

brownish to yellowish-brown parchment-like cocoon on stems and leaves. They then pupate and adults emerge 2 to 3 weeks later. A further generation is produced before the adults enter hibernation and re-appear next spring. Infested plants are disfigured and leaf tissue may eventually split. Flower buds and shoots may be destroyed. To control, spray with a contact insecticide as soon as damage is seen.

Downy mildew can be a problem in the propagation stage under polythene or glass where there light levels are low through the winter. A preventive spray should be applied.

LITERATURE CITED

- Coombes, A. 1988a. *Phygelius*. The Garden 113(8):375-379
 Coombes, A. 1988b. *Phygelius* in the wild and in cultivation. The Plantsman 9(4):233-246.
 Coombes, A. 1990. *Phygelius*, their cultivation and propagation. Growing from Seed 4(3):19-28.
 Royal Horticultural Society. 2000. Wisley Trial Report, March 2000.
 Plant Finder. 2002. Dorling Kindersley/RHS London

***Dierama*: The Harebells of Africa[®]**

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INTRODUCTION

To see a mass of *Dierama* prancing and bobbing in the breeze, or languidly leaning over a pool, staring at their own reflection on a still evening, is food for the soul. One becomes captivated — a slave to their every need (and there are many). They are among the prima donnas of the plant world and in the last few years have finally received some of the attention they deserve.

TAXONOMY AND IDENTIFICATION

Dierama have been given a range of descriptive common names including grassy bells, harebells, wandflowers, or angels fishing rods. The botanical name means funnel and refers to the flower shape. There are approximately forty-four species of this evergreen member of the Iridaceae, growing in Africa from Ethiopia to the Southern Cape, the largest diversity of species being in the Natal area. There are seven tropical species, which may well require protection in the GB&I Region.

Specific epithets such as *ambiguum*, *dubium*, and *dissimile* give a hint of past problems with identification. Today, even with the help of Hilliard and Burt (1991), identifying *Dierama* can be difficult, and some species are not easily recognised. For example if we take colour variation as described in Hilliard and Burt: *D. pictum* — perianth: light to dark mauve pink, magenta, or deep wine red, or *D. dracomontanum* — perianth: light to dark rose pink, light coral pink to red, sometimes shades of purple pink or occasionally mauve. Thus it is not possible to identify on colour alone. The persistent papery bracts surrounding the buds which vary in colour, shape, size, and venation are of some assistance in identification. Size and form are also significant details.

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The following species are fairly easily identifiable:

- *Dierama grandiflorum*, a medium to tall species, is easily recognised by its flared flower with a twist at the end of the tepals. These tepals are bright pink but they have a short blue perianth tube at the base which is unique to *D. grandiflorum*. It is often the earliest to flower in the garden.
- *Dierama dracomontanum* takes its name from the Drakensberg mountains in Natal. It is a clump forming, shorter species with coral, pink or (less likely) purple flowers and coppery bracts.
- *Dierama pauciflorum*, is one of the earliest to flower, about 0.5 m tall, purple/pink and with few flowers to each stem, but many in the clump. The bright rusty copper bracts make it instantly recognisable.
- *Dierama pulcherrimum* has parallel-sided flowers as its identifying feature — though many hybrid seedlings with *pulcherrimum* in their ancestry will also share this feature.
- *Dierama trichorhizum*, a dainty plant with mauve flowers, has fine, hair-like leaves, and can be identified by the a distinct internode between the top of the corm and the first cauline or stem leaf. Small cormels appear in the axil of that leaf.
- *Dierama reynoldsii* and *D. latifolium* have silvery white bracts — the former is a stunning dark wine red with small flowers.
- *Dierama latifolium* is spectacular with white to rose pink flowers in huge clumps. This species can be 3 to 4 m across and up to 2.5 m tall.

Verifying *Dierama* species is difficult both here in the U.K. and in Africa. Plants of species sent to experts in Africa for identification are known to have been returned with CF (check for) alongside a suggested name. If the experts are confounded, there is little hope for the average nurseryman or gardener. It seems, therefore, that provenance is the most vital clue to accurate identification. *Dierama* usually grow in species specific colonies with very little “overlap”. Knowing where the seed was found is the single most useful tool in identification and yet rarely is this information given by suppliers.

CULTIVATION

In the wild *Dierama* grow in the rocky grasslands of the eastern side of South Africa from just above sea level to 3400 m. Here they enjoy wet summers. The genus range extends in the mountains as far north as Ethiopia. The plants are not adapted to the more arid Mediterranean climate of the far south and west of South Africa. An evergreen (or mostly evergreen) “cormous perennial”, most *Dierama* require copious water during the growing season, but only maintenance moisture in the winter.

Successful *Dierama* cultivation requires that the soil is free draining in winter because very few species will tolerate sitting in cold wet, waterlogged soil. The exception to this is *D. pauciflorum* which is seemingly quite unperturbed by a winter wallow. Ways of achieving this ideal, where natural conditions do not provide it, are by planting on a slope, bank, terrace, or raised bed, where leaky hose irrigation can provide any extra summer water needed. Alternatively they will thrive in a gravel area (perhaps in association with grasses) where the corm is kept cool and moist in summer but well drained in winter. It is important to remember that the larger of

the *Dieramas* will achieve a diameter of 3 to 4 m from flower tip to flower tip when mature and to plant accordingly. The most aesthetically pleasing sites will be on the banks of a stream, or reflected in the still water of a pond or lake, however they must not be in a position where they become waterlogged in winter.

In the British Isles *Dierama* appear to grow equally well in gardens with acid or alkaline soils. The only area where one would have problems is in poorly drained cold wet clay in a frost pocket. *Dierama* do not thrive in pots, where they flower reluctantly.

PROPAGATION

Seedlings. Seed for the National Collection is wild sourced in an attempt to obtain species true to name. Seed should be plump, firm, and shiny brown. If it can be squashed it is likely to be inhabited by the white grub of the bruchid beetle, the only pest known to attack the plant in the wild. Infected seed should be destroyed. In cultivation, *Dierama* produce vast quantities of seed in a good year, weighing the flowering stems to the ground in some cases. As the seed ripens it turns a rich chestnut colour.

Dierama are exceedingly promiscuous and seed harvested from species in a garden or nursery situation is almost sure to be cross fertilised unless one protects the flowers.

For the National Collection seed is sown from mid March to mid April in modules. Seed will germinate in about 2 weeks, and seedlings can grow to 20 cm tall in 6 weeks. The most successful seed medium so far has proved to be very gritty: 1 part each sand, soil, and peat to 5 parts fine silver sand (Cornish grit). The seed is sown onto the mix then topped off with more fine silver sand.

Pot on to a slightly richer and more retentive, but still well drained, growing medium, adding controlled-release fertiliser. Potting on by the end of June allows the plant to become established by the autumn.

Alternative methods include: Sow in an open, gritty compost in pots, and keep seedlings until the following spring and then pot them up in clumps; sow into trays and prick out at 50 mm; or sow in situ on a very well drained, warm soil.

Division. Each new season's growth is produced at the base of the stem of the previous season's growth. The fleshy roots shrivel and contract, pulling the corms deeper into the ground, ensuring that the new corms forming on top remain under the surface. This forms a stack of corms, with the older ones dying off. It is possible in most cases to break down this stack and replot the offsets and younger corms. The optimum times for division would either be in April (for pots and younger plants) before the brittle new roots start into growth; or in July (for mature clumps in the garden) when still in flower and it is possible to identify rogue seedlings among the plants. *Dierama* resent disturbance and they will usually die back in the year following division, reappearing as late as May 18 months on, so it should not be assumed they have died.

Micropropagation. In the past couple of years commercial micropropagation of *Dierama* has taken place in the U.K., but is still in its early stages. This process may be the only way to produce named *Dierama* for the mass market. However there are many things we do not know about the process, and how it will affect the final product in the long term. Work is being done in Africa on this, both to propagate species which are becoming endangered and to explore the possibilities of a commercial export trade.

Micropropagation has potential for some of the species which would take years before reaching a suitable size for division — so that accurately named stock is more readily obtainable. Many of the species are simply not commercial, but efforts must be made to properly identify those which are before putting them on the market.

STOCK AVAILABILITY

The National Collection is concerned with growing as many different accessions of each *Dierama* species as possible for the purposes of observation, comparison, and identification. Acquiring accurate stock has been a problem over the years. When buying species *Dierama* from any source it would be prudent to inquire if they are divisions from verified or wild-sourced stock, as many are just “seed from” the plant sought. Most plants in the Collection have been grown from wild-collected seed, which establishes that the plant will undoubtedly be a species — but not necessarily as named.

With regard to hybrids and cultivars Dr. Charles Nelson (pers. comm.) considers most of the old named *Dierama* cultivars to be extant in their original form. *Dierama* are long-lived plants and I suspect there are gardens which still have true stock of some of these. However I have had 6 accessions of *Dierama pulcherrimum* ‘Blackbird’, all different, and only one of which remotely fits the original description. For most garden purposes there are some excellent modern cultivars and seedlings. If mixed seedlings are acceptable to the public, then this is a way of producing some very fine plants — particularly when seed is taken from good varied stock. There seems to be little benefit in naming any plant that cannot be reproduced in commercial quantities

LITERATURE CITED

Hilliard M.O., B.L. Burtt, and A. Batten. 1991. *Dierama* — The hairbells of Africa. Acorn Books. Johannesburg, South Africa.

ADDITIONAL READING

- Pooley, E. 1998. A field guide to wild flowers of Natal and the Eastern region. Natal Flora Publications Trust. Durban North, South Africa.
- Nelson, E.C. and E. Deane (1993.) ‘Glory of Donard’: A history of the Slieve Donard Nursery, Newcastle, Co., Down. Northern Ireland Heritage Gardens Committee. Belfast.
- Hilliard, M.O. and B.L. Burtt (1990) *Dierama* — A neglected genus of *Iridaceae*. The Plantsman 12(2):106-112.