The New Faces of Hellebores©

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INTRODUCTION

Hellebores have proven to be one of the ultimate perennials for shade: long lived, long blooming, evergreen, and virtually disease free. It is certainly no wonder they were selected "The 2005 Perennial Plant Association plant of the year."

Still, improvements in this genus are occurring at a rapid pace. Colors have been much improved on in the past decades. New colors, richer color saturations, and superior flower forms are the hallmarks of the new generation of hellebores. Recent improved leaf color … and shapes only hint at future possibilities.

SEED PROPAGATION

Parent Plants. Good seedlings begin with strong parent plants. The genetic heritage of a superior clone is passed on through controlled crosses and rigorous editing of stock beds. Careful monitoring of the percentage of successes in breeding ensures flower quality.

The "mother" plant has historically been selected for shape, the pollen parent for color. Pollen is placed on the stigma of the "mother" before the anthers on that flower start dehiscing. This avoids self pollination and, when done at the proper time, can avoid the necessity of emasculating the flower.

Seed Collection. Constant vigilance is the name of the game as you watch seed pods ripen. Seed dispersal happens rapidly (ants will carry seed away). Many a good cross has been lost due to failure to collect seed at the proper time.

I usually collect my seed over a 2-week period. I then allow them to dry in paper bags before cleaning. A note of caution: prolonged handling of seed pods when cleaning and extended exposure to leaf scratches on hand and arms while collecting may cause dermatological reactions.

Seed Sowing. Seed is best sown fresh. Old seed does not germinate well or even at all in some cases though cold storage helps extend viability. Seeds should be sown in flats and barely covered with compost or Turface. Cold stratification is also necessary for germination. This usually takes place naturally out of doors in late winter/early spring. For faster germination keep seed warm for 6 weeks then place in a cooler for 4 to 6 weeks. It is now possible to seed in June, transplant in January, and have shippable plugs in May. Seedlings are pricked out after a second set of leaves appears directly into a 3-inch pot or a 50-unit-cell seed tray. It is important to note that hellebores put on their growth in the cooler seasons — spring and fall.

Hybrid vigor, heterosis, is vital. Plants that are selfed too frequently are unhealthy and rapidly decline. Growth of seedlings can be further enhanced by constant fertilization at 100 to 150 ppm. Potting soil is a peat, coir, perlite, and bark finds (12 : 3 : 2 : 3, by volume) mixture. For optimal growth, soils are best adjusted to a pH of 5.5. Root rot can be inhibited by application of root shield $1^{1}/_{4}$ lbs/yd^{3}.

In the garden, in my acidic Pennsylvania soils, hellebores can be left undisturbed for years and years. However, for finishing off plants for retail, adjusting potting soil pH and a comprehensive feeding program is necessary. Deeper pots are preferred; hellebores tend to resent cramped roots. Checking of growth can be expected if grown too long in shallow containers.

ASEXUAL PROPAGATION

Asexual propagation is necessary when attempting to reproduce a particular clone. This is vital for maintaining superior forms. Asexual propagation is achieved by divisions, or more recently, progress has been made with tissue culture. With this latter process transitioning the plants from lab to garden soil is still a challenge.

Color seed strains may provide a similar product to asexually reproduced clones for the gardener. It is my opinion that a high percentage rate of true-to-color type should be documented (80%–90% true) before release of a color strain.

Division. Divisions are best made in late summer. Ensure that there are old and new roots on each division and at least two sets of leaves. This will keep the plant better balanced and avoid the pulling out of young roots. I usually place divisions in containers and watch watering for at least 8 weeks before placing in the open garden.

Tissue Culture. Tissue culture breakthroughs are beginning to happen. This is especially true with straight species of the caulescent group and their crosses. *Helleborus* ×*nigercors* seems to have the highest success rate, with cultivars 'Valentine Green', 'Ivory Prince', and 'Pink Beauty' to name a few. *Helleborus niger* also seems to be responding well. As a "pure," uncomplicated species — and one of the parents of *H.* ×*nigercors* — the protocol is more easily established with these plants. *Helleborus* ×*hybridus* is the complex hybrid of many species, thus presenting a greater challenge. Success in reproducing a variety of superior selections — each with a differing genetic heritage — remains a goal to be achieved. To date the replication turnover for *H.* ×*hybridus* during Stage 2 — a 12-week period — is an average of 1–1.3 or 1–1.8 plants. Stages 3–4, when the plants are introduced to soil are also problematic, which is why *H.* ×*hybridus* are so expensive at sale. And just because a selection *does* respond does not necessarily mean it is worthy of reproduction. We should always be rigorous in our selection of the best possible forms. This is not pessimism, but quite the opposite — there are many opportunities for us in the future. And the future remains bright indeed for this beloved genus.