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ADAPTABILITY STUDIES WITH BEARDED IRIS IN TEXAS

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Figure 1. Well adapted iris fit in well in front of the shrub border.

November through December or earlier, when there is plenty of moisture, was found to be the best time to transplant iris, while April, May and June is the worst time under conditions at College Station. Fall-set plants not only have a better chance to survive than those set in the spring but they are more apt to bloom and have more flowers the following spring and later. When moisture conditions one week before and five weeks after setting were good, the plants were found to do much better than when the soil was dry.

Of the 582 varieties under test, one was rated 10 (excellent) in adaptability, 15 were rated 9 (very good), 44 had a rating of 8 (good) and 89 a rating of 7 (moderately good). This gives a total of 149 varieties out of 582 which are considered to be well adapted. The newer varieties are about as well adapted to the conditions of the test as the older ones, and provide a wider range of color. Varieties receiving awards from the horticultural societies are no better adapted than the average. On the other hand, varieties recommended for discard by the American Iris Society have a lower rating on the average than the entire group as a whole. Varieties considered to be generally good elsewhere have a better than average chance of being well adapted here.

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ADAPTABILITY STUDIES WITH BEARDED IRIS IN TEXAS

by

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Division of Horticulture

The "white flag" was evidently one of the choice flowers brought to Texas by the early settlers. Even today it can be seen growing vigorously and blooming in competition with Bermuda grass around houses and in old graveyards. Further evidence for its excellent adaptability can be found in the legend, still current, that the new, more colorful varieties "revert" to the white form after a few years when sharing a bed with it. What actually happens is that the older, well adapted variety crowds the others out.

Some of these varieties yield to the older white form more readily than others and the need for a careful adaptability study of varieites was early apparent. This led to the establishment of an iris variety test by the Texas Agricultural Experiment Station in cooperation with the American Iris Society. This arrangement was effected by Mrs. Ethyl Anson Peckham who was in charge of iris test gardens for the Society and Dr. Hamilton P. Traub, at the time Chief of the Division of Horticulture of the Texas Station. The American Iris Society continued this work until about 1935. Most of the varieties in the test were secured through the efforts of Mrs. Peckham.

The ratings reported here are different from those usually accorded varieties of iris. While the vigor that any variety displays under a particular set of growing conditions is bound to enter into any judgment of its merits, many characteristics of the plants and inflorescence, such as the form, texture, size and color of the blossom are also important. The very rapid progress of the past quarter of a century in breeding and introducing new varieties, made largely under conditions distinctly different from those obtaining throughout the Southwest, has led, quite naturally, to the gradual elimination of many of the older sorts. This brings up some questions of particular interest to growers of iris in Texas. Are the older varieties that are being saved as best elsewhere also best for our conditions, and do the varieties that are being used as parent material contain the heriditary factors that allow their selected offspring to flourish in Texas? Fortunately, the varieties included in the test cover a sufficient range in time of introduction to get an indication of the trends along these lines. Since the study has been aimed at establishing the adaptability of a representative collection of varieties rather than to get a quick estimate of the behavior of the newest introductions, it has been possible to grow the material over a sufficient length of time to secure fairly dependable results.

Materials and Methods

Source of varieties: Shipments for testing have been received from public institutions, notably Cornell University and the New York Botanic Garden, from individual gardeners and from commercial growers. Private doners include Mrs. Wm. H. Benners, Dallas, Mrs. Willard C. Brinton, New York, Mrs. Ireland Hampton, Ft. Worth, Mr. and Mrs. W. H. Peckham, New Rochelle, N. Y., and Mr. and Mrs. Homer Skeels, Tacoma Park, D. C. The following commercial growers have also supplied iris gratis: Kenwood Iris Gardens, Cincinnati, O., Longfield Iris Farm, Bluffton, Ind., Otwell Iris Fields, Carlinville, Ill., Karl Salbach, Berkeley, Calif., Schreiner's Iris Gardens, St. Paul, Minn., Carl Starker, Jennings Lodge, Ore., Treholme Gardens, Washington, D. C. and Upton Gardens, Colorado Springs, Col.

Growing methods: The soil available for this test, known as Lufkin fine sandy loam, consists of a comparatively shallow layer of fine sand underlaid by a very stiff gray clay. The line between surface and subsoil is distinct and undulating. While the surface drainage is good, there is little or no underdrainage. The soil is slightly acid in reaction. It is naturally low in plant good and organic matter, but iris and other plants respond to applications of commercial fertilizer. Iris has been found to grow well on both sandier and on heavier soils at substations in other parts of the State. It has been observed that heavy soils containing particles of limestone and sufficiently alkaline to cause lime-induced chlorosis in the common ornamental plants (indicated by a partial loss of the green color of the leaves) is not as satisfactory for most varieties of iris as soils that are more nearly neutral in reaction or slightly acid.

Because of the lack of natural soil fertility the plantings were fertilized at the rate of 300 pounds per acre with a complete commercial fertilizer having 6 percent nitrogen, 12 per cent phosphoric acid and 6 percent potash. The most desirable formula for any particular location depends upon the soil available. Soils of our coastal plain, which are in general well supplied with potash, do not immediately require this fertilizing element. Where iris is grown on garden soil of good fertility the application of phosphorus alone in the form of bone meal has been found by gardeners to be entirely satisfactory. The successful fertilization of garden plants is a skill that results from experience and observation. Fraps and Ogier (6) give suggestions for the use of fertilizers on different kinds of soils and with various kinds of plants. It should not be assumed that since the old white flag flourishes under neglect other varieties do not respond to good treatment. Barnyard manure has been used successfully in preparing a raised bed of sandy soil by applying a layer of manure over the entire area and covering with soil to a depth of about 8 inches. This permits the roots to utilize the nutrients without endangering the rhizomes. A variation of this would be to place the manure in holes at a similar depth. Manure is recom-

mended only for soils obviously lacking in nitrogen and in organic matter. Plants needing nitrogen grow rather slowly and lack the normal dark green color seen in the leaves of vigoruusly growing plants.

The plants were first set in the field 30 inches apart in 3-foot rows. The entire area was cultivated. Later they were grown in slightly raised beds 6 rows wide, 3 plants to a variety, with approximately the same spacing. The transplanting tests were made in field plantings set 3½ feet each way, and were handled like the variety plantings.

In setting, a hole of sufficient size was dug to allow spreading the roots at a rather narrow angle. The soil was then packed carefully around the roots and the rhizome was covered with a thin layer of soil. This protected the rhizome at times from drying winds and from sunscald.

Diseases and insects: Southern blight, caused by *Sclerotium rolfsii*, was the most troublesome disease encountered. It is also sometimes called mustard seed disease because of the fungous resting bodies which look very much like mustard seed. These are formed next to the rotting plant. The base of the leaf is attacked causing the leaves to fall over. The rhizome later rots. These resting bodies remain in the soil and attack many types of plants, both ornamentals and vegetables. Putting a bed in lawn for 2 or 3 years is perhaps the least unsatisfactory method of handling the situation. It is also possible to sterilize small areas of soil. This and other diseases are discussed by Dunlap (4) who suggests methods of control.

The more widely spread soft rot caused some damage at different times, especially during warm moist periods. This was not observed to cause the complete loss of a well adapted variety. Large rhizomes were sometimes entirely decayed, but the younger attached rhizomes were able to reestablish the clump. Affected rhizomes can and should in most gardens be removed as soon as discovered. This disease is aggravated by poor drainage and by decaying organic matter in contact with the rhizomes.

There was little damage from insect attack. White grubs, the larvae of the June beetle, occasionally fed on the rhizomes. Where the drainage was excellent the damage did not prove serious. In a few low spots soft rot was observed to follow.

Time of Transplanting

Since shipments of plants were received at various times during the growing season and differences were noted in the subsequent development of different lots it was decided to make monthly plantings of 100 rhizomes of successful varieties to observe the effect of time of planting on later development. The lack of sufficient material of a single variety made it necessary to use a composite sample of 5 rhizomes of each of 20 varieties. While the results were no doubt affected to some extent by differences in varietal response it is felt that the selection

Table 1. Monthly Plantings of 100 Rhizomes[1]. (Data arranged chronologically)

Date set	Rainfall[2] (inches)	Evaporation[2] (inches)	Rain less evaporation	Av. max.[2] temperature	Percent[3] plants established	Bloom data[4]			
						Plants in bloom		Number of flowers	
						Number	Percent	Total	per plant
Aug. 17, 1932	5.15	7.83	— 2.68	92.3	34	4	11.8	23	5.75
Sept. 19, 1932	5.24	6.14	— 0.90	84.2	49	10	20.4	87	8.70
Oct. 18, 1932	0.82	5.56	— 4.74	76.2	41	13	31.7	107	8.23
Nov. 12, 1932	4.06	3.50	+ 0.56	63.1	35	9	25.7	46	5.11
Dec. 27, 1932	5.25	2.60	+ 2.65	66.6	50	13	26.0	117	9.00
Jan. 19, 1933	4.72	2.91	+ 1.81	63.9	56	13	23.2	106	8.15
Feb. 20, 1933	4.92	4.59	+ 0.33	71.2	52	10	19.2	67	6.70
Mar. 18, 1933	3.14	6.50	— 3.36	77.7	10	2	20.0	9	4.50
Apr. 17, 1933	3.04	7.90	— 4.86	86.1	34	8	24.7	26	3.25
May 18, 1933	6.81	9.58	— 2.77	90.9	22	4	18.2	18	4.50
June 16, 1933	1.91	11.31	— 9.40	96.7	11	1	9.1	4	4.00
July 15, 1933	7.64	8.92	— 1.28	95.4	78	10	12.8	48	4.80
Aug. 18, 1933	8.90	8.32	+ 0.58	94.3	39	4	10.3	14	3.50
Sept. 23, 1933	2.79	6.76	— 3.97	88.3	72	3	4.0	11	3.67
Oct. 16, 1933	1.83	5.22	— 3.39	81.1	60	0	0.0	0	0.00
Dec. 1, 1933	5.93	3.39	+ 2.54	72.7	70	18	25.7	141	7.83
Dec. 16, 1933	7.41	2.99	+ 4.42	70.4	74	43	58.1	715	16.63
Jan. 30, 1934	10.99	3.28	+ 7.71	65.4	71	36	50.7	516	14.33
Feb. 21, 1934	6.83	4.31	+ 2.52	69.2	65	23	35.4	249	10.83
Mar. 27, 1934	8.07	5.62	+ 2.45	78.5	70	27	38.6	251	9.30
Apr. 28, 1934	0.77	8.68	— 7.91	86.5	16	2	12.5	17	8.50
May 24, 1934	0.13	11.84	—11.71	95.3	16	4	25.0	25	6.25
June 22, 1934	0.84	13.46	—12.62	100.7	14	3	21.4	42	14.00
July 20, 1934	2.71	11.71	— 9.00	100.2	53	16	30.2	143	8.94
Aug. 24, 1934	4.44	8.77	— 4.33	93.2	69	39	56.5	415	10.64
Sept. 27, 1934	1.28	6.51	— 5.23	88.0	82	26	31.8	249	9.58
Oct. 22, 1934	4.41	5.48	— 1.07	81.8	87	36	41.4	383	10.64
Nov. 26, 1934	10.55	3.00	+ 7.55	65.0	71	35	49.3	290	8.29
Dec. 31, 1934	4.85	2.45	+ 2.40	64.4	73	35	48.0	247	7.06

[1]Except Nov. 26, 1934 (177 rhizomes) and Dec. 31, 1934 (125 rhizomes).
[2]One week before and 5 weeks afterward; data from Main Station farm.
[3]After a summer season.
[4]1934 season to May 11 for all plants set through October 1933; 1936 season up to March 25 for the rest.

only of well adapted varieties and the rather large number of varieties used each month reduced this source of error to a negligible amount. This test was continued for 29 consecutive months. On the twenty-eighth month 177 instead of 100 rhizomes were set and on the twenty-ninth month 125 rhizomes.

The results of the monthly planting test are presented chronologically in Table 1. In order to consider differences in degree of success, with respect to climatic factors, as expressed by the perecentage of plants established, data on rainfall, evaporation from a free water surface and average maximum temperatures are included for a period of one week prior to setting the plants and 5 weeks after planting. In order to get a single set of figures that would bear some likely relation to the soil moisture available to the newly set plants the evaporation in inches was subtracted from the number of inches of precipitation during the period of 6 weeks. Evaporation from a free water surface exceeded the rainfall for 17 of the 29 months of the experiment. It will be noted from Table 1 that plantings made from March or April through June of each year were much less successful than the others. Column 4 shows relatively high negative values for rainfall less exaporation for this period each year. It is interesting that plantings made from July through September under climatic conditions somewhat similar gave definitely better results. This would indicate that the plants were more mature and in better condition for transplanting than they were earlier in the season.

Bloom data for plantings made through October 1933 were taken during the 1934 season. Data for the remainder of the plantings were taken during the 1936 season. Comparisons are difficult as some of the plantings had gone through one or two summer seasons, while others had not. On the whole, those set during the fall or winter bloomed somewhat better than those set in the spring or summer.

Part of the data presented in Table 1 have been rearranged in Table 2 according to data on rainfall minus evaporation. This helps to bring out the relationship between these two sets of figures. At the top of column 1 the evaporation exceeded the rainfall by 12.6 inches for a 6 weeks' period. The planting made at this time was only 14 percent successful. At the bottom of column 1 the rainfall exceeded the evaporation by 7.7 inches and the planting was 71 percent successful. The average of the first 14 figures for rainfall less avaporation is —6.14. The corresponding average percentage established for the first 14 is 38.1. The average of the last 15 entries for inches of rainfall above evaporation is +2.15, with an average of 62.7 percent established. There are, of course, exceptions to this relation between available moisture as indicated by the rainfall-evaporation data and the proportion of plants successfully established. This is due in part to the increased success of late summer plantings under unfavorable conditions of moisture as compared to earlier plantings. The running averages of the last two columns give a little smoother picture of the relationship between the

two. The extent of the correlation can be expressed as a percentage ($r = +54.7$). In testing the statistical significance of the figure we find that t is 3.51 which makes it highly significant (t at the 1% point is 2.77). The data support the conclusion that available soil moisture is an important factor in the success of iris plantings.

Table 2. Monthly planting records arranged according to rainfall less evaporation (inches)

Rain less evaporation	Per cent established	Running average of 5	
		R — E	Percent established
—12.62	14		
—11.71	16		
— 9.40	11	—10.13	22.0
— 9.00	53	— 8.65	35.6
— 7.91	16	— 7.28	39.2
— 5.23	82	— 6.35	45.2
— 4.86	34	— 5.41	48.4
— 4.74	41	— 4.63	59.6
— 4.33	69	— 4.26	55.2
— 3.97	72	— 3.96	50.4
— 3.39	60	— 3.56	46.6
— 3.36	10	— 3.23	39.6
— 2.77	22	— 2.70	40.8
— 2.68	34	— 2.23	46.2
— 1.28	78	— 1.74	54.9
— 1.07	87	— 1.12	60.0
— 0.90	49	— 0.47	60.2
+ 0.33	52	— 0.10	52.4
+ 0.56	35	+ 0.05	46.2
+ 0.58	39	+ 0.35	51.0
+ 1.81	56	+ 0.77	54.6
+ 2.40	73	+ 1.16	60.6
+ 2.45	70	+ 1.55	66.8
+ 2.52	65	+ 1.72	65.6
+ 2.54	70	+ 2.13	65.8
+ 2.65	50	+ 3.15	66.0
+ 4.42	74	+ 4.20	67.2
+ 7.55	71		
+ 7.71	71		

Two comparable plantings were made, one in the spring and one in the fall of 1936. A total of 1272 rhizomes of 43 varieties were set on June 2, and 768 rhizomes of 40 varieties were set on November 2. Rhizomes of 39 varieties were planted each time. The data presented in Tables 3 and 4 permit a direct comparison between the two seasons. It will be noted from Table 3 that moisture conditions were very much more favorable in the spring than in the fall (R-E was +4.26 inches compared with —5.24 in the fall). In spite of this, a much larger proportion of plants of the fall planting survived both by May 1937 and May 1938. Further, by May 1938 there were many more large plants and fewer small plants, on a percentage basis in the fall plantings. Turning to the bloom data presented in Table 4 we find that 24.2 percent of the living plants of the fall planting bloomed the following spring compared to 10.2 percent for the spring planting. The fall set plants still had a slight advantage in proportion of plants blooming in 1938 and also had more flowers per plant (11 on the average compared to 9).

The evidence from the comparison is obviously in favor of fall planting. These conclusions are in line with those expressed earlier by Willa Griffin Largent (7) and by Eddie Fanick (5) in bulletins of the American Iris Society.

Table 3. Spring and Fall Plantings—Plant Data

	Spring		Fall	
Date set	June 2, 1936		Nov. 2, 1936	
Number rhizomes set	1272		768	
Rainfall[1] (inches)	13.03		3.61	
Evaporation[1] (inches)	8.77		8.85	
Rainfall—Evaporation	+4.26		—5.24	
Aver. max. temp. F.	91.9		65.8	
	No.	Percent	No.	Percent
Alive May 3, 1937	951	74.8	732	95.3
Alive May 1, 1938				
large	343	27.0	349	46.7[2]
medium	443	34.8	243	32.5[2]
small	115	9.0	42	5.6[2]
total	901	70.8	634	84.8[2]

[1]One week before setting and 5 weeks afterward.
[2]Based on a total of 747, as 21 were accidently destroyed.

Table 4. Spring and Fall Plantings—Flower Data

	Spring	Fall
Date set	June 2, 1936	Nov. 2, 1936
Number rhizomes set	1272	768
No. blooming by May 3, 1937	97 ~~94~~	177
% of those set blooming	7.6	23.5
% of those alive blooming	10.2	24.2
No. blooming by May 1, 1938	401	320
% of those set blooming	31.5	42.8[1]
% of those alive blooming	44.5	50.5
Total no flowers produced	3680	3559
Ave. no. blooms per flowering plant	9.2	11.1

[1]Based on a total of 747, as 21 were accidently destroyed.

Adaptability of Varieties

Method of rating. The adaptability rating given to the varieties in Table 5 should not be confused with the usual variety rating. This rating is based entirely on ability to survive, on plant vigor and on capacity to bloom. The following values were assigned to maximum plant size shown in column 6: small—1, medium—2, large—3, very large—4. Varieties with plants rated large by the second season or very large by the third season were given one additional point. Points given for maximum number of flowers per plant (column 7) were: 1 through 10 individual blooms—1, 11 through 50—2, 51 through 100—3, and over 100 blooms per plant—4. An additional point was given to varieties

that had remained thrifty for a period of 10 years or the full length of time they were in the test. Several varieties failed to survive the first or second seasons. These have not been included in the report as it is felt that they may not have had a fair trial because of the limited number of rhizomes involved. The total points gave a scale of adaptability that ranged from 1 to 10, which could be interpreted as from very poor to excellent.

Figure 2. Jubilee with a rating of 5 is satisfactory with proper care.

The individual ratings. In recording flower color the system described by Peckham (8) has been followed. As there is no reason to believe that flower color is a function of adaptability, column 3 of Table 5 is included for the convenience of the reader. In cases where the variety

failed to bloom both the color formula and the season have been taken from the Alphabetical Iris Check List (8) with the permission of the American Iris Society. This invaluable reference has been frequently consulted during the course of the test. It should be noted that plant size as given in column 6 is the maximum attained by the variety during the entire test. The same is true of number of blooms per plant.

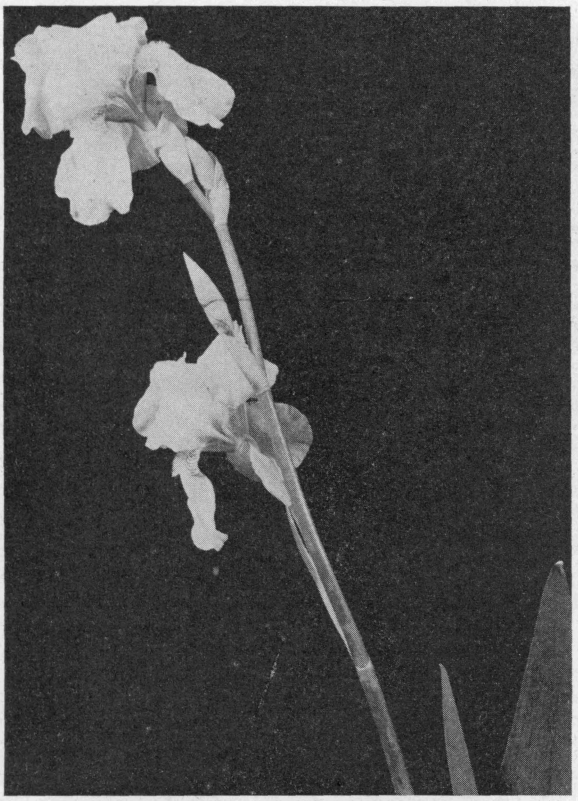

Figure 3. Athene was the most floriferous.

It is inevitable, where rapid progress in breeding provides striking improvement in quality, as it has in iris, that the older varieties have difficulty in maintaining popular interest, in particular among those who specialize in this royal flower. Aside from a few, such as Wister (11) and Bentley (1), the interest of most iris growers in the older varieties is from the historical and from the breeding standpoints. Several appear frequently in the pedigrees of the newer varieties (3). Where they are still obtainable, varieties with a rating of 7 or more should prove useful to those just starting with iris, to those chiefly interested in other flowers,

and to those needing large numbers for landscaping. One hundred forty-nine varieties out of a total of 582 have been rated 7 or better. Where conditions for iris are good those with a rating of 5 or 6 might be included. (See Fig. 2.)

Only a single variety, Azure Glow, was given the top rating of 10. It was exceeded in number of blooms per plant by one variety, Athene with a rating of 9 (Fig. 3) and was exceeded in size of plant only by Lohengrin (also rated 9). Other varieties rating 9 are Evadne (Fig. 4), Julia Marlow, Mme. Chobaut (Fig. 5), Mme. de Sevigne, Monsignor, Powhatan, Quaker Lady, Queen Caterina, Queen of May, Red Riding Hood, Rodney, Rosedale and Titus.

Figure 4. Evadne. Adaptability rating 9.

To those primarily interested in gardening it should be pointed out that size of flower, even in those varieties that are best adapted, seems to be highly responsive to growing conditions. Where conditions are right, with plenty of room and sunlight, and where the plant has been able to store a surplus of food the preceeding season, large blooms may occur, while the same variety under crowded or otherwise unfavorable conditions may have small flowers or none.

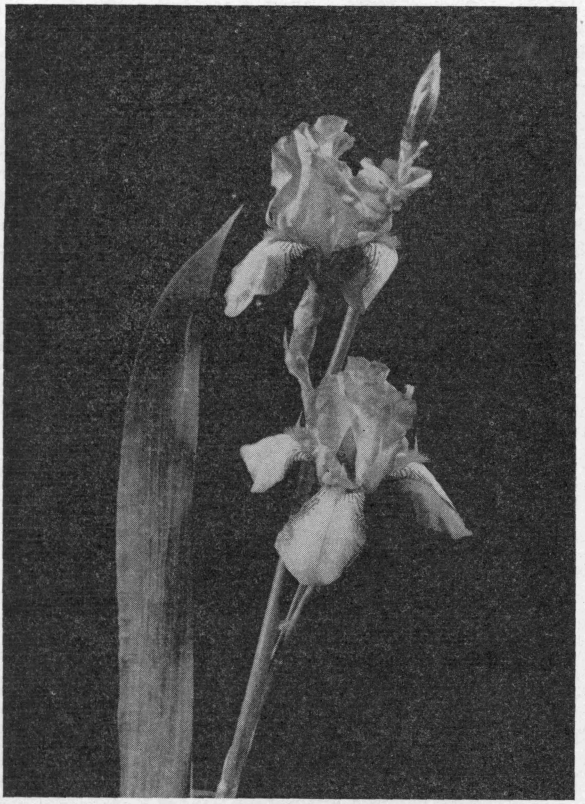

Figure 5. Mme. Chobaut. Adaptability rating 9.

Time of Introduction. The varieties have been classified into four groups (Table 6) according to the time of their introduction. On the average, the adaptibility to Texas conditions of varieties in the test introduced since 1920 is the same as those introduced the first half of the last century and earlier. Certainly no improvement was to be expected as there was no opportunity for selection under our conditions. As a matter of fact it is perhaps surprising that the average adaptability rating has remained as high, since refinements to give high quality are sometimes associated with a less robust plant. The significance, if any, of the lower average for the 80 varieties introduced from 1851 through 1900 is not clear. It will be noted that no variety introduced up to 1901 has been a rating of 1. If a variety is good enough to retain sufficient general popularity to survive 50 to 100 years it obviously must contain some of the factors required for general adaptability under widely diverse conditions of soil and climate.

Table 6. Varietal Ratings Grouped According to Time of Introduction

Time of introduction*	No. of varieties	Average rating	Standard error	No. varieties with adaptability rating of									
				1	2	3	4	5	6	7	8	9	10
Up to 1851	37	5.0	± 0.41	0	4	4	11	4	4	3	7	0	0
1851 to 1901	80	4.8	± 0.16	0	10	8	21	14	10	12	4	1	0
1901 to 1921	255	5.0	± 0.12	4	26	22	48	58	34	37	17	9	0
Since 1920	210	5.0	± 0.14	11	17	22	40	28	33	37	16	5	1
Total	582	5.0	± 0.11	15	57	56	120	104	81	89	44	15	1

*As given in the Alphabetical Iris Check List.

An examination of the frequency distributions presented in Table 6 discloses a tendency for two modes in the group of varieties introduced since 1920. Forty varieties were rated 4 and almost as many, 37, were rated 7, while only 28 were rated 5 and 33 had a rating of 6. This would ordinarily suggest that these varieties represent two distinct but overlapping populations, one of which is poorly adapted, the other well adapted to the growing conditions of the test. The increase in proportion of varieties with a rating of 1 tends to substantiate the assumption. On a percentage basis varieties rated 1 are: up to 1901 0.0%, between 1900 and 1921 1.6% and after 1920 5.5%. In other words the ratings for two populations would be expected to spread out more than the ratings for a single population. Method of rating might account for such a frequency but if this is the case all 3 groups should be bimodal with respect to the same ratings. This does not seem to be the case, although there is a slight tendency for the other groups to be bimodal. The point will be considered further in the discussion of variety relationships.

Varieties from individual introducers. In Table 7 the frequencies of the different adaptability ratings of varieties from outstanding introducers included in the test are arranged more or less chronologically. These necessarily involve relatively small numbers, and for this reason averages are not as dependable as for a large number of varieties. The originations of Lémon are definitely below the average as far as adaptability to Texas conditions are concerned. It is of interest that those of Foster and Bliss are outstanding, since the summer growing conditions in England under which the seedlings were selected are so different from ours. The more recent introductions from France average low, as do those from the northern part of this country. While the Morrison varieties are rated high their number is small. The average of all varieties listed in Table 7 is about the same as for all varieties in the test.

Comparison of parents and progeny. Table 8 summarizes the comparison of parents and progeny for which ratings are available. Column 5 gives the average ratings of the parents and column 4 the average of their progeny. It will be noted that the average for the progeny exceeds that for the parents in all but two entries, one of which involves only a single cross. Here again numbers are small. The instances are unselected and

Table 7. Varietal Ratings Grouped According to Introducer

Introducer	Location	No. of varieties	Average rating	Standard error	No. varieties with adaptability ratings of									
					1	2	3	4	5	6	7	8	9	10
Lemon (Up to 1860)	France	31	4.35	± 0.27	0	3	5	12	4	4	2	1	0	0
Barr & Sons	England	13	4.31	± 0.46	0	2	2	4	2	1	2	0	0	0
Foster	England	18	5.89	± 0.37	0	0	1	2	6	2	3	4	0	0
Vilmorin-Andreaux	France	14	5.50	± 0.29	0	1	2	0	3	4	3	0	1	0
Caparne	Guernsey	23	5.30	± 0.32	0	1	2	3	7	4	5	1	0	0
All (1860–1921)		68	5.31	± 0.20	0	4	7	9	18	11	13	5	1	0
Goss & Koenemann	Germany	27	5.37	± 0.36	0	2	2	5	7	3	4	3	1	0
Perry	England	24	5.04	± 0.48	2	2	2	4	1	6	5	1	1	0
Cayeux et LeClerc	France	11	4.00	± 0.70	2	1	2	2	1	1	1	1	0	0
Bliss	England	18	5.89	± 0.44	0	1	0	3	4	4	2	2	2	0
Farr	Penn.	25	5.56	± 0.40	0	0	4	6	4	1	5	3	2	0
Fryer	Minn.	20	4.75	± 0.37	0	1	3	5	8	0	0	3	0	0
Millet & Fils	France	18	4.17	± 0.38	2	0	4	4	3	5	0	0	0	0
Sturtevant	Mass.	44	4.77	± 0.22	1	6	6	10	5	5	6	3	2	0
Williamson	Ind.	25	5.00	± 0.46	2	3	1	3	3	5	6	2	0	0
Morrison	D. C.	7	5.86	± 0.51	0	0	0	1	2	2	1	1	0	0
All (since 1898)		219	5.03	± 0.12	9	16	24	43	38	32	30	19	8	0

Table 8. Ratings of Parents and Progeny Compared.

Adaptability ratings of parents		No. of varieties	Average rating	
			progeny	parents
3	3	2	5.5	3.0
5	2	4	3.7	3.5
3	5	1	6.0	4.0
3	6	1	7.0	4.5
5	6	2	6.0	5.5
4	8	1	3.0	6.0
5	8	3	7.7	6.5
6 5	8} 9}	6	4.7	7.0
7	8	1	8.0	7.5

seem to indicate the possibility of the accumulation of factors for general adaptability to give a constitution better than that of either parents. As might be expected, the maintenance or improvement of adaptability where one parent has a rating of 8 is more difficult. The varieties themselves are, of course, selections of relatively large populations and such figures given little or no information in regard to the number of factors involved or the prevalence of dominance among them. Presumably a good many factors influence general adaptability.

The average (or single) ratings of progeny of individual varieties are presented in Table 9. The rating of the named variety, when known, is given in column 2; that for the other parent involved in the cross (sometimes seed, sometimes pollen parent) may be found in column 3. It gives some idea of what can be expected from selections of each with respect to adaptability to growing conditions in Texas. The high rating of Mme. Chereau is pretty well maintained in its three offspring listed. The high standing in the 4 seedlings of Oriflamme suggests that its adaptability may have been underestimated. It should be borne in mind that during the course of breeding none of these varieties were selected with reference to Texas conditions and whatever adaptability they may have represents a general vigor plus any factors of especial value to them here that they may carry by chance.

A comparison of seedlings of *I. pallida* and of *I. trojana* may have a bearing on the possibility of two general populations with respect to adaptability among varieties introduced since 1920. The 12 selected seedlings of *I. pallida* average 4.75 while the 9 seedlings of *I. trojana* average 5. 68. It may be that inherent factors for adaptability to conditions such as ours are more prevalent in one species than in another. While several species are involved in the pedigrees of later varieties these data suggest that such differences among the wild forms may account for the bimodal tendencey of

Table 9. Behavior of Progeny of Selected Varieties

Variety	Adaptability rating		Progeny	
	named P_1	other P_1	no. vars.	av. rating
Alcazar	6	?	1	2.0
"	6	5	1	6.0
"	6	8	2	3.0
Amas	8	?	5	5.0
"	8	4	1	3.0
Caterina	5	?	5	3.6
"	5	9	2	5.5
Dalmatica	?	?	6	4.8
"	?	4	1	9.0
"	?	8	1	9.0
"	?	9	1	6.0
Dream	8	7	1	8.0
Iris King	5	?	1	5.0
" "	5	2	4	3.7
" "	5	3	1	6.0
" "	5	6	1	6.0
Juniata	8	?	3	6.7
"	8	5	1	7.0
Lent A. Williamson	4	?	5	6.4
Maori King	?	?	3	3.7
" "	?	4	1	4.0
" "	?	9	1	5.0
Mme. Chereau	8	?	2	7.5
" "	8	5	1	8.0
Nancy Orne	6	?	1	6.0
Oriflame	3	?	1	8.0
"	3	3	2	5.5
"	3	6	1	7.0
I. pallida	?	?	12	4.7
Princess Beatrice	5	?	3	5.0
" "	5	8	1	8.0
Queen of May	9	?	8	6.0
" " "	9	5	2	5.5
I. trojana	?	?	6	6.0
"	?	4	3	5.0

the frequency of these adaptability ratings. This necessitates the assumption of a similar groupiffg among the ancestral species that have been most widely used rather than a normal distribution among them of factors resuling in wide adaptability under garden conditions. The limited information available for similar species supports this assumption. For example, five crosses with *I. cypriana*, which might be classed with *I. trojana*, average 5.60. Seven crosses with Dalmatica, collected before 1600, average 5.71. On the other hand 6 crosses with Amas, another collected variety, averaged only 4.67—slightly less than seedlings of *I. pallida*. Since each parent, where chromosome numbers are the same, contributes equally to the offspring, the

average of progeny gives only partial information unless enough is known about one parent to use it as a tester for the other.

Chromosome numbers. According to Randolph's compilation (9) of the chromosome numbers of commercial varieties from lists published by him and by others, they may be placed in five groups, having 24, 36, 40, 44 and 47 to 50 chromosomes. The averaged adaptability ratings of varieties in each of these groups are presented in Table 10. The 23 varieties in the first four groups average 6.00, while the 13 varieties in the 47 to 50 chromosome groups average 4.85. All groups having 44 chromosomes or less have consistently higher adaptability ratings than the group having the highest number. Of the 13 varieties comprising this group *I. mesopotamica* is found in the parentage of 4 and *I. pallida* of one. Amas is one of the parents of Lent A. Williamson and Kashmir White is one of the parents of Santa Barbara, all being in the same high chromosome group. These relationships suggest that a combination of less favorable factors rather than chromosome numbers *per se* may account for the poorer adaptability of the 47 to 50 chromosome group.

Table. 10. Adaptability of Varieties with Different Chromosome Numbers

Chromosome number	Number of varieites	Average rating	Standard error
24	11	6.00	± 1.18
36	5	6.09	± 0.64
40	1	5.00	—
44	6	7.00	± 0.37
24—44	23	6.00	± 0.50
47—50	13	4.85	± 0.48

Varieties receiving awards. An important use of the varietal ratings made by the American Iris Society and other organizations is in the selection for purchase by gardeners of varieties unfamiliar to them. Since satisfactory growth and flowering are prerequisite to the enjoyment of a particular variety, any relationship between high ratings and good adaptability to Texas conditions is important to the individual gardener. The average ratings of varieties receiving awards, as representing the best of the ratings made by the societies, can be found in Table 11. Taken as a whole the 158 varieties receiving awards average just the same adaptability rating under Texas conditions as the average for all of the varieties under test. With the exception of the Silver Medal, the American awards average somewhat less in terms of our adaptability ratings than those given by the English and by the French societies. There is probably little real difference among them. This negative result is to be expected inasmuch as the score card used by the American Iris Society allots 15 points (formerly 20 points) out of 100 for what is here considered under adaptability and a great majority of the judgments are made under dissimilar growing conditions. This is not to be taken as a criticism of this method of scoring. It is an estimate of the value of such readily available ratings as a source of information on the adaptability of any particular variety to conditions similar to those of this test.

It is concluded that such awards to varieties considered here have no value for this purpose.

Table 11. Average Adaptability Ratings of Varieties Receiving Awards or Otherwise Classified

Classification	Society	No. of varieties	Average rating	Standard error
Award of Merit	Amer. Iris Society	8	4.15	± 0.70
Honorable Mention	Amer. Iris Society	12	4.67	± 0.50
Silver Medal	Amer. Iris Society	3	6.33	—
First Class Certificate	Mass. Hort. Society	8	4.00	± 0.93
Award of Merit	Royal Hort. Society	57	5.19	± 0.28
Commended	Royal Hort. Society	14	5.00	± 0.46
Highly Commended	Royal Hort. Society	37	5.14	± 0.32
Certificate of Merit	Soc. Nat. Hort. France	19	5.16	± 0.48
All honors		158	5.03	± 0.17
Unavailable	Classification from	147	4.67	± 0.15
Superceded	Alphabetical Iris	310	4.93	± 0.11
Discard List	Check List of	202	4.84	± 0.12
Not on Discard List	Amer. Iris Society	380	5.07	± 0.10
All varieties		582	4.99	± 0.11

Superseded varieties. As our varietal resources have improved and increased, the older varieties have gradually been dropped by the commercial growers and from the larger collections. In order to assemble information in regard to this natural development, varieties have been marked unavailable, superseded (by better varieties) or placed on a discard list as recommended by the American Iris Society. It may be of some interest to Texas growers to compare the average ratings of these groups with the average for all varieties. These figures are also in Table 11. All 3 groups average below the general average for all varieties. Those varieties no longer available are considerably below the other groups. While the average for varieties placed on the discard list is low it does contain some well adapted varieties as follows: 24 varieties with a rating of 7, 13 with a rating of 8 and 2 varieties rated 9. Information as to whether varieties intended to replace these would be equally well adapted to conditions in Texas is lacking.

Comparisons with other regions. Strict comparisons with results secured elsewhere are impossible because of lack of comparable data. The best that can be done is to see how the average rating of varieties recommended as generally good in other areas compares with the general average of all varieties here. Pridham (9) lists a number of varieties "acknowledged to be good" under conditions in the Northeast. Sixty of these varieties have an average adaptability rating of 5.20 ± 0.19, slightly above the general average. Twenty-one of these varieties have also been indicated as good varieties by the American Iris Society. These have an average rating of 5.48 ± 0.41.

Wister's (11) selections contain 66 of the varieties included in our test. These average 5.39 ± 0.25. Cook (2) reports the results of a questionnaire sent to members of the American Iris Society located in the middle west (region 9). The 25 varieties receiving a majority of

votes (from 2 to 27 for each variety) as good varieties have an average adaptability rating in this test of 5.60 $\pm$ 0.58, while the 9 varieties receiving a majority vote of poor averaged 5.11 $\pm$ 0.81. A list of 17 varieties rated by Rogers (10) as well adapted to conditions in Oklahoma averaged 4.82 $\pm$ 0.77 in this test. The 149 best adapted varieties in this test (rating 7 or better) had an average of 7.52. On the whole, varieties rated generally good elsewhere have been considered better than average under the conditions of this test.

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Summary

1. Some 582 vaireties of bearded iris were grown in field culture and in beds to secure an estimate of their adaptability when grown on Lufkin fine sandy loam in Texas.

2. In a monthly transplanting test extending through a period of 29 months, April through June was found to be the least satisfactory time to plant iris. The better results secured from July through September are attributed to an improved condition of the rhizomes as compared to the earlier period. November and December are ordinarily the best months to transplant.

3. Available soil moisture as measured by inches of precipitation less number of inches of evaporation from a free water surface during a period one week prior to setting and 5 weeks afterward was found to be correlated with the successful establishment of plants. This correlation is +54.7 percent.

4. Of 1272 rhizomes set June 2 under favorable conditions of moisture 71 percent became established as compared to 85 percent for 747 rhizomes set under unfavorable moisture conditions on November 2. Further, there were nearly twice as many large plants in the fall planting. The spring following the planting only 10 percent of the spring-set plants still alive bloomed, as compared to 24 percent of the fall-set plants. A year later these figures were 44.5 and 50.5. The spring planting then averaged 9.2 blooms per flowering plant while the fall planting averaged 11.1 blooms.

5. Adaptability ratings were made with reference to size of plant, rapidity of growth an amount of bloom, based on a scale of 1 (poor) to 10 (excellent). The frequency for all varieties for each of these ratings

is as follows: (1) 15, (2) 57, (3) 56, (4) 120, (5) 104, (6) 81, (7) 89, (8) 44, (9) 15 and (10) 1. The general average for all 582 varieties is 4.99 ± 0.11. There were 149 varieties with a rating of 7 or better, which is considered well adapted. A single variety, Azure Glow received the top rating of 10. The following varities received a rating of 9: Athene, Evadne, Julia Marlow, Lohengrin, Mme. Chobaut, Mme. de Sevigne, Monsignor, Powhatan, Quaker Lady, Queen Caterina, Queen of May, Red Riding Hood, Rodney, Rosedale and Titus.

6. Varieties introduced since 1920 are as well adapted to conditions of the test, on the average, as those introduced prior to 1851. The data for the varieties introduced later suggest the possibility of two distinct but overlapping populations considered from the standpoint of adaptability, which presumable would go back to the factors for general adapability inherent in the species from which the modern varieties have been developed.

7. Of varieties from individual introducers, those from Foster and Bliss in England have better adaptability than the earlier introductions of Lémon in France. Seven of the Morrison varieties average better than varieties from breeders presumably working farther north in this country. The numbers involved are small.

8. In 14 crosses where adaptability ratings were available for both parents and for their offspring, the latter averaged better than the parents. In the case of 6 crosses where one parent rated 8 or 9 the progeny averaged less than the average of the parents. Twelve crosses involving *I. pallida* average 4.75 and 6 crosses with Amas, a collected variety average 4.67, while 9 crosses with *I. trojana* average 5.68, 5 with *I. cypriana* average 5.60 and 5 crosses with Dalmatica, another collected variety average 5.71. This suggests that the range of factors for general adaptability may be discontinuous among the species and this may account for the tendency toward the bimodal distribution of adaptability ratings of varieties introduced since 1920.

9. Varieties with somatic chromosome numbers of 24, 36, 40 and 44 average better adaptability ratings in each case than varieties with numbers from 47 to 50. This is considered to be due to a lack of factors for general adaptability in this group rather than to the high number of chromosomes.

10. Varieties in the test receiving awards from the iris and other horticultural societies have been no better adapted to the conditions of the test, on the whole, than unselected varieties.

11. Varieties that have been dropped by commercial growers, those that are considered to be superseded by better varieties and those included in the discard list of the American Iris Society have average adaptability ratings below the general average for all varieties. However some well adapted varieties are included on the discard list as follows:

24 with a rating of 7, 13 with a rating of 8 and 2 varieties with a rating of 9. Five varieties with an adaptability rating of 9 are considered by the American Iris Society as having been superseded by better sorts.

12. While it is difficult to secure comparable estimates of adaptability of varieties for other regions, such lists of "generally good" varieties as are available are above the average in adaptability here.

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Table 5. Adaptability Rating of Varieties

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Aareshorst (G. & K.)	TB	S9L	M	4	S	6	2
Abdul Aziz (Barr)	IB	B3M	—	10	L	0	4
Abu Hassan (Sal.)	TB	Y9M	M	6	M	0	2
Acheron (Sturt.)	TB	B9D	M	7	M	2	3
Acquackanonk (B. & A.)	TB	S6L	M	12	L	23	7
Ada (Barr)	TB	Y9M	E	10	L	5	6
Admiral Togo (Childs)	TB	W8	MLa	12	L	20	7
A. E. Kunerd (Fryer)	TB	S6M	MLa	10	L	6	6
Afterglow (Sturt.)	TB	S4L	MLa	6	L	5	4
Alabama (Given)	TB	B1L	EM	8	L	10	4
Alabaster (And.)	TB	WW	M	7	S	1	2
Albatross (Barr)	TB	W3	M	5	M	0	2
Albert Victor (Barr)	TB	B1M	M	9	VL	38	7
Alcazar (Vilm.)	TB	S3D	EM	10	L	8	6
Alfheim (G. & K.)	TB	S3L	M	7	L	5	4
Alfred Fiddler (Ware)	TB	B1L	M	5	M	0	2
Alicia (Mag.)	TB	B3M	M	12	L	25	6
Aliquippa (Hall)	TB	Y4L	M	10	L	25	7
Allure (Mur.)	TB	S4L	M	4	L	3	5
Alpine Dwarf (Upton)	DB	B	EM	6	L	4	4
Amabilis (Lemon)	IB	W3	M	10	M	0	3
Amas (Fos.)	TB	B3M	EM	12	VL	45	8
Ambassadeur (Vilm.)	TB	S9D	MLa	11	L	40	6
Amber (Dykes)	TB	Y4L	M	9	S	0	2
Ambigu (Vilm.)	TB	R7D	MLa	10	L	6	5
A. M. Brand (Fry.)	TB	S6M	MLa	10	L	5	5
Amerphol (Weller)	TB	B3M	EM	12	VL	50	7
Amneris (Mil.)	TB	B1D	La	4	S	0	1
Anna Archer (Sass.–H.P.)	TB	B1D	M	5	S	4	2
Anna Farr (Farr)	TB	W2	M	12	L	10	5
Anne Leslie (Sturt.)	TB	W9	M	4	L	0	4
Apache (Farr)	IB	S9D	M	12	L	45	7
Aphrodite (Dykes)	TB	R7M	EM	7	M	0	2
Appollon (Lemon)	DB	S6D	E	10	L	10	4
Arabesque (Sturt.)	TB	W8	—	10	L	0	4
Arac (Yeld)	TB	B3M	M	6	M	0	2
Argus (Hend.)	TB	W4	MLa	11	L	12	7
Argynnis (Wmsn.)	TB	Y9M	M	10	L	10	5
Arlington (Sims.)	TB	S9L	M	7	M	0	2
Arsace (Mil.)	TB	B7L	EM	7	L	5	5
Asia (Yeld)	TB	S3L	M	8	L	16	6
Asiatica (Fos.)	TB	R7D	EM	12	VL	30	7
Assyrian (Bliss)	TB	B1M	EM	12	L	15	7
Assyrie (Cap.)	TB	W2	—	5	L	4	5
Athene (Sturt.)	TB	W4	EM	12	VL	150	9
Atlas (Mil.)	TB	B3M	M	6	M	6	3
Atropurpurea grandiflora (Berger)	TB	B3M*	EM	12	VL	50	7
*Observed.							
Attraction (Blackhouse)	IB	B1L	M	10	L	13	6
Aurea Maculata (Barr)	DB	S4L	E	10	L	0	3
Aurora (Fos.)	TB	R7L	—	10	M	15	4
Australis (Todaro)	TB	B1L	MLa	12	VL	30	7
Azure Glow (Weed)	TB	B3D	EM	12	VL	110	10
Bacchus (Hort.)	TB	Y9M	—	4	M	0	2
Ballerine (Vilm.)	TB	B3M	—	10	VL	30	7
Bandollero (Mohr-Mit.)	TB	B1L	—	4	L	16	5
Bastien Lepage (Cay.)	TB	Y4M	M	4	S	0	1
Beau Sabruer (Wmsn.)	TB	Y9D	M	4	M	0	2
Beethoven (Barr)	TB	B7M	EM	10	L	11	7
Belladonna (Koeh.)	TB	W2	M	12	VL	100	8
Belvidero (Mag.)	TB	S9L	M	12	VL	50	7
Bercage (Alex.)	TB	B3M	M	5	M	0	2
Bernard Galloway (Per.)	TB	R9M	M	10	L	35	7
Bismark (Dutch)	TB	S6M	—	10	L	0	4
Blue Jay (Farr)	TB	B3D	M	10	L	14	6
Bluestone (Per.)	IB	B9M	E	5	M	0	2
Bluet (Sturt.)	IB	B1L	—	10	M	45	4

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Boccage (Lemon)	TB	W9	M	7	L	0	4
Bonita (Mohr-Mit.)	TB	Y4M	M	10	L	55	7
Bosniamae (Will.)	IB	W3	E	5	L	0	4
Bosset (Verd.)	IB	Y9L	MLa	10	L	0	4
Brenthis (Wmsn.)	TB	S3M	M	11	VL	15	7
Bride (Cap.)	DB	W4	M	7	L	7	5
Bridesmaid (Sal.)	TB	W2	M	10	L	1	5
Britannicus (Van H.)	TB	S3M	M	10	L	0	4
Bronze Beauty (Barr)	TB	S6M	M	5	L	0	4
Burgos (Mill.)	DB	B7D	EM	4	S	1	2
Butterfly (Kelway)	DB	Y5L	EM	10	L	10	5
B. Y. Morrison (Sturt.)	TB	W9D	M	5	M	1	3
Cadenza (Wmsn.)	TB	S9L	M	7	L	30	6
Calypso (Lemon)	TB	B3L	M	4	L	0	4
Camelot (Bliss)	TB	W2	M	5	L	18	5
Cameo (Sturt.)	TB	S7L	M	7	L	10	4
Camilla Dubar (Lap.)	TB	R7L	M	8	M	17	4
Canary (Cap.)	DB	Y4L	EM	10	L	6	5
Canary Bird (Per.)	DB	Y4D	E	4	M	0	2
Candlelight (And.)	TB	B4L	M	4	S	0	1
C. A. Pfeiffer (Fry.)	TB	B3D	M	7	L	0	4
Carcanet (Strut.)	TB	Y4M	M	4	L	0	4
Caroline E. Stringer (Sass–J.)	TB	W7	MLa	4	L	0	4
Cassandra (Per.)	TB	S9L	M	3	S	0	1
Caterina (Fos.)	TB	B1M	E	4	L	8	5
C. D. Hayes (Fry.)	TB	S6M	M	10	L	5	5
Cecil Minturn (Farr)	TB	R7L	EM	12	L	20	7
Celeste (Lemon)	TB	B1L	EM	8	M	5	3
Celia (Yeld)	IB	B1L	M	5	M	0	2
Ceres (Cap.)	IB	W3L	E	5	L	0	4
Chalcedony (Wmsn.)	TB	S7L	M	12	VL	15	7
Charles Darwin (Fos.)	TB	S9L	MLa	5	VL	11	7
Chartier (Hall)	IB	WW	M	10	L	10	6
Cherubin (Vilm.)	IB	R7L	EM	10	L	5	5
Cinnabar (Wmsn.)	TB	B9D	M	12	L	10	6
Citronella (Bliss)	TB	Y9D	M	9	L	15	6
Clarence Wedge (Fry.)	TB	S6M	EM	12	VL	60	8
Clarissa (Van H.)	IB	B3L	—	5	M	0	2
Classic (Grinter)	TB	S8L	M	3	S	0	1
Clematis (Bliss)	TB	B3M	M	10	L	10	6
Cleopatra (Lemon)	TB	YL	—	5	M	0	2
Cluny (Vilm.)	TB	B7M	M	10	L	21	6
Colias (Wmsn.)	TB	Y4L	MLa	7	L	0	3
Comtesse de Courcy (Verd-E.)	IB	W2	M	12	VL	25	7
Contrast (G. & K.)	TB	W3	M	10	L	4	5
Cora (Mil.)	TB	R1M	M	7	L	6	5
Coronation (Moore)	TB	Y4D	—	4	L	4	5
Crusader (Fos.)	TB	B1L	M	12	VL	35	8
Cyanea (G. & K.)	DB	B1D	EM	10	L	4	5
Cygnet (Sturt.)	TB	W4	M	9	L	25	8
Dalila (Den.)	IB	Y3M	M	4	L	0	4
Dalmarius (Den.)	TB	S4L	EM	10	L	9	6
Damozel (Mor.)	TB	W2	M	10	L	22	7
Daniel Lesueur (Den.)	TB	W8	M	10	L	0	4
Darkness (Mag.)	TB	S3D	MLa	12	L	18	7
Delicata (Park.)	TB	B3L	—	10	M	0	2
Delicatissima (Mil.)	TB	R3L	M	12	L	12	6
Delight (Sturt.)	TB	W7	M	8	M	0	3
Desert Gold (Kirk)	TB	Y4L	E	4	M	0	3
Diamond (Cap.)	IB	W3M	EM	12	L	15	7
Diane (Vilm.)	TB	B3M	M	10	L	4	5
Dimity (Bliss)	TB	W2	M	10	L	30	7
Dolly Madison (Wmsn.)	TB	S3L	M	12	VL	50	8
Dolphin (Cap.)	IB	B3M	EM	10	L	15	6
Don Quixote (Mohr-Mit.)	TB	S7L	—	4	L	10	5
Dora Longdon (Bliss)	TB	S6M	M	10	L	8	6
Dorothea (Cap.)	IB	B3L	EM	4	L	6	5

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Doxa (Sass-H.P.)	IB	S6L	E	7	S	0	1
Drake (Bliss)	TB	B1M	EM	12	VL	30	8
Dr. Bales (Mag.)	TB	B7M	MLa	7	L	3	5
Dr. Bernice (Hooper)	TB	S6D	MLa	8	M	6	3
Dream (Sturt.)	TB	R7M	M	12	VL	20	8
Dreamlight (Sturt.)	TB	R7L	M	12	VL	18	8
Dr. Hildershide (Pheif.)	TB	B1D	M	10	L	38	7
Dr. Linnaeus Emerson (Stuhn.)	TB	B1L	EM	5	L	27	6
Dr. Mantor (Fry.)	TB	S6M	M	10	L	6	5
Dr. Sanford (Fry.)	TB	B3M	MLa	7	L	8	5
Duc Decazes (Lemon)	TB	B3M	M	6	M	0	2
Duke of York (Per.)	TB	B3L	M	5	L	40	5
Eclipse (Cap.)	DB	B9D	E	10	L	2	5
Edina (Lemon)	TB	W3	—	10	M	0	2
E. H. Jenkins (Bliss)	TB	B3M	M	4	M	0	2
Eleanor (Yeld)	TB	S9M	MLa	10	M	4	3
Ellen (Mag.)	TB	W2	M	4	L	3	5
Ember (Sturt.)	TB	R7D	M	12	VL	40	7
Empire (Sturt.)	IB	Y4D	MLa	4	M	5	3
Empress (Cap.)	IB	W4	EM	10	L	16	7
Enchantress (Park.)	TB	Y9M	M	10	L	5	5
Erich (Farr)	TB	R7M	—	8	L	0	4
Esperance (Farq.)	TB	W8	EM	12	VL	50	8
Esplendido (Mohr.)	TB	R3D	EM	4	M	4	4
Etoile du Matin (Vilm.)	IB	W1	M	12	VL	15	7
Etta (Cap.)	IB	Y4L	EM	12	VL	18	8
Eugene Verdier (Verd.)	TB	B1M	EM	10	L	5	5
Euphemia (Lap.)	TB	R9D	M	11	L	15	6
Evadne (Bliss)	TB	R7D	M	9	VL	75	9
E. W. Roenig (Pfeif.)	TB	S9L	M	10	L	0	4
Exquisite (Park.)	TB	S6M	MLa	12	L	7	5
Fairy (Kenn.)	TB	W1	MLa	4	L	5	5
Fairy Queen (Sal.)	IB	B3L	—	10	L	12	6
Feldspar (Mor.)	IB	Y4L	EM	10	L	10	5
Feronia (Per.)	TB	R9M	M	9	L	45	6
Fieberi (Rchb.)	DB	B7D	M	12	VL	45	8
Fireball (Essig.)	TB	S1D	—	4	M	8	4
Firmament (Gros.)	IB	B3M	EM	12	L	16	5
Flamingo (Wmsn.)	TB	S9M	M	4	L	0	4
Flammenschwert (G. & K.)	TB	Y9D	M	10	M	0	2
Flavalba (Fos.)	TB	WW	MLa	5	L	4	5
Flavescens (DC.)	TB	Y4L	E	4	L	0	4
Florence Wells (Barr.)	TB	R1M	M	10	M	6	4
Florentina	TB	W1	EM	12	L	15	7
Floribunda (G. & K.)	DB	Y	E	10	L	0	4
Florida (G. & K.)	DB	Y4L	EM	10	M	4	3
Fontarabie (Back.)	TB	B3M	EM	12	VL	11	7
Formosa (G. & K.)	DB	B3D	EM	10	L	1	5
Forsete (B. & K.)	TB	B1M	M	9	L	25	6
Fortuna (Mohr-Mit.)	TB	R1M	EM	12	VL	25	8
Foster's Yellow (Fos.)	IB	Y4M	MLa	10	L	5	5
Fra Angelico (Vilm.)	IB	S4L	M	9	L	35	6
Frank M. Thomas (Thom.)	TB	W2	M	5	M	0	2
Freya (Cap.)	IB	B3M	E	10	M	0	2
Friar Tuck (Wmsn.)	TB	S9D	M	4	S	0	1
Frieda Mohr (Mohr-Mit.)	TB	R7M	M	9	VL	15	8
Fritjof (G. & K.)	IB	B3M	EM	12	VL	20	8
Fro (G. & K.)	IB	Y9D	M	10	L	18	7
Fulda (Bon.)	IB	W3L	EM	10	L	12	7
Gajus (G. & K.)	TB	Y9M	M	3	L	5	5
Garden White (Sturt.)	TB	WW	M	4	S	4	2
Garrick (Cap.)	DB	B9D	E	10	L	7	6
Gaviota (Mohr.)	TB	W3	M	8	L	15	5
General Grant (Dutch)	TB	S3M	MLa	3	L	5	5
General McPherson (Per.)	TB	W9	—	3	S	0	1
Genghis Khan (Sturt.)	TB	S9M	M	8	L	47	7

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Geo. J. Tribolet (Wmsn.)	TB	S9M	M	9	L	10	6
George Yeld (Per.)	TB	S9M	M	10	L	33	6
Gerda (G. & K.)	IB	Y4M	EM	12	VL	19	8
Germaine Perthuis (Mil.)	TB	B7D	M	4	L	0	4
Germanica (Linn.)	TB	B1M	EM	12	VL	29	8
Gertrude (Pet.)	TB	B1M	EM	7	L	4	5
Gisele(Lemon)	TB	W8	M	5	M	0	2
Gladstone (Ware)	TB	W3	M	5	L	25	7
Glitter (Bliss)	TB	Y9M	M	10	L	0	4
Gloire de Hillegom (Krel.)	TB	B1M	E	10	M	0	2
Gloriette (Lemon)	IB	W9D	MLa	10	M	1	3
Gold Crest (Dykes)	TB	B1M	E	10	M	0	2
Gorgeous (Per.)	IB	B9D	M	12	L	8	6
Gov. Hughes (Fry.)	TB	R1M	M	12	VL	15	8
Gracchus (Ware)	TB	Y9L	MLa	4	M	5	3
Gracieuse (Lemon)	TB	B3M	MLa	10	VL	8	7
Grapta (Wmsn.)	IB	S6M	M	7	M	0	2
Gray Morn (Sturt.)	TB	B9D	M	4	L	0	4
Greater May Queen (Weed)	TB	R7M	MLa	10	L	3	2
Grisette (Wmsn.)	TB	S9M	M	4	L	8	5
G. W. Peake (Fry.)	TB	S6D	M	7	M	9	3
Gypsy Queen (Sal.)	IB	S6M	MLa	10	L	12	7
Halfdan (G. & K.)	IB	W4	EM	—	VL	7	7
Hannibal (F. & P.)	TB	B3L	—	7	M	0	2
Harmony (Dykes)	IB	B1M	M	7	M	3	4
Harriet (Fry.)	TB	W2	M	5	M	10	3
Harriet Presby (Presby)	TB	R7M	MLa	7	L	0	4
Haydee (Van H.)	TB	B3L	M	7	L	0	4
Hebe (Lemon)	TB	W7	EM	12	VL	35	8
Helen Frances (Pfeif.)	TB	B1M	M	10	L	0	4
Helge (G. & K.)	IB	Y4L	EM	10	L	21	7
Henkler (Per.)	TB	W9D	M	12	L	25	7
Henri Riviere (Mil.)	TB	S9L	MLa	4	L	0	4
Hereward (Cap.)	IB	B7M	MLa	10	M	3	4
Her Majesty (Per.)	IB	R9M	M	4	L	0	4
Hesperis (Wmsn.)	TB	S6M	M	10	L	5	6
Hiawatha (Farr)	IB	B9D	M	12	L	4	5
Honorabile (Lemon)	IB	Y9M	M	10	M	0	2
Hopatcong (B. & A.)	TB	Y9M	MLa	10	L	7	4
Horizon (Mor.)	TB	B1M	M	3	L	10	5
Idion (Lemon)	TB	Y9M	—	10	L	0	4
Iduna (G. & K.)	IB	Y3M	M	4	L	0	4
Igouf (Mil.)	TB	S3M	MLa	10	L	6	5
Imperator (Cay.)	TB	R9M	M	10	L	6	5
Improved Chereau (Bratt)	TB	W3	M	10	L	4	6
Inca (Farr)	TB	Y9M	M	4	M	1	3
Incognita (Fos.)	TB	S9M	MLa	5	L	4	5
Ingeborg (G. & K.)	IB	WW	EM	12	VL	25	8
Ingomar (Mag.)	TB	B3L	EM	10	M	0	3
Innocenza (Lemon)	TB	WW	M	10	L	0	4
Iris King (G. & K.)	IB	Y9M	M	8	L	2	5
Iroquois (Farr)	TB	S9D	MLa	10	M	0	3
Isoline (Vilm.)	TB	S9L	M	5	M	0	2
Ivanhoe (Mil.)	TB	B3M	M	4	L	0	4
Ivorine (Cap.)	IB	W4L	EM	10	L	7	6
Jacinto (Berry)	TB	R1M	—	4	L	5	5
Jacqueline Guillot (Cay.)	TB	B1L	M	9	L	18	6
Jacquesiana (Lemon)	TB	S9M	M	11	L	5	6
James Boyd (Farr)	TB	B3M	M	10	L	11	7
Jane Williamson (Wmsn.)	TB	S7L	M	7	S	0	1
J. B. Dumas (Den.)	TB	R3M	—	4	M	5	4
Jean Chevreau (Cay.)	TB	Y5L	M	4	M	0	3
Jeanne d'Arc (Verd.)	TB	W2	M	12	L	25	7
Jessie Campbell (Mag.)	TB	S9L	MLa	10	L	30	7
John Bull (Ware)	TB	R7L	—	4	S	0	1
Jubilee (Sass-J.)	IB	S5L	M	8	M	30	5

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Judith (Van H.)	IB	Y6D	E	10	L	0	4
Julia Marlow (Shull)	TB	R9M	M	12	VL	75	9
June Bride (Grinter)	TB	WW	M	4	M	0	3
Jungfrau (Phipps)	TB	W8	—	7	M	0	2
Juniata (Farr)	TB	B1M	MLa	12	VL	50	8
Justinian (Sal.)	TB	S9D	M	10	M	5	4
Kansas (Tim.)	TB	B3M	MLa	10	L	0	4
Kashmir White (Fos.)	TB	W4	M	10	L	5	5
Katharine McFarland (Spitzer)	TB	B7D	M	11	M	0	3
Kathryn Fryer (Fry.)	TB	Y9M	M	5	L	4	5
Kedron (Wal.)	TB	B9D	M	11	L	6	6
Khedive (Barr)	TB	B1L	M	10	M	0	3
King Christian (Cap.)	IB	W4	M	10	L	3	5
King George (Per.)	TB	B7M	EM	10	M	4	3
King Karl (Sass.-J.)	IB	S5M	M	10	L	0	4
King Midas (Mead)	IB	S6D	EM	4	M	0	3
Kublai Khan (Wmsn.)	TB	R3D	M	5	S	3	2
LaBeaute (Clark-Dov.)	IB	B1M	M	10	L	13	6
Labor (Cay.)	TB	B7M	M	7	M	0	3
Lady Byng (Bliss)	TB	R7M	M	12	L	10	5
Lady Foster (Fost.)	TB	B3M	M	9	VL	15	8
Lady Jellicoe (Per.)	TB	W9	—	10	L	0	4
Lady Lilford (Fos.)	IMB	S3D	MLa	10	M	0	3
Lady Seymour (Van H.)	IB	B3L	MLa	10	M	0	3
LaMierka (Mil.)	TB	B2L	M	4	M	9	3
LaNeige (Verd.)	IB	W4	MLa	10	L	6	5
LaPerle (Cap.)	IB	Y4L	EM	10	L	10	5
Lavandulaceae (Van H.)	TB	S1L	MLa	10	M	4	4
Le Correge (Vilm.)	TB	S9D	EM	4	S	5	2
Leda (Farr)	IB	W8	M	12	VL	20	8
Lent A. Williamson (Wmsn.)	TB	S3D	EM	5	L	0	4
Leonato (Hort.)	TB	B1M	—	10	VL	20	7
Leonidas (Barr)	TB	B1M	M	10	L	5	5
Leopold (Cap.)	DB	R7M	E	5	M	4	3
Le Pactole (Lemon)	TB	B3M	M	10	L	0	4
Lerema (Wmsn.)	TB	S9M	M	12	L	5	5
Leseble (Lemon)	TB	B3D	MLa	10	L	9	5
Lohengrin (G. & K.)	TB	R1L	M	12	VL	61	9
Lois (Pfeif.)	TB	B1L	M	5	M	4	3
Lord Grey (Lemon)	TB	S4M	M	10	L	8	4
Lord of June (Yeld)	TB	B3M	M	10	VL	24	7
Loreley (G. & K.)	TB	Y3D	M	12	L	10	6
Louise Arbuckle (Mag.)	TB	S8L	MLa	4	L	5	4
Louis Van Houtte (Lemon)	TB	S3L	—	4	L	0	4
Lugarda (Sturt.)	TB	R7D	M	10	M	7	3
Lygia (Van W.)	TB	R7L	—	5	M	0	2
Mady Carriere (Mil.)	TB	S1L	—	8	L	4	6
Maid Marian (Cap.)	TB	S9L	MLa	7	L	0	4
Majestic (Bliss)	TB	B3M	M	9	L	5	5
MaMie (Cay.)	IB	W8	M	7	L	17	7
Manndelay (Sturt.)	TB	B1M	M	5	M	0	2
M. A. Porter (Lap.)	TB	S9D	M	7	L	0	4
Mareschal (Sturt.)	TB	S3L	MLa	10	L	3	5
Mareschal Ney (Wmsn.)	TB	S4D	M	7	M	10	4
Margaret Moor (Bliss)	TB	R7L	M	12	L	5	6
Margaret Sheridan (Fry.)	TB	S6D	M	5	M	4	3
Marie Corelli (Barr)	TB	Y3M	—	4	L	4	5
Marie Louise Caillat (Hudson)	TB	B3M	E	7	L	0	4
Mariposa (Mohr)	TMB	B3L	MLa	5	L	10	5
Maritana (Ware)	TB	W8	EM	8	L	2	5
Marjolin (Lemon)	TB	Y9M	—	10	L	0	4
Marocain (Mil.)	DB	B9D	M	7	S	2	3
Mars (Cap.)	IB	R7M	E	10	L	0	4
Mary Barnett (Cumb.)	TB	B1L	EM	10	L	12	7
Mary Gibson (Per.)	TB	S9L	M	8	M	10	4
Mary Gray (Farr)	TB	B1M	M	5	L	0	4

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Mary Minanelle (Van H.)	TB	W1	—	5	M	0	2
Massasoit (Farr)	TB	BIM	M	5	L	3	5
Matador (Sturt.)	TB	S9D	EM	10	L	7	5
Matilda (Sass-J.)	TB	W2	—	12	M	4	4
Maureen (Waterer)	TB	R9M	M	10	L	30	7
Maurelie (Dessert)	TB	S6M	MLa	10	L	5	6
Mauvine (Dean)	TB	R3M	M	8	L	10	6
May Morn (McK.)	TB	S6L	M	5	M	0	2
May Rose (Clev.)	IB	R7M	M	5	L	0	4
May Sadler (Per.)	TB	B9M	M	7	M	0	3
Medallion (Sturt.)	TB	Y9M	M	3	L	0	4
Medrano (Vilm.)	IB	S6D	M	8	M	0	3
Mephistopheles (Dutch)	TB	S3M	—	4	M	0	2
Merlin (Sturt.)	TB	B3D	M	4	S	0	2
Messaline (Mil.)	TB	Y9L	—	4	L	4	6
Mestor (Per.)	TB	R9M	M	9	VL	25	8
Midgard (Sass.-H.P.)	TB	S4L	M	4	M	2	4
Midwest (Sass.—H.P.)	TB	W8	M	8	M	11	5
Mikado (Den.)	TB	B9M	M	10	L	10	5
Mildred Presby (Farr)	TB	W9	EM	12	VL	50	8
Mirage (Fos.)	TB	S6M	MLa	10	L	6	5
Miss Eardley (Per.)	TB	Y3D	M	10	L	0	4
Miss Georginana (Pfeif.)	TB	B9M	—	10	L	0	4
Miss Maggie (Fos.)	TB	B3L	EM	10	L	20	6
Miss Rowe (Per.)	TB	R9M	M	12	VL	10	7
Mithras (G. & K.)	IB	Y9D	La	10	M	0	3
Mlle. Schwartz (Den.)	TB	B7L	EM	10	VL	25	7
Mme. Blanche Pion (Cay.)	TB	Y9L	M	4	L	0	4
Mme. Chereau (Lemon)	TB	W2	M	13	VL	30	8
Mme. Cheri (Sturt.)	TB	S7M	E	4	M	0	3
Mme. Chobaut (Den.)	TB	S8M	M	12	VL	100	9
Mme. Denis (Den.)	TB	S2D	M	9	M	5	4
Mme. De Sevigne (Den.)	TB	W8	EM	12	VL	60	9
Mme. Guerville (Verd-E.)	TB	W2	M	10	L	0	4
Mme. Henri Cayeux (Cay.)	TB	S9D	MLa	8	S	0	2
Mme. Modeste (Verd.)	TB	W2	M	10	L	25	6
Mms. Thibault (Verd-E.)	TB	W8	MLa	10	M	3	4
Modeste Guerin (Verd.)	TB	S6M	M	12	VL	15	8
Monhasson (Dessert)	DB	Y9M	M	10	L	0	4
Monsignor (Vilm.)	IB	B9D	M	12	VL	100	9
Montezuma (Farr)	TB	Y5M	MLa?	5	L	0	4
Moonlight (Dykes)	TB	W4	M	6	L	11	6
Moor (Cap.)	TB	B1M	EM	10	L	9	5
Morning Splendor (Shull)	TB	R7D	M	10	L	16	6
Mother of Pearl (Sturt.)	TB	B7L	E	10	VL	19	7
Mozart (Van H.)	TB	S9M	MLa	10	L	10	5
Mrs. Allan Gray (Fos.)	TB	R1L	ELa	10	L	5	6
Mrs. A. M. Brand (Fry.)	TB	W2	M	10	L	0	4
Mrs. B. F. Hoffman (Meyer–F.B. *Observed.	TB	R9D*	M	12	VL	25	7
Mrs. Blakely (Fry.)	TB	W3	M	10	M	0	2
Mrs. Bossart (Fry.)	TB	Y3M	M	10	L	0	4
Mrs. Cowley (Bliss)	TB	S6M	M	11	L	10	5
Mrs. E. B. Large (Perry)	TB	S9L	EM	9	VL	30	7
Mrs. Edward Harding (Per.)	TB	S4M	EM	9	L	3	6
Mr. Shaw (Barr)	TB	S9L	EM	10	L	43	6
Mrs. Hayes (Fry.)	TB	Y9D	MLa	10	L	10	5
Mrs. Hettie Matson (Per.)	TB	S9M	M	4	L	12	7
Mrs. Horace Darwin (Fos.)	IB	W1	M	6	L	0	4
Mrs. Kimball (Fry.)	TB	S9M	M	5	L	4	5
Mrs. Neubronner (Reuthe)	TB	Y4D	M	10	M	0	2
Mrs. Reuthe (Ware)	IB	W2	M	12	VL	27	8
Mrs. Smith (Fry.)	TB	Y4D	—	10	L	0	4
Mrs. W. Cuthbertson (Per.)	TB	S9M	M	7	VL	22	7
Munico (Lemon)	IB	Y9D	E	10	M	0	3
Munite (F. & P.)	TB	Y3L	—	10	L	0	4
Nancy Orne (Sturt.)	TB	S9M	M	10	L	16	6
Naomi (Sturt.)	TB	R9M	M	7	L	25	6

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Nathalis (Wmsn.)	TB	R7M	M	12	L	25	7
Nationale (Lemon)	IB	B3D	MLa	10	L	7	6
Naushon (Sturt.)	TB	S3D	M	12	L	8	6
Navajo (Farr)	IB	S6M	MLa	12	L	25	7
Nebulae (Bratt)	TB	W8L	—	5	L	0	4
Neglecta (Horne)	TB	B3L	MLa	10	M	7	4
Negus (Mil.)	DB	B1D	EM	10	L	7	6
Nellie Quinn (Fry.)	TB	W3	—	10	L	0	4
Neptune (Yeld)	TB	B3M	MLa	12	VL	20	8
Nibelungen (G. & K.)	TB	S6M	M	10	L	13	6
Nimbus (Shull)	TB	B3D	—	4	L	4	6
Nine Wells (Fos.)	TB	B3D	M	10	L	27	7
Nothung (G. & K.)	TB	S4L	MLa	12	L	2	5
Nova Aurea (H. & S.)	DB	Y4D	E	10	VL	4	6
Nowana (McK.)	TB	W8	EM	10	L	6	6
Nudicaulis (Hook)	DB	B9M	EM	11	VL	50	8
Nuee d'Orage (Verd.)	TB	S3M	MLa	10	L	7	5
Ochracea Caerulea (Den.)	TB	S4L	MLa	4	S	0	1
Odoraloc (And.)	TB	R7L	M	10	VL	25	7
Odoratissima (Jacquin)	TB	B7L	M	12	VL	45	8
Opera (Vilm.)	IB	S9D	M	12	L	14	7
Orange Queen (Barr)	DB	Y4D	E	7	S	1	2
Oread (Mor.)	TB	S9D	M	10	L	8	6
Oriflamme (Vim.)	TB	B3M	M	8	M	0	3
Orizaba (Berry)	TB	B3D	EM	9	VL	10	7
Orleans (Lemon)	TB	R7D	EM	12	L	25	7
Othello (Lemon)	TB	B3D	MLa	10	L	9	5
Pancrace (Van H.)	TB	S9L	M	12	L	20	7
Parc de Nevilly (Verd.)	IB	B7D	M	12	L	20	7
Parkmani (Chi.)	TB	Y4M	—	12	L	0	4
Paulina (Hort.)	TB	R7M	M	12	VL	30	8
Paxatawny (Farr)	TB	S3L	M	12	L	0	4
Pearl (Van S.)	TB	S1L	EM	12	L	20	6
Persia (Ayers)	TB	S3M	M	4	M	0	3
Pete Detrick (Mag.)	TB	Y9M	M	6	L	0	4
Petite Amie (Mil.)	DB	W3	—	10	L	0	4
Petrel (Mor.)	IB	B3L	M	9	M	6	4
Petruchio (Mor.)	TB	S6M	M	9	L	6	6
Pfauenauge (F. & K.)	DB	S6L	MLa	10	L	1	5
Phidias (Lemon)	IB	S6M	M	7	M	3	3
Pink Pearl (Clev.)	TB	R9L	M	10	L	16	6
Pioneer (Bliss)	TB	B9D	EM	9	VL	15	8
Plicata Sappho (Farr)	TB	Y5	—	9	L	0	4
Pluie d'Or (Cay.)	TB	Y4M	M	7	M	5	4
Plumeri (Ware)	TB	S9D	EM	10	L	10	6
Powhatan (Farr)	TB	R7M	M	12	VL	55	9
President Thiers (Dutch)	TB	S3D	M	10	L	13	6
Prestige (Sturt.)	IB	Y9L	E	7	L	0	4
Primrose Sturt.)	TB	Y4L	M	5	S	3	2
Princess Beatrice (Barr)	TB	B1L	EM	9	L	5	5
Princess Osra (Bliss)	TB	W2	M	8	M	15	4
Princess Royal (Smith)	TB	B1M	EE	10	L	0	4
Prince Victor (Cap.)	IB	B3D	EM	5	M	2	3
Prinzess Victoria Luise (G. & K.)	IB	Y9L	ELa	10	M	5	4
Priscilla (Hall)	TB	B9L	MLa	10	L	4	5
Proserpine (Lemon)	TB	S4M	—	10	L	0	4
Prosper Laugier (Verd.)	IB	S9D	M	12	L	20	7
Prospero (Yeld)	TB	B9M	MLa	8	M	0	3
Purissima (Mohr-Mit.)	TB	WW	EM	9	VL	10	7
Purple King (Wallich)	IB	R1D	EM	12	VL	40	8
Quaker Lady (Farr)	TB	S3L	M	12	VL	70	9
Queen Caterina (Sturt.)	TB	B7L	M	12	VL	80	9
Queen Elinor (Hort.)	TB	B9M	EM	9	VL	5	7
Queen Flavia (Cap.)	IB	Y4L	M	12	L	15	7
Queen Mary (Per.)	TB	B1M	EM	10	L	4	6
Queen of May (Sal.)	TB	R7L	EM	12	VL	80	9

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Queen Victoria (Sal.)	TB	B7L	—	10	L	0	4
Quinnipiac (Nam.)	IB	S6M	MLa	5	M	5	3
Rajput (Sturt.)	TB	B7M	EM	9	VL	10	7
Rakan (Sturt.)	TB	Y9D	EM	5	L	2	5
Ramapo (B. & A.)	TB	R9M	MLa	10	L	9	5
Ramona (Mohr-Sturt.)	IB	S4L	EM	9	VL	40	7
Rangoon (Sturt.)	IB	B9M	EM	10	L	13	7
Rasakura (Wmsn.)	TB	R9M	M	7	L	19	7
R. C. Rose (Fry.)	TB	S9D	MLa	10	L	7	5
Red Cloud (Farr)	TB	S9M	M	12	L	15	7
Red Glory (Fry.)	TB	S9D	M	7	L	0	4
Red Riding Hood (Koeh.)	TB	R9M	M	12	VL	70	9
Rembrandt (Cap.)	IB	B1L	EM	7	L	13	6
Reticulata Alba	TB	W3L	—	10	M	5	3
Reverie (Sturt.)	TB	S6M	MLa	7	M	0	2
Rhea (Wmsn.)	TB	S9M	M	12	VL	10	7
Rhein Nixe (G. & K.)	TB	W9	M	10	L	0	4
Rhoda (Yeld)	TB	S7L	EM	10	L	9	6
Reis von Connern (Muller)	TB	B1M	M	6	M	0	2
Ringdove (Fos.)	TB	B3M	M	12	L	6	5
Rodney (Bliss)	TB	B1M	M	12	VL	90	9
Rolandiana (Lemon)	TB	B1M	MLa	5	L	4	5
Romance (Mur.)	TB	S7M	EM	7	L	3	5
Rose Ash (Mor.)	TB	S7L	M	11	VL	30	8
Rosedale (Koeh.)	IB	B1M	M	12	VL	95	9
Rose Madder (Sturt.)	TB	R9D	M	9	L	6	5
Rose Magill (Meyer–F.B.)	TB	R3L	EM	10	L	7	6
Rose-Marie (Cay.)	TB	S9M	M	9	VL	15	8
Rose Unique (Farr)	IB	R9M	—	4	M	4	3
Royal (Cap.)	IB	B1D	EM	10	VL	25	7
R. R. Smith (Fry.)	TB	B7L	EM	12	VL	23	8
Ruby (Cap.)	TB	S3D	EM	10	L	12	7
Rubyd (Dykes)	IB	R7D	M	9	VL	40	7
Rugajo (Weed)	TB	R9M	EM	11	L	3	6
Ruth Pfeiffer (Pfeif.)	TB	W3L	M	10	L	10	5
Sambucina (Linn.)	TB	S9M	M	7	L	8	4
Sans Souci (Van H.)	TB	Y9M	MLa	10	L	10	5
Santa Barbara (Mohr-Mit.)	TB	B1L	E	4	L	0	4
Sapho (Lemon)	TB	S6L	EM	7	L	7	5
Sarabande (Sturt.)	TB	S6L	M	10	M	0	2
Saturne (Krel.)	TB	S6L	—	10	L	0	4
Schiller (Wal.)	TB	Y9M	—	10	L	7	4
Segovia (Wmsn.)	TB	B7D	M	10	VL	25	8
Sequoiah (Shull)	TB	S6D	M	12	L	15	7
Serenade (Hall)	TB	R1L	EM	4	VL	25	7
Shakespeare (Van W.)	TB	R9M	M	4	L	6	5
Shelford Yellow (Fos.)	TB	Y4L	M	10	VL	54	8
Sherwin-Wright (Koh.)	IB	Y4D	MLa	4	L	4	5
Shrewsbury (Farr)	IB	R9M	EM	10	L	10	5
Silvia (Hort.)	TB	B7L	M	10	M	0	3
Sindjkha (Sturt.)	TB	S3M	M	12	VL	29	8
Sir Galahad (Shull)	TB	R9M	—	10	L	5	5
Socrates	DB	R9D	E	12	VL	35	8
Soledad (Mohr)	IB	Y4L	E	10	L	15	6
Sound Money (Sass-J.)	DB	Y4M	E	3	M	0	3
Souv. de Loetitia Michaud (Mil.)	TB	B1L	M	8	M	8	3
Souv. de Mme. Gaudichau (Mil.)	TB	B3D	EM	11	L	6	6
Standard (Per.)	DB	B9D	EE	9	M	0	2
Standard Bearer (Ware)	TB	R7D	—	12	L	18	7
Statellae (Tod.)	DB	W4	E	7	L	17	5
St. Clair (Lemon)	TB	W2	M	12	L	15	6
Steepway (Scott)	TB	S7M	M	12	L	10	6
Stipples (Essig)	IB	W2	M	4	S	0	1
Striate (Bratt)	IB	W2	—	4	L	0	4
Susan Bliss (Bliss)	TB	R7L	M	10	VL	25	8
Suzanne Autissier (Den.)	TB	B9D	EM	11	VL	50	8
Swatara (Farr)	TB	S3M	M	7	L	9	5

Table 5. Adaptability Rating of Varieties—Continued

Variety	Type	Color	Season	Years in test	Maximum size plant	Maximum no. bl. per pl.	Adaptability
Sweet Lavender (Bliss)	TB	R3L	M	9	L	20	6
Sweet Sixteen (Lap.)	TB	B7M	MLa	10	L	1	4
Swerti	TB	W8	M	12	VL	26	8
Sylphide (Lemon)	TB	W8	M	10	L	6	6
Sympathy (Ware)	TB	B3L	M	12	L	15	7
Taj Mahal (Sturt.)	TB	W4	M	7	M	3	3
Tecumseh (Farr)	TB	S6M	MLa?	10	L	0	3
Tendresse (Van H.)	TB	B3L	EM	10	VL	14	7
Tenebrae (Bliss)	TB	R9D	M	9	L	0	4
Terias (Wmsn.)	TB	S7L	M	8	VL	35	7
Theseus (Hort.)	IB	W4	M	12	VL	12	7
Thorbecke (Veitch)	TB	W3	MLa	10	M	3	3
Tineae (Tod.)	TB	B1M	EM	10	L	6	6
Titan (Bliss)	TB	B3M	M	10	VL	7	7
Titus (Per.)	TB	R7M	EM	12	VL	63	9
Tom Tit (Bliss)	TB	B1D	M	7	L	4	5
Tristesse (Van H.)	TB	S6M	M	10	L	0	4
Tropic Seas (Shull)	TB	B3M	EM	10	L	15	5
Trostinger (Sass-H.P.)	TB	R1L	EM	9	VL	35	8
Troyon (Cay.)	TB	S6	MLa	5	S	0	1
True Charm (Sturt.)	TB	W2	M	9	VL	25	7
True Delight (Sturt.)	TB	W8	MLa	4	L	0	4
Undine (Koeh.)	TB	B1D	M	4	M	0	2
Urbana (Black)	TB	B1L	M	11	L	20	6
Valery Mayet (Den.)	TB	S9D	M	11	VL	20	7
Van Cleve (Nam.)	TB	B3D	MLa	12	L	0	4
Violet Queen (Hubert)	IB	B1M	—	10	M	0	2
Virginia Moore (Shull)	TB	Y9L	M	10	L	0	4
Virginie (Lemon)	TB	B3M	M	10	L	0	4
Vondel (Barr)	TB	Y3M	—	4	L	0	4
Waconda (Sass-H.P.)	TB	R1M	M	4	L	0	3
Walhalla (G. & K.)	IB	B3M	EM	10	VL	25	7
Walter Scott (Lemon)	TB	Y9M	—	5	L	0	4
Wanda (Mag.)	TB	R3M	—	7	M	0	2
Wawayanda (B. & A.)	TB	S9D	M	10	L	14	6
Wedgewood (Dykes)	TB	B1M	E	7	L	0	3
Weequahic (B. & A.)	TB	B3M	M	10	M	0	2
Whiffenpoof (Sturt.)	TB	S6M	MLa	8	L	5	5
White Nymph (McK.)	TB	W4	MLa	5	L	3	5
Wild Rose (Sturt.)	TB	R7L	M	5	S	0	1
William Marshall (Per.)	TB	R1M	M	11	VL	8	6
Willie Barr (Barr)	IB	S3L	MLa	10	L	3	5
Willoughby (Hort.)	TB	B1M	MLa	8	L	9	5
Windham (Farr)	IB	R9L	M	10	L	0	4
Wyomissing (Farr)	IB	R9L	M	11	L	16	6
Yataghan (Wmsn.)	TB	Y9L	M	7	L	12	6
Yellowstone (Hall)	TB	Y9D	M	4	L	0	4
Yvonne Pelletier (Mil.)	TB	B1L	M	5	S	0	1
Zada (Emig.)	TB	W1	M	11	VL	25	7
Zua (Craw.)	IB	W1	E	8	L	0	4
Zwanenburg (Den.)	IMB	S6L	E	5	M	0	2

Type and color formulas, and season of bloom where plants did not bloom are as listed in the Alphabetical Iris Check List for 1939.

Type: DB—dwarf bearded; IB—intermediate bearded; TB—tall bearded, IMB—Tall mixed bearded.

Color: B—blue; R—reddish; Y—Yellow; W—white; S—squalens or blend; 1 to 3—blue toned; 1—self; 2—feathered; 3—bicolor; 4 to 6—yellow toned; 4—self; 5—feathered; 6—bicolor; 7 to 9—pink toned; 7—self; 8—feathered; 9—bicolor; L—light; M—medium; D—dark.

Season: EE—very early; E—early; EM—early midseason; M—mid-season; MLa—late mid-season; La—late.

Size plant: S—small; M—medium; L—large.

Adaptability rating: 1 to 10—very poor to excellent.