla siberica

Leaves: 4-6, emerging after flowering, 7cm long, 1.5cm wide, oblong, slightly cucullate at the apex. Above, moderate olive-green (137B/C), slightly glaucous, yellow-green (146A) reverse.

Flowering stem: 2-4, upright to slightly nodding, to 14cm long.

Scape: yellow-green (149B) at base to dark purple (79A) towards apex, 8.5cm long.

Raceme: one-sided, loose, 5.5cm long, 2cm wide bearing to 6 flowers.

Pedicels: to 1cm long, dark purple (79A) pendulous.

Flowers: cup to bell-shaped, pendulous, to 2cm wide; tepals 1.2cm long, 0.6cm wide, elliptic to oblanceolate, deep violet-blue (94A) with deep blue (100A) around midvein and violet (88B) towards margins, white base.



BM

Botanical flower terms

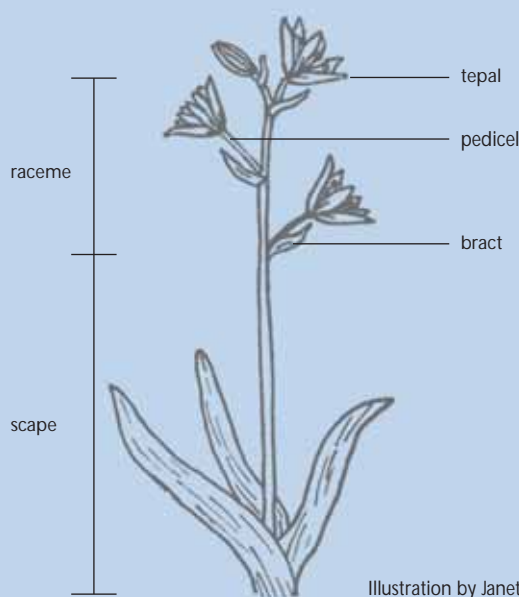


Illustration by Janet Cubey

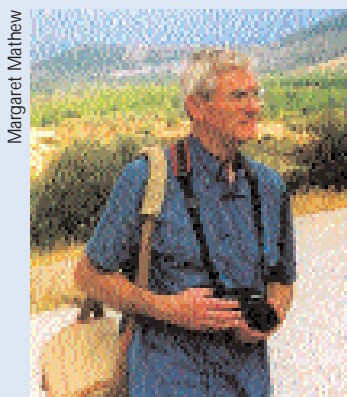
Rock Garden Plant Trials Sub-committee

The Sub-committee is made up of plantsmen, nurserymen, experts and enthusiastic amateurs who give their time voluntarily to promote garden plants for gardeners. Those who judged this trial were:

Chairman: Peter Erskine
Members: Joy Bishop
Chris Brickell
Peter Cunnington
Kath Dryden
Alan Edwards
Tony Hall
Brian Mathew
Mary Randall
Michael Upward

Co-opted Members: Richard Hobbs (National Plant Collection® holder of *Muscari*)
Rod Leeds
Robert Rolfe
Tim Whiteley

Acknowledgements



Brian Mathew trained and worked at Wisley as a horticulturist before becoming a botanist in the Herbarium at Kew for 35 years. A specialist on bulbous plants, he has written 17 books on various topics.

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Photography

Thanks to Brian Mathew (BM), Wendy Wesley (WW), Melanie Dashwood (MD), Mike Sleigh (MS) and RHS Herbarium for supplying photographs.

Further reading

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Rix, M. & Phillips, R. (1989) *The Bulb Book*. Pan, London.

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Bloembollen, Spieringweg 887, 2136 LJ Zwaanshoek, The Netherlands

Cambridge Bulbs, 40 Wittlesford Road, Newton, Cambridge

Cambridge University Botanic Garden, Bateman Street, Cambridge, CB2 1JF

D Cann, Devon

P Clayton, Roseholme Nursery, Howsham, Market Rasen, Lincolnshire, LN7 6JZ

P Cunnington, Ness Gardens, University of Liverpool Botanic Gardens, Neston, South Wirral, L64 4AY

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R Rolfe, Nottinghamshire

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Broadleigh Gardens, Bishops Hull, Taunton, Somerset, TA4 1AE

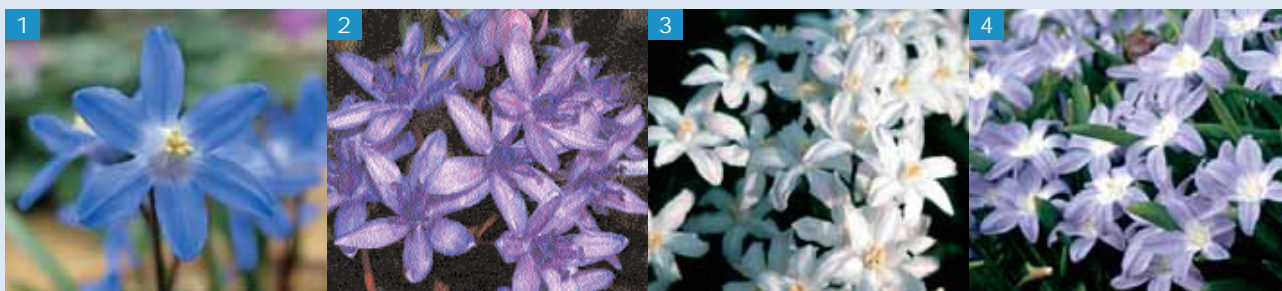
T Smale, Surrey

Van Tubergen UK Ltd, Bressingham, Diss, Norfolk IP22 2AB

RHS Colour Chart

The fourth edition (2001) is available by mail order from RHSE, Wisley, Woking, Surrey GU23 6QB

Little blue bulb selection guide



WW

MS

MD

BM

Name	AGM	Leaves emerge	Planting Position	Comments
Early flowering				
<i>Chionodoxa sardensis</i> (1)	AGM	At flowering	S	Striking, intensely deep-blue flowers. Good colour. Easy to grow.
<i>Muscari armeniacum</i> 'Christmas Pearl'	AGM	Autumn	OG, S & P	An early-flowering, rich violet-blue cultivar that can be forced in pots for an even earlier flower display. The best of the early flowering forms of this species. Scented.
<i>Muscari</i> 'Blue Pearl'		Early winter	OG, S & P	Although it is not very distinct it has the virtue of early flowering, up to three weeks earlier than most variants of this genus. Pot grown plants can early be forced for even earlier flowering. Scented.
<i>Scilla bifolia</i> 'Praecox' (2)	AGM (STA)	At flowering	S	A most striking and early-flowering clone. This has densely flowered racemes of deep rich purple-blue flowers. A plant of woodland or damp meadows.
<i>Scilla mischtschenkoana</i> (syn. <i>S. tubergeniana</i>)	AGM	At flowering	S	A variable species found in the wild growing in heavy, damp to wet soils but nevertheless did very well on the light sandy soil of the trials field. Two cultivars of note are 'Zwanenburg' with slightly stronger blue flowers and the more common, easily cultivated 'Tubergeniana', with very pale flowers.
<i>Scilla siberica</i> subsp. <i>siberica</i> (Siberian squill)	AGM	At flowering	S	This species is a long-term favourite and arguably the best of the genus for general garden use. As there was little to choose between the various entries in the trial (both species and cultivars such as 'Spring Beauty'), it was agreed to award the AGM to the species as a whole. The species has intense blue flowers but there is an attractive white flowered cultivar called 'Alba' which is seemingly less vigorous than the blue forms.
Mid season flowering				
<i>Chionodoxa albescens</i> (syn. <i>Chionodoxa nana</i> subsp. <i>albescens</i>) (3)	AGM (STA)	At flowering	S	Purple-tipped, white flowers. This proved a delightful plant, increasing well and flowering freely. Performed reliably over the 3 year period of the trial. Smallest flowered of the <i>Chionodoxa</i> species.
<i>Chionodoxa lucillae</i> (4)	AGM	At flowering	S	This species is instantly recognisable as the largest-flowered of all <i>Chionodoxa</i> and usually a fairly pale colour. Although there are few flowers to each stem, their size and the fact that they face upwards to the viewer make this a most attractive and desirable plant.
<i>Chionodoxa siehei</i>	AGM	At flowering	S	The most commonly seen <i>Chionodoxa</i> in cultivation, seeding itself freely, making large colonies and often becoming naturalised in the garden. The several, outward-facing flowers per raceme with large white eye in the centre make it relatively easy to identify, although hybridisation can make these characters less discernible.



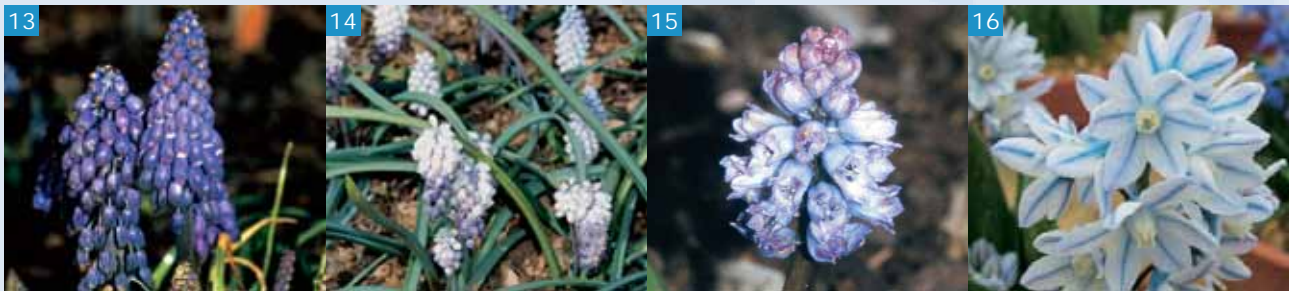
Name	AGM	Leaves emerge	Planting Position	Comments
× <i>Chionoscilla allenii</i> 'Fra Angelico'	AGM	At flowering	S	The hybrid is probably a cross between <i>Scilla bifolia</i> and <i>Chionodoxa siehei</i> . This cultivar is an excellent plant, free-flowering with flowers of a good deep violet-blue and increasing vegetatively into clumps. Does not produce seed.
<i>Hyacinthoides italica</i> (Italian bluebell) (5)	AGM	Appear just before flowering	S & OG	Easily cultivated and develops into handsome clumps. There is also an attractive ivory-white form in cultivation. Similar to <i>Scilla bithynica</i> but with denser racemes of many more flowers and two bracts at the base of each pedicel. A most attractive species, having cone-shaped racemes held well above neat foliage.
<i>Muscari armeniacum</i>	AGM	Autumn	OG & P	To be placed on 'sunset list' because of the considerable variation. However, it is a robust species which is good in cultivation and excellent as cut flowers. The leaves can be past their best by flowering time which can spoil the overall effect. However, if the bulbs are planted in late November the leaves will still be in good condition at flowering. Re-planting the bulbs each year is required in order to achieve this effect. Scented.
<i>Muscari armeniacum</i> 'Valerie Finnis' (6)		Autumn	S & OG	See comments under <i>Muscari</i> 'Jenny Robinson'. Scented.
<i>Muscari aucheri</i>	AGM	At flowering	S	Spikes of bright blue flowers each with small white tepal lobes and sterile apical flowers of pale blue to almost white. Normally spring-flowering but can also have occasional flowers in autumn.
<i>Muscari azureum</i>	AGM	Just before flowering.	S	Excellent, compact little china-blue <i>Muscari</i> . Well-known to be a fine garden plant. Easy to grow. Unlike some other species of <i>Muscari</i> the bell-shaped flowers of this species are not constricted at the mouth.
<i>Muscari botryoides</i> (7)		At flowering	S	Bright blue globular flowers, with neat, upright leaves, easily grown. Also a nice white form 'Album'. Scented.
<i>Muscari</i> 'Jenny Robinson' (syn. 'Baby's Breath') (8)	AGM	Autumn	S & OG	A very pale <i>Muscari</i> which has dense racemes of soft powdery blue flowers, similar to 'Valerie Finnis' in colour but slightly paler. The leaves are different from those of 'Valerie Finnis', being shorter and during the trial period they remained in better condition through the winter and early spring. Scented.
<i>Muscari latifolium</i>	AGM	At flowering	S	Flowers over a long period. Instantly recognisable by its single very wide leaf and stout raceme of dark violet-blue flowers with paler lilac-coloured lobes and strongly constricted mouth, crowned by a 'topknot' of pale blue sterile flowers (a feature common to most <i>Muscari</i> s). Excellent garden plant. Spreads well to create a bold splash of colour. Does not seem to hybridise. Prefers a deeply cultivated soil and to be left undisturbed to naturalise. Scented.

Little blue bulb selection guide



MS

Name	AGM	Leaves emerge	Planting Position	Comments
<i>Muscari macrocarpum</i>		Late winter	OG & P	A 'musk hyacinth' with bright yellow fertile flowers below purplish sterile flowers. Takes a year or so to settle down after planting. Each bulb can produce more than one raceme. Best left undisturbed as bulbs have perennial fleshy roots. Prefers a warm sunny position. Very strongly scented.
<i>Scilla bifolia (sensu lato)</i>	AGM	At flowering	S	Although variable, this early spring squill is familiar to gardeners. Also a good white form 'Alba' is available, and a pink form 'Rosea'.
<i>Scilla bithynica</i> (9)	AGM	Winter.	S	Can seed around vigorously when conditions suit but still a delightful plant. Sometimes confused with <i>S. messeniaca</i> but <i>S. bithynica</i> has bluer flowers, larger and more conspicuous bracts and lower pedicels longer than the upper ones, creating a more cone-shaped inflorescence. Usually flowers after <i>S. siberica</i> . The leaves are still in good condition at flowering. Variable flower colour: soft powdery-blue to deeper violet-blue, also paler greyish-blue and white forms. The white forms usually have yellow anthers but white ones with contrasting blue anthers also occur and are attractive.
<i>Scilla gorganica</i>		At flowering	S & OG	A superb species but not widely available. Flowers produced over a long period which is an unusual feature in <i>Scilla</i> . Reasonably frost hardy. Rare in cultivation. Requires a sunnier, more open, well-drained position than many of the squills but easily cultivated.
Late flowering				
<i>Brimeura amethystina</i> (10)	AGM	Just before flowering	S	A very attractive species, similar to a miniature English bluebell. The pendent, tubular bright blue flowers are produced late in the season, almost into summer. A very good, neat growing, reliable species.
<i>Muscari armeniacum</i> 'Denim'		Autumn	S & OG	A vigorous form with a distinctive bright blue colour that blooms a little earlier than many of the forms of <i>M. armeniacum</i> . Scented.
<i>Muscari armeniacum</i> 'Fantasy Creation' (11)		Autumn	S & OG	An extreme monstrous form, like a 'miniature purple sprouting broccoli' with deep lavender 'flowers'. Unusual but probably not to all tastes. Sterile so stays in good condition for a long period. Sometimes reverts to something similar to 'Blue Spike'. Useful for dried flower arrangements as they keep their shape when dry.
<i>Muscari armeniacum</i> 'Saffier'	AGM	Autumn	S & OG	Racemes of densely packed globular buds, violet-blue with green tips. Buds never open out into normal flowers and do not produce seeds, so the display remains in good condition for a long time. Strong grower and good late flowering variant. Benefits from lifting and replanting in fresh soil every 3-4 years.
<i>Muscari comosum</i> (12)		Just before flowering	OG	A 'tassel' hyacinth so-called because of its apical tuft of bright violet sterile flowers.




Name	AGM	Leaves emerge	Planting Position	Comments
<i>Muscari neglectum</i> (13)		Autumn/ Winter	S & OG	Variable. Globular or oblong deep blackish-violet flowers with a constricted mouth and white lobes. Can be invasive as spreads by both seed and bulbils.
<i>Muscari pallens</i> (14)		Just after the start of flowering	S	Compact with neat foliage and dense inflorescences of pale lilac flowers. Increased well in trial.
<i>Muscari</i> 'Superstar' (possibly <i>M. armeniacum</i> × <i>M. aucheri</i> hybrid)		Just before flowering	P & S	Compact, grey-green leaves which still look good at flowering. Suitable for growing in pots and as a cut flower. Scented.
<i>Scilla litardierei</i>	AGM	Just before flowering	OG	A fine garden plant although variable in flower colour (shades of violet-blue) and aspect of the leaves (some with erect foliage others more spreading). Easy to grow and one of the latest to flower. The cultivar 'Orjen' is also good with richly coloured flowers, almost prostrate leaves and flowering mid-season.
<i>Scilla persica</i>	AGM	Just before flowering	S	Loose racemes of starry mid-blue flowers. Likes a damp spot.
Other genera				
<i>Bellevalia</i>			OG & P	On the whole the judging panel was unimpressed by the genus <i>Bellevalia</i> as garden plants. However, some of the species, as well-grown clumps in the garden or as pot plants for the alpine house have their value. Few of the 50 or so species were entered into the trial. In fact, there are not many species in cultivation except perhaps in a few specialist bulb collections. Of those submitted for trial several did not thrive at all. Species which do have merit include <i>B. dubia</i> , <i>B. hyacinthoides</i> , <i>B. paradoxa</i> and <i>B. romana</i> .
<i>Hyacinthella</i> (15)			P	Although this genus contains some horticulturally attractive little plants they are really suitable only for an alpine house or bulb frame. This is partly because they are small and can be better appreciated in pots on a bench or in a raised frame and partly because they seldom thrive in the open ground. They have dense racemes of pale blue to deep rich violet-blue bell-shaped flowers.
<i>Puschkinia</i> (16)			S	Although this small genus of one or two species did not receive an AGM it should certainly not be overlooked as a garden subject. When a suitable position is found <i>P. scilloides</i> can be very attractive and will even naturalise by self-seeding. Being a snow-melt plant in the wild it requires a cool position, where the bulbs will not become too hot and dry when dormant in summer, but at the same time not too shady. It is best to aim for a situation in dappled shade in soil with a good humus content.

The Royal Horticultural Society

The RHS is the UK's leading gardening charity dedicated to advancing horticulture and promoting good gardening. Its charitable work includes providing expert advice and information, advancing horticulture, training the next generation of gardeners, helping school children learn about plants, and conducting research into plants, pests and environmental issues affecting gardeners. The RHS AGM plant trial scheme is an important part of this work.

The RHS receives no government grants and for every pound received from members' subscriptions we need to raise more than twice as much again to fund our charitable work. We also rely on donations and sponsorship to supplement income from our garden operations, flower shows, shops and plant centres.

RHS Plant Trials

With so many different types of gardener and so many different cultivars available to them in each group of plants, it is important that a system of recommendation is in place to help with selection at point of sale. These recommendations must be clear and reliable to ensure that of the thousands of plants available in the UK, a proportion are known to be excellent garden plants. The RHS provides this information through its extensive programme of plant trials held at RHS gardens in the UK. The RHS Award of Garden Merit  signifies the selection of the best cultivar for general garden use.

RHS plant trials serve the professional gardener who wants to know the range of plants available, including the latest breeding and selection programmes, with their distinctive characteristics and provenance. They also serve the amateur who wants to know which plants will grow and perform well in a particular garden situation.

The RHS has an unrivalled resource of knowledge and expertise and is therefore best placed to conduct plant trials for the UK gardening market.

RHS Herbarium

The RHS Herbarium keeps a record of trial cultivars as dried specimens with detailed descriptions and photographic images. This forms an important reference for the horticultural industry. Any new cultivars are highlighted and a Standard specimen is preserved and described.

The RHS Herbarium, stored at RHS Garden Wisley, is the largest active horticultural herbarium in the world. At present the collection contains about 80,000 herbarium specimens and over 30,000 images of plants. Material is actively collected from a wide spectrum of sources including RHS plant trials.

RHS Bulletins

Canna: September 2003

Daisies (yellow perennial): September 2004

Delphinium: June 2004

Geranium (hardy) Stage 1: June 2005

Lavender (hardy): July 2003

Miscanthus: October 2004

Potentilla (shrubby): July 2002

Salad Potatoes: November 2004

Saxifrages (silver): May 2005

Spiraea japonica (with coloured leaves): November 2003

These bulletins can be viewed at a larger size on the RHS Website:

www.rhs.org.uk/plants/trials_bulletins.asp

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