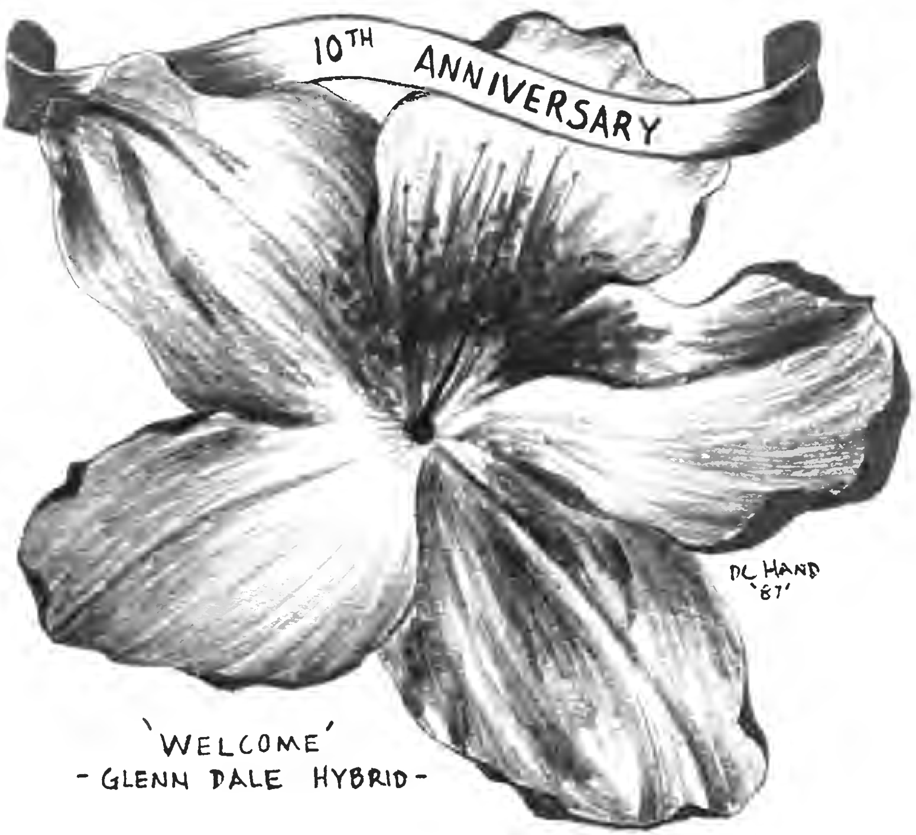
THE AZALEAN

Journal of the Azalea Society of America

Volume 10 Number 4 December 1988



AZALEA SOCIETY OF AMERICA

The Azalea Society of America, organized December 9, 1977 and incorporated in the District of Columbia, is an educational and scientific non-profit association devoted to the culture, propagation and appreciation of the series *Azalea* (subgenus *Anthodendron*) of the genus *Rhododendron* in the Heath family *(Ericaceae).*

OFFICERS FOR 1988-1989

PRESIDENT - Robert Hobbs
VICE-PRESIDENT - Robert Stelloh
SECRETARY - Valerie Lorenz
TREASURER - Glenn W. Taylor
IMMEDIATE PAST-PRESIDENT - L. Malcolm Clark

BOARD OF GOVERNORS

Terms expiring in 1989

James A. (Tony) Dove, Jr.
Charles H. Evans, M.D., Ph.D.
Eleanor Stubbs
Nancy Swell
Glenn W. Taylor

Terms expiring in 1990

Ruth Amos
Fred C. Galle
Alice J. Holland
Robert T. Stelloh
Donald H. Voss

Chapter presidents serve as ex-officio members

CHAPTERS

Brookside Gardens (chartered August 1979)
William L. Clagett, president
Richmond, Virginia (chartered August 1979)
Rosa Carter, president
Robert D. Gartrell (chartered May 1980)
Jerry Goodman, president
Ben Morrison (chartered May 1980)
Edward Rothe, president
Northern Virginia (chartered May 1980)
Betty Jones, president
Louisiana (chartered June 1981)
John U. Rochester, Jr., president
Ralph W. Penninigton (chartered June 1981)

Tri-State (chartered October 1981)
Robin Hahn, president
Mobile (chartered March 1983)
Pat Ryan, president
Northwest (chartered October 1983)
Henrietta Hass, president
Flame Azalea (chartered May 1984)
Allen Cantrell, president
Delmarva (chartered May 1986)
Gordon W. Severe, president

Regular membership is open to all interested parties for an annual contribution of $15.00. Life membership is $225.00. Members receive *THE AZALEAN* and are eligible for participation in all activities of the Society including those of the chapter with which the member affiliates. For information and membership application, write to the Secretary, Azalea Society of America, P.O. Box 6244 Silver Spring, Maryland 20906.

THE AZALEAN

The Journal of the Azalea Society of America, Inc.

Dr. Charles H. Evans, Editor

Volume 10 Number 4 December 1988

THE AZALEAN is published during March, June, September, and December by the Azalea Society of America, Inc., P.O. Box 6244, Silver Spring, MD 20906. Additional copies of the current and back issues can be obtained from the Secretary. Volumes 1 through 4 published from 1979 through 1982 consist of 15 issues at $2.50 per issue. The price for each issue beginning with 1983, Volumes 5 through 10 and continuing is $3.50.

Address all editorial and business correspondence to The Editor, *THE AZALEAN*, 9233 Farnsworth Drive, Potomac, MD 20854.

IN THIS ISSUE:

RESPONSES OF CERTAIN AZALEA CULTIVARS TO PHOTOPERIOD, TEMPERATURE, AND GROWTH-REGULATING CHEMICALS PART 2

William L. Brown
Hammond Research Station
Louisiana Agricultural Experiment Station
Louisiana State University Agricultural Center

Dormancy in plants is a subject that is very complicated and not fully understood. Plants vary greatly in regard to the biochemicals that seem to be involved in their dormancy (2). They also vary greatly, even within a species, in the amount of cold, light exposure, and the particular chemicals that are able to prevent or end their dormant state.

Quiescence, pre-rest, and even the word dormancy itself are sometimes used to describe the state of an apparently inactive bud that is capable of resuming growth when placed in an optimum environment. Rest is used to describe the stage in which growth will not resume even when placed in an optimum environment. For most plants, a certain minimum exposure to cold is required to end rest and allow bud growth.

If we accept these definitions, what we do when we force azaleas to flower without exposure to cold is to prevent rest rather than "break" it. This endeavor is very similar to the production of temperate-zone fruit in the tropics (1). With evergreen azaleas, however, we cannot use such techniques as defoliation that are possible with deciduous plants.

Follow-up work on the research results reported in Part 1 (*The Azalean* 10:20-22, 1988) was carried out at the Hammond Research Station between 1970 and 1977. Objectives of this work were to determine the feasibility of commercial forcing of florist azaleas without use of refrigeration, to determine the environmental treatments which produce the best results, and to determine the effectiveness of growth-regulating chemicals in combination with controlled environment.

In the research reported in Part 1, azalea cultivars 'Red Wing' and 'Alaska' flowered very rapidly, without a period of cooling, in reponse to a certain sequence of environmental conditions. This sequence consisted of a period of several weeks of warm long days to promote vegetative growth following pinching, a period of warm short days to begin flower development, and another period of warm long days to promote completion of flower development. Minimum temperature throughout this series of tests was 60°F. except where refrigeration is indicated.

Gibberellic acid (GA) is a plant hormone which promotes cell and, therefore, stem elongation. It has been used to "break" the dormancy of various plants and has been used on azaleas in attempts to replace a period of cold with variable results. GA_3 is the most common form of GA and was used in all of these tests except one in which GA_{4+7} is specified.

Experiment 1 plants were given a final pinch on December 20, and Experiment 2 plants were pinched on September 8. Following pinching, they were placed under 18-hour photoperiods (LD) for five weeks and four weeks, respectively. LD was accomplished by lighting with 75 watt incandescent bulbs placed approximately three feet apart and three feet above the plants from at least one half hour before sunset to 10 p.m. and from 4 a.m. to at least one half hour after sunrise.

Following this LD period, half of the plants were sprayed with a 3000 ppm solution of B-Nine (daminozide). At this time, all plants were shifted to a nine-hour photoperiod (SD) provided by covering the plants with black cloth from 4 p.m. to 7 a.m. The 17-week treatment period consisted of either continuous SD, 12 weeks of SD followed by five weeks refrigeration, or four, six, eight, or ten weeks of SD followed by LD.

Table 1. Effect of photoperiod and GA_3 on percentage of azalea flowers which were open at the time of maximum flowering. Short day (SD) treatment began on Oct. 6.

Treatment	% Flowering at peak	
	'Chimes'	Other cultivars[1]
12 wks SD + 5 wks cold	76 a[2]	91 a
17 wks SD + GA_3[3]	42 bcd	65 c
10 wks SD + 7 wks LD	33 d	79 b
10 wks SD + 7 wks LD + GA_3	53 b	82 b
8 wks SD + 9 wks LD	30 de	71 c
8 wks SD + 9 wks LD + GA_3	50 bc	78 b
6 wks SD + 11 wks LD	19 e	66 c
6 wks SD + 11 wks LD + GA_3	40 cd	64 c

[1] Mean of 'Red Wing', 'Alaska', and 'Gloria' values.
[2] Values followed by a common letter are not significantly different (P=.05).
[3] Five weekly spray applications at 1000 ppm.

Gibberellic acid was applied to some of the non-cooled plants. GA treatment consisted of five weekly spray applications of potassium gibberellate at 1000 ppm plus 0.1% Tween-20 (surfactant). These applications began 12 weeks after SD treatment started.

Cultivars used in these tests were 'Red Wing', 'Alaska', 'Gloria', and 'Chimes'. In Experiment 1, GA did not significantly increase the percentage of test stems which flowered within seven seeks after the treatment period, except those of 'Chimes'.

Table 2. Effect of photoperiod and GA_3 on the number of days (after first 12 weeks of treatment period) to peak of flowering.

Treatment	Number of days to peak of flowering			
	'Red Wing'	'Alaska'	'Gloria'	'Chimes'
12 wks SD + 5 wks cold	76 d[1]	78 d	78 f	82 d
17 wks SD + GA_3[2]	43 c	43 c	42 e	49 c
10 wks SD + 7 wks LD	41 c	39 b	38 d	51 c
10 wks SD + 7 wks LD + GA_3	35 b	39 b	36 cd	45 ab
8 wks SD + 9 wks LD	30 a	36 ab	33 c	48 bc
8 wks SD + 9 wks LD + GA_3	32 ab	34 a	29 ab	43 a
6 wks SD + 11 wks LD	30 a	36 ab	33 bc	44 ab
6 wks SD + 11 wks LD + GA_3	34 ab	34 a	28 a	45 ab

[1] Values, within a column, followed by a common letter are not significantly different (P=.05).

[2] Five weekly spray applications at 1000 ppm.

In Experiment 2, the percentage of flowers which were open at the peak of flowering for a given plant was calculated. This data is shown in Table 1 for 'Chimes' and collectively for the other three cultivars which responded similarly. The concentration of flowering was greatest with refrigeration with all cultivars. GA greatly increased percent flowering of 'Chimes' with all combinations of SD and LD, but it significantly increased flowering of other cultivars with eight weeks of SD only. Greatest percentage of flowering without refrigeration occured with ten weeks of SD followed by LD.

The earliest flowering, however, occurred with either six or eight weeks of SD followed by LD. Differences in times of maximum flowering are shown in Table 2. With 'Gloria', GA further hastened the flowering peak with both six and eight weeks of SD (Fig. 1). Time of maximum flowering with refrigeration ranged from five to over six weeks later than the best photoperiodic treatments.

In Experiment 1, the combination of continuous SD and GA resulted in the greatest amount of growth of vegetative bypasses of 'Gloria' and 'Alaska'. In Experiment 2, six weeks of SD followed by LD plus GA resulted in more bypass growth than all other combinations.

The combination of GA and LD following six weeks of SD resulted in longer pedicels (flower stems) of 'Alaska' and 'Chimes'. This resulted in drooping flowers and some reduction in quality.

B-Nine treatment greatly increased percent flowering of 'Chimes' plants, both refrigerated and uncooled. With the other three cultivars, it had little effect on percent flowering of refrigerated plants, but it reduced flowering (within seven weeks after treatment period) of uncooled plants by 20 to 37%. B-Nine also delayed flowering of uncooled plants of these three cultivars but hastened that of 'Chimes' by 18 days.

A third follow-up test was conducted to compare another form of gibberellic acid (GA_{4+7}) with the most common form (GA_3) and to investigate the possibility of an additive effect of combining GA_3 with SD8339, a cytokinin (another type of plant hormone).

Hormone treatments consisted of four weekly spray applications of the following:

1) GA_3 at 1000 ppm
2) GA_3 at 1000 ppm + SD8339 at 100 ppm
3) GA_{4+7} at 500 ppm

Treatment 2 (with LD) was the only treatment resulting in a significantly earlier flowering peak of 'Red Wing' than LD treatment alone. With 'Gloria', only treatment 3 (with LD) hastened flowering. With 'Alaska', both treatments 2 and 3 (with LD) resulted in earlier flowering than LD alone. With 'Chimes', all three chemical treatments resulted in earlier flowering.

Treatment 2 (with LD) was also the only the chemical treatment which resulted in higher percentage of flowering of "Red Wing' at one time than did LD alone. All chemical treatments, with LD, resulted in more concentrated flowering of 'Gloria'; and all chemical treatments, with or without LD, resulted in more concentrated flowering of 'Chimes' than LD only. Refrigerated plants of 'Gloria' and 'Chimes' had significantly more concentrated flowering than all other plants of those cultivars.

Figure 1. Plants of azalea cultivar 'Gloria' which received 6 and 10 weeks of short photoperiods followed by long photoperiods and GA_3 applications. Note that the differences shown are only differences in earliness of flowering, not in quality.

The first trial of this system of forcing, which was considered a failure with 'Red Wing', 'Alaska', and 'Gloria', was one in which the final pinch took place on January 29 and short day treatment was begun on March 7. High temperatures during the second period of long days were considered responsible for the poor flowering in this trial. This led us to try out the system with a series of trials at monthly intervals to determine the effect of seasonal variation. The schedule of events was as follows:

Last Pinch	SD Began	LD Began
July 16	Sept. 3	Oct. 29
Aug. 19	Oct. 1	Nov. 26
Sept. 16	Nov. 1	Dec. 27
Oct. 15	Nov. 26	Jan. 21
Nov. 15	Dec. 27	Feb. 21
Dec. 16	Jan. 27	March 24

GA treatment consisted of three weekly applications of 1000 ppm GA_3, starting two weeks after the beginning of the final LD period.

The concentration of flowering of these six crops is indicated in Table 3. All crops of 'Red Wing' and 'Alaska' were considered satisfactory; however, percent flowering of the July-pinched crop was distinctly lower than that of all others. Flowering of 'Gloria' was excellent with the first four crops, but almost completely lacking with the November pinch and poor with the December pinch.

Table 3. The effect of seasonal variation on concentration of flowering with photoperiod control and GA_3 instead of cooling.

	% Flowering at peak					
	Month of last pinch					
Cultivar	July	Aug.	Sept.	Oct.	Nov.	Dec.
'Red Wing'	52	80	75	73	73	71
'Alaska'	72	91	91	84	82	82
'Gloria'	76	87	83	77	17	39
'Chimes'	52	69	73	79	70	40
Mean	63	82	80.5	78	60.5	58

Flowering of 'Chimes' was fair with the July pinch, good with August and September pinches, and poor with all others. The percent flowering following October and November pinches is misleading because the total number of lower buds present on these crops was very small.

All plants from October, November and December pinches had large numbers of blind shoots. Temperatures were moderate during the short day treatment periods of these crops, but low light intensity and short duration of sunlight may have contributed to the poor bud development.

Flowering was fastest following September and October pinches, reaching their peak from nine to 17 days faster than all others.

Table 4. Response of various azalea cultivars to photoperiod control and GA_3 to replace cold. Final pinch July 13.

Cultivar	% Flowering at peak	
	Without GA	With GA
'Kingfisher'	57	78
'Dark Rose Queen'	70	64
'Hershey's Red'	66	65
'Skylark'	58	51
'Dorothy Gish'	40	58
'Hexe'	6	64
'Jean Hearens'	34	51
'Ambrosiana'	27	39
'Albert Elizabeth'	41	31
'Barbara Gail'	0	35
'Satellite'	5	24
'Roadrunner'	9	27
'Hino-Crimson'	0	0

The final test in this series was intended to determine the effectiveness of the forcing system on 13 additional cultivars. The final pinch date for this test was July 13, which, judging by the previous test, was not the best choice of times. Half of the plants of each cultivar received four applications of 1000 ppm GA_3, and the other half received photoperiodic treatment only. Concentration of flowering of these cultivars is shown in Table 4 and Figs. 2 and 3.

Figure 2. 'Dark Rose Queen' with and without GA_3 treatment (See Table 4).

Using 50% of the total potential flowers open at any one time as a minimum for satisfactory flowering, 'Kingfisher', 'Dark Rose Queen', 'Hershey's Red', and 'Skylark' flowered satisfactorily with and without GA_3. Of these, only 'Kingfisher' produced more concentrated flowering with GA_3.

'Dorothy Gish', 'Hexe', and 'Jean Hearens' also exceeded the 50% minimum with GA_3 applications. Flowering of all other cultivars was below 50%, both with and without GA_3.

Although 'Hino-Crimson' plants produced no flowers with or without GA_3, they produced numerous long vegetative shoots after receiving the GA_3 treatment. Such treat-

Figure 3. 'Hexe' with and without GA_3 treatment (See Table 4).

ment could be used to develop propagating materials of cultivars that normally produce cuttings that are too short or too few.

SUMMARY

This series of tests can be summarized as follows:

1) Certain azalea cultivars, among those that are associated with florists' pot-plant production, can be flowered satisfactorily without a dormancy-breaking cold period by photoperiod manipulation.

2) The photoperiodic schedule following a final pinch consists of (a) a period of long days (LD) to promote vegetative growth, (b) a period of short days (SD) to promote early flower bud development, and (c) another period of LD to prevent dormancy and complete flowering.

3) A SD period of six or eight weeks resulted in the earliest flowering; however, a SD period of ten weeks often resulted in more concentrated flowering.

4) Flowering with photoperiodic forcing was never as concentrated as that with conventional cooling, but flowering occurred five to seven weeks earlier with photoperiodic forcing.

5) Use of gibberellic acid (GA_3 or GA_{4+7}) or the combination of GA_3 with a cytokinin generally improved results only slightly with the more responsive cultivars, but improved flowering of other cultivars greatly.

6) Seasonal variation in response was considerable. Schedules which resulted in flowering in winter and spring have generally been successful.

7) Cultivars appear to vary greatly in their response to all the factors used in these tests and, in particular, in the ability of this photoperiodic regimen to prevent rest and allow rapid flowering without cold.

I have not made a thorough review of the literature concerning research since these tests, but one interesting series of tests concerning effects of photoperiod on azalea was conducted by Pemberton in Minnesota. In one test, flowering of non-cooled 'Redwing' plants was more rapid under SD or normal days of winter than with daylength extended to 24 hours with either incandescent or fluorescent lights (4). In other tests, 'Prize' azalea plants were budded in Florida and successfully forced in Minnesota using various combinations of photoperiod and GA_3 (3). Seasonal variation in response to these treatments was at least partially attributed to differences in the Florida environment in which flower bud development began.

REFERENCES

1. Edwards, Gordon R. 1987. Producing temperate-zone fruit at low latitudes: avoiding rest and the chilling requirement. *HortScience* 22(6):1236-1240.

2. Leopold, A. Carl. 1964. *Plant Growth and Development*. McGraw-Hill Book Company, New York. 466 pp.

3. Pemberton, H. Brent and H. F. Wilkins. 1985. Seasonal variation on the influence of low temperature, photoperiod, light source, and GA in floral development of the evergreen azalea. *J. Amer. Soc. Hort. Sci.* 110(5):730-737.

4. Pemberton, H. B., G. Radtke, and H. F. Wilkins. 1982. The effect of photoperiod and growth regulators on the forcing of non-cooled 'Redwing' azalea. HortScience 17(3):516.

W. Larry Brown is an Associate Professor at the Hammond Research Station, Hammond, Louisiana and a member of the Louisiana Chapter.

Part 1 of this article appeared in the AZALEAN 10:20-22 (June 1988).

WILL THE REAL 'JEANNE WEEKS' PLEASE STAND UP?

Donald H. Voss,
Vienna, Virginia

Observation of plant material from gardens in the Richmond-to-Hampton area of Virginia (as well as like plants in my own garden) prompts this brief sequel to a previous article on mix-ups in plant names. (1) We again address a situation in which a cultivar name is being applied to different cultivars—obviously an illegitimate practice. In this case, the identity of the cultivar to which the name legitimately applies is clear when character states of the plants in question are compared with the hybridizer's notes and the description in the registration statement for 'Jeanne Weeks'.

THE REGISTERED CULTIVAR

'Jeanne Weeks' is a Robin Hill evergreen azalea hybridized and named by Robert D. Gartrell. The plant was originally known by an identification number (U7-8), and that number is now a synonym for the name. Descriptive entries for this plant appeared in Robert's 1972/73 notebook, as well as in the notebook being used in 1981. The author excerpted data from the 1981 notebook a few weeks before the Gartrells moved from Wyckoff, New Jersey, in the summer of 1981; the notebook itself was apparently lost during the move. Robert's entries provided the following data on 'Jeanne Weeks' (note that he habitually used "Louise" when referring to 'Louise Gable'): [2]

- 1972/73 Notebook—
  U7-8 Louise x Tama Giku/Kaigetsu x Carol 'Jeanne Weeks' 2" vy dble opens like a rose bud, Amaranth Rose 65A [moderate purplish pink] ht 10" fairly dense foliage dk green 5/25/72
- 1981 Notebook—
  U7-8 Louise x Tama Giku/Kaigetsu x Carol 'Jeanne Weeks' HH [hose-in-hose] 2-¼" petals broad, wavy petaloid fairly dense foliage dk green [color noted in successive years:] 63C [strong purplish Pink], 68C [moderate purplish pink], 68B [strong purplish pink]

(Entries enclosed in square brackets are supplementary information supplied by the author.)

The description of 'Jeanne Weeks' in the registration statement was taken from Robert's original plant in Wyckoff. [3] Excerpts of this statement follow:

> JEANNE WEEKS: A Robin Hill evergreen azalea. ('Louise Gable' x 'Tamagiku') x ('Kaigetsu' x 'Carol' (Gable))...Synonym: U7-8. Buds open like rose buds. Flowers openly funnel-shaped, 2" across x 1-⅜" long, with 5 + 5 (hose-in-hose) wavy lobes, with variable number of central petaloid stamens (irregularly double). Red Purple Group 62A (Rhodamine Pink) to 65A (Amaranth Rose), with 63 B (Spiraea Red) spotting on dorsal [lobe] and slightly on adjacent lobes. No calyx, 0 - 7 stamens. Inflorescence 1-2-flowered...There is another plant being grown with this name; it, however, is fully double, very flat-faced, much lighter in color, and has a prominent, ¼" long, green calyx. [RHS 62A is strong purplish Pink; 65A is moderate purplish Pink.]

COMPARISON WITH THE "NOT JEANNE WEEKS" CULTIVAR

In mid-May, 1988, the author evaluated a 'Jeanne Weeks' conforming to the registration description and a plant he has labelled "Not Jeanne Weeks" growing side-by-side in his garden. The source of the author's plant of "Not Jeanne Weeks" is the same as that for those recently observed in the Richmond-to-Hampton area. In addition to the marked difference in color between the two cultivars, the registered one does *not* have a green foliaceous calyx; the "Not Jeanne Weeks" does. The author's 1988 notes on the two plants follow:

- 'Jeanne Weeks' (Syn.: U7-8). Buds open like rose-buds. Flowers openly funnel-shaped, hose-in-hose, irregular double. Two flowers per bud. Green foliaceous calyx *absent.* Corolla diameter 56 mm (ca. 2-¼"), length 32 mm (ca. 1-¼"), 5 + 5 lobes, stamens sometimes unmodified but more usually petaloid; margins wavy; color 62A (strong purplish Pink) to 65A (moderate purplish Pink), spotting 185D (deep pink), light tint of 143D (moderate Yellow Green) deep in throat.
- "Not Jeanne Weeks" (Gartrell identification number uncertain). Flowers widely funnel-shaped, irregularly double, often opening into rounded flat-faced corolla with broad overlapping petals (somewhat in the manner of 'Nancy of Robinhill'). Two flowers per bud. Green foliaceous calyx *present.* Corolla diameter 66mm (ca. 2-½"), length 32mm (ca. 1-¼"), 5 lobes plus a variable number of petaloid stamens; margins wavy; color 52D (strong Pink), nearly White on abaxial side near calyx, spotting 53B (strong Red), pale tint of 154D (light Yellow Green) in throat, occasional flecks or stripes 50B (deep Pink).

In the late 1970's, Robert Gartrell was aware that the plant I here call "Not Jeanne Weeks" was being grown under the name 'Jeanne Weeks'. He discussed the matter with the author on several occasions during 1979-81 and indicated a possible reason for the confused situation. Before selecting the registered plant to be named 'Jeanne Weeks', he had considered selecting the other plant. Over several years, however, he found that in the late stages of its floral development (under growing conditions in Wyckoff, New Jersey) elements of the corolla tended to separate and twist into an unattractive form. Accordingly, he dropped that plant from consideration for selection and naming. This decision presumably antedated the "5/25/72" notebook entry, which recorded the corolla color of U7-8 as RHS 65A [moderate purplish Pink].

LESSONS TO BE LEARNED

The fine performance of the "Not Jeanne Weeks" in a milder climate (the plant is well-liked by some expert growers and, indeed, has won a "Best in Show" award) points to a problem that crops up in connection with many hybrid groups. When Robert Gartrell requested that only the 69 cultivars that he selected and named be referred to as Robin Hill azaleas and that his other hybrids be designated Gartrell Hybrids, he was distinguishing plants that met his criteria for growing under specific cultural conditions from others that did not. The author believes that it is important to maintain this sort of distinction with respect to all hybridizers' decisions on selection or rejection for naming of their plants.

A hybridizer must engage in serious advance planning if he desires the distinction between his selections and rejects to be maintained. The selection and naming of cultivars should not be "backed into." Ideally, the hybridizer crosses, sows, grows, observes, evaluates, selects, and—if superior cultivars are found—names a small number of plants. We have all heard of a certain road paved with good intentions, and, in practice, hybridizers find it very difficult to enforce upon themselves rigorous retraint in the selection and naming of their "babies."

The plot thickens when we consider that most hybridizers do not carry out in isolation the entire sequence from crossing to naming. They are visited by personal friends, other azalea fanciers, and that special breed, the human vacuum cleaner (the compulsive cutting clipper). The unwary hybridizer may fall into the trap of believing that plants turned over to others for testing and evaluation will remain inviolate. The simple fact is that new plants have an overpowering influence on propagators and collectors! Before long, Cultivar X will be in many hands—unless the hybridizer ruthlessly excludes all and sundry from his nursery.

If the hybridizer rejects a hermitic existence and accepts the inevitable, several practices can minimize undesirable consequences with respect to naming that may accompany "wildfire" propagation of new cultivars:

- Once a seedling is determined to lack exceptional merit (whether for landscape use or as a parent plant in hybridization), it should be destroyed. Vegetative propagation of existing superior cultivars is preferable to introduction of interior material.
- Hybridizers should assign a unique identification number to each seedling selected for protracted observation; a letter-number combination including the year of cross is advantageous.
- Naming should be avoided assiduously until firm determination is made that a cultivar offers unique, superior qualities that will broaden the spectrum of azaleas available to gardeners and landscapers.
- Never discuss with others tentative or prospective names for cultivars still being evaluated; willy-nilly, ,people will start to use those names.

As demonstrated by the performance in the Southeast of the "Not Jeanne Weeks" and several other Gartrell Hybrids that did not perform well in northern New Jersey, the first (and rather draconian) recommendation in the preceding paragraph may be challenged by some. It clearly does not make provision for preserving cultivars that prove worthy when grown under different cultural conditions or when evaluated by criteria different from those used by the hybridizer. An occasional success may be achieved in finding among a hybridizer's rejects a plant that will demonstrate uniquely superior qualities in these circumstances. In the broader context of the thousands of azalea cultivars in existence, however, the gain must be weighed against the probability that hundreds of unworthy plants will vie for the time and attention—not to mention garden and nursery space—of azalea growers.

The recommendations relating to naming are less controversial. If followed, these steps will prevent the premature association of a name with a plant that in the end may be rejected. When new plant material with great promise becomes available, it is beyond human endurance to resist propagating it. Identified by a number, a new cultivar may be grown and enjoyed, evaluated, and selected or rejected for naming with no difficulty. Naming should be the last step taken when determination is made for introduction of a cultivar.

POSTSCRIPT: ANOTHER MYSTERY

After compiling the foregoing information relating to the cultivar 'Jeanne Weeks', the author was looking forward to seeing blooms on several newcomers in the garden. One was a plant tagged 'Cayenne'. But when the flowers opened, the cayenne-pepper color was nowhere to be seen. Alas, the corolla color was close to RHS 59D, a strong purplish Red (equivalent to Munsell 7.3 RP 4.8/11.2). The color of ground cayenne pepper from the kitchen shelf is a strong reddish Orange (Munsell 1.25 YR 5/12).

Seeking to resolve the apparent divergence between expectation and bloom, the author turned to Galle's *Azaleas*. On page 252 (1st edition), Galle describes 'Cayenne' as deep yellowish Pink (a color very close to strong reddish Orange); Plate 87, however, shows a photograph labelled as 'Cayenne' but of different color. In the photograph, the corolla color of open flowers is close to Munsell 8.75 RP 6/10, a deep purplish Pink—slightly lighter but essentially similar in hue to the color of the plant in the author's garden.

Bob Stewart kindly sent a copy of Back Acres descriptions compiled by Anita Frazer, and Philip Normandy of Brookside Gardens and Fred Galle both checked their copies of the registration description of 'Cayenne'. All of these sources indicate the corolla color of 'Cayenne' to be Ridgway's *Rose Doree* (a deep yellowish Pink). Comparison of Ridgway's *Rose Doree* color chip with the *R.H.S. Colour Chart* shows it to be very close to RHS(66) 44D, which is equivalent to Munsell 5.7 R 5.9/12.2 (a deep yellowish Pink).

All of this brings to mind—perhaps inaccurately—a ditty learned in junior high school:

Six honest serving men have I,
Who, what, where, when, how, and why.

With respect to the "Not Cayenne" plant, the author is batting zero on all six! From the best available information, he can only conclude that the plant in his garden (and in the photograph on Plate 87 in the Galle book) is not 'Cayenne', and that the author is not alone in possessing this horticultural misnomer. Information on the identity and source of the "Not Cayenne" plant would be greatly appreciated.

References

1. Voss, Donald H. 'Will the Real 'Sherbrook' Please Stand Up?" *The Azalean,* Vol. 9:1 (March 1987), pp. 1-4.

2 Citations of RHS color-chip numbers in this note refer to the *R.H.S. Colour Chart* [1966 edition]. The Royal Horticultural Society. London. 1966.

3 *American Rhododendron Society Journal,* Vol. 37:2 (Spring 1983), p. 113.

THE MANY COLORS OF AZALEAS

Ruth Harrington
Falls Church, Virginia

Planning the arrangement of a group of colorful azaleas has been compared to painting a landscape. A beautifully coordinated drift of blooming plants is indeed a work of art.

Some of you may remember the exhibit at the National Gallery of Art in Washington, D.C., of the paintings of the French Impressionist artist, Claude Monet. Many of his paintings were inspired by his gardens at his home in Giverny. He designed and planted the gardens, then painted them. Even though we may not want to go that far, a little study and planning of color schemes could help us to create "living paintings", which would give pleasure to everyone who looks at them.

Of all plant groups, that of azaleas offers a palette with just about the widest assortment of bright colors, tints, and shades.

I have always been frustrated with some of the color descriptions given in azalea books. The original descriptions for the Glenn Dale azaleas, developed by B. Y. Morrison, used the Ridgway color standards which is now out of print. In *The Azalea Book* by Frederic P. Lee, I counted 36 unfamiliar color names in this group. Definitions are not available to the average person. Some examples are: Eosine Pink, Thulite Pink, Matthew's Purple, Amaranth Purple, Phlox Purple, Spectrum Red, and Geranium Pink.

These color names are not found in an ordinary dictionary — perhaps in an art book, or the National Bureau of Standards *Dictionary of Color Names.* It is difficult to envision colors from these names. Even colors named for flowers, (Geranium Pink or Phlox Purple, for example), are not definitive. They do not give a clue as to colors involved in their make-up, such as the difference between orange-red and purplish-red. Geraniums have a wide variety of pinks — salmon-pink, deep rose-pink, or lavender-pink. "Phlox-purple" could be lavender, magenta, or deep blue-purple — all colors which appear in phlox.

Motivations for using good color harmonies vary greatly, from a desire to beautify a small yard to large scale plans for public display.

Small personal plans will not need much research. Names may not be important — often what is required is just enough knowledge to create an arrangement pleasing to the home owner.

Here are a few tips which may help in choosing colors:

- Visit azalea nurseries when azaleas are in bloom, and keep a notebook of colors you like. Your notebook may contain descriptions such as "orange-red" "violet-red", "pale salmon-pink", "bright violet-red", "deep rose-pink", etc.
- Discuss azalea varieties and colors with azalea nurserymen (during the slow season only.)
- Increase your knowledge of color by reviewing the artist's "color wheel", (available in most art books). Understanding the relationship of colors to each other will help in putting them together in a pleasing manner.

Even though color in pigments differs in texture from color in flowers and plant colors are not "mixed", the effect of combinations has the same artistic effect. (Omit blues and greens for flower color harmony.)

Colors which are opposite on the color wheel give a highly intense effect when used together; for example yellow-orange and blue-violet. If one color is light and the other at full intensity, the effect is "quieter" than if both were at full intensity.

Color schemes are more pleasing if there is a variation of intensities — light and dark; full and bright. White is useful in all color schemes.

Many azalea colors are so brilliant that certain ones together create an unpleasant, violent effect (e.g., a flaming orange-red next to a screaming red-violet).

Before there was a wide variety of azaleas on the non-nursery market, 'Hinodegiri', 'Snow', and 'Coral Bells' were mainly what was available. We have a much wider choice now. People who did their home landscaping twenty or thirty years ago leaned heavily toward the "Hinos". Most were clustered around the foundation of the house like chicks around a mother hen. If the house was constructed with the terra-cotta color of brick (the orange-red tone), there resulted a clash with the violet-red "Hinos". An azalea with orange-red bloom, such as 'Sherwood Red', is more pleasing with this color of brick. "Hinos" would go well with light pink or pale buff brick.

If you are interested in more detailed treatment of color evaluation, two readily available references will be of assistance. The first is available in most libraries, "Explanation of Color Charts and Descriptive Color Names" in *Webster's Third New International Dictionary of the English Language Unabridged* (be sure to refer to the *third* edition of the G. and C. Merriam volume). This article follows the dictionary entry on 'color' and includes color plates. The color names listed in the "Explanation" are those of the Inter-Society Color Council — National Bureau of Standards (ISCC-NBS) Method of Designating Colors. In Fred Galle's book *Azaleas,* color names from other systems, (for example, Ridgway names in Glenn Dale azalea descriptions), have been translated into the ISCC-NBS system. A second reference, "Communicating Perceptions of Color" was published in the December 1985 issue of *The Azalean.*

The phrase "color scheme" has connotations of elaborate planning. But, simple plans are also satisfying. Personal taste is important. You may want a rainbow, a two color scheme, or even one color — effective if several tints, shades, sizes and shapes are used.

Some time ago, when I used to travel by bus to shop, I remember seeing a yard full of large azalea bushes, in different shades of lavender and purple. It was lovely. I hope it is still there.

TRANSLATION OF RIDGWAY COLOR NAMES INTO ISCC - NBS COLOR NAMES

Ridgway Names	ISCC - NBS Names
Acajou Red	grayish Red
Amaranth Pink	deep purplish Pink
Amaranth Pink, Pale	strong purplish Pink
Amparo Purple	strong to brilliant Purple
Amparo Purple, Light	brilliant Purple
Amparo Purple, Pale	light Purple
Aster Purple	deep purplish Red
Begonia Rose	deep yellowish Pink
Bishop's Purple	moderate reddish Purple
Bordeaux	dark purplish Red
Cameo Pink	light to brilliant purplish Pink
Carmine	vivid Red
Chartreuse Yellow	light greenish Yellow
Chrysolite Green	moderate Yellow Green
Citrine-Drab	light Olive
Eosine Pink	deep Pink
Eugenia Red	moderate Red
Geranium Pink	deep Pink, deep yellowish Pink
Hortense Violet	brilliant Purple
Indian Red	grayish Red
Jasper Pink	deep Pink, deep to strong yellowish Pink
Jasper Red	moderate Red
Jasper Red, Light	deep Pink, moderate Red
La France Pink	vivid Pink
Lilac	pale to light Purple
Liseran Purple	deep purplish Pink, light to moderate to strong reddish Purple
Livid Purple	moderate reddish Purple
Magenta	strong reddish Purple
Mallow Pink	strong purplish Pink
Mallow Purple	deep purplish Pink, vivid reddish Purple
Mallow Purple, Light	deep purplish Pink
Mathew's Purple	moderate to strong Purple
Mauvette	light purplish Pink
Neva Green	brilliant Yellow Green
Nopal Red	strong Red
Old Rose	moderate Red
Pansy Purple	dark purplish Red
Peach Red	moderate reddish Orange
Phlox Pink	light Purple
Phlox Purple	strong reddish Purple
Phlox Purple, Light	deep purplish Pink
Pomegranate Purple	grayish to moderate purplish Red
Pompeian Red	moderate Red
Purple (True)	vivid reddish Purple
Rhodamine Purple	vivid purplish Red
Rose Color	deep purplish Pink, vivid purplish Red
Rose Doree	deep yellowish Pink
Rose Pink	light purplish Pink
Rose Pink, Deep	strong purplish Pink
Rose Red	vivid Red
Rose-Purple	brilliant Purple
Rose-Purple, Pale	light Purple
Rosolane Purple	strong purplish Red
Rosolane Purple, Light	deep purplish Pink
Rosolane Purple, Pale	deep purplish Pink

Scarlet	strong reddish Orange
Scarlet-Red	vivid Red
Spectrum Red	vivid Red
Spinel Pink	strong purplish Red
Spinel Red	strong purplish Red
Thulite Pink	strong purplish Pink
Tyrian Pink	strong reddish Purple
Tyrian Rose	vivid purplish Red
Viridine Yellow	moderate to strong greenish Yellow

Research of color reference material and translation of Ridgway color names provided by Donald H. Voss of the Northern Virginia Chapter. Source: "Dictionary of Color Names", Kelly, Kenneth L. and Dean B. Judd. *Color: Universal Language and Dictionary of Names.* National Bureau of Standards (renamed the National Institute of Standards and Technology in 1988). Special Publication 440. Washington: U.S. Government Printing Office, 1976, 1978. pp 83-158.

HERBICIDE CONTAMINATED SOILS MAY BECOME A MAJOR NURSERY PROBLEM

Francis R. Gouin
Department of Horticulture
University of Maryland
College Park, MD 20742-5611

If you are going to be planting nursery stock in land that had been previously used for growing corn or soybeans, you had better research which herbicides have been used for growing those crops. A new herbicide, "Classic", now being widely used for growing corn and soybeans, has a 30 month residual. Even when used at the recommended rate of one-half ounce (½ oz.) per acre, it is deadly to most ornamentals and forest seedlings. Classic is being used alone and in combination with "Lorox" for the control of broadleaf weeds and grasses in the growing of soybeans and to some extent field corn. The only species of plants that are cleared for use on land that has been treated with Classic are corn, soybeans and cotton. No other species of plants can be planted on treated land for at least 30 months after the date of application.

We are dealing with a serious problem and one that has already caused losses and planting delays to foresters and Maryland nurserymen. Classic is manufactured by DuPont Chemical Co. for the sole purpose of controlling weeds in mostly agronomic crops. In the reforestation of marginal crop land on the Easternshore, Maryland foresters have suffered 90% to 95% losses of Loblolly pine seedlings planted approximately ten months after a single application of Classic at the recommended rate. After making this announcement at a recent nurserymen's meeting, a Maryland nurseryman called to inform me that a plot of land that he had hoped to plant this spring had been previously treated with Classic for soybeans in 1987.

I have thoroughly researched the literature in pesticide manuals on Classic, and it clearly states that no other crops other than those specified on the label should be planted in treated land. This is a very persistent herbicide and one that every nurseryman should be knowledgeable of, especially if they are leasing out their land to local grain growers or are growing grains as an alternate crop to keep the land productive.

If you are growing grains or are leasing your land for the growing of grains, recommend and use only short term herbicides that are cleared for use on those crops. Herbicides such as Surflan, Treflan, Lasso, Dual, Dacthal, Devrinol, and Eptam should be used. All of these herbicides have short residual properties, and all are cleared for use on growing grain crops. They may not give 100% weed control, especially to troublesome weeds, but they will not leave toxic residues after the crop has been harvested. Furthermore, land that will not grow weeds will not grow ornamental or other crops efficiently, either.

Efforts to produce weed-free ground around our crops may be creating more problems than we think. Over the years, many nursermen and growers of Christmas trees have called my attention to problems that appeared to have been nutritionally related. After much head scratching, I concluded a year or two later that the problem must have been herbicide related, especially when the problem disappeared without doing anything. I agree it is nice to see a weed-free nursery, but is it wise? There is strong evidence that the more soluble herbicides are leaching into our ground water supply. The overuse of herbicides and the use of persistant herbicides are no doubt affecting the environment, that environment that we are claiming to be keepers of.

We have known for some time that Atrex can remain in soils for three to four years and that corn is one of the most active degrading plants one can grow in Atrex contaminated soils. Nurserymen and growers of Christmas trees have known for some time that using Princep for three to four consecutive years will cause sufficient accumulation in soils to kill transplants unless the land is placed into green manure crops for one to two years before replanting. Atrex-treated soils that have been stocked pile have been reported to cause Atrex toxicity problems in greenhouse crops up to seven years after the time of application. Under anaerobic conditions, triazines like Atrex and Princep do not decompose.

The purpose of this article is to make you aware of a potentially new problem. I hope that this information will make you more environmentally aware and concerned. It is better to tolerate a few weeds and have healthy plants and clean water, than to have no weeds and have plants that appear nutritionally stressed and drinking water that is polluted with herbicide.

Reprinted from *Nurserymen's News,* May June 1988

BROOKSIDE GARDENS CHAPTER AZALEA TEST PROGRAM

William "Buck" Clagett
Derwood, Maryland

In the spring of 1982, the Brookside Gardens Chapter set up a testing program to experiment with selected azalea cultivars which had not been seriously tried in the Greater Washington Metropolitan area. The primary objective was to increase the number of azaleas available for growing in the area, particularly late bloomers.

Five home gardens were selected for the test, all within a 30 mile radius of Washington, D.C. The site included Silver Spring, Annapolis, Spencerville, and Mt. Airy in Maryland, and Springfield, Virginia. Although any two of these were only a few miles apart, the spread represented a significant variation in micro climates.

Sixty four clones were chosen from Nuccio's Nursery, in the Los Angeles area. All were Satsukis or Nuccio-propagated sports from, or seedlings of, Satsukis. None of them was known to have been evaluated for the Greater Washington Area.

The purchased plants were delivered to the Anacostia facility of the U.S. Botanical Gardens where ID numbers were assigned and cuttings were taken and rooted for distribution to the test sites. The intent was that each tester would have one or two rooted cuttings of each clone, with the remaining cuttings distributed to the chapter membership. Numbers 1, 35, and 53 had fewer than five cuttings each.

Each tester was allowed to develop a plan to suit his or her facilities and growing conditions. Two of the gardeners put representative cuttings of each cultivar directly into the garden, while protecting the rest in a greenhouse or cold frame. At two other sites, all the cuttings were held in cold frames or under lights over the first winter and represen-tive plants put into the ground the following spring. At the fifth site, Springfield, all plants were kept in cold frames for the first three years, with the aim of producing healthy plants for a good photographic record of each.

Separate from the test operations, additional cuttings were rooted, toward filling out any gaps as they developed. When an outside plant was lost, it was replaced from this source or from the protected supply. This practice was followed through the first three winters. Thus, when all plantlets of any one of the cultivars were lost at a site, replacement cuttings, if available, were supplied. However, a few clones proved hard to root, so testers were consistently short on these or lacked them entirely.

As can be seen, the absence of strict controls identify this effort more nearly as a field test than as a scientific experiment. Variations in methods among the testers, and from one year to another at the same site, were considerable. In spite of this informality, or perhaps in part because of it, the project has yielded useful information.

The 64 cultivars were to be tested for five years, with yearly reports sent to the test committee chairman for interpretation, evaluation, and consolidation. The five years have now elapsed, and the experiment with these 64 clones officially closed. Following is the Chairman's report on the project.

It is important to note that a five-year test of evergreen cultivars can support only tentative conclusions as to plant and bloom hardiness in a give geographic area. Aberations in winter weather over a longer span may bring differing assessments in some cases. On the other hand, so short a test may do an injustice to some of the cultivars involved. There is evidence that some plants become better able to cope with a colder climate if allowed to develop substantial root systems before being exposed to the full force of winter. Further experimentation might well show greater plant hardiness in some of the cultivars than these tests suggest. In spite of these limitations, the test provides clear indications that a number of the cultivars are well worth trying.

SUMMARY REPORT

Table 1 lists those clones which, as a group, performed best over the five-year period. Note that order within the list is numerical, placing no one above another in quality.

Table 1. THE BEST OF THE BEST

S-3	'Minato'	S-24	'Chinsai'
S-5	'Issho-no-Haru'	S-25	'Tomei-Nishiki'
S-6	'Beni-Kagami'	S-30	'Hakurei'
S-8	'Kobai'	S-32	'Dai-Setsu-Zan'
S-13	'Nuccio's Wild Cherry'	S-33	'Utamaru'
S-14	'Tensho-no-Hikari'	S-36	'Azuma-Kagami'
S-16	'Koshuku-no-Aki'	S-38	'Tama-no Hada'
S-17	'Mansaku'	S-39	'Yuki-no-Myojo'
S-20	'Yata-no-Sai'	S-49	'Dainanko'
S-21	'Nuccio's Polka'	S-63	'Nuccio's Mt. Baldy'

Table 2 lists the twenty clones with next best performance. Again ordering within the list is numerical

Table 2. THE BEST OF THE REST

S-2	'Koryu'	S-35	'Hino-Tsukasa'
S-4	'Summer time'	S-41	'Haru-no-Hikari'
S-7	'Zuio'	S-44	'Summer Sun'
S-10	'Yume'	S-45	'Unryu'
S-15	'Meicho'	S-47	'Nikko'
S-19	'Chitose-Nishiki'	S-48	'Kohan-no-Tsuki'
S-22	'Shiraito-no-Taki'	S-51	'Haku Shin'
S-23	'Juko'	S-54	'Gorin-Nishiki'
S-27	'Kagetsu-Muji'	S-55	'Osakazuki'
S-31	'Nuccio's Warm Heart'	S-62	'Kamiyo Goromo'

Table 3 lists those clones, The Survivors, which survived, but did little or nothing more. Test results show these to be unsuited to the Washington, D.C. area. Those which consistenly showed themselves unable to cope with the Washington area climate are listed as "The Hot-House Group".

Table 3. THE REST

THE SURVIVORS		THE HOT-HOUSE GROUP	
S-2	'Koryu'	S-1	'Mai-Ogi'
S-12	'Haru-Gasumi-White'	S-9	'Raiko'
S-26	'Lavender lady'	S-11	'Hayasahi-no-Tsutsuki'
S-28	'Takara'	S-18	'Nuccio's Misty Moon'
S-29	'Asahi-Zuru'	S-40	'Valo'
S-34	'Shiko-no-Kagami'	S-42	'Tsuki'
S-37	'Suzu'	S-53	'Ko-Kinsai'
S-43	'Kaho-no-Hikari'	S-61	'Kinpo'
S-46	'Gekkei-Kan'		
S-50	'Nanba-Nishiki'		
S-52	'Shiryu-no-Homare'		
S-56	'Haru-Gasumi'		
S-57	'Nuccio's Blue Moon'		
S-58	'Yamaksawa-no-Tsuki'		
S-59	'Korin'		
S-60	'Uchu-no-Tsuki'		
S-54	'Sanko-no-Tsuki'		

INDIVIDUAL CLONES

CODE KEY:

S# Test identification number; an arbitrary number, assigned for purposes of the test only.

BB# Page number of Bantam Book color photograph.

GB# Page number to description in *Azaleas,* by Fred C. Galle. (1st Edition).

P.H.# Plant Hardiness Rating:
4 — Well stuited for all micro climates in this area.
3 — Perfectly suited to areas inside the Beltway (Interstate Highway I495 and I95) and east and south. Probably would do well in the other areas but with damage in occasional very cold years.
2 — Probably hardy enough to survive most winters inside the Beltway. Most plants north and west, especially young plants, probably would be subject to some winter kill almost every winter.
1 — Should be grown no further north than Richmond, or maybe Miami.

BH# Bloom Hardiness Rating (1-4):
4 — Well bloomed every year, even small plants.
3 — Bloom seemed to improve with age. Bloomed at least two out of five years.
2 — Bloomed little or very sparsely over the five years of this test. Some had extensive bud burn.
1 — No bloom to date.

Bloom descriptions for plants that flowered well are based on observations of the test plants. Where the bloom was sparse or lacking entirely, as in the case of those clones rated BH1 or BH2 for bloom hardiness, bloom descriptions have been adopted from the Nuccio Catalog. Spelling, including hyphenation, is from Nuccio's Catalog.

S1 'Mai-Ogi' BB412 GB220 PH-1 BH-1
2½-3", white heavily speckled and striped with pink to red; many variations and solid.
Plant — slow growing.
The Japanese describe this one as tender. We found it not only very tender but hard to propagate. All remants of it were lost by the third year of the test.

S2 'Koryu' BB159 GB219 PH-3 BH-2
1½-2", light peach with occasional coral stripe.
Plant - spreading.
I have never observed a variegated bloom. Bloom is sparse.

S3 'Minato' BB--- GB220 PH-4 BH-4
2-2½", white center toning to orchid border; single to semi-double.
Plant - vigorous, open and upright
Some blooms petaloid rather than semi-double. Bloom is reminiscent of another Satsuki being sold in the area as 'Hosi'.

S4 'Summer Time' BB--- GB231 PH-4 BH-2
2-2½", rose pink, semi-double.
Plant - vigorous; upright. Foliage bronzes nicely in fall.
Grows and blooms like a Macrantha; sparse bloom.

S5 'Issho-no-Haru' BB--- GB216 PH-4 BH-3
3-4", pale orchid pink with occasional purple stripes and selfs.
Plant - upright, compact.
One of those plants that improves with age. Growth habit in my two plants, from two different sources, is more open than compact as described. Bloom impressive.

S6 'Beni-Kagami' BB--- GB209 PH-4 BH-3
2-2½", variegated, white striped salmon to orange red.
Sports heavily.
Plant - upright.
Bud burn observed each year.

S7 'Zuio' BB241 GB229 PH-3 BH-2
2-2½", white with occasional rose pink stripes.
Plant - spreading, compact.
A little peripheral winter damage.

S8 'Kobai' BB153 GB218 PH-4 BH-4
1½-2", rose red, like 'Red Slipper', with occasional white blotches. Outstanding black anthers.
Plant - slow, spreading.
No winter damage ever. Good form; good foliage. Bloom form that of 'Wakaebisu'. White blotches actually detract from quality of bloom.

S9 'Raiko' BB468 GB222 PH-2 BH-1
2½-3", white with occasional light purple stripes; some solids.
Plant - neither upright nor spreading.
One left, still sustaining winter damage. Japanese write that this is hard to establish.

S10 'Yume' BB459 GB229 PH-3 BH-3
2-2½", white with many variations of salmon pink and red, with selfs.

Plant - vigorous, open spreading, cascading; nice foliage.
Better with age.

S11 'Hayasahi-no-Tsutsuki' BB--- GB--- PH-2 BH-1
2-2½", rose pink.
Plant - bushy, spreading.
One left, still sustaining winter damage. No blooms ever reported.

S12 'Haru-Gasumi White' BB--- GB--- PH-2 BH-2
2½-3", white with orchid to purple stripes.
Plant - open, upright growth.
Like 'Haru Gasume'; may be a sport of that.

S13 'Nuccio's Wild Cherry' BB--- GB275 PH-4 BH-4
2½-3", cherry red.
Plant - fast, upright, compact; nice foliage.
Rose red like Glenn Dale 'Glamour'. Great foliage; good bloomer.

S14 'Tensho-no-Hikari' BB--- GB227 PH-4 BH-3
3-3½", white to blush pink, speckled and striped coral pink to red; selfs and some white centers.
Plant - upright, bushy.
Bloomed last two years. Very impressive bloom. Blotching has tie-dye effect. Some difficulty in propagating from cuttings (lost 22 out of 25 one year). A gem.

S15 'Meicho' BB437 GB220 PH-4 BH-3
3-4", coral pink with occasional deep pink marking.
Plant - open, spreading.
Did well everywhere except my yard. Book describes some variegation, though I have observed none in these plants.

S16 'Koshuku-no-Aki' BB--- GB219 PH-4 BH-4
2-2½", deep pink, occasional white center.
Plant - compact growth; tiny.
Very similar to two other azaleas, 'Narihira' (#1354) in Brookside collection and 'Yae-no-Tsuki' (#0880) featured in Bantam book, page 444.

S17 'Mansaku' BB--- GB220 PH-4 BH-4
2½-3", salmon pink with occasional white and deeper pink stripes.
Plant - upright growth.
Folds up under excessive heat.

S18 'Nuccio's Misty Moon' BB--- GB275 PH-2 BH-1
2-2½", light orchid lavender with deeper tones toward edge.
Plant - compact.
Hot house plant. Pretty, but did poorly in the test.

S19 'Chitose-Nishiki' BB301 GB210 PH-3 BH-3
1½-2", white with some stripes of light to rose pink; many variegations.
Plant - slow, spreading growth.

S20 'Yata-no-Sai' BB446 GB229 PH-4 BH-4
2-2½", blush pink center, deeper coral rose on edges.
Plant -upright.
Very narrow petals with splits between them.

S21 'Nuccio's Polka' BB--- GB275 PH-4 BH-4
1½-3", orange red, single.
Plant - compact; good foliage.
Like 'Amagasa', but much better blotch.

S22 'Shiraito-no-Taki' BB219 GB224 PH-3 BH-1
White with occasional lavender stripes; most blooms with stamens only.
Plant - vigorous, bushy, upright growth.
Split petal or no petal flowers. No blooms observed on any test plants.

S23 'Juko' BB209 GB216 PH-3 BH-4
2-2½", light orchid pink, stripes deeper; many variations.
Plant - slow, spreading.
Plant showed some winter burn; gets better as it ages.
Bloom hardier than the foliage.

S24 'Chinsai' BB--- GB210 PH-4 BH-4
1½-2", white with pink and rose variations. Occasional self; many unusual forms.
Plant - slow to medium spreading growth.
Observed selfs only. Sometimes displays split petal form.

S25 'Tomei-Nishiki' BB326 GB227 PH-4 BH-4
2-2½", variegated white to blush pink, speckled deeper pink; some selfs.
Plant - slow open spreading growth.
Reported plant habit contradicts Nuccio description. Plant is more dense than open.

S26 'Lavender Lady' BB--- GB230 PH-3 BH-2
2-2½", deep lavender; some white deep in throat.
Plant - spreading, compact, cascading growth.
hard to propagate. Attractive flower.

S27 'Kagetsu-Muji' BB--- GB216 PH-3 BH-2
2½-3", white with speckles and stripes of rose red.
Plant - spreading, bushy growth.
Six petals. Blotch is more like a stain and covers four of the six petals. Seems to get better with age. (This is a long standing & wide spread error. 'Muji" means "self". 'Kagetsu-Muji' is a mallow purple self, Ed.)

S28 'Takara' BB287 GB226 PH-2 BH-2
2½-3", white with occassional coral rose stripes; some selfs. Some white in throat.
Plant upright, bushy.
One bloom in five years.

S29 'Asahi-Zuru' BB16 GB209 PH-2 BH-2
2½-3", white bordered coral rose with some bordered an unusual light purple. Unusual color combination of lavender on a coral rose ground.
Plant - upright and open.
All of these managed to die these last two years; seemed to be affected by the dry summer.

S30 'Hakurei' BB354 GB213 PH-4 BH-4
1½-2", white, with pointed petals.
Plant - very slow, bushy growth. Very small.
Off white much like 'Misu-no-Yamabuki'. Very small plant.

S31 'Nuccio's Warm Heart' BB--- GB275 PH-3 BH-3
1½-2", warm pink, semi-double.
Plant -vigorous; compact.
Very similar to 'Macrantha Rose'. Nicely bronzed foliage in fall

S32 'Dai-Setsu-Zan' BB--- GB211 PH-4 BH-4
4½-5½", white.
Plant - vigorous, upright and open.
Great flower; smallest 4½", largest 6" on my plant. For the first 24 to 48 hours, the edge of the bloom truns up, much like that of the water lily.

S33 'Utamaru' BB39 GB--- PH-4 BH-4
1½-2", blush pink with deeper throat.
Plant - very slow, spreading growth; dense, dark green, small, foliage.
Very good plant; nice peach and light peach shade combination.

S34 'Shiko-no-Kagami' BB195 GB224 PH-3 BH-1
2-2½", light lavender center tipped purple. Many tones of lavender and purple; some selfs.
Plant - tiny; slow, spreading growth.
Has never bloomed in five years. Buds burn easily.

S35 'Hino-Tsukasa' BB380 GB214 PH-3 BH-2
2-2½", deep salmon.
Plant - upright, compact growth.
Bloomed in fifth year. Not spectacular.

S36 'Azuma-Kagami' BB21 GB209 PH-4+BH-4+
2½-3", light pink shading deeper with many variations.
Plant - vigorous upright growth.
Blooms much larger and later than Kurume of the same name.

S37 'Suzu' BB246 GB226 PH-2 BH-3
2½-3", white speckled and striped orchid pink and rose red; many variations.
Plant - bushy.
Dependable bloomer. Peripheral winter damage to foliage every year.

S38 'Tama-no-Hada' BB--- GB226 PH-4 BH-3
1½-2", white with coral stripes and occasional selfs.
Plant - vigorous and open growth.
Has six petals; very impressive flower.

S39 'Yuki-no-Myojo' BB--- GB229 PH-4 BH-3
Creamy white with lavender and purple flecks; small; single.
Plant - slow bushy growth.
Bicolor (lavender edge with white center) only bloom observed here.

S40 'Valo' BB--- GB231 PH-1 BH-1
Orchid.
Plant - compact.
No healthy plants left on test.

S41 'Haru-no-Hikari' BB--- GB214 PH-3 BH-2
Soft pink to deep coral, with many variations.
Plant - vigorous open growth.
Earliest to bloom; self only; strong pink. Bloomed one year out of five.

S42 'Tsuki' BB315 GB227 PH-1 BH-1
White with occasional pale orchid pink rose with orchid rose stripe; many variations; some blooms with six petals.
Plant - no comment.
No plants left on test.

S43 'Kaho-no-Hikari' BB70 GB216 PH-2 BH-1
White with occasional deep pink stripes and some selfs.
Plant - slow; very bushy, upright growth.
One plant left on test.

S44 Summer Sun'
(Kogane') BB--- GB231 PH-4 BH-2
2-2½", orange red.
Plant - upright bushy growth.
Macrantha type; bronzes well. Sparse bloomer. Very similar to 'Macrantha Orange' sold by Kingsdene Nursery.

S45 'Unryu' BB--- GB228 PH-3 BH-3
1½-2", pale lavender to white center, deeper lavender edges.
Plant - very compact growth; narrow twisted leaves.
Bloom like 'Mme. Butterfly' in pattern and color.

S46 'Gekkei-Kan' BB126 GB212 PH-2 BH-1
3-4", white with many solid pale pinks and pale pink tipped with coral rose.
Plant - upright growth.
Blooms have never been reported. Seems to get better with age. Japanese label this one tender.

S47 'Nikko' BB343 GB222 PH-3 BH-2
1½-2", light salmon pink with occasional white stripes to blush pink. Occasional solid rose.
Plant -very slow, somewhat compact growth.

S48 'Kohan-no-Tsuki' BB174 GB218 PH-3 BH-4
2½-3", orange red with variable white center and wide petals.
Plant - bushy, upright growth.
Improves with age. Very impressive flower, of 'Margaret Douglas' type. Keep indoors for a couple of years for a good start.

S49 'Dainanko' BB--- GB211 PH-4 BH-4
White with orchid rose pink speckles and stripes; occasionally pale orchid.
Plant - very slow; compact.
Rose pink color is actually many rose pink dots on white ground.

S50 'Nanbe-Nishiki' BB338 GB221 PH-3 BH-1
Variegated white, striped dark rose. Many variations and occasional selfs.
Plant slow spreading.

S51 'Haku Shin' BB349 GB213 PH-3 BH-3
1½-2", white to blush pink; single.
Plant - bushy growth.
Better with age.

S52 'Shiryu-no-Homare' BB222 GB--- PH-2 BH-2
2-2½", purple, single with pointed and narrow spider petals.
Plant - vigorous, upright; twisted foliage.

S53 'Ko-Kinsai' BB--- GB218 PH-1 BH-1
Coral salmon; small, single, narrow, irregular split petal.
Plant - slow, bushy with extremely small foliage.
Nothing left on test. Hard to propagate.

S54 'Gorin-Nishiki' BB178 GB212 PH-3 BH-4
2½-3", variegated, white with heavy speckles and reddish purple stripes; occasional self.
Plant -upright growth.
Better with age.

S55 'Osakazuki' BB49 GB222 PH-3 BH-3
2-2½", deep rose pink.
Plant - very bushy growth; bronzes well in fall.
Blooms very sparse. Foliage much like Glenn Dale 'Fashion'.

S56 'Haru-Gasumi' BB363 GB214 PH-3 BH-2
2½-3", orchid pink with many variations of orchid and rose purple markings.
Plant - vigorous open, upright growth.
Plant more hardy than 'Hanru Gasumi White'.

S57 'Nuccio's Blue Moon' BB--- GB275 PH-2 BH-2
2-2½", rich lavender, sometimes fading to white center.
Plant - vigorous; compact.
One plant reported thriving in Northern Virginia and three in Silver Spring.

S58 'Yamakawa-no-Tsuki' BB447 GB228 PH-2 BH-1
2½-3", white to pink with white edges and occasional orange red stripes.
Plant - vigorous, spreading growth.
Japanese label this one as tender

S59 'Korin' BB160 GB219 PH-2 BH-1
1½-2", rose pink.
Plant - very compact growth.

S60 'Uchu-no-Tsuki' BB40 GB--- PH-2 BH-1
2½-3", white speckled and striped coral and orange red; an occasional bicolor.
Plant - slow, bushy growth.
Japanese label this one as tender.

S61 'Kinpo' BB116 GB218 PH-1 BH-1
2½-3", white with creamy center.
Plant - compact; upright.
Very impressive. The closest evergreen to yellow I have seen. Very large chartreuse blotch makes garden effect very pale yellow. Japanese describe this one as tender, and it is.

S62 'Kamiyo Goromo' BB--- GB216 PH-3 BH-4
White, heavily striped rose pink; occasional selfs.
Plant - medium, upright, open growth.

S63 'Nuccio's Mt. Baldy' BB--- GB275 PH-4 BH-4
1½-2", tubular, white with throat occasionally spotted rose red.
Plant - compact growth; rolled leaves.
Not a really attractive bloom but has a very unusual appearance. The dots in blotch area are red, and there are few enough to count — 12 to 20 in bloth area. Blooms profusely.

S64 'Sanko-no-Tsuki' BB188 GB223 PH-3 BH-1
2½-3", white with occasional deep rose stripes; some selfs.
Plant - spreading, bushy growth.
Seems to bet better with age. Japanese label this one tender.

Buck Clagett is a Founding member of the Society, president of the Brookside Gardens Chapter, and has been Director of the Chapter's Azalea Test Project since its inception.

PROPAGATION OF AZALEAS FOR CONTAINER AND FIELD PRODUCTION

Ron St. Jean
Portsmouth, Rhode Island

Propagation of azaleas at Van Hof's Nurseries begins about the last week of August, when cuttings are taken either from bedded plants, containers, or lined-out material. Having these choices of locations assures that good healthy cuttings will be taken.

CUTTING PREPARATION AND STICKING

After gathering the cuttings, they are brought back to the nursery where the lower leaves are stripped. A fresh 45° cut is made, and then #2 Hormodin powder is added.

Although the length of the cutting is not critical, we believe that a 5½ inch cutting is ideal for the following reasons:

1) For ease of handling and ease when sticking into the peat and perlite medium.
2) Transplanting the rooted cutting into the growing bench.
3) Branching is low to the soil level when the cuttings begin to grow.

The cuttings are then transferred to the propagation house where they are stuck into a bench of peat:perlite (1:1, v/v). We have found that a depth of 6 inches of peat and perlite provides good drainage. When spacing the azalea cuttings, we use a spacing stick for this process to get a 1¼ x 1¼ inch spacing.

MISTING

Mist is provided by using the Phytotronics control system. This system allows for settings from two to 64 minutes between misting cycles and settings from two to 16 seconds of "on" time. A 24 hour clock regulates the time the misting begins and ends. The misting sequence begins at 9 a.m. and ends at 5 p.m. The propagation house is shaded with a 51 percent shade cloth, so the mist control is adjusted daily. Ventilation fans are set for 80°F and, when needed, heat is set at 70°F.

Within five to six weeks, rooting has taken place and the mist is gradually eased off until it is completely shut off after seven to ten days. The shade cloth is removed from the house at this time.

TRANSPLANTING

The rooted cuttings are transplanted around the end of November to a bench containing peat:perlite (1:1, v/v). Spacing is now 2½ x 2½ inches. These plants will be kept at 45°F until February when the greenhouse temperature will be raised to 70°F. At this time we also begin to fertilize. Later, in May, the house will be shaded with a 51 percent shade cloth.

FERTILIZATION

Fertilization with Peter's 20-20-20 is done using a Gewa injector, six gallon model. We use the number 3 setting on the Gewa injector, which provides a ratio of 1 to 100 and a concentration of 16 ounces of fertilizer to one gallon. Fertilization is done every other watering.

TRIMMING

Trimming begins when we pinch the flower buds in February. This promotes rapid growth of new shoots and also keeps flowers from decaying in the bench. When the new growth has matured, half of the new growth is cut off with shears. Hand shearing ensures that each plant is trimmed correctly. The next two or three times the azaleas are trimmed will be with electric hedge shears. After each trimming, we use a Shop-Vac to pick up the cut material. This helps in preventing disease, especially as the plants grow larger. The last trimming is done before the plants are removed from the propagation house.

TRANSPLANTING INTO CONTAINERS

Transplanting the azaleas into containers is done in May or June. Plants are pulled from the propagation house and placed in flats. Then they are brought out to the potting machine and put into a 1.5 gallon container. We use a mix consisting of 16 yards washed sand, 50 bales of 6 ft^3 peat moss, 360 pounds high magnesium lime, and 43 pounds triple superphosphate.

After planting, a top dressing of twelve grams 18-6-12 Osmocote, nine month formulation, is used. Containers are placed pot-to-pot for the first year. Then they are spaced and trimmed for the second year.

Winter care of azaleas begins in early November. Plants are irrigated, then poly is used to cover the shelters. Irrigation is continued through the winter as needed.

BED PLANTING

Rooted cuttings are bedded out ideally in April to May in beds 62 inches wide. They are spaced at approximately six inches on center.

LAND PREPARATION AND PLANTING

Land is prepared by using 800 pounds per acre of 19-19-19, (nitrate form of nitrogen.). Beds are staked out roughly 300 feet long. Fifteen bales of peat moss are broken down inside the beds, then rototilled to produce a 12 inch depth of soft soil.

Planting is done by hand using trowels. Aged sawdust is used as mulch, and 50 percent shading is provided by wood lath shades. We use an herbicide (Devrinol 50 percent wetable powder) at eight pounds per acre. In the fall of the same year, an additional feeding of 800 pounds per acre of 15-15-15 ammoniated fertilizer is used for a quick intake and retention of nitrogen to become available when plant activity begins the following spring.

In the spring, about the third week of March, shades are removed and another herbicide treatment, Surflan, is used. When bud elongation becomes evident, urea is applied at the rate of 150 to 170 pounds per acre and irrigated into the soil. Factors such as rainfall, foliage color and temperature are considered before further application of urea. Four to five treatments of urea are possible. Azaleas will stay in the beds for two years.

FIELD PLANTING

Land preparation and herbicide and fertilizer applications are the same as in bed planting. The plants are lined out using a Two-Row planter. Planting is done during June and July. The azaleas will stay in the field for three years.

FALL DIGGING

When possible, fall digging begins at the end of October. The plants are balled and burlapped, loaded on trucks, watered, then stored in a sheltered area.

GENERAL INFORMATION

The azaleas grown at Van Hof Nurseries, Inc. are: *Rhododendron mucronatum* [syn. *R. ledifolium var. album*], *R. x stewartstonianum,* and the cultivars *R.* 'Carmen', 'Cornell Pink', 'Delaware Valley White', 'Girard's Hotshot', 'Hino Crimson', 'Kaempo', 'Mother's Day', and 'Rosebud'. *Rhododendron yedoense* var. *poukhanense* is grown from seed. The seed is collected in the fall from our field plants. The seed is sown in flats in November and then transplanted into flats in February. There are 130 plants per flat. These plants will be bedded out in the spring. We grow 30,000 azaleas a year, with 12,000 for containers and 18,000 bedded out.

Reprinted from *Int. Plant Propag. Soc.* 36:605-607 (1987).

PROPAGATING *RHODODENDRON YAKUSHIMANUM* BY CUTTING-GRAFTS

Roger Peek
Bere Alston, Yelverton, Devon, England

Some cultivars are particularly difficult to root from cuttings, and we therefore have to look at alternative methods of propagation. This paper will discuss the "cutting-graft technique" which we have successfully used for rhododendrons.

The species with which we have done most work is *Rhododendron yakusimanum,* which forms a compact, dome-shaped bush up to about 1.2 metre high and the same across. The young growths are silvery, and the mature leaves are dark green above with a brown indumentum underneath. It flowers prolifically in a compact truss, rose-coloured in bud, opening pink, and maturing to white. This species is only found in the wild on the wet and windy mountains of Yakushima Island, Japan. It was introduced to the United Kingdom in 1934 and has become a very desirable plant.

Our first attempts at propagation were from cuttings. Cuttings were prepared in the usual way, wounded, and treated with a hormone rooting powder and then stuck in seed trays containing a peat/sand mixture. It was unusual to find roots being produced, although even after 12 months the cuttings were in good condition. The few cuttings which rooted tended to grow very slowly. This led to the consideration of other methods of propagation, one of which is the cutting-graft technique.

A *graft* is made when a piece of living tissue (a *scion*) is transplanted into a slit on another plant (the *stock*) so that the scion can get sap from the stock and a union is eventually produced.

A *cutting-graft* is exactly what it says. A scion is grafted onto an unrooted cutting which is then stuck as usual into compost in a tray. This is a different method from that used to graft a scion onto a root.

METHODS AND MATERIALS

The materials required are understocks, scions, grafting tape, and seed trays filled with compost. In addition, a sharp knife is required.

The understocks used can be of any *Rhododendron* which is compatible with *R. yakusimanum* and which is easy to root. Cultivars found to be suitable are 'Cunningham's White', 'Christmas Cheer', and *R. ponticum.* There may be a preference to use *R. ponticum* because it is more readily available and the variety diameter of the stock material makes it easy to match with the scions.

Scion material is in short supply and therefore every piece of the current year's growth is used. The ideal size for understock and scion is pencil thickness.

A piece of understock material about four inches long is selected, and all the leaves, apart from two at the top, are removed. If the top of the shoot is used, the apex (or growing tip) is removed. Any buds on the stem of the cutting below the two leaves are now removed with a sharp knife. This is done by making a small angled cut above and below the bud in a v-shape, with the result that the bud drops away. The base of the cutting is then wounded in the normal way.

The top of the cutting is then prepared to accept the scion. A side veneer graft is normally used, and the first step is to make an incision about one inch long in the side of the cutting, starting immediately above the lower of the two leaves at a 20° angle. A second cut is then made, starting 1/3 to 1/2 inches higher up the stem at a 15° angle to met the first cut at its bottom end. A very thin wedge of the stock is therefore removed, exposing as much cambium as possible and making it easy to insert the scion.

A suitable scion about the same thickness as the understock is then selected. Two cuts are made at the base of the scion of the same length as the cuts on the understock. The cuts are made at slightly greater angles than on the understock so as to form a tapered wedge when compared to the understock.

The scion is then inserted into the understock in such a position that the cambium layers of the stock and the scion are in contact. The graft is then tied to hold the two parts together. Tape is used to wrap around the stem of the understock, care being taken to avoid tying too tightly and leaving small gaps between each wrap around the stem. It is also possible to use the saddle or inverted saddle graft.

To finish the preparation of the cutting-graft, the leaves of either the stock or scion may be reduced in size to decrease transpiration and overcrowding in the seed trays. The cutting-graft is now inserted in a seed tray filled with a mixture made up of three parts sand and one part peat. A rooting hormone is used, made up of equal parts of Seradix No. 3 and Captan; 40 cuttings are inserted in each tray.

The seed trays are placed on the propagation bench with bottom heat at about 18°C. They are only slightly watered-in and then covered with thin gauge polythene making sure the polythene goes down the side of the trays so that high humidity is maintained. The polythene is removed at least every other day when trays are checked for drying-out and any debris is removed. The propagation bench is watered once a week to make sure that high humidity is maintained under the polythene. Care has to be taken to shade the cuttings in sunny weather to avoid scorching. Pests and diseases are controlled by our routine glasshouse spraying programme and no special problems are experienced.

During the last two years propagation has been carried out in the fog unit, thereby eliminating the need to use polythene. The amount of work involved in looking after the cuttings is then much reduced, and results have been very satisfactory.

When the cuttings are rooted, they are weaned prior to potting. After emptying the cutting tray, the two leaves and buds which were left at the top of the cutting are removed. The two cuts which were made on the stock are painted with Arbrex, and the tie taken off. Any buds which may have been left when the cutting was made, or which have subsequently formed, are also cut away. The cuttings are then potted using a lime-free compost or they can be planted into beds.

Depending on the season, grafting is done either during September or in early October. Cuttings are rooted by about the end of February, although they are not potted until July, which fits in with our programme on the nursery.

Compared to grafting onto *R. ponticum* seedlings as understocks, the main disadvantages of the cutting-graft method are that it is a little slower to produce a finished plant, and that sometimes the understock does not root for some reason.

The main advantages are that less space is required for propagation, it is a very clean technique, and the cuttings are easy to handle. In addition, there is a larger choice of understock material and timing is not quite so critical when compared to using seedlings as the understock.

CONCLUSIONS

So long as the graft is executed carefully and the cambium layers are lined-up properly, there are very few problems with this method. Because *Rhododendron ponticum* roots easily, it has proved to be a useful technique, with success rates in excess of 70 percent.

This method can also be used to propagate other *Rhododendron* cultivars and for *Rhododendron* cultivars and for *Camellia reticulata* cultivars, which are difficult to root.

Reprinted from *Int. Plant Propag. Soc. Comb. Proc.* 36:330-332 (1987).

BREEDING DECIDUOUS AZALEAS FOR THE GULF SOUTH

John Thornton
Franklinton, Louisiana

In 1972, I met Ruby and Mel Williams, who then lived in nearby Angie, Louisiana. They had been crossing *Rhododendron austrinum* with the Knaphill-Exbury hybrids. B.Y. Morrison had suggested to them that these crosses might be productive ones. Mr. Morrison had shown them how to pollinate flowers, and they in turn, showed me.

In 1973, I began breeding deciduous azaleas of the Luteum subseries for the climate of the Gulf South. The southeastern native azaleas were crosses among themselves. Crosses included:

prunifolium x *serrulatum*	*serrulatum* x *bakeri*
prunifolium x *bakeri*	*serrulatum* x *alabamense*
prunifolium x *canescens*	*serrulatum* x *canescens*
prunifolium x *flammeum*	*serrulatum* x *austrinum*
prunifolium x *alabamense*	*serrulatum* x *flammeum*
prunifolium x *austrinum*	*calendulaceum* x *flammeum*
flammeum x *canescens*	*calendulaceum* x *austrinum*
flammeum x *austrinum*	
flammeum x *alabamense*	

None of these crosses yielded outstanding flowers except the cross of *calendulaceum* x *flammeum.* This cross produced extremely vigorous plants that had flowers resembling very good *calendulaceum.* They bloomed in late March at the same time as *canescens* and a full month before their parent plants.

The following crosses were also made:

canescens x *occidentale*	*canescens* x *japonicum*
alabamense x *occidentale*	*alabamense* x *japonicum*
flammeum x *occidentale*	*flammeum* x *japonicum*
prunifolium x *occidentale*	*prunifolium* x *japonicum*
serrulatum x *occidentale*	*serrulatum* x *japonicum*
canescens x *luteum*	*canescens* x *molle*
alabamense x *luteum*	*alabamense* x *molle*
flammeum x *luteum*	*flammeum* x *molle*
prunifolium x *luteum*	*prunifolium* x *molle*
serrulatum x *luteum*	*serrulatum* x *molle*

Dr. Frank Mossman made the following crosses with pollen I sent him, and he shared the seed with me.

occidentale x *austrinum*	*occidentale* x *canescens*
occidentale x *alabamense*	*occidentale* x *flammeum*
occidentale x *prunifolium*	*occidentale* x *serrulatum*

All of the above crosses yielded seed; however, only the cross of *occidentale* x *austrinum* made by Dr. Mossman produced plants that have survived. Most seed of the above crosses had poor germination. All that germinated eventually died.

The *occidentale* x *austrinum* plants have pink to cream flowers with a yellow flare. They are highly self-fertile and set seed profusely. In flower, they are inferior to both of their parents. However, they undoubtedly will be useful for further breeding.

Several Knaphill-Exbury hybrids have been crossed with the southeastern native azaleas. Only the Knaphill-Exbury hybrid x *austrinum* crosses have produced plants that have survived. The Knaphill-Exbury hybrids x *canescens, alabamense, flammeum, prunifolium* and *serrulatum* crosses produced plants lacking in vigor that died within a few years.

The Knaphill-Exbury x *austrinum* plants have proven to be excellent growers with very attractive flowers. Many enthusiasts in the south have made these Knaphill-Exbury x *austrinum* crosses with the same results. Second and third generation plants of these crosses should produce plants equal in beauty to the Exburys.

DISCUSSION

In these breeding experiments, it was discovered that *austrinum* refused to accept pollen of any of the species put on it. The following attempted crosses did not produce seed:

austrinum x *canescens*	*austrinum* x *luteum*
austrinum x *flammeum*	*austrinum* x *japonicum*
austrinum x *alabamense*	*austrinum* x *molle*
austrinum x *prunifolium*	*austrinum* x *occidentale*
austrinum x *serrulatum*	

Austrinum pollen however, was readily accepted by the above species. The resulting plants that have flowered have been completely sterile both as pollen and as seed plants except for *occidentale* x *austrinum.*

In contrast to the species, *austrinum* readily accepts pollen of the Knaphill-Exbury hybrids. The resulting plants are highly self-fertile.

The above observations on *austrinum* bring up interesting questions as to the parentage of the Knaphill-Exbury hybrids. *R. austrinum* is not listed as one of the parents of the Knaphill-Exbury hybrids. It readily accepts pollen of the Knaphill-Exbury hybrids, but refused to accept pollen of the individual species that reportedly make up these hybrids. Could it be that the Knaphill-Exburys all have *austrinum* blood in them? Is there another explanation?

Dr. John T. Thornton is member of the Louisiana Chapter.

ACIDITY OR ALKALINITY OF SOLUBLE FERTILIZERS

David R. Hershey
From MD Greenhouse Growers' News Vol. 4, No. 3

The pH of a growing medium often changes during crop growth due to the acidity or alkalinity of the irrigation water and/or the fertilizer used. Irrigation water acidity or alkalinity can be easily measured using test kits available from scientific or greenhouse supply companies. However, the precise magnitude of the acidity or alkalinity produced by a particular fertilizer on a particular crop is not easy to predict because of the complex reactions causing fertilizers to produce acidity or alkalinity

The acidity or alkalinity, also called basicity, of a fertilizer is often expreseed in terms of the pounds of pure limestone (calcium carbonate) per ton of fertilizer or per pound of nitrogen (Table 1). Since greenhouse growers typically add liming or acidifying materials in units of pounds per cubic yard, the equivalent acidity or alkalinity is also expressed in units of pounds of calcium carbonate per cubic yard of 200 ppm nitrogen solution. The two nitrate fertilizers, potassium nitrate and calcium nitrate, are considered alkaline or basic. In contrast, fertilizers containing ammonium or urea are acidic. Most common commercial soluble fertilizers contain appreciable amounts of urea or ammonium, so they are acidic. However, they are much less acidic than fertilizers containing only ammonium. For example, ammonium sulfate has 2.5 times the acidity of Peter's 20-20-20, per unit of nitrogen.

Table 1. Equivalent acidity or alkalinity of common greenhouse fertilizers.

Fertilizer	Pounds of calcium carbonate per ton of fertilizer	per lb. of nitrogen[z]	per cubic yard of 200 ppm nitrogen[y]
	Equivalent alkalinity		
Calcium nitrate (15-0-0)	400	1.33	0.45
Potassium nitrate (13-0-44)	520	2.00	0.67
	Equivalent acidity		
Ammonium nitrate (33-0-0)	1180	1.79	0.60
Ammonium sulfate (21-0-0)	2200	5.24	1.76
Monoammonium phosphate (11-48-0)	1300	5.91	1.99
Diammonium phosphate (20-50-0)	1500	3.75	1.26
Urea (46-0-0)	1680	1.83	0.62
Peter's (20-20-20) [5.61/3.96/10.43][x]	597	1.49	0.50
Peter's (20-10-20) [12.0/8.00/0][x]	422	1.06	0.36
Peter's (15-15-15) [7.23/2.97/4.80][x]	261	0.87	0.29

[z] Divide lbs. calcium carbonate per ton fertilizer by (20 x % nitrogen).
[y] Multiply lbs. calcium carbonate per lb. nitrogen by 0.3368.
[x] Percent by weight nitrate, ammonium and urea nitrogen, respectively.

According to Table 1, irrigating a cubic yard of growing medium with 0.25 cubic yards of 220 ppm nitrogen solution containing Peter's 20-10-20 will neutralize 0.09 pounds of calcium carbonate. Thus, daily irrigation of a medium amended with limestone at 5 pounds per cubic yard will neutralize all the added limestone in 8 weeks. With ammonium sulfate instead of 20-10-20, the added limestone would be neutralized in just 11 days. However, the data in Table 1 are calculated values which can only approximate the actual acidity or alkalinity produced in a particular situation. To explain why the acidity or alkalinity of a fertilizer may vary requires a consideration of the reactions of nitrate, ammonium, and urea that produce acids or bases.

Nitrate - NO_3^-

When nitrate is the major source of nitrogen fertilizer, the medium pH often increases. This is termed physiological alkalinity, because the plant root is responsible for the bases that raise pH. Roots excrete basic anions, such as hydroxyl (OH^-) or bicarbonate (HCO_3^-), when the root absorbs more anions than cations. With nitrate as the major nitrogen source, more anions, such as nitrate, sulfate, and phosphate, are usually absorbed than cations, such as ammonium, calcium, potassium, and magnesium. A plant must contain the same numbers of cations and anions, so the root excretes the basic anions to attain the balance.

The magnitude of the alkalinity produced in this manner will depend largely on the plant, so the alkalinity may be more or less than that predicted by Table 1. Some plants absorb a greater excess of anions than others, and a few species apparently do not absorb excess anions, even with all nitrogen as nitrate. Unfortunately, the relative ability of floriculture crops to absorb more anions than cations has not been thoroughly studied.

Ammonium - NH_4^+

Part of the acidity due to ammonium is also caused by the plant root. Unlike the excess anion absorption which often occurs with most of the nitrogen as nitrate, there is usually excess cation absorption when a substantial part of the nitrogen is supplied as ammonium. When more cations than anions are absorbed, the root excretes hydrogen ions (H+), which increases the acidity. This process is termed physiological acidity.

Ammonium may produce a greater amount of acidity if it is nitrified rather than being absorbed by the root directly. Nitrification is the bacterial conversion of ammonium to nitrate as shown in equation [1].

$$[1]\ NH_4^+ + 2O_2 = NO_3^- + H_2O + 2H^+$$

For each ammonium converted to nitrate two hydrogen ions are produced. This is twice the acidity produced by each excess cation absorbed by the root. Nitrification is influenced by numerous factors including the temperature, pH, aeration, and moisture content of the growing medium. A population of nitrifying bacteria must also be present for nitrification to occur. Nitrification rates also vary depending on the medium.

Plant ammonium toxicity is a common problem. Ammonium may be converted to toxic ammonia (NH_3) in the plant, which may be the mechanism of toxicity. In some cases, however, ammonium toxicity may be due mainly to the acidity produced since low pH is detrimental to roots and inhibitory to nitrification, which prevents conversion of potentially toxic ammonium to harmless nitrate.

Urea - $CO(NH_2)_2$

Urea is a nonionic molecule that can be hydrolyzed by the enzyme urease to produce ammonium carbonate, as shown in equation [2]. The ammonium carbonate then hydrolyzes to produce ammonium, carbon dioxide and hydroxyl ions, as shown in equation [3].

[2] $CO(NH_2)_2 + 2H_2O = (NH_4)_2CO_3$

[3] $(NH_4)_2CO_3 + H_2O = 2NH_4^+ + CO_2 + 2OH^-$

One hydroxyl ion (OH^-) is produced for each ammonium when ammonium bicarbonate is hydrolyzed, so urea is initially basic in reaction. Nitrification of the ammonium produced in equation [3] makes the net effect of urea acidic (Table 1). Because of the initial alkalinity, urea is less acidic than fertilizers containing all their nitrogen as ammonium.

As with nitrate and ammonium, the amount of acidity produced by urea depends on a number of factors. Growing media differ in the rate of urea hydrolysis. If urea is hydrolyzed to ammonium and no nitrification occurs, then the net effect of urea could be alkaline.

pH MANAGEMENT

Because the exact magnitude of fertilizer acidity or alkalinity cannot be predicted, managment of media pH requires periodic pH measurement and adjustment of fertilizer source if the pH changes. For example, if the medium pH decreases, then a less acidic fertilizer should be utilized. When the pH increases, as often occurs when the irrigation water has high alkalinity, then a more acidic fertilizer could be employed. Thus, fertilizer acidity can be used to counteract irrigation water alkalinity. Peter's 20-20-20 fertilizer at 200 ppm nitrogen (Table 1) produces enough acidity (0.50 pounds calcium carbonate per cubic yard) to neutralize an irrigation water alkalinity of 297 ppm of calcium carbonate. (To convert pounds per cubic yard of calcium carbonate to mg/liter or ppm, multiply by 594.) Remember that the values in Table 1 can only be considered approximations. Any changes in fertilizer source must be made after consideration of the crop tolerance to different nitrogen sources. Some plants, such as poinsettia and geranium, are considered intolerant of ammonium, so they should not be given fertilizers with less than about 50% of the nitrogen as nitrate.

POTENTIAL DEVELOPMENTS

Considering the importance of medium pH, there is limited knowledge of the level of fertilizer acidity or alkalinity encountered in floriculture crop production. With greater knowledge, better control of medium pH and crop nutrition will be possible. Potential future developments include inoculation of media with urease enzyme to provide a predictable and rapid rate of urea hydrolysis. treatment of media with nitrifying bacteria or nitrification inhibitors to promote or inhibit nitrification, respectively, and breeding or selection of plants that thrive with nitrate as the only nitrogen source and absorb equal numbers of cations and anions so pH remains constant. More exotic innovations might include transfer of nitrification genes into plant roots so that the crop could nitrify ammonium rather than depending on bacteria, or nitrification of relatively inexpensive urea and ammonium to the more costly nitrate prior to fertilization of the growing medium.

Reprinted from Nurserymen's News, May-June 1988.

WHAT AZALEAS DO YOU RECOMMEND?

William C. Miller III
Bethesda, Maryland

Upon first glance, this may seem like a reasonably simple question. The facts of the matter are that it is a difficult question to answer due to a multitude of important considerations. To begin with, no two requirements or tastes are exactly alike. Secondly, recommended varieties should be viewed as a matter of personal opinion; that is, twelve experts could be expected to produce twleve different lists. Recommendation lists can be helpful if one understands that such lists constitute a starting point and not a guarantee or a short cut to success. Some "homework" has to be done, and some decisions have to be made if one is to be happy with the results. Flower color (red, pink, white, purple, yellow, orange, flecked, striped, sectored, bordered), flower form (single, double, semidouble, and hose-in-hose), plant habit (size and shape), leaf characteristics (deciduous or evergreen), and period of bloom (April, May, June, July, Fall) are some of the primary characteristics to be considered when shopping for azaleas.

The list of recommended cultivars that follows is limited to the complex aspect of color and includes varieties of differing plant habit, period of bloom, and flower form; all are known to grow locally. Color was chosen as the focal point because it is particularly important, much misunderstood, and a difficult subject to convey. There is considerable latitude in how color is perceived by different people, and there are many colors to choose from. If precise color is important to you, and I suggest that it should be, then it is a good idea to see an azalea in bloom before you buy it. What is "pink" to me may be a disappointing "salmon" to you, and your opinion and color perception are the ones that really count. As the general public has become more knowledgable, it has begun to alter its buying habits. No longer are people satisfied with buying "reds, whites, and pinks". Instead there is an increasing demand for specific cultivars by name, and the trade is beginning to respond.

Another major consideration is to ensure that you select varieties, or "cultivars", which are hardy or appropriate for your area. Many azaleas, like the beautiful "forcing" azaleas routinely available from florists, are not sufficiently hardy to survive the rigors of the Washington Metropolitan area and therefore are unsuitable for landscape purpose.

One of the best ways to select azaleas is to visit nearby public gardens. Locally, the McCrillis Garden in Bethesda, Maryland; Brookside Gardens in Wheaton, Maryland; and the United States National Arboretum have extensive azalea collections suitable for helping the homeowner in the selection process. Such outings during the spring are a delightful way to see which cultivars perform well in a given region. If your regional public gardens can grow the varieties, then by extension, you should be able to grow them too.

A LIST OF RECOMMENDED AZALEAS FOR THE WASHINGTON D.C. METROPOLITAN AREA

1. REDS:
   'Rain Fire', Harris hybrid
   'Pryored', U.S. National Arboretum Introduction
   'Stewartstonian', Gable hybrid
   'Kobold', Glenn Dale hybrid
   'Balsaminaeflorum', selection of *Rhododendron indicum*
   'Copperman', Glenn Dale hybrid
   'Commodore', Glenn Dale hybrid

2. PINKS, ROSE, SALMON:
   'Delos', Glenn Dale hybrid
   'Ellie Harris', Harris hybrid
   'Coral Bells', Kurume hybrid
   'Blaauw's Pink', Blaauw hybrid
   'Betty Anne Voss', Robin Hill hybrid
   'Pink Pearl', Kurume hybrid
   'Ho-oden', Kurume hybrid
   'Rosebud', Gable hybrid
   'Gaiety', Glenn Dale hybrid
   'Pink Cascade', Harris hybrid
   'Ambrosia', Glenn Dale hybrid
   'Pocono Pink', hybrid group unknown

3. PURPLE AND LAVENDER:
   'Zulu', Glenn Dale hybrid
   'Herbert', Gable hybrid
   'Purple Splendor', Gable hybrid
   'Corsage', Gable hybrid
   'Royalty', Gable hybrid
   R. poukhanense, a species
   'Elsie Lee', Shammarello hybrid

4. WHITES:
   'Glacier', Glenn Dale hybrid
   'Treasure', Glenn Dale hybrid
   'Kehr's White Rosebud', Kehr hybrid
   'Hardy Gardenia', Linwood Hardy hybrid
   'Vespers', Glenn Dale hybrid
   'Delaware Valley White', Mucronatum hybrid
   'Rose Greeley', Gable hybrid
   'Palestrina', Vuyk hybrid
   'Niagara', Glenn Dale hybrid

5. BORDERED, STRIPED, AND SECTORED:
   'Ben Morrison', Belgian-Glenn Dale hybrid
   'Geisha', Glenn Dale hybrid
   'Festive', Glenn Dale hybrid
   'Janet Rhea', Linwood Hardy hybrid
   'Marian Lee', Back Acres hybrid
   'Martha Hitchcock', Glenn Dale hybrid
   'Margaret Douglas', Back Acres hybrid
   'Cinderella', Glenn Dale hybrid
   'Cavendishi', Southern Indian hybrid

6. MY FAVORITE:
   'Parfait', Harris hybrid

ASA NEWS AND VIEWS

THE EDITOR'S NOTEBOOK

This issue brings to a close Volume 10 of *The Azalean* and my tenure as Editor. I have injoyed working with you and bringing what we believe has been a comprehensive coverage of azalea horticulture. For the past 24 issues we have concentrated on a wide variety of topics for the backyard azalea enthusiast as well as for the professional. Scientific articles have been juxtaposed with simple descriptive features and noteworthy previously published articles have been included with the new to add to the appreciation of the development of azaleas. Each year we have reviewed the national meeting activities to give those who were unable to attend a flavor of the convention. We published your letters and have strived to obtain articles covering topics you have requested or that we felt were timely to present.

Publication of a quarterly journal by an all volunteer staff is a fun but time consuming job requiring many hands. My deep appreciation goes to Janet and Bill Miller and to my wife, Nancy, for their untiring efforts in obtaining, reviewing and assembling material. We are also very grateful to those of you who have submitted articles, letters, poems, meeting notices, reports and other information of interest to Society members and other azalea fanciers. *The Azalean* is your journal and we have enjoyed putting it together each three months. Increasing professional demands necessitate that I turn over the editorship to insure that the journal remains timely and of the quality you demand. Bob Hobbs is assuming the editorship as of January 1, 1989. We wish him continued success. Please send him your letters, articles, chapter and meeting notices, and suggestions and he will have no difficulty meeting your needs. As of January 1 business and editorial correspondence for *The Azalean* is to be sent to:

Robert W. Hobbs, Editor
737 Walnut Avenue
North Beach, Maryland 20714

Charles H. Evans

WELCOME, COUSIN!

The American Camellia Society, with headquarters at Fort Valley, Georgia, has become a member of the Azalea Society of America. The following information, furnished by Mrs. Ann Blair Brown, Executive Director of the American Camellia Society, may be of interest to ASA members living in or planning travel in the South:

Our Society is located 30 miles South of Macon on 130 acres of land. At the present we have an 18th century style Headquarters Building, another same style building housing an outstanding collection of Edward Marshall Boehm porcelain. There is a landscaped greenhouse, a research greenhouse, a Japanese Garden and a Rose Garden plus nine acres of camellias. We are presently constructing a visitors center-museum.

We have a number of azaleas which grow very well in this area. We plan to increase the azaleas as they add so much interest to our gardens. Upon the completion of the present building, the Board of Directors has authorized a 15 acre arboretum with a small lake. We are moving into a more well rounded-yearround garden. At the present, those acres not used by the garden are planted in pecan and peach trees as well as seasonal crops.

We have an excellent library of horticultural books dating from 1669 to the present day.

A LETTER FROM BRITTANY

Two letters from Charles Simon, a retiree in France, give us an insider's view of azaleas in Brittany, a French peninsula at the mouth of the English Channel. Excerpts from his letters are cited below. M. Simon's letters are well written, even though he learned English "only by a book, without a teacher, merely to know the discoveries of Americans what they are doing with azaleas, rhododendrons and camelias". We have taken the liberty of editing the excerpts at a few points, for clarity. Words in brackets are the Editor's interpretation of the original.

December 20, 1987 letter:

"I [love] azaleas and now I am retired I should wish to create a collection of the best.

"This book of M. Fred Galle is an illumination and many nurserymen would gain from reading this book.

"My estate is near the town of Lorient and [the] Atlantic in Brittany."

April 13, 1988 letter:

"Brittany is the better area of France for azaleas, rhododendrons and camellias. The ground is acid. The low temperature is 0 degrees Farenheit, the high about 80 degrees. The sun is often lightly shaded, the mist frequent, the rain 30 inches a year. There are many strong winds. In October 1987 a tornado devastated the forest and burned the leaves of all shrubs. The salt deposit burned more than the wind. We are two miles [from the] Atlantic.

"Not anyone here is very punctilious to know what he buys or sells, but the plant azalea always [has] first quality leaves and flowers. . The nurseryman either busy young plants for retail or [makes] cuttings of old, hardy varieties. As regards the azalea Indica, they come from Belgium.

"There is not a true classification. Unfortunately we have not here a Fred C. Galle. That man did a gigantic work.

"I have a few azaleas one year old, from cuttings, always in open air, [and] all ancient varities. The recent varieties you have are [unavailable] here. All newer ones come from Belgium, the Netherlands, or the United Kingdom. I have sowed azalea seed from A.R.S. and am waiting to see the flowers."

M. Simon has just joined the Society.

Ryon Page

BACK TO THE (AZALEA) FARM

Ben Blankenship
Stafford, Virginia

Farming was going to be fun. I went to a cow college. Then the big city beckoned. Now many years later, with renewed determination, I *am* going to be a farmer, an azalea farmer. Trouble is, for several years there's been little to show for it, except when the Census of Agriculture form arrived in the mail last winter, for the first time.

What elation! Now was I a farmer? Sad to say, not yet. For even though I stick thousand(s) of cuttings each summer, produce hundred(s) of nice plants of numerous varieties, and advertise each spring, officially I still haven't made it. I'll remain a non-farmer until some perceptive neighbors of great taste give me $1,000 for my home-grown products in one calendar year. Then watch out.

You see, my operation is already worth many times that meager amount. Why, just look in Carlson's mail order catalog for price comparisons, less poetry and postage. My plants ought to be worth at least $15 apiece. Heck, my 'Coral Bells' alone would put me over $1,000. It's only logical and fair. Figuring in my labor and management inputs, true cost of production per plant is nearly $15, so it's unarguable.

And just as soon as I can talk Don Hager into letting me increase his patented 'I'll Be Damned' in my own inimitable fashion, Farm Journal will be seeking me out for a feature before you know it.

In the meantime, however, some nagging problems persist. My wife, for example. She wants me to grow only 'Pink Ruffles' and not sell any. Pretty they are, hardy they ain't, although you'd never know it from watching those thousands of people buying them from those huge dumb retail outlets that surround me. Coffee, gas, Gumpos?

Then too, there is my slight marketing handicap. I can advertise til the cows come home, but my snooty private community won't let me use the media to tell my customers where I'm at.

Another marketing hurdle is that my plants look sad up against those potted marvels. So, being grown in planting beds, they just sit there until I discount them somewhat below the $1.98 going price around here.

Moreover, I hesitate to reveal the true source of some of my plants without breaking some fool law. For instance, I didn't have official approval for getting my 'Treasure' starts from a lovely old bush on the White House lawn right near the exit gate, where a friendly if puzzled guard obligingly looked the other way.

And you know azaleas. They grow so doggone slow. Seems that all the plants I want to sell take forever to get large enough not to be ashamed of. Take my 'PJM's. Please. I now appreicate why they cost an arm and a leg everywhere, except for those puny four-year-olds I nurse along. No wonder they can't be called azaleas.

Don't get me wrong. When a visitor goes into ecstasy over a row of orphaned 'Hino Reds' that are blooming well despite me, everthing's suddenly all worth it. Boy, I just melt. Will they mess up your car seat? I'll deliver. I'll even plant them, and replace free up to ten years. The price? Gos, I was going to donate them soon anyhow, so. . .

It's a love affairs which, thankfully, my wife endures— most of the time. Friends and neighbors are also pleasantly folerant when I go on about my azaleas business. IRS examiners must laugh too hard over my annual Schedule C return to audit it. I always report a profit, sometimes upwards of two digits. In fact, the cash receipts do usually cover the costs of each year's mulch delivery. So who's to say I'm not well ahead of the game?

Besides, and I've thoroughly studied this. In order for me to go really big time, my babies would have to go into pots, No thanks. That's not farming. That's compromising. Like decorating with artificial flowers (ugh). Or eating pizzas out of the freezer (ditto). As copy in on of my early ads put it: "It is so *cruel.* Like the chinese used to bind their little girls' feet to keep them tiny, most nurseries grow their plants tightly in plastic pots to make them easier to handle. (*Not us*). . . You know what happens when you dump the poor plant from the pot. Its roots are all tangled. It might even die unless you untangle them. . . Anyhow, you can just tell it's stunted. . . How would *you* feel if you still had to fit into the same clothes you wore to your first dance? Same difference. . . Azaleas of Aquia are home grown and healthy. . . so they'll be all perky and *eager* for you to plant. . ."

Marvelous. Although it didn't draw a single response, publishing it was great fun, and so was this piece. Hope you enjoyed it and do stop by. Look me up in the ASA directory. But don't let on that I told you.

NEW MEMBERS

Brookside Gardens Chapter

Joseph L. & Paulette G. Horan
5115 Crittenden Street
Edmonston, MD 20781

Flame Azalea Chapter

Melvin M. & Carolyn J. Picker
Rt. 1 Box 659
Lacey's Spring, AL 35754

Northwest Chapter

Howard W. Jackson
12126 Hwy. 8 N.W.
Olympia, WA 98502

Lavonia Leo
8422 Fauntleroy Way. S.W.
Seattle, WA 98134

Richmond Virginia Chapter

M/M Norman S. Patterson
Rt. 2 Box 827
McGaheysville, VA 22840

No Chapter Affiliation

Warren V. Simpson
146 Metropolitan Ave.
Rosalindale, MA 02131

Joseph Kent
70 Lantern Lane
Exeter, R.I. 02822

Chester N. Zembroski, DDS
509 Glenbrook Road
Stamford, CT 06906

Harry Marvin, Jr.
12 Mallard Ave.
Selden, NY 11894

Elvin M. Sheffield
Rt. 4 Box 55
Wetumpka, AL 36092

10 YEAR INDEX FOR VOLUMES 1-10 OF THE AZALEAN, 1979-1988

Entries in this index are by author and by subject. Pagination for Volumes 1-4 is listed by volume (issue number) and pages (e.g. 4(4): 11-12). Only volume and pages are listed for entries from Volume 5 (e.g. 5:38-46) as the pagination is consecutive throughout Volumes 5-10. This is a general index and while not all inclusive contains many cross referenced headings.