Ornamental Herbaceous Vegetation for Public Places in Maritime Climates - Potential and Problems

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Abstract

Maritime climates, such as are characteristic of the Atlantic coastal regions of Europe present both great opportunities and great problems. Given the high probability that global warming is occurring, this climatic zone, characterised by relatively warm winters, could substantially increase, making the experience of practitioners in this zone of greater importance to the rest of Europe. Mild winters, combined with a long growing season, are favourable to a wide range of plants, including a very wide range of herbaceous perennials and many southern hemisphere species. The latter have become particularly popular in some places, arguably resulting in a planted landscape that is clichéd, repetitive and often inappropriate. However, northern hemisphere herbaceous perennials rarely present the same aesthetic problems. Given a wide availability of taxa, designers of public space now have great opportunities for adventurous design, with exciting aesthetic possibilities. However, the long growing season presents major management problems, chiefly the competitive advantage given to a small number of aggressive semi-evergreen weed species. The reasons for this are examined and the possibility of selecting herbaceous species to compete with weeds is discussed, with an emphasis on how growth habit affects competition over the growing season. It is also vital that an open mind be kept about the use of herbicides in maintenance strategies.

INTRODUCTION

The division in Europe between Mediterranean and cool-temperate climatic zones is clear-cut and well appreciated, whereas that between maritime and continental is much more subtle and partly as a consequence, less well appreciated, often by horticulturists as much as by anyone else. A greater awareness of the difference between the two could lead to much more intelligent plant selection and use, particularly in low-maintenance public environments.

First it is important to establish the value of learning from the horticultural experience of regions with a maritime climate, which, for historical reasons, very largely means the British Isles. Practitioners in, for e.g. Bratislava or Dresden, are entitled to ask “What is the relevance of the experience of colleagues in a place with such a different climate such as the west of England or Ireland?”

Scientific opinion generally agrees that global warming is occurring, and a variety of widely different models have been made of possible outcomes. Given the immense complexity of climate these are essentially very speculative (Walker 2000; Pearce 2001).

Whatever happens however, those areas of Europe that currently experience a marked continental climate may well experience changes that result in a growing season that will be longer – which will increase the relevance of the experience of practitioners in maritime climates, a longer growing season being one of the most characteristic features of the maritime as opposed to a continental climate.

Herbaceous plantings in public spaces enjoy considerable popular support when they are well-managed, and their continued development could and should have a major positive effect in public spaces. However, practitioners currently have little guidance on the problems posed by working in climates with a long growing season. The major work of reference for public herbaceous planting was written with respect to work carried out in a very clearly continental climate in Bavaria (Hansen and Stahl 1993). A plant reference manual developed for landscape professionals working in British conditions...
offers additional and more relevant information (Committee on Plant Supply and Establishment 1994) together with a book aimed primarily at an amateur audience (Kingsbury 1996). One book by a horticultural writer is an excellent introduction to the more general topic of climate and ornamental planting (Taylor 1996), whilst another by the same author is one of the very few studies that address the topic of maritime climate gardening, but with a strong bias towards woody material (Taylor 1990).

MARITIME AND CONTINENTAL CLIMATES

Visitors to the west of England are sometimes heard to say that it is impossible to tell whether it is June or December – weather conditions are unpredictable and the difference between winter and summer averages are not nearly as marked as in a continental climate. Whereas continental climates experience clearly defined cold winters and hot summers, maritime climates have cool winters and summers with relatively short hot periods. Periods of cool and wet weather are normal in summer, and winters can alternate between periods with cold and moderate temperatures. The unpredictability of temperatures is accompanied by high rainfall with little seasonality.

Continentality and Plant Growth

In continental climates the growing season is clearly marked, as the winters are too cold to allow anything but the most minimal growth. In maritime climates however the potential growing season is much longer, with those species which are not strongly seasonal in their growth pattern able to make some growth right the way through the winter. For those species with a seasonal growth pattern, activity can start early in the spring and finish late in the autumn (Taylor 1990).

For horticulturalists the most obvious advantage of mild winter temperatures is the ability to grow plants from warmer climates – as is shown by the number of ‘sub-tropical’ gardens and exotic looking flora in gardens on the west coast of the British Isles, even as far north as Scotland. As an example, the author has had *Musa basjoo* growing unprotected for seven years in a garden in Bristol, south-west England. Whilst the range of plants that can be grown in a maritime climate is enormous, it is not all advantageous, as some woody species which need summer heat to ripen their growth in order for it to be frost hardy may not survive (Taylor 1990). The use of southern hemisphere plant material that is only hardy to between –5 and –10 °C is increasing in the British Isles, e.g. *Phormium tenax*. In aesthetic terms these plants are not always suitable for the situations where they are planted, and are arguably contributing to a clichéd appearance in many new plantings.

For herbaceous plants, a maritime climate allows a long season of growth. However this creates its own set of problems for public horticulture, where ease of maintenance and issues of sustainability are of fundamental importance. The main problems concern weed competition.

The vast majority of ornamental herbaceous perennials are strongly seasonal in growth - they are dormant in the winter, living tissue being practically invisible above ground. The most successful weeds in these climates are herbaceous species that either have a seasonal growth pattern that allows them to make start into growth at low temperatures, and thus to commence growing very early in the year, or which never die down at all, and are effectively evergreen. *Urtica dioica* for example produces young shoots in late winter, enabling it to make rapid growth in the first spell of warm spring weather (Fig. 1), and *Ranunculus repens* stays green all through the winter, seeming to be able to grow at any temperature above freezing. Most importantly of all, coarse pasture grasses fall into this latter category, species such as *Arrhenatherum elatius* and *Holcus lanatus* or specialised weeds of cultivation such as *Agropyron repens*.

WEEDS, BIO-DIVERSITY, AND THE AESTHETICS OF PUBLIC PLANTING

The combination of a maritime climate with a limited number of effectively evergreen grass species is one of the main reasons why bio-diverse and aesthetically
pleasing wildflower communities in Britain are so rare (other reasons include the effects of the last ice-age, agricultural history and possibly nitrogen pollution). The situations where a wildflower and grass meadow community can be established as an aesthetically rewarding part of public horticulture are comparatively rare. A combination of high soil fertility and a long growing season benefit the highly competitive grasses – which even if not part of the original seed mixture or are present as part of the weed seed bank, soon introduce themselves on the wind.

The same problems occur in areas of ornamental herbaceous planting. Since the vast majority of such plants are winter-dormant, they leave the ground between them bare, and therefore open to colonisation by weed seedlings. By late winter in many British parks and gardens, there is already a green haze of weed seedlings between the desired species, grasses predominating. If they are not dealt with, by late spring they can be well established, and by the end of the growing season, their removal is a potentially time-consuming and disruptive operation.

Herbaceous Plant Selection

Of the strategies open to those attempting to develop ornamental herbaceous plantings in maritime climates, the selection of species that are able to compete with weeds is the most attractive, and sustainable, option.

One attractive sounding option is to attempt to naturalise robust herbaceous species in a grass sward. In practice it seems that few species are able to survive long-term. Nevertheless the simplicity and potential cost-effectiveness of this approach means that it is worth persevering with research (Hitchmough 1994).

The vast majority of public herbaceous planting takes place in borders of some kind, where there is considerable potential for weed seed development in the spaces between the ornamental perennials during the winter and early spring, before the herbaceous canopy closes in. It should be clear that species should be chosen that are semi-evergreen or which make an early start to growth in the spring, and which thus reduce the area available for weed colonisation by offering effective competition for light (Fig. 2). Currently the range of ornamental perennials commercially available with this combination of characteristics is limited. One reason for this is simply that there are relatively few species which combine these characteristics with frost hardness. Practitioners therefore need to make effective usage of this limited species range whilst developing strategies for minimising weed colonisation to allow the effective public use of winter-dormant species.

Additionally however clump-forming species that shade out ground surrounding the clump as much as possible will also reduce the development of weed seedlings (Fig. 3). By late spring these species may completely cover the ground, denying space to weed seedlings. There is quite an extensive range of species with these characteristics commercially available.

It is worthwhile to mention some of the plants available that are effective weed-suppressants through combining spreading foliage and a semi-evergreen habit. Two species from northern Spain, *Geranium endressii* and *G. versicolor* and the hybrids that result from them, known collectively as *Geranium × oxonianum*, are pre-eminent. Flowering profusely in early summer, they produce further growth to flower again in autumn. They are however quite untidy in the intervening mid-summer period, and their vigorous growth can in itself be a problem in that they can compete with other herbaceous perennials if grown too closely to them. However, for many purposes, where minimal maintenance is a requirement, they are superlative public-space plants. Much tidier in habit is *Phlomis russeliana*, which forms a tight mass of attractive matt-textured evergreen leaves, with golden-yellow flowers in early summer. Its seed heads are tough enough to withstand wet autumn weather and so continue to be a moderately decorative feature through the winter.

Practitioners in public space need more plants like these. Further selection of quality cultivars and plant breeding could produce more variations of the limited number
of species available. More fruitful though, may be the introduction of species not currently in cultivation, after initial assessment of any tendencies to invasiveness. Areas of the world with west-coast maritime climates need prospecting for suitable species: the Pacific north-west coast of North America and Chile are the two obvious ones. However continental climates may also have some species which are suitable. For example, many North American aster species, or *Cirsium canum* which the author has introduced into cultivation from the Slovak Republic and which starts into early growth with dramatic foliage.

**Management Techniques**

Given that the range of species which are semi-evergreen or make sufficiently early growth to compete with surrounding weed seedlings in low-maintenance situations, is limited, practitioners are still faced with the problem of how to manage plantings that contain those species which are readily out-competed.

Of the management techniques that play an important role, the use of wood chip mulch is highly effective. Parks maintenance departments are often self-sufficient in this material, as a by-product of pruning and tree thinning. Applied in spring, after planting, to a depth of at least 3 cm, it effectively prevents most weed seeds from germinating. However it is readily disturbed by the factors that can make all aspects of public plantings problematic: dogs and young people on bicycles riding through plantings.

Some infiltration of weeds in ornamental herbaceous plantings does seem inevitable. Given that they can rapidly increase and then devalue the appearance of the planting, it is essential that they are limited as much as possible. The use of herbicides, particularly those based on glyphosate, is one obvious means of control, especially if weeds are spot-treated during the winter season, when the ornamentals are dormant, but when many of the most problematic weeds are still actively growing. Such techniques are opposed by some members of the public, and indeed the profession, on the grounds that they pose an environmental risk. There is little evidence however, that commonly used herbicides present a major risk factor, glyphosate in particular, which bio-degrades (Greenpeace 1997, Infoventures 2003, PAN 2003). In addition to which, the quantities needed for effective weed control per unit area are actually very small indeed compared to the quantities used in agriculture.

Regarding herbicides, it is important that members of the profession take notice of two issues: (1) carefully targeted usage according to very specific criteria for clearly stated aims, is far more environmentally responsible and much easier to justify to the public than any kind of routine usage, and (2) by limiting the growth of aggressive weedy species, management using herbicides actually promotes bio-diversity.

**CONCLUSION**

The experience of practitioners who work in climates with a long growing season could become increasingly important. The understanding of the growth habits of ornamental species throughout the year is a vital part of selecting species that might be suitable for plantings where weed competition is likely to be a problem. Selection of appropriate species based on this understanding plays a major role in developing successful plantings. Management techniques need to take account of the effects of a long growing season on plants, and to target weeds accordingly.

**Literature Cited**


Figures

Fig. 1. Growth of two common weeds through the year, *Urtica dioica* and *Ranunculus repens*. A common herbaceous ornamental, *Persicaria amplexicaule* is included for comparison.
Fig. 2. Growth of four common herbaceous ornamentals through the year: *Aster laevis, Geranium endressii, Geranium phaeum, Eupatorium maculatum.*

Fig. 3. The profiles of four common herbaceous ornamentals through the year: *Aster laevis, Geranium endressii, Geranium phaeum, Eupatorium maculatum.*