

to grow with a single trunk, but if trained into a pyramid, *M. grandiflora* could possibly be grown further north than at present, since the outer pyramid of leaves would insulate the trunk during severe weather and possibly prevent "Southwest Disease" — in which the bark cracks open when the trunk thaws rapidly in a period of severe cold weather.

I am still making observations about the hardiness of *M. grandiflora*. I started growing them from seed about 1939. I remember a winter about 1950 when the temperature went to 26° below zero for about six hours. Magnolias came through with no damage to the trees, although the foliage browned. *Buxus sempervirens* was killed to ground level. The elevation here (Karnak, Ill.) is 340 feet. Just 1½ miles south where elevation is higher, possibly 380 feet, boxwood was not damaged, but of a different clone than mine.

The winter of 1976 or 1977 we had many nights with temperatures as low as 25° below zero. These extremes of temperature followed a dry fall. I lost ten *M. grandiflora* trees in my yard and many more in the park. These trees were seedlings, parent trees being seedlings purchased from T.G. Owens Nursery, Columbus, Miss. I would think Owens would have used locally collected seeds. Trees that were killed were 20 feet tall and had diameters of 6-8 inches at ground level.



Mounded form of *M. grandiflora* in Italy.

## Creating Hybrids

By Dennis Ledvina

The hybridization of magnolias is a fascinating and rewarding adventure which I encourage more of our members to try. The number of possible crosses that have not been explored is in the hundreds. Why not try a few crosses next spring and donate the excess seed to the Seed Counter?

Several of our Society members are involved in some rather interesting and elaborate hybridizing programs. Phil Savage has many exciting new hybrid trees that we eagerly await to form their first flower buds. I had good luck with my hybridizing last spring also.

Herb Trautman has a tree of *M. salicifolia* which produces very little of its own seed, but, pollinated by *M. sargentiana* var. *robusta*, it produced large carpels. I harvested about 20 'bananas' with over 400 seeds, some of which will be offered in the Seed Counter.

Tom Horner has several trees of *M. soulangiana* 'Alexandrina' which produce very little seed of their own but put some pollen on their unopened flowers and the carpels will develop into large fruits with many seeds. Pollen we used and got good seed production from included: *M.* 'Orchid,' *M.* 'Galaxy,' *M.* 'Picture' × *M. sprengeri* 'Diva,' *M. acuminata* × *M.* 'Picture,' and *M.* 'Yellow Lantern.' Some of this seed will also be offered.

Other crosses I made and got good seed production from were *M.* 'Paul Cook' × *M.* 'Woodsmen,' *M.* 'Picture' × *M.* 'Woodsmen,' *M. acuminata* × *M.* 'Galaxy,' *M. acuminata* × *M.* 'Alexandrina,' *M.* 'Yellow Lantern' × *M.* 'Picture,' *M. acuminata* × *M.* 'Merrill,' *M. acuminata* × *M. kobus*, *M. acuminata* × *M.* 'Wada's Memory,' and finally, with some skepticism, *M. acuminata* × *M. grandiflora* 'Russet.'

The equipment used to become a pollen freak is simple but essential. First you should buy several small

white paper envelopes with a well glued flap for sealing. I prefer paper envelopes to gelatin capsules which tend to hold moisture and cause the pollen to develop mold. While you are at the store get several water-color paint brushes of a fine thin-line type.

You will also need some rubber bands and some plain white typing paper. Next go to your garden supply store and get some "Flower Dri" and some plastic tags. I prefer the large red tags which are easy to find in the dense fall foliage. You will also need a glass jar with a tight-sealing cap.

Your first job is to go out and collect some pollen. The early blooming magnolias such as *M. kobus*, *M. salicifolia*, and *M. loebneri* are probably the most difficult to collect pollen from. It is difficult because it takes a warm, sunny day to obtain good pollen. If the flowers are picked too early the stamens shrink and harden and the anthers never open. If they are picked too late most of the pollen is lost.

The best time to gather the flowers is in the afternoon, just as the stamens are springing back slightly from the base of the gynoecium. You can collect the entire flower or the stamens only. 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 tip of the stamens. Stand the remaining flower parts upside-down on white paper, onto which the stamens will drop their pollen. Watch for, and remove those beetles.

The following day there should be circles of golden pollen on the white paper. Tap each flower part to remove the last of the pollen and then remove them. Put a fold in the pollen covered paper to form a chute. Gently tap the bottom of the paper to direct the pollen into the chute and then slide the pollen into one of your white

envelopes. Label the envelope and seal it securely. Obtain a good, tight-sealing glass jar and fill it half full of Flower Dri and lay your envelopes on it. Don't allow the desiccant into the envelope. Screw the cap on tightly, and place it in the refrigerator. If the pollen will not be used within a couple weeks it is best to freeze it.

Look over the magnolias you intend to use as seed parents and find buds that are about to open. The best time to pollinate a bud is the day before it opens. A receptive bud is one that has its stigmas curled back and with a glisten on the upper surface of the stigma. Brown stigmatic surfaces, or the folding of stigmas against the gynoecium are signs that it is too late to pollinate a flower.

Once you have found the bud you intend to pollinate, carefully open up the bud to reveal the stigma. With a watercolor brush, apply some pollen on the receptive stigma. It is important to use a different brush for each pollen or to clean the brush completely after using a particular pollen. If you prefer, you may slice off the pointed tip of the bud instead of trying to unfold the petals of the flower bud, but be careful not to cut through the gynoecium within. Once the union has been made it is very important to tie the bud shut using either twine or rubber bands. This will help prevent self-pollination or pollination from another source. Label the cross with a tag and you are all set to wait for the results.

The unfertilized gynoecium can develop and hang on for some time. If fertilization has taken place, there is more development of the carpels containing seeds, giving the fruit an irregular appearance. In some crosses the seed can be apomictic, that is, reproduce only the seed parent. Certain trees tend to be more fertile than others, but if the right trees are selected you may expect some interspecific hybrids.