

Division, Factors for Consideration in Ensuring Success

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In the course of a year, we divide a significant number of *Hemerocallis*, *Hosta*, and *Iris* cultivars

There are a number of basic tenets that should be followed to ensure success when propagating by division. I propose to deal with each in turn and cite pertinent examples relating to each.

CORRECT IDENTIFICATION

As plants resulting from division are often sold prior to flowering, it is imperative that the material is correctly named. The propagator must check that newly acquired material is correctly identified. Accurate records detailing the source and location of the stock plants must be kept. Perhaps the greatest difficulty encountered by those of us employing staff is inculcating the importance of correct identification in our staff. It is very difficult when dividing *Hemerocallis*, for instance, to identify the plants one from the other without flowers present. I would defy anyone with limited knowledge of the crop to identify one tall bearded iris fan from another.

PLANT MORPHOLOGY

To successfully divide any crop and maximise the number of propagules, the propagator must have a thorough understanding of the morphology of the crop with which he/she is working. Is the crop a rhizome producing a crown with the current seasons roots arising as the shoot develops, as seen in *Hosta* and *Hemerocallis*, or is it a tuber as that found in *Dahlia*? Are there any scraps that will give rise to further plants if they are retained and nurtured? How small can a given rhizome be cut up?

SOIL HUSBANDRY

All stock plants should be grown in healthy vital soil. The addition of organic matter, either through incorporation or as a mulch, will provide this. Organic matter assists in aeration and fosters a healthy worm population and also encourages high populations of beneficial soil organisms such as actinomycetes which will help keep harmful organisms at bay.

Care should be taken to minimise soil compaction through the use of heavy machinery particularly during periods of high soil moisture. The effects on the soil mechanics are long lasting and difficult to remedy. Compacted soils are poorly aerated, have slow water infiltration and percolation rates, may sour, and have upset nutrient balances.

Such effects either individually or collectively will lead to poor growth. It is well known that compacted soils will cause root rot in *Hemerocallis*.

WATER

Water is all important. Typically, we find situations in division where we have either too much or not enough. In most instances the candidate for division should not have

been grown under conditions of water stress. If plants are to be divided in dry periods it is recommended that the soil be brought to field capacity at least 24 h prior to lifting. One exception would be the bearded iris, where in fact we dry the rhizomes for a brief period before shipping them.

Whereas most other plants require significant levels of water following division, bearded iris require limited water during the re-establishment phase. Excessive quantities of water frequently induce the soft rot complex that is associated with bearded iris.

NUTRITION

Plants supplied with the required levels of nutrition and appropriate water and which are grown in a healthy soil are themselves likely to be healthy and less vulnerable to the depredations of pests and diseases. The old adage, 'a little and often' is well remembered when applying fertiliser to stock plants. The grower must understand the crop being produced and cater for the appropriate needs. To fall back to the already oft-cited bearded iris example, the application of nitrogen in any form while producing strong shoot growth often induces soft rots during the growing season. The application of nitrogen to this crop must be handled with care.

TIMING

Much has been written, some of it fallacious, some whimsy, some myth, about the time certain crops should be divided. Without doubt some plants are fickle and demand particular care. Others prove to be no more than a challenge. An understanding of the morphology of the plant being dealt with and the growth phase it is in, will often provide the solution to the problem. There are those plants such as *Helleborus* which do have defined periods during which the results will be better. For instance, the *Helleborus* hybrid forms I work with, respond best to division during late summer to early autumn (February - March).

As an aside, I generally avoid dividing *Helleborus* for any purpose other than bulking parents for use in the breeding programme due to the slow recovery following division. Division of *Helleborus* for resale on the scale I need is not a viable option. Hence the breeding programme to produce the required seed lines

PLANT AGE

In all instances the use of young plants that have not become tangled and entwined makes the process of division easier. Our Iris beds are replanted every 2 to 3 years. Bearded iris rhizome production is best in the third year after which the rhizome numbers and quality generally diminish. A bed of Louisiana iris that is any older than 3 years is a challenge to separate, as is a 4-year-old clump of *Hemerocallis* and likewise a mature clump of *Hosta*.

VIRUS STATUS

Care must be taken to check all new and existing stock for virus. Often the inexperienced eye will confuse viral symptoms with some other physiological disorder. Until one gains experience with the crop a vigilant eye must be maintained and advice sought when an apparent problem arises. Hostas may suffer from one of two or possibly both viruses. To the inexperienced eye the slight chlorosis resulting from Arabis Mosaic Virus (AMV) or the more general chlorosis caused by tobacco

Rattle Virus may appear to be nothing more than a characteristic of the particular cultivar. Stunting should also be watched out for. In New Zealand both *Hosta* 'Royal Standard' and 'Sweet Susan' have been observed to be infected with AMV. Infected material should be destroyed by burning.

PEST STATUS

Stock plants must be maintained free of pest species. Vigilance is required as the pest species that are likely to do the most damage are often not seen. While aerial species are obvious to the trained eye, those living within the soil are not. Of particular interest are the root knot nematodes, found in many of our soils, which in the case of vulnerable cultivars of the *Iris ensata* hybrids can lead to decline of the plant.

The larvae of the white fringed weevil which develops over the late summer and spring, will do considerable damage to the roots and crowns of some *Hosta* cultivars, severely depleting the plant to the point that it is destroyed. *Hosta plantaginea* and *H. fortunei* var. *obscura* 'aureo-marginata' are particularly susceptible.

DISEASE STATUS

To ensure success, a spray programme must be prepared to combat fungal problems. This can be graphically illustrated in our instance with bearded iris, where we maintain an appropriate spray programme. Over the last 2 years we have bought in stock to supplement that from our own fields and those we draw from in Australia. The incidence of systemic leaf spot within the material acquired locally was such that the resultant crop was unsalable. The grower concerned had failed to maintain an adequate spray programme.

HYGIENE

During the process of division, care should be taken to minimise the risk of transmitting virus or disease to the propagated material. Where we use knives to assist in division they are treated with a quaternary ammonia to destroy any latent virus that may be present in the sap.

POST PROPAGATION TREATMENT

In some instances the material that has been divided is treated with an appropriate post propagation dip to either assist with re-establishment or combat pests and / or diseases. Following the lifting and division of raspberry (*Rubus idaeus*), apple (*Malus*), and quince (*Cydonia oblonga*) stools, they are dipped in a solution containing the bacteria *Agrobacterium radiobacter*, to protect the plants from the causative organism of crown gall *A. tumefaciens*.

AFTERCARE

One could write a tome concerning the aftercare of plants following division. Simply remember that in most instances the plant has been severely treated. Often having lost not only its root and shoot mass but also suffering the disruption of the source - sink relationships within the established clump. Consequently one must treat the divisions appropriately to ensure the best possible strike.