Get in on the "ground floor" of Magnolia Hybridizing

by J.C. McDANIEL

There are many hybrid possibilities in *Magnolia,* and some have not been at all explored. Even within a variable species like M. *grandiflora* seed produced by selfing a good clone (or crossing it with another good one) should be distinctly preferable to what we get by just letting the bees do it.

In some crosses, the seeds, or most of them, can be apomictic, reproducing only the seed parent. Certain trees, in M. *virginiana,* seem more apomictic than others. M. *acuminata* also sometimes gives apomictic seeds after pollination by other species, but if enough crosses are made (in a compatible combination) you may expect some interspecific hybrids. M. *acuminata* × M. *denudata* hybrids have been accomplished, as well as *acuminata* × *liliflora.* The cross M. *virginiana* × M. *grandiflora* is easily made, with either typical or M. *v.* var. *australis* as the seed parent. Typical, but not var. *australis* sweetbays can be pollinated with M. *tripetala* pollen to produce M. × *thompsoniana;* the reverse cross, with *tripetala* as seed parent, does not work.

Not all hybrid magnolias are useful for breeding. All of the *liliflora* × *stellata* hybrids are sterile triploids. Most hybrids of M. *virginiana* (such as M. × *thompsoniana*) are sterile; 'Freeman' (M. *virginiana* × *grandiflora*) is partially fertile at times, and has been back crossed to both parent species.

The *soulangiana* cultivars vary in fertility; good seed producers include 'Lennei', 'Grace McDade' and 'Rustica Rubra'. Gresham made several hybrids with 'Lennei Alba' as one parent. All these are probably easier to hybridize than the parents, M. *denudata* and M. *liliflora.*

In California gardens, M. *dawsoniana* has generally set few seeds. M. *campbellii* (including subspecies *mollicomata*) is often fruitful, as are M. *sargentiana robusta* and M. *sprengeri* 'Diva'. (These are all hexaploids in section *Yulania.*) M. × *veitchii* is fertile.

Several crosses have been made between species with different chromosome numbers, including 2n × 4n, 4n × 6n, and 2n × 6n. Some of the hardiest species, like *stellata,* are diploids; crosses of these with hexaploids, like *denudata* and *sprengeri* 'Diva' which bear larger flowers, should be rewarding. Any cross with the relatively late-flowering M. *acuminata* (including *cordata)* should give improvement in escaping spring frosts. In general, it seems easier to use the species with lower chromosome number as the seed parent; such a cross may give more seeds, or in any event the hybridity from the larger parent should be obvious among the more vigorous or larger leaved seedlings of a cross, in contrast with others that may not be true hybrids.

In mild climates, it should be possible to make such unusual diploid × hexaploid crosses as *salicifolia* × *campbellii, stellata* × *dawsoniana, loebneri* × *sprengeri* 'Diva', etc., which should be hardier than the hexaploid parents. I already have a hybrid, *stellata* × *denudata,* which Mr. Gossler has grafted.

In these cases it is better to use the plant with lower chromosome number as seed parent, so that true hybrid seedlings can more readily be identified morphologically in their juvenile state.

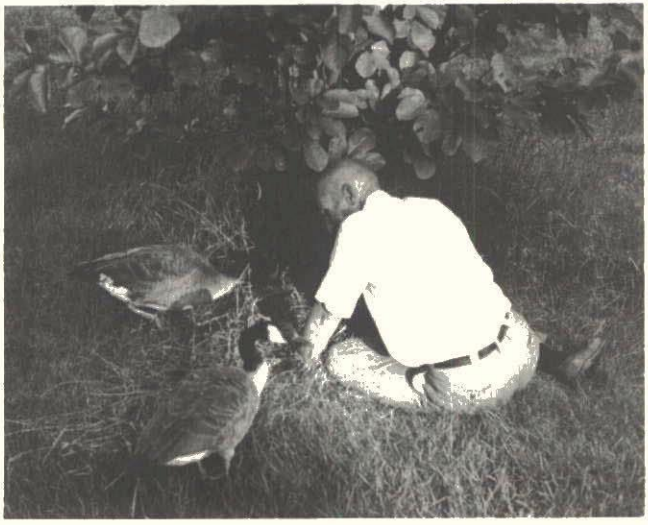
My very hardy *acuminata* × *liliflora* hybrids are blooming here now. The Brooklyn Botanic Garden has another very hardy one (No. 391) from *acuminata* × *denudata* cross.

Why not make a few crosses yourself this spring? When you have selected the species or hybrid you plan to use as the "male" parent in a cross, gather flowers in the afternoon, just as the stamens are springing back slightly from the base of the gynoecium. You can collect the entire flower, breaking or cutting it off at its base, or the stamens only. A strong reading glass will help you to see if dehiscence (lengthwise splitting) of the anthers has already taken place, with total loss of pollen, or if the golden powder you seek is still neatly packaged for you. If you gather stamens only, put them on a clean sheet of white paper in a warm room, but not in direct sunlight. If you gather whole flowers, break off the tepals at their base, and clip off the gynoecium even with the tips of the stamens. Stand the remaining flower parts upside-down on white paper, onto which they will drop the pollen, ready for use. Watch for, and remove tiny thrips and beetles!

The period of receptivity to pollen starts when flower is in the late bud stage, and for subgenus Magnolia, at least, can continue a few hours after the flower first opens, but not until the second day. Brown stigmatic surfaces, and folding back of stigmas against the gynoecium (in some spp.) are signs that it is too late to pollinate a flower.

The unfertilized gynoecium can develop to some extent, and hang on, even for months. But if fertilization is accomplished, there is more development of carpels containing seeds, giving an irregular appearance to the fruit aggregate. ★★★

Photo by Tim Savage



Ye olde Editor shows a nesting site (one rm. wi/bath) to a pair of apartment hunting Canada geese. The wife didn't like the carpet (quack grass) and flew off, the gander following wearily. I had thought the roof, *M. denudata*, would clinch the deal. —P.J.S.