Hardiness – an upate

Bob Brown

The public largely imagine hardiness is all or nothing. Thus, in their imagination, the thermometer drops to 0ºC (freezing) and tender plants are reduced to mush. In the world of tender bedding this may be true. The nasturtiums that have been happy and even flowering during November with temperatures in single figures, dissolve to slime when, crash, there's a drop below zero. This kind of reaction is exceptional.

Lately, eastern Worcestershire has experienced some record low temperatures – officially about –20ºC at the met station on the side of the hill but as low as –26ºC at the bottom. I can vouch that perennials and shrubs planted out on my nursery finally die at all kinds of temperatures: *Puya spathacea* (fig. 1) at –10ºC, *Viola odorata* at –15ºC (fig. 2), *Viburnum tinus* 'Gwenllian' (fig. 3) at –17ºC, *Agapanthus caulescens* (fig. 4) at –20ºC, *Agapanthus* 'Navy Blue' (fig. 5) and many others, including the spectacular winter-flowering Moroccan *Ranunculus calandrinioides* (fig. 6), presumably die somewhere out of sight below –26ºC. I conclude that hardiness is not an all or nothing quality.

It gets more complicated. New, modern *Echinacea* hybrids, bred from species native to the Midwest of the USA, are used to temperatures so low that freeze-drying operates and the activities of pathogenic bacteria and fungus are suspended. Currently the British public watch them disappear over winter and (rightly) complain. During recent very cold

Fig. 1 *Puya spathacea* dies at –10°C

Fig. 2 *Viola odorata* 'The Czar' dies at –15°C

Fig. 3 *Viburnum tinus* 'Gwenllian' dies at at –17°C

winters I can report that they mostly lived. My theory is that warmish wet British winters allow pathogens to rot the crowns and conclude that new *Echinacea* hybrids **die when it isn't cold enough**.

Americans have known that their plants die at different low temperatures all their gardening lives, and the US Department of Agriculture issue a zoning map based on average minimum temperatures. Plants tend, therefore, to come with zoning attached. '*Farfugium japonicum* 'Argenteum' (fig. 7) Z (zone) 8a–10b' means 'It'll thrive planted out in places zoned between 8a and 10b where the average minima lie between –12.2ºC and +1.7ºC. How sensible! It beats my amateurish attempts to qualify the limits with "bone hardy", "hardy-ish", "needs the protection of a wall" or "tender-ish" and so on. The trouble is that American hardiness zoning doesn't translate to Britain. A plant like this farfugium that'll thrive to –12ºC in Virginia dies at –5ºC in Ely. This is probably explained by the contrast between the warm, ripening summers and physiologically dry winters in the US and the cold wet summers and cool wet winters in Britain.

In 2012 the RHS introduced a new British hardiness zoning system: H1 to H7. H1 is hot-house conditions, H7 is very hardy (below –20ºC). 0ºC is included in both H3 and

Fig. 4 *Agapanthus caulescens* dies at –20°C

Fig. 5 *Agapanthus* 'Navy Blue' dies below –26°C

The new RHS hardiness zones

zone	*ºC*	*category*	*definition*
H1a	*>15*	*Heated greenhouse – tropical*	Generally under glass all year
H1b	*10 to 15*	*Heated greenhouse – subtropical*	Can be grown outside in the summer
H1c	*5 to 10*	*Heated greenhouse – warm temperate*	Can be grown outside in the summer. (Most bedding plants, tomatoes and cucumbers.)
H2	*1 to 5*	*Tender – cooler frost-free greenhouse*	Tolerant of low temperatures, but not surviving being frozen. Except in frost-free inner-city areas or coastal extremities requires glasshouse conditions. (Most succulents, many subtropical plants, annual bedding plants, many spring-sown vegetables.)
H3	*– 5 to 1*	*Half-hardy – unheated greenhouse mild winter*	Hardy in coastal and relatively mild parts of the UK except in severe winters and at risk from sudden (early or late) frosts. May be hardy elsewhere with wall shelter or good microclimate. Likely to be damaged or killed in cold winters, particularly with no snow cover or if pot grown. Can often survive with some artificial protection in winter. (Many Mediterranean-climate plants, spring-sown vegetables for later harvesting)
H4	*– 10 to – 5*	*Hardy – average winter*	Hardy through most of the UK apart from inland valleys, at altitude and central/northerly locations. May suffer foliage damage and stem dieback in harsh winters in cold gardens. Some normally hardy plants may not survive long wet winters in heavy or poorly drained soil. Plants in pots are more vulnerable to harsh winters, particularly evergreens and many bulbs. (Many herbaceous and woody plants, winter brassicas, leeks.)
H5	*– 15 to – 10*	*Hardy – cold winter*	Hardy in most places throughout the UK even in severe winters. May not withstand open/exposed sites or central/northern locations. Many evergreens will suffer foliage damage, and plants in pots will be at increased risk. (Many herbaceous and woody plants, some brassicas, leeks.)
H6	*– 20 to – 15*	*Hardy – very cold winter*	Hardy in all of UK and northern Europe. Many plants grown in containers will be damaged unless given protection. (Herbaceous and woody plants from continental climates.)
H7	*< – 20*	*Very hardy*	Hardy in the severest European continental climates including exposed upland locations in the UK. (Herbaceous and woody plants from continental climates.)

Fig. 6 *Ranunculus calandrinioides* dies below –26°C

Fig. 7 *Farfugium japonicum* 'Argenteum', hardy where the average minima lie between –2.2°C and +1.7°C

H4. Hooray! A solution to the problem is in sight. I've offered my four penn'orth and recorded H zones for plants I've killed, and others are doing the same. Eventually a consensus about a plant's hardiness will be reached. H numbers have started to appear in print. They'll soon be on labels.

I grow, have grown, kill and have killed an enormous number of plants in a part of Britain currently experiencing record low temperatures. I can say that *Ranunculus calandrinioides* even survives –26ºC. Others who have had temperatures only down to –14ºC or –9ºC can vouch for its hardiness only down to their minima. The places where it originates in Morocco do experience winter weather worse than ours. I remember a trip in late February/early March when it snowed continuously between the Rif and sea level on the Mediterranean coast. At sea level no snow settled. At higher altitudes it did settle. I imagine that summer in the Rif is probably warmer and drier than our summer (I find this an easy concept to visualise). *Ranunculus calandrinioides* ought to rot to death whilst it's dormant in British summers. As I write this in January 2013 it's in flower under some snow. Last summer (2012) we had astonishingly high rainfall. I would have predicted it would have died then and not be in flower now. However, it's planted under a deciduous hawthorn tree which tends to dry the soil while it's growing during the summer so I can't do any more than suggest that maybe it's **summer-hardy** as well. When I said it's complicated I meant it.

Bob Brown is a plantsman with opinions who selects, trials, sells, talks and writes. He likes to provoke because other people's opinions are useful too.