

Hardy border chrysanthemums

Barrie Machin

Introduction by Judy Barker

After some years trialling a section of border chrysanthemums at Wisley, the RHS asked if I would be interested in providing more of the border types from my National Collection for full hardiness trials planned from spring 2010 to late autumn 2012. Some 300 plants were needed and I am most grateful to Andrew McDougall, who had visited my collection over several years, and who helped me to assess the plants. He collected propagation material and grew all the plants needed for the trials and delivered all to Wisley.

In the first year, at a trials meeting, Dr Barrie Machin turned to me and said, “In all my years on the RHS committee this is the most interesting one, it is about how chrysanthemums behave, not just pretty flowers”. I gave him the results of my research and we shared ideas. To have the last important pieces of the breeding and hardiness puzzle put into place was fantastic. Of course we need to study a lot more species in their natural habitat to understand even more about these beautiful plants.

The Wisley trials

The Chrysanthemum Sub-Committee of the RHS held an Open Day in October 2011 to report on the progress of the current three-year trial on the hardiness of border chrysanthemums (fig. 1). The trial is composed of 128 cultivars of early-flowering varieties including a few ‘cushion mums’ (under 18 inches tall), some types for cutting, and 97 border varieties supplied by Judy Barker, who holds the National Collection of Hardy Chrysanthemums® with Plant Heritage.

The trial was planted at Deers Farm, Wisley, a local frost pocket, in mid-June 2010. After the severe winter of 2009–10 we feared we might have missed the boat, but luckily we had another severe spell from mid-November to the end of December 2010, apparently the severest December weather for 100 years. The lowest air temperature at Deers Farm was



Fig. 1 RHS Trials Open Day 2011

recorded as -17°C on 21st December. Winter survival also depends on soil type and drainage: Deers Farm is on greensand. Beds 120cm wide were planted three plants across, with 45cm spaces each way from the middle plant. Coarse 20cm netting over the bed prevented the plants from invading the paths.

In each year of the trial the sub-committee awards a Commendation to the best varieties, and those gaining three awards will receive an AGM. At the end of the trial, Wisley garden will provide space for a demonstration of a good range of the best varieties.

History

For a number of years, Judy Barker has been extremely busy researching the history of the plants in her collection. A general history of chrysanthemums since the time of Confucius is fairly well known (e.g. *The Garden* Sept. 2004); however, the more recent history of the border types has not yet been described in detail, although it is, indeed, fascinating, and teaches us much about the behaviour of the varieties that happily flower in our gardens year after year.

The florist's chrysanthemum, *C. morifolium*, first arrived in Europe from China via Marseilles in 1789, and it rapidly became popular even though it was late flowering and required a heated greenhouse to flower in November in Northern Europe. (Fig. 2) The French, in particular, were very keen to find earlier-flowering garden cultivars to provide flowers for All Saints Day celebrations on 1st November. Early in the nineteenth century, Chusan Daisies (pompoms) were brought to Europe from China, and some earlier-flowering singles and doubles from Japan. Interestingly, in the trial there's a delightful small crimson pompon, *C. 'Julie Lagravère'*, bred by August Bonamy in France in 1821.

Gradually French and English breeders provided varieties which flowered outside before October, although the list was rather short. I have a book published in 1886, by Edwin Molyneux, listing a dozen border chrysanthemums, eleven of them with French names. From the 1850s these early-flowering varieties found their way across the Atlantic to the ports of New England, often with French sailors.



Fig. 2 *C. 'Colvill's Old Purple' 1796*



Fig. 3 Bristol Koreans 1929



Fig. 4 Perry's Catalogue

By 1900, gardeners in northern Europe and the northern states of the USA had a reasonable choice of varieties which flowered from mid-September until killed by frost. The Americans called them 'garden mums'.

Koreans – In 1905 J. G. Jack of the Arnold Arboretum in Boston collected a chrysanthemum species in Korea. It was grown for a number of years before it was noticed by Alex Cumming, a chrysanthemum breeder. He wrongly called it *C. coreanum*, but described his 'Korean Daisy' as vigorous, well branched, 30–120cm tall, and floriferous, with 5cm alabaster-white flowers aging to carmine pink. Moreover it was very hardy, and its tough petals continued to open and flourish despite overnight frosts. He had been searching for a plant like this for years.

Starting in 1928, he crossed his Korean daisy into two lines of his breeding programme and, after several years of inter-crossing the best seedlings, he released a range of colourful singles which he marketed as Koreans, gradually introducing doubles and pompons into the range (fig. 3). By 1936 all were marketed in England by Wells of Merstham. One of these pompons is a lovely yellow, called *C. 'Jante Wells'*, and the lady herself attended the Open Day.

Rubellums – In 1929 a stray chrysanthemum plant, bought in a mixed batch of dwarf chrysanthemums intended for a rock garden, flowered in a garden in Llandudno. It was named incorrectly as *C. erubescens* and in 1935 it was grown at Kew Gardens and given an Award of Merit. In 1938 Kew botanist John Sealy was asked to make a positive identification: he thought that in all its characteristics it was most like *C. zawadskii*, but it was vastly superior, being taller, with more luxuriant growth, coarser leaves and larger flowers. He thought that it was sufficiently different from *C. zawadskii* to have status as a separate species which he called *C. rubellum*.

Amos Perry, a chrysanthemum grower and breeder from Enfield, saw *C. rubellum* in the Kew trials and decided to use it in his breeding programme. Crossing *C. rubellum* with his own and other leading early varieties, he produced a new, improved range which he called Rubellums (fig. 4). Some of them, including 'Clara Curtis,' 'Lady in Pink,' and 'Paul Boissier', are still growing well and in the trial.

Rubellums and Koreans are similar in habit, vigour and hardiness, and it is almost impossible to distinguish between them in the trial. It is said that amongst the original varieties in each group, Rubellums have a more spreading rootstock than Koreans, and also a more pronounced scent, said to be inherited from their ancestor *C. indicum*.

An especially important fact has emerged from the historical notes uncovered by Judy Barker. Amos Perry's son Gerald had in his garden a plant of *C. zawadskii* which produced an improved mutation. The mutation was compared with two sources of *C. rubellum* and found to be identical! In 1831, in his researches to identify *C. rubellum* correctly, John Sealy found that the original *C. zawadskii* had been seen in what is now Slovakia (near the Polish border), latitude approximately 50°N. Similar chrysanthemum species had been discovered along the same latitude extending to the far east of Asia and then south into Korea, China, and Japan. Although only slightly different from *C. zawadskii* in leaf characteristics, they had been given names such as *C. sibiricum* var. *acutilobum*. Sealy decided that since *C. zawadskii* had been named first, all the similar types should be regarded as varieties of *C. zawadskii*.

All this means that Amos Perry was actually crossing *C. morifolium* (the early florist's double chrysanthemum) with the very hardy *C. zawadskii* variety to produce Rubellums. In America, Roderick Cumming had written in his 1964 book that the Korean daisy that his father had used to produce the Koreans was not *C. coreanum* but *C. sibiricum* – which we now know is actually *C. zawadskii* var. *sibiricum*. So it is apparent that the two breeders on both sides of the Atlantic were actually making very similar crosses, at more or less the same time, to produce both the Koreans and Rubellums. It is not surprising that their main characteristics are similar.

The hardiness of both Koreans and Rubellums is mainly derived from the species *C. zawadskii* varieties which developed over a very long distance across Europe and Asia at latitude 50°N. This would not have been far south of the northern ice caps during the Ice Ages, and the plants would have had to survive a wide range of soil and moisture conditions.

The very last piece of the jigsaw came from my old Japanese chrysanthemum-breeder friend, Dr J Kawata, last June. He sent me a paper by Dr Fukai, stating that the consensus reached by Japanese studies of chrysanthemum species is that *C. morifolium* was probably developed from crosses between *C. indicum* (China) and *C. zawadskii* var.



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Fig. 5 *C.* 'Starlet'. A bushy, short (60cm), amber, single, spoon-petaled variety with the longest flowering period, June to November.



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Fig. 6 *C.* 'Syllabus'. A small-flowered pink and white anemone spoon, with a wide bushy habit, 75cm tall, flowering through September and October.



Figs 7, 8, 9 & 10
C. 'Mei-kyo', a small mauve pink with a small daisy eye, and its sports CC. 'Bronze Elegance', 'Nandyerry Sunshine' and 'Purleigh White'. Rose Clay gave a talk about them at the Open Day. Spherical bushes, 90cm tall, full of flowers through October and November. They are magnificent together in a border and, to use Mrs. Clay's description, "as tough as old boots".

latilobum. Both Cumming and Perry were actually backcrossing *C. zawadskii* to its original and most hardy parent, thereby concentrating the genes of *C. zawadskii* in their progeny.

The RHS sub-committee has so far nominated at least 25 varieties for awards, but we do not yet know the full degree of hardiness of each. Further trials will take place at Harlow Carr in Yorkshire. However, it can be stated that any variety awarded an AGM can be planted with confidence that it will survive the UK winters outdoors without protection.

Cultivation

Border chrysanthemums are easy to grow and require little labour to maintain. They can also be relied upon to flower for at least three years before needing to be lifted, divided and replanted. At the Open Day, Bob Brown, well known to Hardy Planters, gave a talk on the cultivation, plant spacings and feeding requirements of border chrysanthemums. They prefer a fertile soil, enriched by compost or manure before planting, and top-dressing with a general fertilizer such as Growmore each spring thereafter.

The best time to plant out young plants is mid-May, when the soil is warm enough to promote immediate root growth. If plants are to be left undisturbed for several years, over 90cm should be allowed between plants. In my opinion, if they are to be lifted or moved each year, less space should be given so plants will tend to support each other

when flowering, and staking will be unnecessary. Sometimes individual varieties need individual treatment. For instance, the tallest ones, and those with wide-branching habit, will need a bit more nitrogen to sustain optimum growth than the more compact varieties. At the end of each winter, the soil is deficient in nitrogen because it is leached away three times more easily than either potassium or phosphates. So a high nitrogen liquid feed is sometimes needed in June when maximum growth occurs. After this no feed should be given, because growth needs to harden up before autumn.

It helps to understand what the chrysanthemum plant itself is trying to do. In late May and June it is striving to produce strong branching stems and healthy leaves to support a maximum number of flowers. Pollinating insects then have the best chance to maximise seed production to create new plants for the following year. If time is taken to deadhead when individual flowers fade, the plant's reaction is to produce more flowers over a longer period to compensate.

At the same time as top growth reduces and nutrients are only required for petal elongation, the plant redirects most of its photosynthetic products downwards to initiate growth in the underground rhizomes from which will emerge vegetative shoots for the following year's flowers. Most cultivars of hardy chrysanthemums operate in this way, and should not be fed after colour shows in the flower buds.

Many border chrysanthemums have small, tough leaves and are not too attractive to sucking pests such as aphids and thrips. Black aphids sometimes attack in late summer, but a puff or two of a suitable insecticide will remove them. Choosing varieties with tough leaves will also help to avoid the fungus disease, white rust, which is particularly prevalent in warm, wet summers. The rust spores germinate only when leaf surfaces are covered by a film of water, so it is wise to water the plants at the roots and avoid splashing them.



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Fig. 11 C. 'Grandchild'. Dwarf (45cm); mauve-pink double flowers, September to November.



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Fig. 12 C. 'Perry's Peach'. Found in a garden in Whitby. 75cm tall. A lovely single. Flowers September to November.



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Fig. 13 C. 'Carmine Blush'. Bob Brown's seedling. 90cm tall, lovely colour and form; single flowers from October onwards.



Fig. 14 C. 'Aunt Millicent'. Another mid-border type 90cm tall; pale pink, almost white single for October and November.



Fig. 15 C. 'Tapestry Rose'. A back-of-the-border, 105cm tall, deep carmine pink single for October.

colour, height and flowering period. Judy Barker is working hard to ensure that by the end of the trial in November 2012 all the best varieties will be available for sale.

Judy has been running full hardiness trials on 3 open allotments in a frost pocket on heavy soil for over 10 years. Some of my own favourites, which have proved their hardiness, are pictured here (figs 5 – 15). 🌼

Barrie Machin started growing chrysanthemums 70 years ago, when he was 11, and has studied chrysanthemums all his adult life. Awarded the RHS Gold Veitch Memorial Medal for his work on AYR cut-flower chrysanthemums, he has been a member of the RHS Chrysanthemum Committee for many years, and written many books on his favourite plants.

Judy Barker's work on hardy chrysanthemums has been recognised by the National Chrysanthemum Society with the award of the John Woolman Silver Medal. See www.gardenchrysanthemums.org.uk

Varieties

I'm very pleased to report that in 2011 almost half of the plants in the trial appeared to be resistant to white rust. Many of them are also amongst the most useful for colour, form and longevity of flowering. There is, therefore, a golden opportunity for young, keen chrysanthemum enthusiasts to develop new breeding lines between the best plants in the trial, as they already have hardiness in their genes.

Border chrysanthemums flower from late June to mid-November, according to variety. The gardener must choose between a border devoted entirely to chrysanthemums, so that during the five-month period some will always be in flower, or a mixed border with the later varieties predominating from mid-October to November when other herbaceous plants are over. In both cases, the use of spring- and summer-flowering bulbs between the plants will provide a long flowering season with minimum labour.

To plan a border efficiently, consider

Plants will be on sale at Great Dixter Plant Fair weekend 6th–7th October 11–4, and Judy Barker will be there to answer any questions.