

## The Smaller Arilbreds

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### Introduction

This article accompanies the publication of “A Checklist of Arilbred Dwarfs and Medians through 1996.” The last such checklist was published in 1980. In the intervening years, the arilbred medians have enjoyed increasing popularity, receiving the William Mohr award (now medal) 10 times since 1980. A few new lines of breeding are opening up that promise to eliminate the fertility barriers that have plagued this group of irises from the beginning. The new checklist lists nearly 200 arilbred dwarfs and medians that have been registered since 1960, as well as a comparable number of historic and other cultivars that might be considered arilbred dwarfs or medians if different definitions are used. It is time to come to terms with these small arilbreds.

### History

The history of the smaller arilbreds begins early in this century, when *onocyclus* and *regelia* species were becoming available to European and American breeders. Crossing these arils with dwarf bearded varieties (almost exclusively *I. lutescens* in its various forms) produced small arilbreds, half aril by ancestry, but usually triploids with one set of aril chromosomes and two sets of bearded chromosomes. Crossing the arils with the diploid tall bearded irises available at the time also sometimes produced median-sized plants.

These early small arilbreds were regarded mainly as curiosities. They were generally quite sterile, and so were not developed as a new race of garden irises. (An exception is ‘Zwanenburg’, introduced in 1912, which is fertile. Its parentage is open to question, but it is likely that it resulted from an unreduced gamete of *I. susiana* pollinating the *I. lutescens* cultivar that was its pod parent. Although not an amphidiploid, ‘Zwanenburg’ apparently has enough homologous chromosomes to show some fertility. It became the parent of a number of small arilbreds.)

From the 1930s through the 1950s, dwarf breeders became interested in the psammirises, a distinct group of dwarf irises with arillate seeds. At one time, these were referred to as the “arenaria-flavissima complex.” Today, the various forms common in cultivation are grouped together under the species *L. humilis*. Although long grouped with the arils, the psammirises do not show any of the distinctive flower

characteristics of the regelias and oncocyclus, and in 1995 the Aril Society placed them outside its definition of “aril.” The hybrids between *I. humilis* and *I. lutescens* cultivars (a total of 17 were registered) are thus now appropriately placed in the MDB or SDB class, depending on height. Some of them make pleasing garden subjects, but like the aril/dwarf hybrids, they are essentially sterile.

Beginning in the 1950s, but not reaching full steam until the 1970s, two new classes of small arilbreds were being created. This development was made possible by the creation (around 1950) of a new kind of median and a new kind of arilbred. The modern SDBs were developed from crossing *I. pumila* with TBs, and the modern fertile arilbreds were produced through the persistent work of C. G. White. These represented two new “fertile families” of raw material for the production of small arilbreds.

When an SDB is crossed with a C. G. White type arilbred, the result is a small arilbred with one set of aril chromosomes, one set of *I. pumila* chromosomes, and two sets of TB chromosomes (symbolized *APTT*). These plants tend to resemble IBs in size and general appearance (they average 16 inches in height), but frequently show some aril influence in color or form. They are now the most common (and most popular) type of small arilbred, and the term “arilbred median” suits them especially well. About 120 irises from this type of breeding have been introduced since 1960.

When an SDB is crossed with a pure aril, rather than an arilbred, the result is typically a triploid with one set of chromosomes from the aril parent and one set each of *I. pumila* and TB chromosomes from the SDB parent, thus *APT*. These plants are smaller than the SDB/CGW types (averaging only 10.5 inches) and usually show their aril ancestry more strongly. In a way, these irises are the modern version of the old *I. lutescens* arilbreds: they have a similar chromosome configuration, and similar size and appearance. However, the superiority of the modern SDBs over the *I. lutescens* dwarfs makes them generally more attractive. Because of their smaller size (and their similarity to the old aril/dwarf hybrids), it is natural to call these irises “arilbred dwarfs.” There have been about 30 registered since 1960. These arilbred dwarfs are probably the most beautiful and distinctive of the small arilbreds, showing both aril and dwarf ancestry unambiguously.

Neither of these new types is fertile. Full fertility will only be possible when small amphidiploid arilbreds are developed. There are two approaches to achieving this goal. Both are being pioneered in the 1990s by Harald Mathes of Germany. Tetraploid arils crossed with *I. pumila* produce amphidiploid arilbred dwarfs (*AAPP*), such as ‘Barbarella’. There are also dwarf and median bearded irises whose chromosomes come in sets of 12, like the TBs (*I. aphylla*, *I. reichenbachii*, and *I. suaveolens*, for example). If these are used instead of *I. pumila*, small amphidiploid arilbreds may be produced with a chromosome configuration like

that of the tall C. G. White arilbreds (*AATT*). Mathes's 'Anacrusis' and 'Invention' are examples of this type of breeding. It is likely that the next century will see the development of two new fertile families of small arilbreds.

Figure 1 shows the number of different types of arilbreds with dwarf ancestry registered through the passing decades. The decline in the 1990s probably reflects the decreasing number of hybridizers working with arilbreds.

### The Classification Problem

The problem of classifying these irises is perhaps the worst nightmare anywhere in the American Iris Society's registration system. These small arilbreds have been registered under no fewer than *twenty-eight* different classifications through the years.

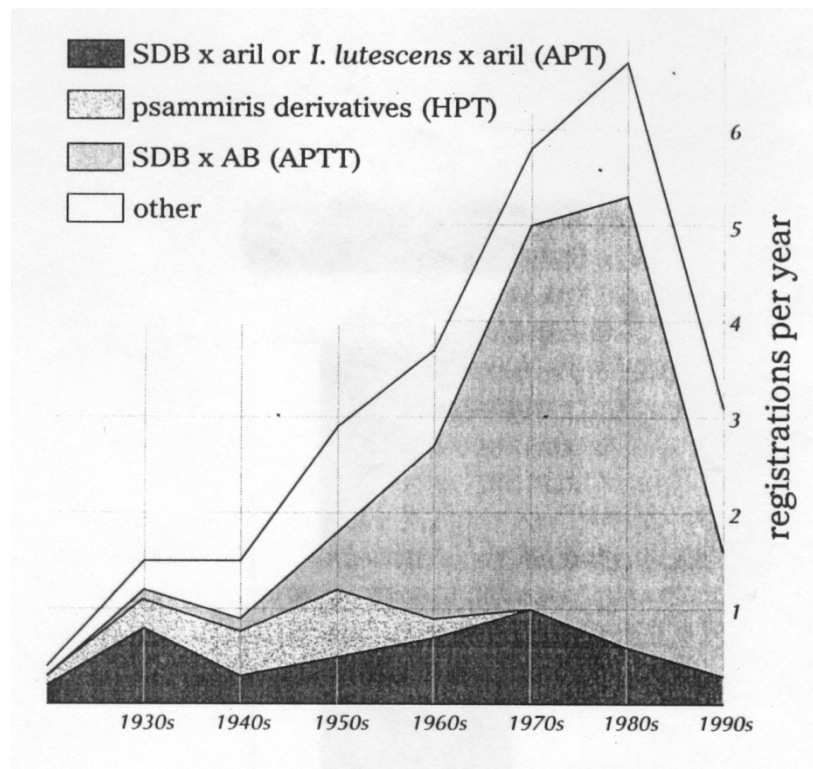


Figure 1. Registrations of irises with mixed aril and dwarf ancestry, by decade.

As the situation currently stands, any small iris with at least one-quarter aril complement and two aril flower characteristics may be registered as an arilbred. If an iris does not meet these criteria (in the hybridizer's judgment), it may be registered in one of the dwarf or median classes, according to height and bloom season. Most of the arilbred medians and arilbred dwarfs are thus registered as arilbreds and compete for the William Mohr or C. G. White medal, as appropriate.

Grouping them with the larger arilbreds presents many problems, however. Size is important to gardeners, and it is odd and unhelpful to classify a 5-inch arilbred dwarf together with a 40-inch tall arilbred. Many commercial growers recognize the public's need for a more helpful classification, and so use a distinguishing term for the smaller arilbreds. Unfortunately, since there is no "official" category for these irises, the terminology is not uniform, but differs from person to person, sometimes wildly. Further, arilbred medians have their own following among iris growers and judges. Aril Society members, on the other hand, typically show little interest in irises that are not at least one-half aril, and most arilbred medians do not make this cut. Hence the arilbred medians and the tall arilbreds tend to be grown and promoted by two increasingly separate groups of irisarians. Were they not competing for the same awards, this situation might be acceptable. As it is, there is an ongoing uncertainty as to how, by whom, and even if arilbred dwarfs and medians should be promoted. This leaves hybridizers in a sort of "no-man's-land."

This aspect of the problem is not likely to be resolved soon. In the mean time, however, one can take a look at the different kinds of small arilbreds being produced and see if any convenient groupings can be made, to aid the gardener in understanding what to expect.

In the first version of the checklist, I introduced a classification system based entirely on pedigree: if all the bearded ancestry came from dwarf species, the iris was an arilbred dwarf. If the bearded ancestry were a mixture of dwarf and TB, the iris was an arilbred median. This was convenient at the time, but it has some inadequacies. First, it is not a horticultural classification. Irises that are very similar in size and appearance (the SDB/aril hybrids and the *lutescens*/aril hybrids, for example) may end up in different classes. For this reason, and also because parentages may be unknown or inaccurate, I now think it is better to base the classification of observable characteristics of the plant itself.

This leads to a system in which height is the primary criterion. But where to draw the lines? Do we want an arilbred class corresponding to each of the six bearded classes? That hardly seems practical. The small arilbreds do not tend to fall into the same groups as the bearded irises do. Instead, I used the two most common types of arilbreds with dwarf ancestry as models for separate classes. The arilbred median class

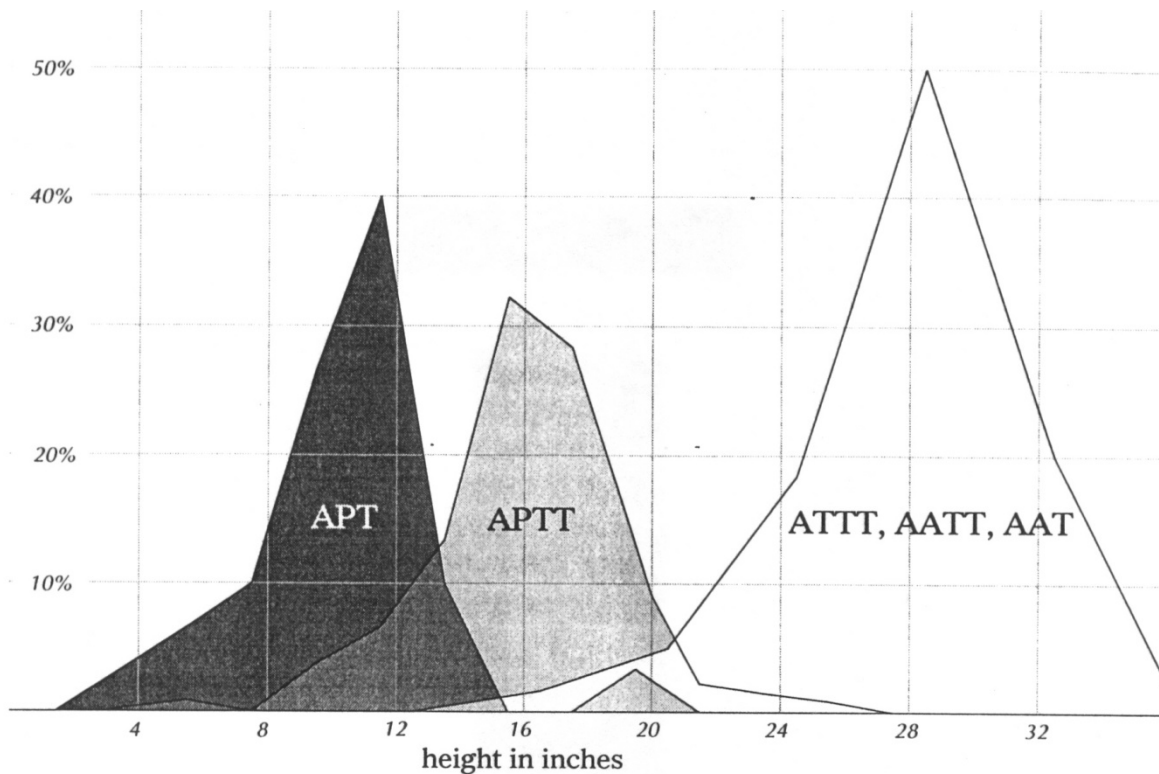


Figure 2. Height distribution of arilbreds from three kinds of breeding: SDB/iril (*APT*), SDB/AB (*APTT*), and conventional tall arilbreds (*ATTT*, *AATT*, *AAT*). The *APT* sample includes all 30 such irises registered since 1960 and is sorted into 2-inch bins. The *APTT* sample includes all 120 such irises registered since 1960 and is also sorted into 2-inch bins. The arilbred sample includes 20 each of AB-, AB, and AB+ cultivars, and is sorted into 4-inch bins. The height of this curve is an artifact of the larger bin size.

is modeled on the SDB/irilbred (*APTT*) hybrids, and the arilbred dwarf class is modeled on the SDB/iril (*APT*) hybrids. Figure 2 shows the height distributions for registered irises from these two types of breeding. Two-thirds of the *APT* irises fall between 8 and 12 inches; two-thirds of the *APTT* irises fall between 14 and 18 inches. Thus 13 inches is a natural cut-off. If the line is placed here, only 4 of the 30 *APT* irises fall in the taller (arilbred median) class, and only 14 of the 120 *APTT* irises fall in the shorter (arilbred dwarf) class. Moving the line in either direction increases the number of misfits.

What about the upper limit for the arilbred median class? Here the issue is the line between *APTT*-type arilbred medians and conventional tall arilbreds. Only about 5% of arilbreds from aril/TB breeding measure 20 inches or less. The fraction of *APTT*-type arilbred medians that measure 21 inches or more is about 3%. This figure doubles if the line is moved 1 inch lower. Hence 20 inches is a sensible upper limit

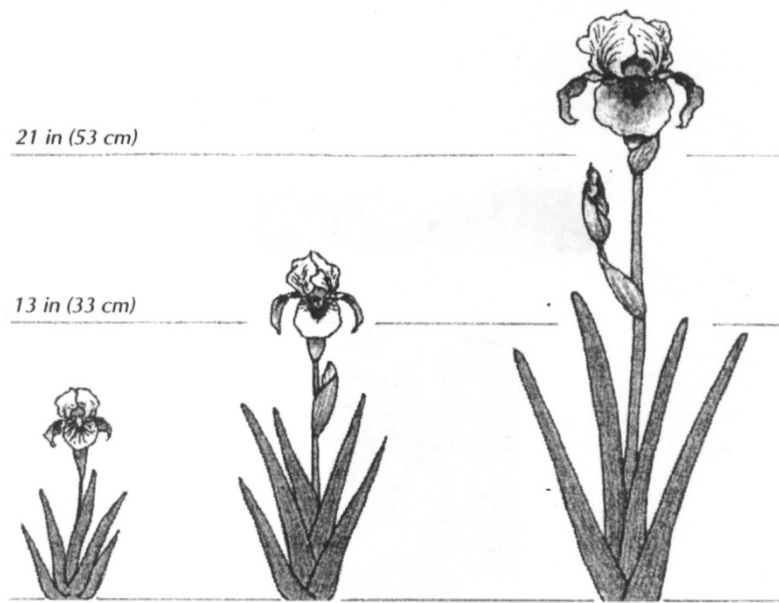


Figure 3. The three proposed arilbred classes

for the arilbred median class. As it happens, this is also in agreement with the recommendation of Jim and Lucy Fry in “Garden Judging of Aril Medians” (*ASI Yearbook* 1984). Figure 2 also shows the height distributions for arilbreds from aril/TB breeding.

Figure 3 illustrates the three arilbred classes arrived at through these considerations: arilbred dwarfs (less than 13 inches), arilbred medians (13 to 20 inches), and arilbreds (21 inches or more). These terms were chosen (in preference to “aril median,” “arilmed,” and so on) because they emphasize that these irises are officially arilbreds, not arils.

One of the results of such a “yardstick” classification system is that some conventional arilbreds with no dwarf ancestry at all get classified as arilbred medians. This is a necessary compromise, but perhaps not without some merit. An arilbred this small will find a different niche in the garden. These are sort of the arilbred analogs of the BB class, short segregates from a type of breeding that usually produces much taller plants. Breeders might take note of these, for they offer another method for breeding fertile arilbred medians.

The arilbreds with more than one-half aril content present a special problem. Some of these have quite short stems, not because of dwarf bearded ancestry, but simply because some of the aril species themselves are short-stemmed. They are thus very different, horticulturally speaking, from arilbred

medians of the *APTT* type. In view of this, the classification scheme I use does not extend the arilbred median class into the arilbreds of more than half aril content.

I do, however, extend the arilbred dwarf class to all arilbreds, regardless of aril content. There are currently no arilbred dwarfs with more than one-half aril content (unless one counts a few whose actual chromosome configuration is uncertain). If any are produced in the future (say by crossing anil/pumila amphidiploids with pure arils), I presume that the role of their dwarf ancestry in producing their small size would be apparent, and they would be horticulturally distinct from their aril/TB analogs.

The result of this exercise is nine horticultural classes for the pogon irises (pure arils excluded). The relationship between these classes is shown in figure 4.

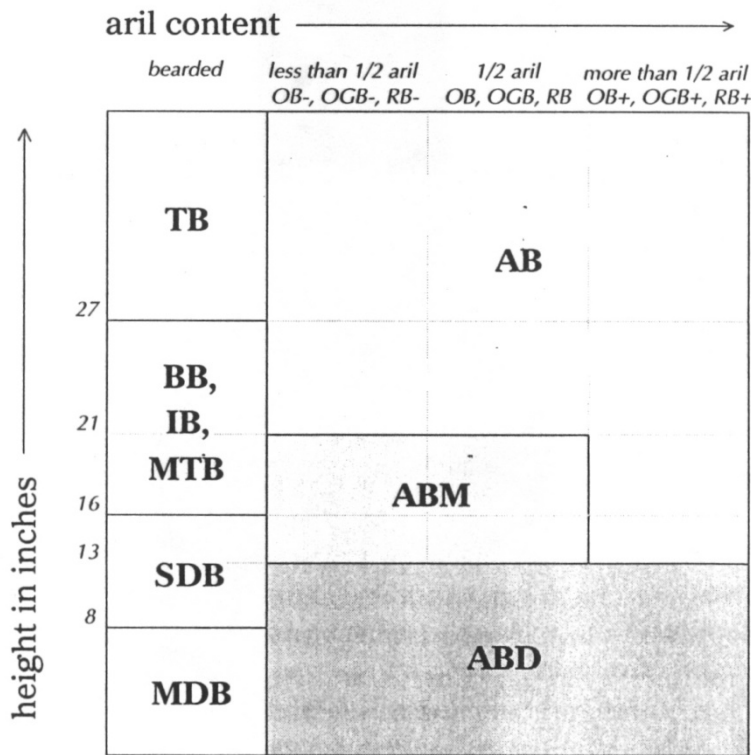


Figure 4. The nine proposed pogoniris classes, diagrammed by height and aril content.