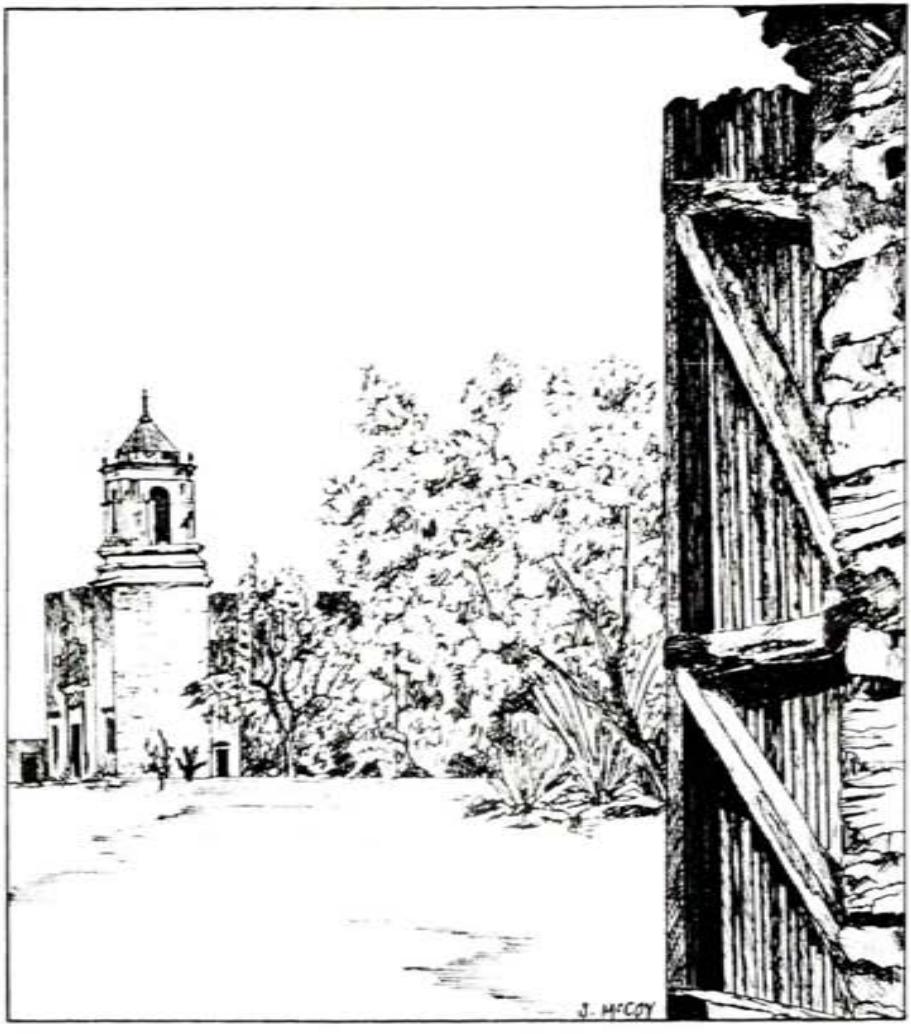
Atlantic Coast Camellias

JOURNAL OF THE ATLANTIC COAST CAMELLIA SOCIETY



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ATLANTIC COAST CAMELLIA SOCIETY
OFFICERS

ABOUT THE COVER DRAWING

We are looking through an ancient wooden gate in an ancient stone wall at an ancient monastery. This monastery is in Portugal. What has this got to do with camellias? Well, it was to Portugal that camellias probably first came to Europe. This was in the first half of the 16th century. It is believed that camellias were planted in the Villa Nova de Gaia in Oporto about 1550.

IN THIS ISSUE

President's Message

Ed Powers

If you weren't at our 14th annual meeting in Myrtle Beach on October 7th and 8th, we missed you. If you were there, I'm sure you enjoyed the wonderful food that our members brought to the pool party on Friday night as well as the fellowship. The air was filled with camellia talk and renewal of old friendships. There were slightly less than 100 members present this year and for those of you who have never attended our annual meeting, we ask that you place it high on your agenda for next October.

At our business meeting on Saturday morning, the membership was informed that the Independent Holiday Inn was going to be torn down starting the next week. We have been assured by management that they will be up and running in plenty of time for our convention. The Board of Directors felt it was prudent to delay fixing our 1995 convention date until our board meeting in May of 1995, at which time we will have a better handle on whether the building will be completed on time.

After the meeting Jim Pinkerton treated us to a very professional slide-show of new seedlings, 'hot' new varieties, and some old tried and true winners. We held the annual auction of plants and goodies that members brought to help support the club after Jim got everybody in the mood. Bill Robertson and Buck Mizzell did a wonderful job of convincing us that we just couldn't do without any of them and all items were sold, bringing the club over $1000. Our thanks to Bill and Buck.

Saturday evening our featured speaker was Dr. Ray Campbell, Chief-Plant/Waste/Solution Advisory Section in the North Carolina Department of Agriculture, who gave us an outstanding talk on "Using Diagnostic Tools to Enhance Camellia Production". For those of you who were not there, his talk will be published in this journal at a later date.

I was elected your new President at the annual meeting also. It is a great honor you have bestowed on me, especially in light of the outstanding job done by my predecessor Mildred Robertson. I promise to do my best to keep this a growing and vibrant organization.

Sincerely,

Ed Powers

Editor's Note

Dr. Dave Scheibert

When one becomes keenly interested in camellias we begin to notice changes in their behavior that cannot be explained. Happily, there is usually a change back to normal which may also defy logical reason. Our previous five month show season was characterized by slow and sparse blooms so that the first half of the shows had an average of half the usual number of blooms . Many buds waited to bloom after the shows were over in mid March. This season the blooms are opening early as well as opening in 1/3 less time in responsible gibberellic acid in the Atlantic and Gulf Coast regions of the United States. Mother Nature has many ways to teach us humility.

The camellia disease, petal blight, has been in my greenhouse for 2 years. It is hoped that removal of 2 inches of soil from the greenhouse floor and repotting the camellias will cure the problem. However, the appearance of petal blight in the Wellington area of New Zealand will be very difficult to correct. Betty Hotchkiss and Dr. Luther Baxter described in the August 1994, Camellia Journal that preliminary 5 minute soak in a mixture of HWG 1608 (to be named Lynx) will give 100% protection to 18 exposed blooms over a 4 week period, while all 18 untreated blooms became involved. Bayleton only protected 50% of blooms from the blight while Captan, Benlate and Cleary 3336 were of no help. Soaking in the above mixes with a few drops of detergent was not harmful to the blooms. There is still no effective method of destroying the camellia blight sclerotium in the soil but this will be investigated further. It appears that this new fungicide is a giant step forward in the control of camellia petal blight.

In this issue are 2 superb articles detailing the culture of camellias by Jim Newell as it appeared in the Camellia Journal in 1990 and a 20 year look ahead for camellias as it appeared in the New Zealand Camellia Bulletin in 1994 by Dr. Ron Bieleski. Jim's article will sharpen your camellia culture practices in the present and Ron's will tickle your fancy for the future of camellias. In future issues biological pest control will be presented. Last summer I introduced a praying mantis, 4 lady bugs, and several lace wings into my greenhouse and more news will follow. These beneficial insects are now available by mail order. Another needed article will summarize methods of control of pine mice, shrews and vols. No, moles do not harm our camellias. An entertaining useful article on snail and slug control is promised by Charles Bush who is gaining national popularity as a writer and speaker.

You will find the present issue to be a double one to help make up my omission of the past. I hope this has not caused you inconvenience or harm to the Atlantic Coast Camellia Society. I apologize and hope most can forgive.

The 50 year anniversary of the American Camellia Society will be celebrated very soon, March 8-11, 1995 at Massee Lane Gardens. We hope to meet you there at the annual convention.

Getting Your Blooms To The Head Table

Hyman R. Norsworthy

A poorly grown plant will not produce a show winner. This article is not a 'how to' on culture but a 'how to' on getting your blooms to the head table. You will need to disbud your show plants, leaving no more than three or four buds (terminal buds) per foot of plant height. Keep a mixture of buds of various levels of maturity. Complete this task by late September.

Under normal conditions, each variety has a specific time response to gib. Learn these response times for your particular environment and gib accordingly. As buds begin to show color, pin encroaching limbs and leaves away from the bud with clothes pins to prevent petal damage. Watch the opening bud carefully; if the flower is a semi-double with upright petals or if it is a loose peony, check the opening flower for uniformity. You may use small pieces of Dacron batting to stuff between petals forcing them to fill any obvious gaps.

Show blooms MUST be cut at peak condition, and when cut at the proper time, can be kept in cold storage for four to six days. Cut your blooms with about two inches of stem and place them on a Dacron-lined tray for transport to your prep area. Cut no more than four to six blooms at one time; process these and then go back for more. Have your entry cards completed by this time.

Show blooms must be groomed to perfection. Primary grooming is done at home in your prep area and final touch-up grooming is reserved for the show site. All leaves (two at most) should be turned right-side up and wiped clean with a damp cloth. Some exhibitors like to use a small amount of leaf shine on the damp cloth. Examine the stamens, if any, and remove a stray dark anther that may be present. Do not attempt to remove more than one or two as this will disqualify the flower from contention. If the bloom has been cut at its peak, this will not be a problem.

Now is the time to place a collar on those blooms whose outer petals have a tendency to curl downward. Size the collar properly so that it will not be a distraction to the judge. Use a small, soft artists brush to remove any pollen grains from petal surfaces. Also inspect blooms for spiders, ants, etc. - these are a definite no-no.

For those blooms with upright petals, place small pieces of Dacron between petals to keep them upright. This is very important if you plan to transport the bloom any appreciable distance. This "stuffing" will be removed at the show site. Now place the bloom in its individual container with tight-fitting lid and place the entry card on top of the container. Prepare the containers in this manner:

1. Plastic containers of varying sizes are needed. Use large ones (five quart) for large blooms, small ones for your small blooms, etc.

2. Place a small cup receptacle (about 3/4" diameter X 1" high) in the center of the container and surround it with a generous layer of Dacron. Fill the cup with your favorite "keeper" solution.

3. If the flower is to be stored longer than a couple of days, you may wish to spray the bloom lightly with Clear Life (Design Master) or Clear Set (Flora Life) - available from your floral supply house. This light coating reduces moisture loss and the bloom remains turgid.

4. Recut the two-inch stem to fit the cup, place the bloom stem in the cup so that the bloom is level and is centered in the container.

5. Cover the bloom with a very thin sheet of Dacron to protect it from any lid condensation.

Blooms are refrigerated in their containers at 39 degrees - 41 degrees F. and transported to the show site in appropriately sized styrofoam boxes. A large box (16" H X 20" W X 48" L) will hold fifteen to twenty containers of mixed sizes along with four one-quart "blue ice" containers to keep the blooms cool. The amount of blue ice needed will be dependent on ambient temperatures.

Allow sufficient time at the show site to perform your final grooming and to place your entries for competition. Select a display cup that is complimentary to bloom size - miniatures in a small cup, etc. Many shows fail to provide adequately sized cups for your small flowers, particularly miniatures; therefore, you may need to take your own cups for your small and miniature blooms.

A bloom destined for the head table has to be near perfect in every aspect. With a lot of hard work and close attention to detail, you can make your bloom meet those strict standards.

Camellia Show - Charlotte, N.C.
Curtis Smith, John Newsome, Joe & Mabel Austin, John Penny
by Shepherd

Using Diagnostic Tools to Enhance Camellia Production

Dr. C. Ray Campbell
Agronomic Division
North Carolina Department of Agriculture

A good nutrient management program provides a number of significant benefits to the hobbyist or commercial producer of camellias and other ornamentals. Foremost, plant growth is maximized and quality is enhanced. Healthy plants generally produce more foliage and flowers. Flowers of healthy plants also last longer.

Equally important is the need to limit applications of nutrients and pesticides in the environment. Everyone, not just farmers, has the responsibility to be a good environmental steward. In most cases, urban gardening sites have little or no buffer zones to filter impurities from runoff water that enters our streams and rivers. It is important to use the nutrients and chemicals that are needed but no more.

Why spend more on wasted nutrients and pesticides if less will do the same or a better job? It is not only important to preserve economic resources but also natural resources including phosphate and other reserves, water quality and soil productivity.

Concerns in Nutrient Management

Soil pH is of major importance in growing plants. Proper pH is more important than any other nutritional factor. Soil pH is measured on a scale of 1 to 14. Most plants grow well at a pH of 5.5 to 6.0. Below 5.0, roots are damaged by aluminum and other elements that become toxic. Above 6.5, the availability of a number of elements becomes significantly limited. Traditionally, camellias have been considered acid-loving plants. As a result, a pH of 5.0 - 5.5 has been considered optimum. In recent years, growers have reported success at pH of 6 and higher. Considering the type of soil mix (bark and sand) used in camellia production, a pH of 6.0 is probably ideal.

These are 16 essential elements that plants require to grow normally and complete their life cycle. Hydrogen (H), oxygen (O2), and carbon (C) are supplied by the atmosphere and water. Required minerals need to be supplied through the soil medium or a feeding program. There are three elements (N, P, K) that are of major importance and are generally required in greatest quantity. Of these three, nitrogen influences growth more than the others. Nitrogen is required for protein synthesis. Phosphorus is a part of the genetic material (DNA) that is required for cell division and growth. Potassium is very important in water movement and sugar transport in plants and facilitates nutrient uptake. Secondary elements, including calcium (Ca), magnesium (Mg), and sulfur (S), are required in smaller quantities. Calcium is an important constituent of cell walls. Magnesium is part of chlorophyll

that utilizes the sun's energy during photosynthesis. Sulfur is required for the production of many amino acids and proteins. Micronutrients are required in very small amounts and can quickly become toxic if in excess. They generally serve as catalysts for various reactions in plants.

The combination of fertilizer salts in the soil is commonly referred to as soluble salts and are measured as electrical conductivity through the soil solution. Soluble salts provide an indirect assessment of nutrient availability but most importantly provide a means of identifying excess fertilizer salts that can cause root damage. After low pH, an excess of soluble salts is the most common problem encountered in the production of ornamentals.

Sodium is not an essential element and can be harmful if in excess. This element contributes to soluble salts. Essential elements including most of the micronutrients can become toxic in excess quantities. Where municipal sludges or other waste products are applied to land, the list can be expanded to include nickel (Ni), cadmium (Cd) and lead (Pb). Soils can become sterile and no longer support plant life if heavy metals including Ni, Cd, Pb, Zn, and Cu accumulate to extremely high levels. Currently, the only way to overcome this condition is to dilute the soil with amendments containing lower concentrations of these metals. Soil pH can be increased to 6.5 - 7.0 to tie up heavy metals but has limited effects and can also limit availability of required elements including iron and manganese.

Tools for Nutrient Management

There are a number of tools that are available to improve nutrient management. First, observation and experience is extremely important in managing nutrition. It should always play a role in decisions that are made concerning nutrient application. There are also a number of analytical tools available to provide some science-based facts from which to make decisions. Most states provide analytical services including soil testing, plant analysis, waste analysis and solution analysis for a nominal fee. There are also private laboratories that provide these services for a fee.

Soil testing determines acidity and lime requirement of the growing medium. It also predicts the availability of some required nutrients including major - P, K; secondary - Ca, Mg; and minor - Mn, Zn, Cu elements. Most soil test laboratories also measure sodium concentration and soluble salts. A good soil test service provides recommendations on lime and fertilizer requirements for the crop to be grown.

Plant analysis provides a direct evaluation of nutritional status. Through chemical analysis of indicator leaves, the status of essential elements (major - N, P, K; secondary - Ca, Mg, S; micronutrients - Fe, Mn, Zn, Cu, B, Mo, Cl) is determined. Plant analysis is based on the fact that indicator leaves of healthy plants contain predictable concentrations of essential plant nutrients. Just below the sufficient range, there may be "hidden hunger". As the essential element becomes further limiting, the plant becomes visibly deficient and significant growth

potential is lost unless the problem is corrected. Major and secondary elements generally do not become toxic but may result in plant burn from excess fertilizer salts in the root zone. High concentrations of elements including Ca, Mg, and K in the root zone may also result in competition for uptake and imbalance in the plant. In contrast, micronutrients can become extremely toxic when they accumulate in the plant. They may also damage the root system and indirectly limit uptake of other elements.

Plant analysis can indirectly point to pH problem but cannot provide an estimate of lime requirement. In contrast, plant analysis provides a comprehensive evaluation of the status of essential plant nutrients whereas soil testing does not provide an effective means of evaluating certain nutrients that are mobile with water. Plant analysis also provides a means of identifying elements that have accumulated in the plant to toxic levels.

A waste analysis provides a prediction of the availability of the essential nutrients in compost, farm manures, municipal or industrial wastes and by-products. When appropriate, neutralizing value and concentrations of potentially harmful elements including sodium, chloride, and heavy metals are also determined. As a result, these materials can be amended to soils at rates required to supply the desired nutrients or neutralize acidity.

Solution analysis provides an assessment of water quality and a prediction of usability in plant production. Concentrations of essential plant nutrients are determined along with electrical conductivity, pH and total carbonates. From this information, corrective action needed to routinely use water for irrigation or to make nutrient or pesticide solutions is identified.

The most common problem found in irrigation water is high soluble salts and excessive concentrations of sodium and chloride. When total dissolved solids become 500 ppm or more (0.75 mmho/cm), damage to plants is likely to occur if the water is routinely used for irrigation. Other problems with irrigation water include high carbonate and bicarbonate. High concentrations of these anions result in increased pH of media over time where the water is routinely used for irrigation. Excess bicarbonate can be neutralized by injecting the proper amount of acid in water prior to application. Rates of acid injection should always be based on a water analysis. High water pH can also limit effectiveness of pesticides. Buffering agents should be used to stabilize pH at 6.0 when water pH is 6.5 or higher.

Applications of Diagnostic Tools

Decisions concerning the nutritional status of plants and nutrient application are best when based on scientific evidence. Diagnostic tools provide a foundation for optimizing plant performance while protecting the environment. Diagnostic tools are used to solve plant production problems and to monitor healthy plants in an effort to fine tune nutritional programs. Problems are best solved using a combined approach involving all or most of the diagnostic tools. In addition to nutrition, plants should be evaluated for disease and insects or other problems.

For monitoring, plants are usually sampled annually at a strategic time to help plant nutrient application. Soil samples should be taken no less than every two years. Water supplies should be sampled annually unless problems require greater frequency. In coastal areas, water supplies should be sampled during dry periods to determine if salt concentration is increasing to potentially harmful levels.

Sampling Procedures

The key to reliable results is to provide good samples. A good common sense approach should always prevail. Soil samples should represent the average of a medium or come from the root zone of actively growing plants. Most laboratories require one pint of soil.

The best indicator for plant samples is the most recent mature leaf (first fully expanded leaf below the growing point that is neither premature nor dull with age). It usually is the fourth or fifth leaf back from the growing point. Ideally, 8-10 leaves of plants like camellias are required for analysis. For smaller leaf plants (azaleas), a minimum of 20-30 leaves is required.

A good problem-solving technique includes taking matching plant and soil samples from representative "good" and "bad" plants. Soil cores should be taken from the root zones of plants that are sampled.

Water analysis requires a 1 pint sample for comprehensive testing. Samples should be placed in clean, plastic containers and shipped directly to the laboratory. For old wells, water should be run at least 5 minutes before sampling. New wells require longer pumping to obtain a representative sample.

Monitoring samples should be taken from plants representative of a group. It is ideal to stay within a single variety. Variation among species generally is greater than among varieties.

Best Approach to Nutrient Management

Soil pH should always be adjusted before attempting to grow plants. Lime and nutrient requirements should be determined based on soil test. Research indicates that type of bark (hardwood vs. softwood) influences pH and nutrient content (2). Additions of lime and nutrients without the benefit of soil test results are very risky (1). High pH may require foliar feeding of iron to maintain acceptable foliage color. Additions of micronutrients including manganese, copper and zinc to media already containing adequate levels of these nutrients can increase these concentrations to toxic levels.

Slow release fertilizers decrease frequency of application but risk sudden release of nutrients and subsequent soluble salt damage. A number of fertilizer and nutrient mixes have been used successfully by camellia producers. Application in the spring before bud break and in the early fall should generally be adequate. Application rates can be adjusted basded on soil results and plant samples. A good time to take monitoring samples is in the spring before bud break.

The form of nutrients is important. Inorganic fertilizers are water soluble. Organic materials must mineralize before becoming plant available. They are generally considered slow release materials. Some inorganic materials are also slow release due to inhibitors and/or coatings. Fertilizer grades indicate the total concentration of nitrogen, phosphate and potash. The fertilizer grade should be selected based on how well it meets nutrient requirements based on soil test. Soil application is generally preferred for major elements. This method is also preferred for secondary elements but foliar sprays can be used to correct problems. Foliar application is the preferred method of correcting micronutrient problems since such small amounts of these elements are required for growth. Soil applications of micronutrients are also acceptable but are slower acting.

Summary

Diagnostic tools provide a means for solving nutritional problems and enhancing growth of normal plants while protecting the environment and preserving economic and natural resources. Problem-solving requires the combined approach of soil, plant and solution analysis to identify components contributing to the problem. Soil testing is best utilized in evaluating soil acidity and predicting lime requirements. Soil testing is also effective in predicting availability of a number of required elements for plant growth.

Plant analysis provides a more comprehensive evaluation of the status of essential elements. It also identifies nutrients that may be accumulating to toxic levels.

Solution analysis provides an evaluation of water quality and useability for plant production. Nutrient solutions can also be evaluated. In coastal regions, water should be evaluated annually after extended dry periods to determine if salt concentration remains within acceptable levels.

A comprehensive approach to nutrient management includes evaluation of the growing medium prior to planting. Soil pH and nutrient levels should be adjusted based on soil recommendations. Maintenance nutrient applications can be based on general recommendations but should be fine-tuned with soil and plant analyses. Both slow release and water soluble fertilizers can be used provided frequency and rates of application are adjusted accordingly.

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Camellia Pest Problems and Solutions

Ray Bond

Insects

There aren't many insects which will bother camellias, but those that do can be very destructive. Generally, control is simple and complete. For 99% of camellia insect problems, Diazinon, Orthene, insecticidal soap, pyrethrins, bug baits and dormant oil spray will do about all that needs to be done except for Japanese beetles. Sevin (carbaryl) can be used in conjunction with all of these, particularly for chewing bugs and Japanese beetles. Follow directions on labels and instructions as issued by the state.

In order of potential damage:

Scale is the most common and ongoing insect pest problem with camellias. Tea scale is the most common followed closely by camellia scale. All scales considered generically here, because treatment is the same for each of them. The best eradication is by spraying the affected plant(s) as soon as you see any evidence of scale attack. The best prevention is immediate attack when discovered and separation from other plants in the nursery with scale or which may be scale prone. Plants heavily infested with scale may exhibit leaves appearing to be yellow spotted, or variegated with small yellowish spots on the top of the leaf. Turn these "variegated" leaves over and you may discover colonies of scale infestation. Scale does not always cause this "variegation," so periodic inspection for scale under the leaves and on the trunks of camellias should be routine.

Heavy scale infestations will look like tiny white or grayish spots in a cluster or randomly distributed oval specs attached to the underside of the leaf. Sometimes scale insects will attach randomly to the top of the leaf. Scale infestations may be accompanied by a cottony, web-like mass.

Once eradicated, scale is slow to return if continued inspection and eradication procedures are maintained. Scale should be attacked as it appears. Once rid of scale, it is easy to keep it away unless there is a plant such as euonymus, a preferred host for scale and many other pest problems, such as mildew and white flies, in the vicinity. Scale insects will go down the street and around the corner looking for euonymus and problems will spread from there! Scale can be eliminated with dormant oil spray, particularly in spring when the young scale insects are moving about. Follow directions on the label being sure to spray under the camellia leaves where the scale is most likely to be found. Diazinon and Orthene will control scale, but dormant oil mixed with Diazinon spray seems to be best.

Aphids will severely damage new growth and buds and they will do it in a hurry! Next winter's blooms come from this spring's new growth. If ants are about , odds are great that aphids are nearby or will be very soon. Eliminate aphids as soon as they are detected. They will appear as a mass of small insects, clustered on new

growth. Black aphids are most readily apparent but the green aphids are just as destructive. Either will quickly maul new growth and flower buds.

An excellent spray, before temperatures get about 80 degrees F is dormant oil mixed with Diazinon. It eliminates aphids as well as scale. After temperatures reach above 80 degrees F, aphids can be quickly eliminated by spraying with Orthene (25% strength), Diazinon, or insecticidal soap. Diazinon will also kill the ants which probably introduced the aphids.

Please note that Orthene much stronger than 25% can damage camellias. Do not use Dursban (Chlorphyrifos) to kill aphids or anything else on camellias. It isn't recommended for camellias and can damage them severely!

Slugs and snails can be very messy pests. When weather warms, slugs will go into a bloom for a bite of the tender inner petals and a drink of nectar. Great blooms have been ruined by slugs. Their slimy trails leave dirty streaks on petals. In spring, slugs will eat new growth and they have voracious appetites for it. Bug baits or beer will eliminate them. When using beer, pour a little into pie pans in slug infested areas. Slugs love beer and will crawl in, get drunk and drown. Sprinkle baits according to directions. They do their damage at night, so prepare to defend against them at night.

Mealy bugs are in the scale family, but they do not permanently attach themselves to the plant. They will be seen as little white fuzzy bugs which will hide by running around to the other side of the limb. Mealy bugs will cluster in groups on new growth and suck on the plants. Mealy bugs can cause a lot of damage, if they are not detected and eradicated. Orthene (25%) and/or Diazinon will eliminate mealy bugs.

Japanese beetles can be a real pain. Japanese beetles love new growth of anything, camellias included and will quickly eliminate it. Vydate, being a good stomach poison as well ads contact poison will kill them. However, they can do a lot of damage before there is opportunity to treat for them. The best defense is to be prepared ahead of time. Jap beetles are best controlled by (sex) scent traps. Be careful to place the traps far away from any valuable plants. Japanese beetles will eat any new growth between wherever they might be and the traps. Jap beetles can come in swarms, like 17 year locusts, eating anything in their path. The best defense is being prepared before they arrive.

Spider mites can be a problem but they are relatively rare on camellias. Symptoms include gray, dusty appearing leaves. If mites are suspected, tap the edge of a leaf over a sheet of white paper. If there are any mites, they will reveal themselves as small, maybe moving and perhaps reddish specs on the paper. Mites may also attack flower and growth buds. Symptoms of mites attacking buds are browning and dropping of buds. Mites will attack new growth, causing a severe distortion and curling of new leaves.

Spider mites do not really like camellias, preferring other plants, but they can be a problem. Control is fairly simple. Spray with Diazinon being sure to spray under the leaves. If that doesn't work in a week or so, apply Kelthane or Avid according to directions.

White flies are only occasionally found around camellias. Generally, camellias are a little tough for them. Orthene, Insecticidal soap, Diazinon, Pyrethrins, horticultural oil and vegetable oil (if the temperature is above 80 degrees F) are good knock-downs. Alternate remedies because white flies quickly become immune to specific chemicals.

Thrips can be a problem on very early (fall) blooming camellias and very late spring blooming camellias. They will get into the base of the flower and cut the petals, eating them for lunch. If thrips are suspected, tear into the flower. They will appear to be tiny, hairlike worms deep in the bloom. Because most camellias bloom in the winter, thrips are usually not a problem. Remove and destroy affected blooms. Usual chemical remedies for thrips can be used if necessary.

Rodents

Voles can quickly cause heavy damage to camellias. They won't hesitate to completely cut down camellias at the ground. The plants will look like small beavers did the damage.

The best way to stop them is to prevent them by trapping and/or poisoning before they can do any damage. An extremely effective vole trap is a one or two gallon plant container placed over mole runs and other holes where voles hide. A mouse trap baited with apples and peanut butter should be placed under it. Voles are nocturnal, so set the traps at night. The results will be astounding and the traps can be reset over the same holes again and again. One grower caught over 80 voles in just one week using this technique. Her losses went to zero.

Rat baits are also very good vole control, but they must be used more judiciously. Be sure state law is complied with in bait use. Use only as labelled.

Rats and squirrels (including mice) like to chew the soft bark around the base of camellia plants. Rats and squirrels will chew up camellia trunks. The soft cambium is loved by these varmints when they aren't inclined to get to anything else. These pests love camellia seeds and will completely ruin a plant or seed bed as they devour the seeds.

Squirrels may be "cute," but they are as destructive as rats and have been aptly described by knowledgeable zoologists as "rats with bushy tails." Rat baits work for squirrels, too. Caution, In some States, including North Carolina , squirrels are protected. In these areas, squirrels are to be trapped and turned loose some distance away where they won't or can't harm anyone (except their new landlords). How the squirrels are moved is another matter. "Humane" type traps are recommended.

Rabbits and chipmunks can be a problem, doing similar damage as squirrels and rats. Rabbits like new growth within their reach, chipmunks will climb for it. However, rabbits and chipmunks usually do not find camellias as tempting as other tender plants. Traps and rat poisons will help control them.

Cats are efficient and effective rodent preventors and eradicators. They are nature's most efficient hunters and are heartily recommended for rodent control.

(For further information, contact the American Camellia Society, One Massie Lane, Fort Valley, GA 31030. Brand and trade names are used for information only. Consult State Agricultural and Pesticide agencies for recommended chemicals registered by the State. Always follow instructions on the label.)

Insecticidal Soaps

Kenneth R. Schroeder

"Effective control for many soft-bodied insects with little or no environmental impact."

Concern for environmentally safe pest control renewed interest in soaps as insecticides and brought about commercially developed insecticidal soaps. Some questions that may come to mind when you hear insecticidal soaps mentioned are; what are they; how do they work; will ordinary soaps and detergents work; and other questions like, what are the benefits of use; and exactly how safe are insecticidal soaps?

Insecticidal soaps

Soaps in general are made up of fatty acids. The most effective fatty acid registered for insecticidal use today is oleic acid, an eighteen-carbon-chain fatty acid. Oleic acid is present in high quantities in olive oil and other vegetable oils. The fatty acids are used in a salt form to improve solubility in water. The most common commercially available insecticidal soap, Safer soap, uses the potassium salt of oleic acid (potassium oleate) as its active ingredient. In addition the fatty acid salts are combined with alcohol and water to improve mixing of the product.

How they work

Insecticidal soaps work as liquid contact insecticides with no residual effects. Upon contact with a susceptible insect, the fatty acid penetrates the body and disrupts normal cell functions. The process begins with interruption of cell metabolism, then blockage of respiration and finally cell disruption and leakage of the contents, resulting in rapid insect death. Insect selectivity of insecticidal soap appears to be determined by how easily the soap can penetrate the insect's body covering, cuticle and epidermal layer.

Some soft-bodied insects affected by insecticidal soaps: Adelgids, Aphids, Armyworm larvae, Earwigs, Elm Leaf Beetle larvae, Gypsy Moth larvae, Japanese Beetle adults, Leafhoppers, Lacebugs, Mealybugs, Plant Bugs, Psyllids, Sawfly larvae, Scales, Spider Mites, Thrips, Whitefly, Woolly aphids.

A soap, is a soap, is a soap; or is it?

Are household detergents and soaps good insecticides? After all, most soaps are made from salts of fatty acids. Household soaps and detergents often contain a mixture of several fatty acid salts of which only some are insecticidal. Further, fatty acid contents may vary from one batch to another within the same brand because price and availability of these fatty acid salts can dictate exact formulas used.

Despite this variation, university experiments have shown many household soaps and detergents, including Ivory Liquid dishwashing detergent, Ivory bar soap,

Tide laundry detergent, Fels Naptha soap, and Shaklee's Basic H, can effectively reduce soft-bodied pest populations. In evaluating whether to use ordinary household products as insecticides, consider these points:

-Household detergents and soap have not been formulated to kill insects.
-Application rates have not been established.
-Because these products have not been labeled as pesticides, users would likely have little recourse if problems arise, except to shoulder the burden on their own. This might not be a big deal for the backyard gardener, but a wholesale or retail business might not want this responsibility.

Benefits of using insecticidal soaps

Because insecticidal soaps are selective, they can protect beneficial insects. Adult beetles, bees, wasps, flies, and grasshoppers are not affected by insecticidal soaps because of their heavy cuticle covering. Many beneficial insects fall within this category. For example, in the 1982 article by G.S. Puritch, et al. in the Journal of the Entomological Society of British Columbia reports that Encarsia formosa, a beneficial parasitic wasp tolerates insecticidal soap better than does the greenhouse whitefly and may work well with integrated pest management programs in controlling the whitefly.

Insecticidal soaps can also reduce petrochemical usage, as a substitute for them, and through the use of lower concentrations of companion pesticides. According to Safer Incorporated, the rate of the companion pesticide may be reduced by as much as 75% of the maximum label rates when tank mixed with Safer Insecticidal Concentrate in a 1 to 2% solution. Some of this enhancement may come from the natural spreader-sticker effects of soaps.

Reduction of insecticide resistance through rotation with other insecticides is another reason to use insecticidal soaps. The soaps themselves should not become ineffective through cross-resistance with other insecticides because they work by disrupting cell membranes and interfering with basic cell functions. The soaps' lack of residual effect also lessens the chance of insect resistance developing.

Safety concerns

Insecticidal soaps and soaps in general, being fatty acid salts, occur naturally in living organisms and their food, thus it is unlikely for them to produce long-term damage to animals or humans. Toxicity of insecticidal soaps is basically the same as that of any soap or detergent.

Specifically Safer Insecticidal Concentrate has an acute oral LD50 of greater than 5ml/kg, a high value translating into almost no mammalian toxicity permitting harvesting of fruit and vegetable crops without delays due to residue problems. Among short-term effects, ingestion is likely to cause vomiting and an upset stomach, and like any type of soap can irritate the eyes and mucous membranes and dry the skin.

Today's soaps and detergents (Safer Insecticidal Concentrate included) are readily biodegradable and do not accumulate in the food chain. A major question needing further research is whether there is a problem with buildup of soap and detergent in the soil when used repeatedly over time.

Insecticidal soaps can produce phytotoxicity (injury to plants by chemical or other agents) when applied to the foliage of plants. Sensitivity to phytotoxicity varies from species to species, even cultivar to cultivar. Common symptoms of phytotoxicity include leaf browning and yellowing; ring spots; crinkling; yellow, brown, or black spotting; and abnormal growth, especially stunting.

Be cautious when using soaps as insecticides. If using household products, be sure to do a trial on a few leaves of the plant or plants to be sprayed and wait four or five days, then check for symptoms of phytotoxicity. Other approaches to lessen the potential for phytotoxicity would be to rinse off the solution shortly after application. Do not spray during high temperatures and high humidity or when plants are under stress. Note also that phytotoxicity can be cumulative, appearing only after repeated applications.

Commercial insecticidal soaps seem less likely to dissolve plant waxes than household cleaning products. To avoid serious phytotoxicity problems when using a commercial product, be sure to read and follow label directions.

Summary

Soaps have been used since before the introduction of synthetic petrochemicals to control insect pests on plants. The fatty acid salt makeup of soaps lend to rapid degradation and low mammalian toxicity. Household soaps and detergents have been demonstrated to work successfully as pesticides, but the drawback to their use is lack of a label for use as an insecticide; after all this is not the production purpose of these products. Therefore use with caution. There is probably no recourse if problems develop. On the other hand commercial insecticidal soaps, generally speaking, are less likely to dissolve plant protective waxes, and the companies have registered labels and ongoing testing of these products.

Insecticidal soap usage can reduce petrochemical use; reduce the kill of beneficial insects; and reduce chances of insecticide resistance. They are environmentally friendly, have low mammalian toxicity and work well with integrated pest management (IPM) programs. Important points to remember about insecticidal soaps are the nonexistence of residues; (this product is only effective in the liquid stage); and as with any pesticides the potential for phytotoxicity does exist. All in all the use of insecticidal soaps deserves serious consideration as more and more synthetic organic chemicals are being banned from use and environmental concerns heighten.

Editor's Note: The above article was written by Kenneth R. Schroeder, a May 1993 graduate of UW-Madison. The article was written for the economic entomology class taught by Dr. Charles Koval. Mr. Schroeder received a Natural Science degree in Horticulture. Reprinted from "Wisconsin Landscape Federation." Sept. 1993.

Camellia Care In March and April

Ray Bond

March is a prime month for spring sales. Your best budding and blooming plants should be moved to retail sales as soon as possible. Marginal and non budding camellias should be held back for the fall selling season. They need a few months to develop buds. People buy color; camellia buyers buy color: the blooms and buds. Colorful blooms lead to impulse sales. A non-budding/blooming plant will not sell unless the ultimate buyer is educated and knows exactly which plant is which.

March is also a transition month for camellias. Some of the late blooming cultivars are about to end their season, while those that have completed their blooming cycle are getting ready to put on new growth, if they have not already begun.

Fertilizing

As soon as your plants have finished blooming and before new growth is well under way, fertilize them. Use a good fertilizer with trace elements. For this first yearly feeding, I like a 3-1-2 or similar ratio fertilizer which includes trace elements. Read directions on the bag, then cut the recommended quantity by one third. Replace the portion you have eliminated with the same quantity of cottonseed meal by volume. Trace elements can be overdone, particularly zinc, copper and boron. Recent studies have indicated that excessive quantities, which may not be much, of these elements in the soil can be damaging, if not fatal, to your plants. If in doubt, eliminate trace elements and add them separately. Cutting the fertilizer with cottonseed meal will serve to reduce the potential for damage from overdose.

Inspection

Many growers of containerized camellias choose March, after the plants have bloomed, to inspect the plants thoroughly and make any adjustments they think necessary. It pays to check the roots and if the plant is root bound, bump the plant to a larger container. If the roots look unhealthy, prune the bad roots away and repot the plant, changing the soil. Good, healthy roots are white; sick or dead ones are dark brown.

It is impossible to inspect all your plants. I suggest a sample plan, wherein you look at a random sample of about five plants per hundred. In addition, plants which are obviously weak, infected, or different should be inspected.

Disease Prevention

Pick up and destroy any brown or brown spotted blooms that have fallen from your camellias. They may have petal blight, an invasive, bloom decimating fungus for which there is no known cure. Petal blight is mostly found in more humid areas, but is not necessarily restricted to humid locations. It can be transported from place to place in infected containers.

A pine needle mulch around the plant will greatly retard petal blight as well as keep the roots protected, cool and happy. The down side of the pine needle mulch is that it encourages voles and fleas. Black ground cloth covering the area around the plant or container will greatly retard this disease.

Petal blight manifests itself as a small brown spot on the bloom which rapidly expands to consume the bloom. After the bloom has been attacked and fallen to the ground, a short, dime sized gray-brown toadstool grows, releases spore and the cycle is repeated. There is no known treatment, other than prevention, for this fungus. Good hygiene will help eliminate and/or prevent petal blight.

Continually inspect for camellia die-back. Dieback is very active in the spring. Cut off any branches or twigs that look dried up and dead. Cut them back to clean wood. Immediately destroy these infected branches. Be sure to sterilize your cutters. Dip them into a mixture of 10% chlorine bleach solution. Treat the wound with a captan and benomyl (Benlate) or Cleary 3336, two tablespoons each per gallon of water. Add a few drops of kitchen detergent, as a surfactant, to this mixture. Treat the wound with this mixture and cover it with a water based wound paint.

Soil Mix

March is a good time to plant cuttings which you have rooted over the winter. If you use my recommended (well draining) soil mix, you can move these cuttings directly into large containers, avoiding time consuming continual bumping from smaller to larger containers. The down side of this soil mix is that more water is required to keep the roots moist by having the water running by them.

As a soil medium, I suggest about 80% pine bark mulch and 20% sand. To this, mix in 20 pounds of cottonseed meal, 20 pounds of composted cow manure and 20 to 40 pounds of dolomitic limestone for every cubic yard of soil medium. This is a good, light, easy to handle mix.

Cottonseed meal, as a fertilizer, hasn't burned anything yet, so it is tough to use too much, but there is a point of diminishing return. Quantities suggested herein will suffice. Composted cow manure won't burn and this fertilizer combination will give your new plants a good "kick start." The dolomitic limestone serves to raise the pH to a level where camellias grow well, 5.5 to 6.5. If you use city water, adjust the dolomitic limestone because city water has had calcium added. I don't use peat moss in camellia soil mix. Peat moss fills the voids in the mixture, denying the roots of needed air space. It is also very acid (low pH).

Spraying

When the temperature is between 40 degrees F and 80 degrees F, spray horticultural oil or dormant oil for scale insects. Be sure to follow directions. Scale larvae are moving at this time of year and are very vulnerable. Kill them now for better and healthier plants! Scale is the largest, ongoing insect problem camellias have.

The captan/Cleary 3336 spray mixture (above) is an excellent prophylactic spray for dieback and other possible fungi. Some growers also add dormant oil or Sunspray Horticultural oil to this mix for the first spraying, thereby solving two problems with one spray. This combination works well.

Spraying alternately every three weeks with malathion and diazinon will eliminate fleas if they are present in pine needle mulch. This spraying will also protect the new growth on the camellias from insect damage such as aphids and mealy bugs. I am not a fan of spraying for the sake of spraying. Prophylactic spraying is good and should be done if really needed.

Relocating Camellias

Before moving camellia containers to summer locations, place a layer of gravel to the depth of about two inches under them. This will assure good drainage and lessen the chance of root rot by helping eliminate water puddling. A sheet of polyethylene under the gravel will discourage voles and mice from invading and help stop invasive roots of other plants, including some trees, from growing up and into the containers. This is a good use for old, used poly. Be sure to punch small holes in the polyethylene to let water drain. Black ground cloth over the gravel will help prevent petal blight and give you a firm base for your containers.

Without a barrier, trees, particularly maple trees can be invasive. After one month near a maple tree, a plant container may become attached to the ground. Many grasses will do this too. Grass and weeds love to grow up and out through a container, right beside the container's rightful occupant. Pest plants invade in order to get to the extra nutrients provided for the rightful owner of the container.

Conclusion

March and April are very important months for camellias. The better the care during this growing season, the prettier the blooms will be during the following winter. As a rule, camellias grow in March and April; they set buds in May and early June. In July they may put on more new growth. After that, they are gathering strength for the blooming season.

For further information, contact the author or the American Camellia Society, One Massie Lane, Fort Valley, GA 31030. Quantities, chemicals, brand and trade names are used for information only. Consult State Agricultural and Pesticide agencies for recommended chemicals registered by the State. Always follow instructions on the label.

The Development of Cutting Propagation of *Camellia reticulata* Hybrids

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New Zealand

A dramatic introduction of Yunnan reticulata camellias into Western gardens occurred in 1948 when the Kunming cultivars from China were imported into the United States. This heralded a new era of interest and progress in the cultivation of the genus Camellia which has since gained further impetus with the development of new interspecific hybrids, scented cultivars, and the introduction of the yellow-flowers C. chrysantha.

These early Kunming reticulatas were traditionally propagated by grafting. Scions were worked onto pot-grown C. reticulata or C. sasanqua seedlings. Robust, well-established, 3-year-old seedlings, 1 to 2 cm in diameter, were decapitated and either cleft, or, less-commonly rind grated, to unite scion to rootstock. This was a costly time-consuming, labour-intensive method of propagation. However, it was most successful in producing excellent plants at a time when labour costs were not as high as they are today.

In the early 1970s, increasing costs prompted investigation into finding a more economical propagation method. Cutting-grafts were successfully tried. Good plump cuttings of a C. reticulata cultivars, e.g. 'Satan's Robe' that had proved to be easily rooted (>80% with a 0.8% IBA powder) were made in the usual way, but with a slightly longer shank below the foliage. Onto this unrooted, long-shanked cutting, a side veneer graft was made in the following manner. Approximately 3.5 cm from its base, an oblique angled, straight, clean cut was made about 2.0 cm long. The desired scion cultivar was prepared with an approximately 2.0 cm long, slender wedged base and trimmed foliage. The scion was tied firmly into the incision in the cutting, which was basally wide-wounded in the usual way, treated with 0.8% IBA powder, and inserted into the propagation medium to a point above the union area. Light intermittent misting, moderate humidity, and bottom heat (20 to 23 degrees C) were maintained, as for camellia cuttings. Callus tissue quickly formed and as the cutting rooted, the scion united with it. After approximately 10 weeks, the young cutting graft was untied and potted up. When established with good root development evident, the cutting top was removed above the scion union, leaving the selected cultivar joined to the cutting roots. While a successful method of grafting C. reticulata - greater than 70% outturn could be achieved consistently - cutting grafts were a slow and fiddly procedure, and much more labour input was required than for traditional cutting propagation.

In the late 1970's trials were continued with cuttings of the many new C. reticulata hybrids that had been introduced along with the original Yunnan

cultivars. Different timing and stronger hormome treatments gave us some excellent results. Cuttings from young, barely half-ripe, late spring shoots were made and treated with stronger hormones than usually considered adequate for "soft or green" wood cuttings. Timing was important to obtain optimum results; when cutting wood was in prime condition, some excellent rooting percentages were achieved. Further trials confirmed that barely half-ripe, very pliable green-wood cuttings, basally wide-wounded, and treated with IBA powder (0.8 to 1.0% up to 2.0% with talc base containing Captan) gave very acceptable results (Table 1). The resulting rooted cuttings produced good, vigorous, saleable young plants in 18 months for PB5 grade (3 litre) or 30 months for PB12 (7.5 litre). They were nicely branched young trees.

In this way the production of C. reticulata cultivar can be achieved without costly grafting techniques, without the cost and need for producing compatible understocks, and with much more cost-effective labour input.

Table 1. Rooting of selected *Camellia reticulata* cultivars.

Cultivar	IBS (talc based) (%)	Weeks from sticking to potting	Rooting (%)	Sticking date
Buddha	1.0	18	90	Nov
Buddha	0.6	18	40	Feb
Butterfly Wings	0.8	12	35	Dec
Ghittagong	0.8	12	72	Dec
Curtain Call	0.8	10	90	Dec
Curtain Call	0.8	10	43	Feb
Doctor Clifford Parkes	1.0	16	83	Feb
Doctor Clifford Parkes	0.8	16	48	Apr
El Greco	0.8	14	66	Dec
El Greco	0.8	12	25	Mar
Howard Asper	1.0	10	65	Dec
Howard Asper	0.8	12	30	Mar
LASCA Beauty	2.0	14	74	Apr
Miss Tulare	1.0	13	88	Dec
Pagoda	1.0	18	73	Nov
Pagoda	0.8	18	20	Mar
Royalty	0.8	12	62	Dec
Satan's Robe	0.8	12	80	Feb
Terrell Weaver	1.0	12	71	Dec
Valentine Day	2.0	16	52	Apr
William Hertrich	1.0	12	93	Dec
William Hertrich	0.8	12	52	Mar

(Reprinted from The International Plant Propagators' Society Combined Proceedings, Vol. 42, 295-296, 1992.)

Fire Ants

Dave Slater
Certified Professional Agronomist
Caroland Farms

Biology

The biology of fire ants is worth understanding in order to better know how to control these colonial insects. The ants have mating flights under certain weather conditions from spring through summer. The queen flies as high as 800 feet in the air for mating. The males follow. Upon mating the queen falls to the ground, burrows into the ground, and begins laying eggs. Newly mated queens may fly as far away as 12 miles, but more frequently will land within one quarter mile of the original colony. Upon landing, the queen removes her wings to use as a food source in the small burrow she digs. When the queen falls from the mating flight she is most vulnerable to predators such as dragon flies and birds.

Within 24 hours the queen begins laying eggs in her protected burrow. She first lays only 10-15 eggs and these will hatch in 8-10 days. As these eggs hatch, the queen has laid 75-125 more eggs which will hatch and be reared into workers within two weeks to a month. These first few ants are called "minims" because they are very small due to the limited amount of food available from the queen. These minims open the burrow to locate food and begin feeding the queen. The queen now continues to lay eggs and new workers are produced daily. The mound is not detectable for up to 6 months or more but as the mound becomes visible above the ground the colony has transformed from one queen to several thousand ants. The queen of a mature colony is capable of producing 1500 eggs or more every day. A mature colony may contain from 80,000 to 240,000 workers.

The mound may be 24 inches across and 12-18 inches high. It goes deep in the ground with foraging and escape tunnels running far and wide just under the soil surface. If the mound is disturbed the workers will grab the queen and carry her to safety through the escape tunnels. The queen may then set up a new colony.

Hazards To Living Things

Fire ants are quick to defend their mounds from any type of intruder. Livestock and pets learn quickly to avoid the fire ant mound in the pasture or yard. Humans that accidentally get into a fire ant mound find themselves instantly covered with the ants and are bitten simultaneously by many of them, resulting in severe blisters and pain.

Controlling Fire Ants

Fire ants are easy to kill. The use of a bait that is quickly taken down into the mound and fed to the queen and other workers is very effective. Following an application of bait a day later with a quick kill chemical that washes into the mound and kills the ants on contact is a very useful combination. The bait will be foraged upon within 20-30 minutes of its application.

Quarantine?

If they are so easy to kill, why are we worried about them and why is much of the southeastern United States under quarantine? These ants reproduce quickly and in massive numbers. They build their mounds in out-of-the-way places so as not to be disturbed. They will invade native ant mounds and destroy their colonies.

Much of the southeastern United States is quarantined in an effort to keep the Imported Fire Ant from spreading outside the quarantine area. Nurseries and turf farms in these areas are supposed to be following a compliance program of chemical treatment if they intend to ship any of these nursery or turf products outside the quarantine area.

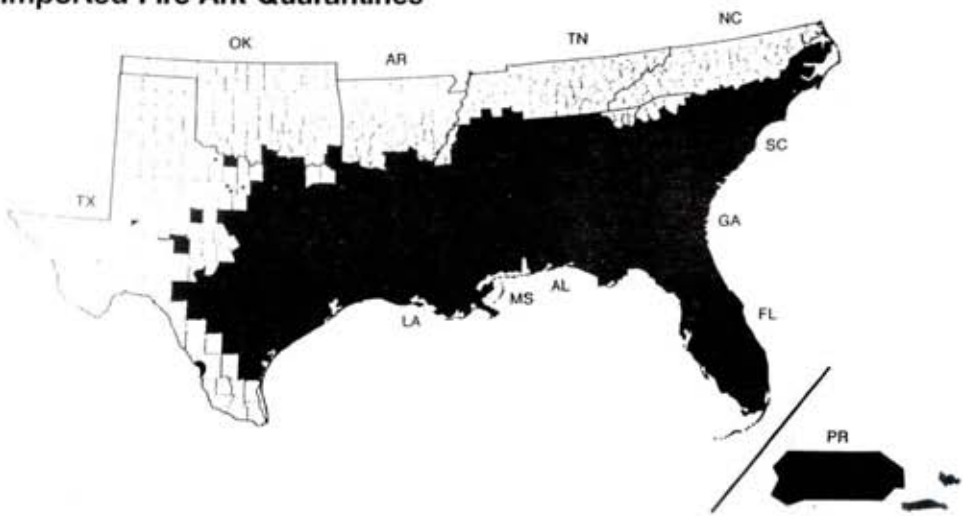
If our part of the state becomes quarantined our producers will then have to add to their production costs the application of chemicals solely for the Imported Fire Ant.

Summary

In summary, due to the rigorous mating flight held several times throughout the spring and summer seasons, the Imported Fire Ant is able to reproduce easily and quickly. Readers should be aware of how quickly these insidious insects multiply and take immediate action against any mounds they find using a combination of education, baits, and quick kill chemicals.

(Reprinted from Upstate Green Industry News).

Imported Fire Ant Quarantines



Conditions of Movement

Counties entirely colored are completely regulated; counties partially colored are partially regulated.

Regulated area

Restrictions are imposed on the movement of regulated articles as follows: From red areas into or through white areas.

Consult your State or Federal plant protection inspector or your county agent for assistance regarding exact areas under regulation and requirements for moving regulated articles. For detailed information see 7 CFR 301.81 for quarantine and regulations.

How To Raise Head Table Blooms

Jim Newell

1. There is no one single, all important factor that spells the difference between success and failure. This is true in the material sense, however at a higher level of understanding, there is one element that transcends this teaching and is known affectionately as T.L.C. (Tender Loving Care).

2. Perfection is not trifle, but trifles make perfection.

3. A winner's philosophy: If we would become a master, it is wise to follow in the footsteps of the masters. Translated into camellia lingo-keep thy plant and thy plants will love thee and bless thee with magnificant blooms.

4. Luck? Sorry - No such thing.

5. Quantity of Plants. Only as many plants are kept as can be cared for in accordance with the above.

6. Selection of plants: Always bet on a champion. The champions of the camellia world are the consistent head table winners as tabulated in the ACS Yearbooks, "The judges have spoken." Other considerations when selecting new varieties or using existing varieties for understock are as follows:

A. Does bloom shatter, bull-nose or age fast?

B. Are blooms distorted, under-sized or dull colored?

C. Does plant produce mostly weak stems?

D. Are blooms from new varieties find their way to the head table?

E. Other undesirable characteristics are flat blooms, lack of petal substance and poor strain.

7. Soil Preparation: Remove all grass, weeds, etc. and loosen the soil to a depth of 6". Dig in 4" of leaf mold, then dig in 4" of manure at least three months old. Have soil analyzed and request recommendations as to supplements needed. Add recommended supplements to bring pH to 6.0-6.5, phosphorus, potash, magnesium and calcium to H. or VH. Add trace elements which contain sulpher, iron, boron, copper, manganese and zinc as recommended by the manufacturer.

8. Fertilization and Mulching: No specific program. A general program is as follows: 2 to 3 oz. cottonseed meal to a 6 foot plant once or twice in the spring. If plants aren't growing vigorously by May, a fast release nitrogen fertilizer is used selectively as follows: 20-20-20 at 1 tbl/1 gal water or ammonium nitrate at 1 tbl/2 gal water or urea at 1 tbl/3 gal water. Use a gallon or two gallons for a 2 to 3 foot plant. No fertilizer needed after June.

Apply 3" of mulch (leaves or leaf and pine straw mixed) and 1" of horse manure. Mulch should be kept away from the trunk approximately 6" to aid in root aeration. Also keep mulch from matting, caused by water and biological break down. Matting prevents air and water penetration.

9. Water and humidity: Watering is done by low pressure dramm (grey) perfect nozzles at approximately 5 to 7 psi, 5 feet O.C. located approximately 8" above bed.

Beds are watered on 7 to 10 day schedule with 1 or 2 inches of water year round. Our mist system is Eddy-Mist nozzles, placed 8 feet O.C., 7 1/2 feet high, over beds, using 40 to 60 psi water pressure. System is activated by 24 hour timers set for the hot day hours, in series, with a humistat set at 50% and an intermittant timer set at 2 1/2 seconds every 5 minutes. The system is used to enhance plant growth and bloom bud development. It is turned off during the blooming season.

10. Shade, ventilation and temperature control: Shade is provided by a 60% polypropalene tarpaulin over the roof. The south and west sides are sprayed with a light coat of white latex paint except for the bottom two feet. Ventilation and temperature control is provided by a 30" fan in the east end of the greenhouse (30 ft. x 36 ft.) and a wet pad system in the west end, 3 1/2 ft. x 22 ft. The system is activated by a thermostat set at 90 to 100 degrees in summer and 60 to 75 degrees in winter. This system can add up to 50% increse in humidity. No attempt is being made to us this system to lower the temperature below ambient temperature.

11. Pruning: Roughly speaking, large plants are pruned back about one third every year. This drastic pruning is done for the following reasons.

A. To produce strong vigorous stems that will in turn have the substance necessary to support, grow and sustain a large healthy bloom.

B. To remove all weak stems.

C. To provide adequate space between limbs so that disease and insects can be controlled by spraying and surgery, and flowers can bloom and be harvested without contacting other limbs which may damage them.

D. To keep plants from growing higher than one can reach to gib and harvest blooms and from growing into neighboring plants.

12. Disease Control: The number one problem is dieback. The writer has found no substitute for surgery. One must be continually vigilant in plant examination, searching for cankers or twig dieback. All infected or off colored wood must be removed and painted with a protective coating. Tree Kote is excellent. The addition of 5% Benlate and enough water to make a thick paste so that it can be brushed on will ensure complete wound seal and will prevent reinfection. These are the surgical tools I use for this work.

A. Razor sharp knife.

B. 1/8" to 1/4" chuck rotary tools approximately 20,000 rpm, fitted respectively with a 1/8" and 1/4" very sharp H.S. steel bit.

For small cankers, a sharp knife and bonsai shears may do the job

For large cankers, the 1/8" or the 1/4" dril may be needed. Drills are used for drilling and routing, and the sides of the drills are used for planing and smoothing up the wound. The fine tooth saw is used for cutting limbs which are too large for the pruning shears. The electric chain saw is used for routing out large trunks 2" or more in size. The critical time for spread of dieback is in the spring during leaf drop. Now that all known dieback has been removed surgically, it is time to turn to prevention.

If dieback has been severe, the plants should be sprayed every two weeks beginning with the first sign of leaf drop in the spring. It should be continued until leaf drop is completed. To each gallon of water, add two tsp. Benlate (W.P.) and one tbl. Captain (W.P.). If algae is a problem, add one tbl. Manzate 200 and 1/2 tbl. Sticker Spreader. Nu-Film-= P works as well as Sticker Spreader. Place powders together in a small container, add small amounts of water until a heavy paste is formed. Work out all lumps. Continue adding small amounts of water until a thin smooth paste is obtained. Add this paste to the gallon of water and then add the Sticker Spreader.

The number two problem is root rot. The cause, very simply stated, is too much water and not enough air around the roots. Here are some don'ts:

A. Don't try to grow camellias in wet heavy soil.

B. Don't overwater.

C. Don't water new grafts at all and especially in containers until there is enough foliage to begin using the water around the roots.

D. Don't let the mulch mat up or cover the roots to within 6" of the trunk.

Here are some do's:

A. Loosen up heavy soil by adding 50% or more of organic materials, coarse sand, Perlite or equivalent.

B. In wet weather keep potted plants under cover.

C. If root rot is suspected use Subdue as a soil drench. Mix Subdue 1/4 tsp / 2 gallons water, apply one quart of this mix to a 2 gallon container, proportionate amounts for other sizes. Treat at six month intervals as required.

13. Insect Control: Once insects are under control, routine sprays are reduced to 2 or 3 times a year, twice in the spring - 10 to 14 days apart, beginning shortly after lead drop begins and again in the fall. Spraying is done with a power sprayer and great care is taken to ensure that the trunks, branches and all leaves, bottoms as well as tops, are completely covered. Spring spraying is done with a spray composed of 2 tsp Cygon E2 per gallon of water, 1/2 tsp Spreader Sticker and fungicides and algicides listed above.

Soluable fertilizers are added sometimes. Fall spraying is done in September, October or November as required to control Red Spider or Black Aphids. Use Kelthane for spider mites and Malathion for aphids mixed at the rate of 1 tbl/gallon of water. While spraying all recommended precautions are taken. If you do not wear a mask, turn on the exhaust fan and open the windows to create adequate ventilation for removing all fumes and over spray.

Slugs and snails are controlled with Bug-ETA as directed by the manufacturer; fire ants with Amdro; nectar ants, pill bugs and sow bugs with Diazinon. There is only one sure way to control moles, mole traps used as directed by the manufacturer.

14. Disbudding: Remove all but terminal buds. Remove all buds from weak stems. Always try to leave buds face down to help protect the bloom from the elements. After disbudding is finished, remove another 50% of the remaining buds.

Disbudding is begun in June and continues through January. When a bud breaks dormancy, gib has very little effect, hence the late disbudding. An effort is made to preserve about 1/3 small buds in hope they will mature later and extend the blooming season.

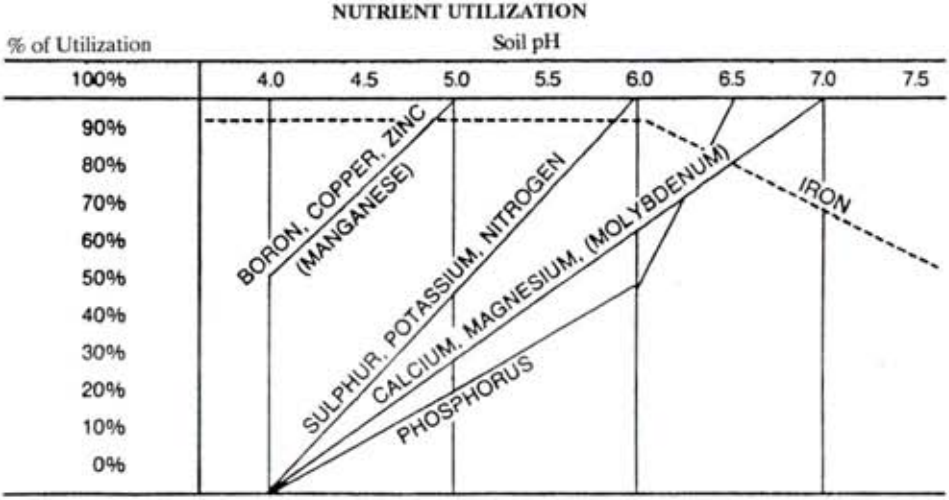
15. Gibbing: Potassium Gibberellic Acid is used at the following strengths- September and October last year's gib 2.2% and new gib 1.3% (13,000 ppm); November 1.5%; December 1.8%; January 2.2%. Buds are regibbed only once. Analysis of detailed gibbing records has not provided substantial evidence that multi-gibbing is superior in any way to single gibbing. Miniatures are gibbed with 0.5% potassium or magnesium gib. One or two buds per plant are gibbed every week or two depending on the size of the plant. Detailed gibbing records indicate a great difference in blooming time after gibbing - for example, Aztec-58 days, Tomorrow-45 days, Mouchang-40 days, Carter's Sunburst-36 days, Little Babe-30 days, etc. Buds are gibbed for shows in accordance with these predetermined harvest days.

JIM NEWELL'S FERTILIZER PROGRAM

THE TEN PRINCIPLES OF SUCCESS IN ORDER OF PRIORITY

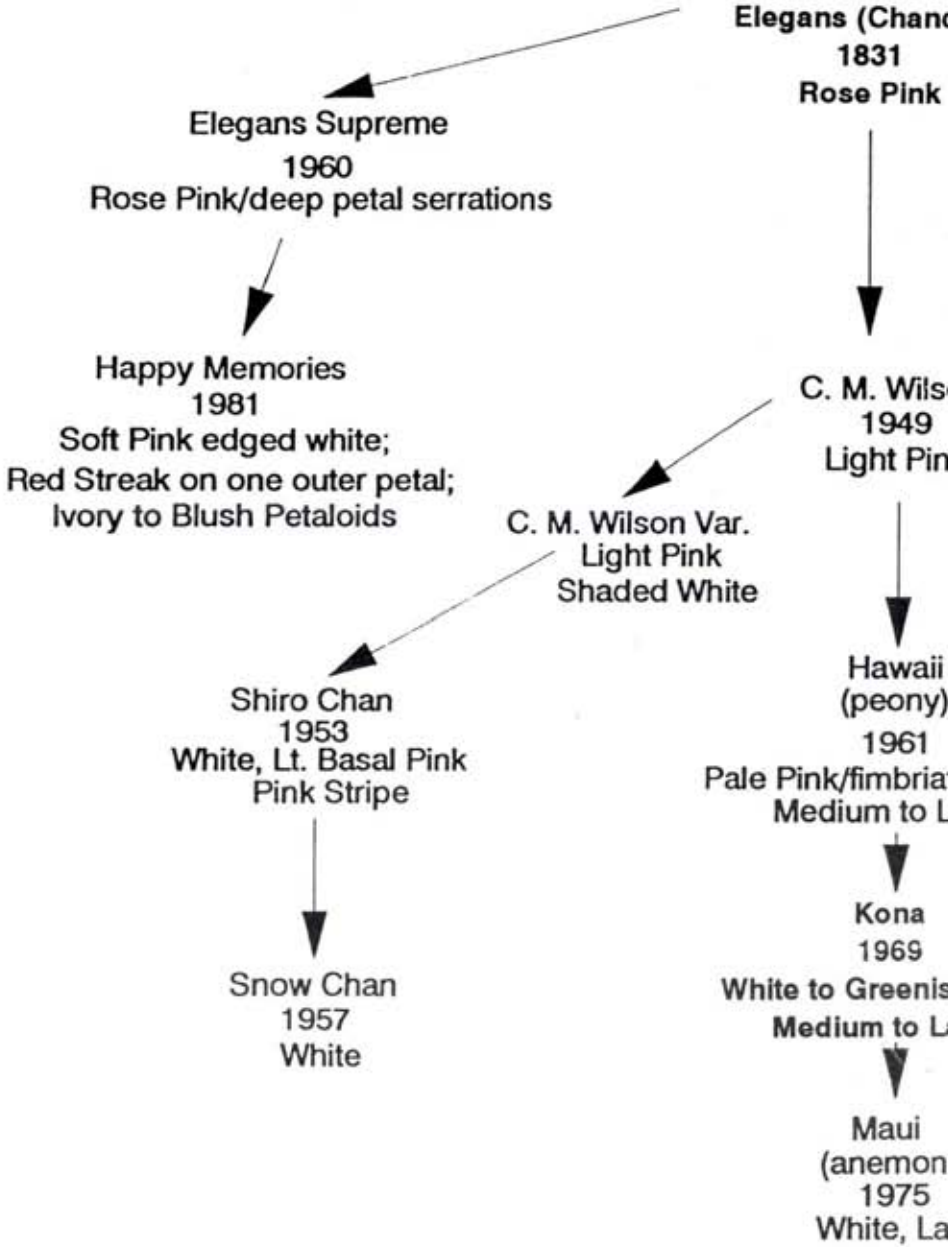
1. Soil Texture
   a. Over 50% humus - highly retentive of moisture
   b. loose in construction - good drainage
2. Adequate watering - every 10 days (7?)
3. pH between 5.5 and 6.5
4. Filtered shade - approximately 50% to 65%
5. Complete soil analysis
6. Add nutrients to eliminate deficiencies and bring nutrients into balance
7. High nitrogen for growth
8. High phosphorus for large blooms
9. Too much nitrogen - excessive top growth
10. Too much phosphorus, iron or too low pH locks up other elements

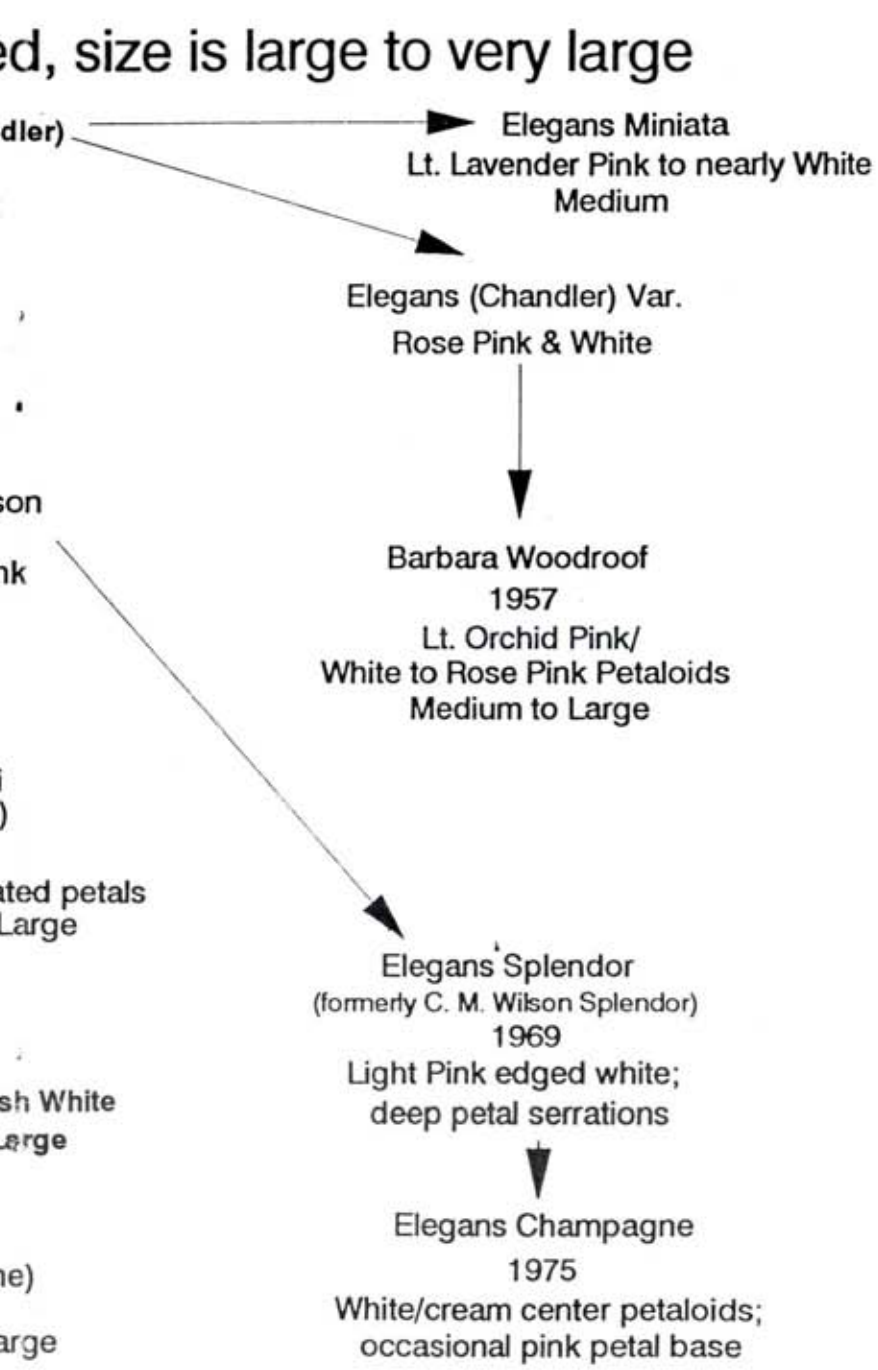
NUTRIENT UTILIZATION



From the Camellia Journal, Aug. 1990. pp 40-41. Courtesy of Ann Brown, Editor.

Elegans Family - unless state




ed, size is large to very large
dler)
Elegans Miniata
Lt. Lavender Pink to nearly White
Medium
Elegans (Chandler) Var.
Rose Pink & White
son
nk
Barbara Woodroof
1957
Lt. Orchid Pink/
White to Rose Pink Petaloids
Medium to Large
ated petals
Large
Elegans Splendor
(formerly C. M. Wilson Splendor)
1969
Light Pink edged white;
deep petal serrations
sh White
arge
Elegans Champagne
1975
White/cream center petaloids;
occasional pink petal base
ne)
arge

Camellia Families

Jerome Hogsette
Gainesville Camellia Society

Elegans (Chandler) - One of the oldest, most interesting, and well-branched camellia families is probably the Elegans family (see figure in the over-leaf center page spread). The original member of the family, Elegans, was originated by Alfred Chandler in Vauxhall, England, reportedly from seed of Warratah planted in 1822. It was named and described by Chandler and Booth in 1831. To avoid the confusion of this variety with another similar but inferior variety, the name of the originator was attached to the name of the flower. Hence the name Elegans (Chandler), Elegans Chandlerii, and so on.

Chandler and Booth originally described Elegans (Chandler) as a rose flower about three and one half to four inches in diameter. However, Gerbing in 1943 and Hume in 1946 described Elegans (Chandler) as a variegated flower. Apparently between the time of its development and the renewed interest in camellias in the mid-20th century, a variegated form of Elegans (Chandler) appeared and became the most well-known form. In the 1957 edition of Camellias Illustrated, Elegans (Chandler) is shown and described as rose pink with white petaloids. A similar description is used in the current Camellia Nomenclature.

From this confusion we can assume that the Elegans (Chandler) has been a variety with a potential for variation, an assumption proved correct by all of the documented 20th century Elegans (Chandler) sports. Elegans (Chandler) Variegated and Elegans Miniata are listed in the Camellia Nomenclature, but no dates are given for their descriptions. The first recorded 20th century sport was C.M. Wilson in 1949, but no date is given for the variegated form.

It is interesting to note that despite the color variation in the 14 sports, there is only one change in flower form. Hawaii, a 1961 C. M. Wilson sport, has peony-form flowers. Kona, which sported from Hawaii in 1969, also has peony-form flowers. However, Maui, a 1975 sport of Kona, reverted back to the anemone form of its ancestors. In all sporting lines, the colors get lighter with each successive sport as if there were an organized attempt to eliminate the rose pink of Elegans (Chandler) altogether. The three sporting lines from C.M. Wilson actually terminate at present with white flowers. Elegans Champagne is perhaps the most beautiful of the three, but flowers of this variety have been observed with red basal streaks. Are we in for another surprise from this Elegans family?

Members of the Elegans family can be very challenging to grow. The habit of growth is usually slow or very slow. Once a plant has been topped, growth becomes primarily lateral and it is difficult in many instances to induce additional upward growth. For this reason, the Elegans family members can be used in foundation plantings where low-growing shrubs are desired. They can also be used for low hedges or for espalier. Despite the frustration of slow growth, the beautiful craped

and ruffled flowers are well worth the effort and the wait. If you have a member of the Elegans family in your camellia collection, who knows, you might be the one who registers the next Elegans sport.

References: Gerbing, G.G. 1943. Camellias. J. Horace McFarland, Harrisburg, Pa.; Hume, H.H. 1946 Camellias in America. J. Horace McFarland, Harrisburg, Pa.; Sharp, M.L. 1957. Camellias Illustrated. Abbott, Kerns & Bell, Portland, Ore.; Camellia Nomenclature. 1993. A.A. Gonos & W.W. Donnan, (Eds.). Southern California Camellia Society, Arcadia, Cal.

Jacksonville Show
Marion Edwards, Eulee Wheeler, Emily Wheeler
by Shepherd

ACCS Myrtle Beach
Delores & Jim Oates, W.C. Wyatt, Clara Hahn,
George Gerbing
by Shepherd

David Coleman Strother
9th Generation

Dick Dodd, nephew

DAVID COLEMAN STROTHER (R.C., W.A., Geo. James, Wm., George, Jeremiah II, Jeremiah, William). The youngest child of Richard Coleman and Frances (Mickler) Strother was born May 16, 1881 in Oconee County, South Carolina. He died January 25, 1970 in Fort Valley, Georgia. He is buried beside his father and mother in the cemetery in Walhalla, South Carolina. He never married.

He graduated from Wofford College in Spartanburg, South Carolina in 1902. He was a member of the Chi Psi fraternity there before fraternities were abolished at that institution. After graduation, he located in Fort Valley, Georgia to operate the Fort Valley Oil Company his father had purchased that year as part of a family trust. He made Fort Valley his home for the rest of his life, although traveling extensively.

Although operating the Fort Valley Oil Company most successfully until his death in 1970, Mr. Strother had given all of his inherited stock in the company to the grandchildren of his father, Richard C. Strother. The Fort Valley Oil Company was the last business enterprise set up by his father that remains a profitable and progressive company today. Mr. Strother's estate at his death was accumulated from his business endeavors outside the Fort Valley Oil Company.

A brief summary of his activities is published in The History of Peach County published in 1972, compiled by Gov. Treutlen Chapter of the D.A.R., Fort Valley, Georgia. An extract from this publication follows:

DAVID COLEMAN STROTHER

"In 1902 several Fort Valley businessmen sold their cotton seed crushing mill to Richard Coleman Strother of Walhalla, South Carolina. He purchased the property for his son, David Coleman Strother, who had just graduated from Wofford College. After telegraphing the young man to come to Fort Valley at once, Mr. Strother cooled his heels for a week before the young graduate arrived on an afternoon train.

"What kept you so long?" demanded his father.

"Why, I've been coming ever since I received your telegram," replied his son, being careful not to mention the farewell dances and the house parties that had filled the week.

"Coming" was a characteristic of the tall and personable Dave Strother, who had worked and danced his way across the Atlantic during college vacations. Now he was in the oil business to stay, for all of 67 years.

"The new manager bought real estate and farms and entered the peach business. A charter member of the Kiwanis Club, he was interested in Fort Valley's well-being. An Episcopalian, he beautified the church grounds and kept them up for years.He was second president of the Library Board, serving for over forty years and added to its trust fund by annual gifts.

"When a windstorm destroyed trees on one of his farms, Dave Strother used camellia plants as replaements. These shrubs were the nucleus of the world-famed "Massee Lane" gardens. Becoming an authority on camellias and camellia nomenclature, he was known as Mr. Camellia. He traveled over the western hemisphere in pursuit of his hobby. He added acres each year to the gardens and had extensive trial grounds for seedlings. Two years before his death at 89 he gave the gardens to the American Camellia Society for headquarters, together with a large trust fund for maintenance. On numerous trips to Charleston on camellia business he secured there the mellow brick with which to beautify the oil mill property and the camellia gardens. His arrival in Fort Valley in 1903 was indeed a coming of beauty to the small community."

THE AMERICAN CAMELLIA SOCIETY

"In 1968 Fort Valley became the home of the National Headquarters of the American Camellia Society when Dave Strother gave his camellia garden to "Massee Lane" and 160 acres of surrounding farmland to it.

"Mr. Strother had spent 35 years collecting the best varieties of camellias and planting them in a seven-acre garden which soon became the chief tourist attraction in Peach County. Many times the hundred-car parking lot filled early in the afternoon and highway patrolmen had to be called to handle the traffic. He never charged admission, nor did he sell plants or flowers.

"As he expanded the garden to include more and more varieties of camellias, brick paths were laid out and lined with boxwood. Millstones from all over Georgia were brought in, granite mileposts were used as accents, and a formal part of the garden was enclosed with a wall made of old brick from Magnolia Gardens at Charleston. Other plants were added, and Lady Banksia roses growing up the tall pines provided a mass of blossoms each spring.

"The American Camellia Society kept the gardens intact and erected a headquarters building in the Williamsburg style favored by Mr. Stother. A large greenhouse was built in 1970 and other small structures and an irrigation system were added. Flowering plants including late flowering Satsuki azaleas and new varieties of hemerocallis extended the blooming season.

"The library in the headquarters building, the finest camellia library in existence, housed many rare, old volumes and paintings as well as all current literature pertaining to camellias. Two sets of Berlese: Inconographie du Genere Camellia, 1845, one of which had been the property of the Empress Marie Louise, and An Embassy to China, published in 1669, were among the many collectors' items. Original camellia waterclolors by Clara Maria Pope, whose paintings were published in London in 1819, and by Paul Jones of Australia, who in 1972 was the world's outstanding horticultural illustrator, hung on the walls of the reception room of the offices.

"In 1972 Mrs. William Parks Stevens of Macon, who with her husband had been long-time friends of Mr. Strother, completed a gallery to house the collection of

Edward Marshall Boehm porcelains which she had started giving to the Society while Mr. Strother was alive. The collection of 130 of Boehm's finest porcelains, given permanent residence at "Massee Lane", was considered to be the largest collection of Boehm bird subjects in any one museum."

ACCS Myrtle Beach
Bill & Alda Boll
by Shepherd

ACCS Myrtle Beach
Jack & Dot Teague
by Shepherd

Science In The Service Of The Camellia Grower: Prospects For The Future - Part I & II

R.L. Bieleski
Horticulture and Food Research Institute of New Zealand Ltd.

This paper was presented by Pat Macdonald, N.Z. Director of the ICS at the 1993 ICS Congress in South Africa

Plant scientists are creatures of habit. They carry out most of their research on a very limited range of plants - ones that are either of major economic importance, such as wheat, soybean and cotton, or ones that can be grown easily and rapidly in a laboratory or glasshouse, and used as model systems. Typical examples here are spinach, pea, tomato and maize. What this means is that plants like camellia, which is both slow-growing and prized for its beauty rather than its commercial value, don't receive very much attention at all. It was with the aim of jogging these unimaginative scientists into taking more interest in camellias that the New Zealand Camellia Society set up the Camellia Memorial Trust in 1985. Its stated purpose was to fund research on camellias, and to catch scientists in their formative years. For this reason it was particularly aimed at supporting Masters and Doctorate students at New Zealand universities. I have recently given as account of what has been achieved to date in our N.Z. Camellia Bulletin, in March 1993 issue.

But that is in the past. What I want to do here is to gaze into a crystal ball (even if it is a very murky one) and tell you of some of the possibilities that I see in the future. The overriding impression I have is that most of the knowledge that will be useful to camellia growers will come, not from work on camellias themselves, but from work with other model plants (the sorts I have already mentioned). Our real trick for the future will be to adapt some of that knowledge to the camellia. If we start with some sort of picture of the knowledge that might be useful, this should make us more prepared to take the opportunities as they arise; and that is my purpose in this article.

The first area where we might look for advances is in control of plant disease. In New Zealand a root rot called Phytophthora is the most troublesome disorder that camellia growers meet. The situation that we find here provides a good example of the general difficulties that lie in the way of devising new fungicides and pesticides. In the last couple of decades agricultural chemical companies have had to meet increasingly stringent, extensive and expensive testing protocols before releasing a new agricultural chemical for general use. Even then the job is not done, because there has to be further testing of its application to a specific crop before the chemical can be sold for that purpose, and often the regulations are established on a country-by-country or a state-by-state basis. To give an idea of how stringent these controls can be, it is against State law in California to promote the use of dilute household bleach (sodium hypochlorite) as a vase additive to extend flower life, because that specific use of that chemical has not yet been tested and

approved. As a result, chemical companies will only invest effort in developing a new agricultural chemical if the extremely high costs of testing and gaining approval can be offset by major future use of that chemical. In practice, it means that only the disease of very major crops are worth their attention. And although Phytophthora is often one of the most serious disease problems facing a wide range of fruit trees (avocado, apple, kiwifruit etc.) not one of those crops provides a large enough market to make control of Phytophthora a high priority in the minds of the chemical companies.

Thus, I do not see major advances over the next twenty years in Phytophthora control beyond what we have already. Even so, that still leaves us with two promising options for the camellia grower. The first is to select rootstocks that are much more resistant than run-of-the-mill cultivars to Phytophthora attack. There is every probability that this approach will be successful given some systematic testing. The cultivar 'Kanjiro' has already been identified as having some resistance to Phytophthora, and there is a lot more opportunity out there. There are many species available for testing, and these have come from a wide range of climates and habitats, so that there is every chance there will be a resistant type out there somewhere. The second opportunity we have is to test the use of the simple inorganic chemical, potassium phosphite, (not phosphate), sold in Australia as "Foli-R-Fos" for treatment of Phytophthora problems in avocado, for its ability to control Phytophthora infections in camellia. Again, some preliminary results we have suggest that the method may work well for camellias. A related organic chemical called "Aliette" or fosetyl-Al would be expected to give similar and perhaps better results, and often similar opportunities.

The other main scourge of the camellia is the petal blight Ciborinia (Sclerotinia) camelliae. There are several Sclerotinia species, such as peach brown rot and onion black rot, which are of economic importance, but again no one crop is individually large enough and with a sufficiently big enough Sclerotinia problem to make the market big enough for agricultural chemical companies to spend much effort developing a new specific fungicide. The over-wintering organ that gives the genus its name, the sclerotium, is highly resistant to chemicals and inactivating conditions of all kinds; and it is unlikely that we will see any major advance here. All the indications are that the main control will continue to come from good hygiene - that is, the picking up of camellia litter and burning of any diseased material so that we reduce the load of sclerotia in the soil.

There is one type of camellia disease that at present we take rather for granted or even encourage, and that is virus disease. There is no spray or ordinary agricultural procedure that will cure it, and nor will there be in the next twenty years. There are however procedures that could be used to eliminate virus infections from our plantings, should we want to. Wine grape industries in California and New Zealand and the apple industry in New Zealand have largely achieved this over the last thirty years, and there is every reason to believe that the techniques used there would work for camellia. They depend on three observations.

Firstly, virus is very slow to move between one camellia plant and another, and is mainly trasferred by grafting of infected material or by secateurs that have been used on infected material. Secondly, seedlings and new cultivars raised from seed begin their lives virus-free, and so there is no problem in starting off with virus-free material. Thirdly, where there are established cultivars that already have virus infection, it is often possible to remove virus from propagating material by skilled application of heat therapy or meristem culture methods. At present these techniques have not been worked out for camellia, but I am confident that the camellia would be amenable to their use, and that we would succeed if we put in the effort. An important first step would be to establish reliable and routine methods for the meristem culture and tissue culture propagation of camellias. There would be several other benefits to come from developing these tissue culture methods for camellias. I will discuss a couple later. For this reason, this is a research area I would recommend for high priority in the next twenty years. An extended discussion of the pros and cons of removing virus from our plantings, and of the techniques we would need, is to be found in recent issues of the Southern California Camellia Society publication, The Camellia Review.

On the whole, camellias are not too badly bothered by insect pests. Because most insect pests are highly catholic in their eating habits, and usually attack plants from widely different genera and of very different growth habits, chemical companies have found it worthwhile to continue to develop new general pesticides. Some of the modern ones are very effective. Because they are much more easily broken down than the pesticides of the 1950's and 1960's (such as the halogenated hydrocarbons like DDT), they remain effective for only 1 - 2 weeks after being sprayed on the plant. At first sight this would seem to be a disadvantage but it is not: it means that the biological world is under much less pressure to develop resistant strains of insects, and the insecticides are retaining their usefulness for very much longer. This process is helped by the current trend to use biological control procedures more and more, and to spray with pesticides only when a problem is expected, rather than spraying the stuff on every other Tuesday regardless of need. Although some of the pesticides are very toxic and only for commercial use by trained operators, the safest ones (the sort sold to home growers in garden centers) are no more toxic than other materials we encounter in our everyday life, such as aspirin, tobacco, caffeine and dishwasher powder. In the next twenty or thirty years there will be a slow development of new pesticides, to adjust to the slow development of resistance in the insect population, but we should not expect any major change or advances. The area where there will be the biggest change will be in the development of biological control methods, or what are sometimes called "integrated pest management systems", in which the pests are brought under control mainly by attacking them with a parasite or some other natural antagonist (such as the bacterium Bacillus thuringiensis), with limited assistance from insecticides not toxic to the parasite. Many of the procedures will be tailored specifically to a single or closely-related species of pest and host, so it

remains to be seen whether any of the methods developed will be applicable to camellia. My guess is that within twenty years, there will be methods to control species of scale and aphid that attack camellia, but that they will mainly be available on a commercial basis for orchard management. What we have to do is keep reminding scientists who get a lot of their funding from public money that they should keep the amateur gardener in mind when devising strategies for using biological control agents.

Another area where research may have an impact concerns the keeping quality of camellia flowers. Many cultivars produce flowers that will last for only a day after cutting before they drop their petals and become useless as decorations. Yet what can look nicer in winter than a bowl of fresh camellias in the middle of a dinner table, or a sprig of gay miniatures on the sideboard? This quick loss of petals has been a problem with many flower species, and a great deal of research has been carried out over the last thirty years to understand the process. Many flowers are triggered into wilting and losing their petals by becoming affected by the plant hormone gas, ethylene. We now know that camellias share this behaviour - that is, that they drop their petals as a result of the same sort of processes that cause fruit to ripen and the fowers to wilt. Various treatments have been devised that prevent ethylene from taking effect, and these are used commercially to extend flower life of cut roses and carnations for example. We need to methodically try these out with camellias. Another cause of early flower death is a shortage of carbohydrate (the food store for the flower), which is particularly serious when there is a bulky cut flower supported by few or no leaves (the case with camellia). Here the vase life of the flower can be increased by supplying sugar in the vase solution, so that it can enter the flower stem with the water. There have been preliminary experiments to test both ethylene inhibitors and sugar feeding for their ability to extend camellia life, with only limited success; but there is enough promise there for me to believe that we will be able to develop procedures that will give us five to seven days of vase life for at least some cultivars. Will we ever see camellias sold by florists as cut flowers? I believe it is possible, but here we will need the breeders to help us by using cut flower life as the main criterion in making some of their crosses and selections. The combination of post-harvest flower science and intelligent breeding which has worked for other species such as the rose should have every chance of success in making the camellia into a useful item for florists, so adding to their choices in the lean winter season.

We have an encouraging sign of what may be possible in the operations of a horticulturalist stationed near us. One of the lines he produces is freeze-dried flowers such as roses. He has recently found that camellias adapt well to the process. As a result we have learned a couple of things. The first is that camellias can compete with other standard dried flowers as decorative items for the home: the second is that if we can stop the degenerative processes (here, by freezing the tissue), the petals stick on to the flowering stem firmly, and are not rapidly shed.

Some other plant hormones and anti-hormones that are being developed may also have uses with the camellia. I have already mentioned the potential for compounds blocking ethylene action to extend the cut flower life of camellias. Another group of compounds with some promise are the anti-gibberellins such as "Cultar". These shorten the internodes of various woody plants, and are already being used commercially to make cherry trees much smaller and more stocky, more floriferous and easier to harvest. A preliminary trial has shown that "Cultar" affects the growth of camellias as well making the plant much less 'leggy' and causing flowers to bunch up. Some effects of this kind are not particularly desirable, but others offer real potential: thus I envisage nurserymen producing miniaturised "tub plants" versions of suitable cultivars for the very small garden, to be added to the present line of miniatures, or even to produce consumable plants for house use, like the potted chrysanthemums that are purchased in flower then thrown out when flowering is over. Another option could be to make some of the lovely but straggly C. reticulata cultivars into tidier, smaller and more floriferous plants. As new compounds are devised for orchard use, other potential applications for camellia growing will undoubtedly develop.

Perhaps the area where science has the most prospects for helping the camellia fancier is in the broad field of plant breeding. I include here an understanding of the taxonomy of the genus (which species is related to what, and how closely), the identification of parents of chance seedlings, and the sorting out of cultivar relationships and possible mix ups. Some major opportunities are created by rapidly-developing techniques of molecular biology. These new tools let us do a number os spectacular things. They let us take genes from one organism and insert them into an entirely unrelated species and have them expressed there, so that their products appear in the new plant environment (as in producing new colour lines in petunia). So comprehensive is this, that scientists have already produced plants that not only have genes from bacteria or yeast, but those same genes have been made to work effectively in the new environment. One example that I am particularly interested in has involved taking a bacterium gene that causes a sugar alcohol to be made, and putting it in a tobacco. Not only does the new tobacco make the product, the product causes the tobacco to be more resistant to salinity - that is, to the presence of salt in the water. Such a step could well adapt the camellia to a wider range of soils. The techniques even allow us to synthesise a pseudo-gene that totally blocks the operation of the real thing, preventing its action (for example, slowing the breakdown of cell wall materials and extending storage life in tomato fruit). Yet another trick is to take a gene which controls where and when its neighbouring genes are expressed, and put it alongside a different gene of interest, so that gene can be "turned on" and made to operate in a different organ, or at a different time in development. As an example of how this might work, I give you the yellow camellia. Despite the general impression that bright yellow is a colour not found in C. japonica cultivars, it does occur and is common. We don't register its presence because it is restricted to the pollen, but the pigments giving the pollen its yellow

colour are likely to be closely related to the ones giving C. nitidisima (C. chrysantha) flowers their bright yellow colour. (This point may be settled during the next year by some research work being funded by our Camellia Memorial Trust). I hope you see the significance of this. It seems that C. japonica has the capability to make yellow pigment in high concentrations, but not in the right place, the petals. What we need to do is to somehow give C. japonica cultivars the ability to make those pollen pigments in another place, the petals; and that is just the sort of property these gne expression controllers have - they will dictate the organ that a particular gene will function in. This gives us an alternative path for making yellow camellias to using C. nitidissima hybrids. Indeed, the lack of success to date with those hybrids may come about because the C. japonica parent is dominant in blocking formation of yellow pigments in the petal, and that this is the barrier we may have to overcome, not the ability to synthesize the pigments themselves. At present the sort of techniques required for genetic tinkering can only be carried out in an expensively equipped laboratory by skilled people, and the cost of generating a successfully manipulated plant is very high. However the procedures are becoming more standard, easier and more practical as each year passes. I believe that within the next twenty years it will become commercially viable for one or another of the private firms (or an interested scientist in a University department) to try genetic manipulation on the camellia: the two most probable end-points would be to generate new colour lines (particularly yellow and true blue), and to develop camellias that can be used as cut flowers, by giving them a greatly extended vase life. It is worth noting that once the appropriate gene has been inserted, it will usually behave like any other gene, and become inherited in the progeny, so that the modified plant will be able to become the parent of a whole family with related properties.

We do not need to wait, however, to take advantage of another branch of these molecular biology techniques, and to try fingerprinting camellias in order to learn more about the origins of hybrids and relationships of species. The techniques are already well-developed and routine, should some student or researcher take an interest in the topic. This is one of the sorts of project that I hope will come up for funding by the Camellia Memorial Trust within the next few years. One general approach is to compare the detailed pattern made by several key enzymes in the different plants. The enzymes that are selected are the ones that can exist in several different forms within the one plant: these are called "isoenzymes" or "isozymes". They typically make a characteristic pattern for each genotype (cultivar), and are inherited from the parents. In this way the parents can often be identified, particularly when there is a reasonable suspicion about what those parents might be. This technique is rapidly being surpassed by RFLP mapping, which has its best known application in the DNA fingerprinting of murder and rape suspects, but which is having an even more routine (though less publicised) application in resolving paternity matters. It is now being routinely carried out in commercial laboratories. It involves isolating a small amount of DNA from an individual (or

cultivar) of interest, then chopping it into several fragments with highly specific enzymes that recognize particular code sequences in the DNA, then separating and measuring the length of those fragments. The pattern (or map) that is obtained is unique for each individual (except identical twins) or, in the plant world, for each cultivar. Again, the lengths of the various fragments are inherited from the two parents, so that if the pattern of one parent is known, part of the pattern of the other parent can be simply deduced from the pattern in the offspring.

We have the tools now to resolve some of the many questions about parentage of various dubious camellias, as well as the parentage of fatherless children! Another important task will be to test the relationships (and validity) of the various species, particularly the flood of new ones coming out of South East Asia.

Finally, tissue culture is a technique which has much to offer the camellia world, and I believe that developing methods to tissue culture camellias is of the highest priority. I have already indicated its use in virus elimination, but there is much more to it than that. All of the genetic manipulation I have talked about earlier is of no use at all unless real plants growing in the garden can be raised from manipulated cells, and tissue culture is required for this - indeed, the manipulations themselves are often dependent on a range of tissue culture skills, and tissue culture methods are being used more and more by commercial nurserymen to raise many different species, and even forest trees. Our experience with other plants suggests there will be occasional situations where a camellia will be better propagated by tissue culture methods than the more conventional techniques. But perhaps the most powerful use I can see, in the next twenty years, lies in the area of what is sometimes called "embryo rescue". When two species that are not closely related are crossed, it is quite a common experience to get seed which contains a small poorly developed embryo that dies either before or immediately after germination. This for example has been the problem of many of the crosses made with Camellia nitidissima. In such cases, it is often possible to dissect out the fragile embryo (under sterile conditions) and then, by using tissue culture techniques, to grow it up into a viable plant when it would have died if left to grow from a seed in the normal way. This approach could be a powerful tool for the more outrageous and difficult crosses, in order to develop new lines of breeding. Despite all the power of the molecular techniques, 95% of progress in the range of plants we have available to us in the next twenty years will come, I am sure, from relatively standard plant breeding procedures particularly if the breeder can be helped in successfully making difficult crosses.

The message I wish to leave you with is that in the next two decades, science will be throwing up exciting new prospects for horticulturists and plant fanciers. Very few initiatives will be specifically developed for the camellia of the camellia grower. However, if we stay alert to what is happening, we will be able to adapt some of these advances to our purposes. We need to keep ourselves educated about what is happening, be imaginative in thinking about how we might use the information, and adventurous in actually getting out and trying things. It is my

personal hope that by funding camellia research through the Camellia Memorial Trust, New Zealand's camellia fraternity and sorority will catalyse the process. That is what I believe I am seeing in my crystal ball.

ACCS Myrtle Beach
Emily Vort, Marie & Paul Dahlen, Wyman Priester
by Shepherd

CCCS Picnic Oak Island Plantation
The Brogdens were presented a pillow signed by Camellia friends as it was their 50th Anniversary.
Elliott & Lawanda Brogden, Bill Robertson, Buck Mizzell,
Bonnie Serpas, Parker Connor
by Shepherd

Growing Camellia Seeds

Ed Atkins

One of the most exciting things in the camellia world is growing seedlings.

For the past 15 years we (June and I) have been planting Camellia seeds. With few exceptions they are all chance crosses. We do know the mother plant, but rarely keep up with these plants. I feel like Julius Nuccio, who says "Who cares who the father and mother are as long as they look like Marilyn Monroe." There is nothing we do that is more exciting than seeing a new flower bloom. From planting to blooming usually takes six to eight years, unless you graft the first two leaves from a sprouting seed. This can speed up the process two or three years. Our new blooms have beat the average somewhat, in that usually one new or different bloom only occurs in about 500 seeds.

Late August or early September is the best time to pick seed pods. Inside the pods you will find from one to six seeds. These seeds will germinate as they are when planted in damp soil about one inch deep. However, if you crack the seed and remove the hull, place in the frig for two or three weeks, they will germinate more quickly.

When temperature and moisture in the seed are favorable, the germ-embryo becomes active. One of the first acts is to produce gibberellin. This gibberellin carries the message that the seed is ready to grow and needs the reserve food located in the balance of the seed. This is the same action that takes place when we Gib for blooms.

During our growing seed years we have tried to hasten the growing by placing seeds in different gib; solutions of 1000 PPM to 10,000 PPM. Results indicate the seeds did germinate faster with gib up to 5000 PPM however higher percents did not increase the germination.

We have tried different methods to get the seeds started. One of the best and fastest is to place the hulled seeds between layers of long grain moss and keep them in a warm place. In about three weeks the seeds should be ready to transplant to small containers of half perlite and peat moss mixed. Keep them in a warm shade slightly damp. You can also encourage lateral roots by removing about 1/2 inch or the tap root planting.

Quite a few seeds are lost due to either mildew, fungus or rot. Getting the seeds to germinate therefore, should be to your advantage reducing the possibility of losing seeds. Early germination might also encourage two growth cycles, which means you could get a grafting scion earlier. The blooms, of course, are the payoff. Anything you can do to get the blooms as early as possible is very important. Remember the most exciting about all this work is waiting to see another new bloom of new shape, size and color.

We have been fortunate in that during the past 15 years we have produced and registered the following blooms, some with ACS others with SCCS: 'Something

Beautiful', 'June Atkins', 'Julia', 'Brooke', 'Nancy K.', 'Shalimar Sunset', 'Shalimar Sunset Var.', 'Stephanie Stanley', 'Rachial Stanley', 'Mandy Lane', 'Monte Horton', 'Miss Ft. Walton Beach', 'Ed's Red'. We have approximately 800 to 1000 seedlings growing - ages one year to 12 years old. Hurry up and wait.

Summary: Results indicate soaking seeds in acid for 12 hours does increase the germination time for sprouting. No disadvantages have been noted in our experiments and several advantages have been noted. Good luck and have patience. A friend of June's (HA) recently asked, "How long does it take to get a new bloom?" I replied, "Eight to ten years." Her response was, "At your age, why bother?" So goes the world...

Reprinted from the Gulf Coast Camellian - Fall 1994. Courtesy of Art Landry, Editor

Middle SC BBQ at the Stands, Columbia, S.C.
Frances Racoff, Helen Bush, Elliott Brogden, Delores Edwards
by Shepherd

ACCS Myrtle Beach
Beulah Smith, George Gerbing

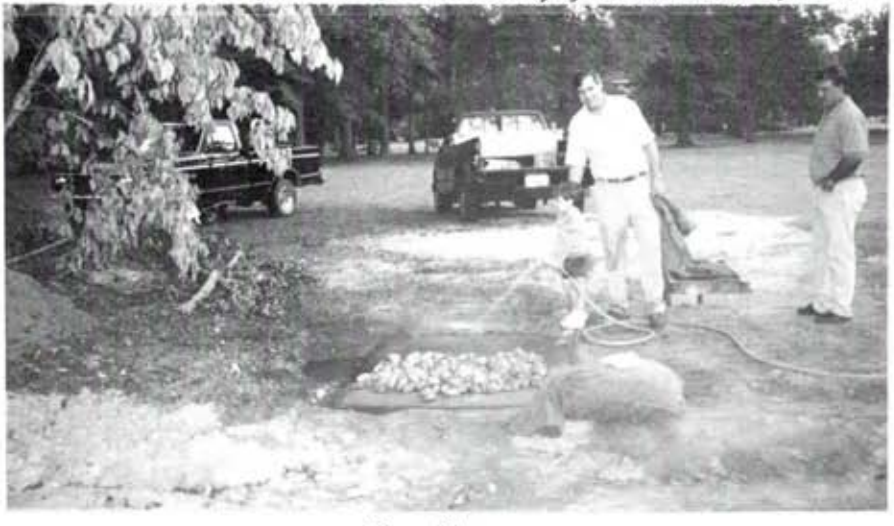
Do We Have As Much Sense As A Goose?

Next fall when you see geese heading south for the winter flying along in a "V" formation, you might be interested in knowing what science has discovered about why they fly that way. It has been learned that as each bird flaps its wings it creates an uplift for the bird immediately following. By flying in a "V" formation the whole flocks adds at least 71% greater flying range than if each bird flew on its own. (People who share a common direction and sense of community can get where they are going quicker and easier because they are traveling on the thrust of one another.) Whenever a goose falls out of formation, it suddenly feels the drag and resistance of trying to go it alone and quickly gets back into formation to take advantage of the lifting power of the bird immediately in front of it. (If we have as much sense as a goose, we will stay in formation with those who are headed the same way we are going.) When the lead goose gets tired, he rotates back in the wing and another goose flies point. (It pays to take turns doing hard jobs - with people or with geese flying south.) These geese honk from behind to encourage those up front to keep up their speed. (What do we say when we honk from behind?)

Finally, (Now I want you to get this) when a goose is sick or is wounded by gun shot and falls out, two geese fall out of formation and follow him down to help and protect him. They stay with him until he is either able to fly or until he is dead, and then they launch out on their own with another formation to catch up with their group. (If we have the sense of a goose, we will stand by each other like that.)

Editor's note: Thanks to a camellia enthusiast for this information. I think for all camellia societies struggling to "go the distance" the goose makes sense.

From the Camellia Review, Nov.-Dec., 1994. Courtesy of Melvin B. Belcher, Editor



Perry Show
Lee & Grady Stokes washing oysters for oyster roast/low country boil
by Shepherd

SHOW REPORTS

FLORIDA

APOPKA, December 10-11, 1994
Number of blooms displayed - 940

Division I - Japonica
SMALL
1a. Grown Unprotected
'Lallarook Var.' - Clarence & Lillian Gordy
1b. Unprotected Treated
'Ruby Mathews'- Howard Smith
MEDIUM
1a. 'Betty Sheffield Supreme'- Jerry Conrad
1b. 'Lallarook'- John Spencer
LARGE
1a. 'Dennis Vaughn'- Clarence & Lillian Gordy
1b. 'Helen Bower Var.'- Bill & Donna Shepherd
1c. 'Tomorrow Park Hill'- Buck & Tyler Mizzell

Division II - Reticulata/Hybrid Reticulata Parentage
2a. Grown Unprotected untreated
'Massee Lane Var.'- Clarence & Lillian Gordy
2b. Grown Unprotected treated
'Frank Houser Var.'- Clarence & Lillian Gordy
2c. Under Protection
'Lasca Beauty'- Buck & Tyler Mizzell

Division III - Hybrids/Non Reticulata Parentage
3a. Grown Unprotected untreated
'Mona Jury'- Clarence & Lillian Gordy
3b. Grown Unprotected treated
'Julia'- Clarence & Lillian Gordy
3c. Under Protection
'Delores Edwards'- Annabelle & Lewis Fetterman

Division IV - Miniatures
'Man Size'- Annabelle & Lewis Fetterman

Division V - Sasanquas or Others
'Chasonette'- Tom & Mary Adams

Division VI - Seedlings or Mutants
'Extra Pink'- Dr. Jerry Hogsette

Division VII - Tray of 3
7a. Grown Unprotected untreated
'Dr. Robert E. Schwartz - Harold Goforth
7b. Grown Unprotected treated
'Pink Perfection' - Jack Slyker
7c. Under Protection
'Frank Houser'- Annabelle & Lewis Fetterman

Division VIII - Tray of 5
8a. Grown Unprotected untreated
Clarence & Lillian Gordy
8b. Grown Unprotected treated
Eileen Hart
8c. Under Protection
Buck & Tyler Mizzell

Best White Bloom
'Charlie Bettis'- Buck & Tyler Mizzell

Best of Show
'Pearl Terry'- Clarence & Lillian Gordy

Sweepstakes Gold
Clarence & Lillian Gordy

Sweepstakes Silver
Annabelle & Lewis Fetterman

Court of Honor
Star Above Star - John Shirah
Doris Ellis - Tom & Mary Adams
Frank Houser - Buck & Tyler Mizzell
Mary Alice Cox - Clarence & Lillian Gordy
Sawandas Dream - Annabelle & Lewis Fetterman
Dixie Knight Supreme - Tom & Mary Adams
Nuccios Jewel - Tom & Mary Adams
Buttons & Bows - Annabelle & Lewis Fetterman
Dennis Vaughn Var. - Clarence & Lillian Gordy
Rena Swick Var. - Clarence & Lillian Gordy
Cile Mitchell - Clarence & Lillian Gordy
Pirates Gold Var. - Clarence & Lillian Gordy

Court of Honor (continued)
William Forest Bray Var. - Clarence & Lillian Gody
Mona Jury - Clarence & Lillian Gordy
Carter Sunburst - Clarence & Lillian Gordy
Little Susie - Clarence & Lillian Gordy
Frank Houser - Clarence & Lillian Gordy
Something Beautiful - Clarence & Lillian Gordy
Mouchang Var. - Clarence & Lillian Gordy
Dennis Vaughn - Clarence & Lillian Gordy

Fort Walton Beach, November 12-13, 1994
Sponsor: Fort Walton Camellia Society
Number of blooms displayed - 1091

ACS Outstanding Bloom Certificates:
Most Outstanding Bloom, In Open: 'Elaine's Betty', Elaine Smelley
Most Outstanding Bloom, Protected: 'Show Time', Jim Newell

C. japonica (In Open)
Very Large: 'Helen Bower', Jack Wetherell
Medium: 'Eleanor Martin Supreme', Gordon Wesley
Small: 'Black Gold', Anne Gramling

C. japonica (Protected)
Very Large: 'Tomorrow Var.', Jim Newell
Medium: 'Betty Sheffield Supreme', Walter Creighton
Small: 'Little Babe Var.', Jim Newell
Miniature: 'Man Size', Jim Newell

C. reticulata
In Open: 'Valentine Day', Elaine Smelley
Protected: 'Dr. Clifford Parks', Jim Newell

C. hybrid
In Open: 'Debbie', Don Applegate
Protected: 'Debbie', T.E. Lundy

Best White, In Open: 'Snowman', Elaine Smelley
Best White, Protected: 'Lucy Stewart', Jim Newell

Best Novice, In Open, Medium: 'Shalimar Sunset', James Keelor
Best Novice, In Open, Small: 'Little Babe', Bill Lang
Best Novice, Protected: 'Dennis Vaughn' James Keelor

ACS Gold Certificates
In Open: Ed Atkins
Protected: Jim Newell

ACS Silver Certificates
In Open: T.E. Lundy
Protected: W.C. Stout

GAINESVILLE, January 7-8, 1995
Sponsor: Gainesville Camellia Society
Number of blooms displayed: 1,373

Division I - AWD 1
japonica - Unprotected, Untreated, Large-Very Large, 'Happy Birthday' C.M. & Lillian Gordy
Division I - AWD 2
japonica - Unprotected, Untreated, Small-Medium, 'Pink Perfection' Mr. & Mrs. Atlee Davis
Division II - AWD 3
japonica - Unprotectd, Treated, Very Large, 'Leila Gibson' Jerry & Debbie Hogsette
Division II - AWD 4
japonica - Unprotected, Treated, Small-Medium-Large, 'Ruby Mathews' Eileen Hart
Division III - AWD 5
japonica - Protected, Very Large, 'Holly Bright' Dr. C.D. Scheibert
Division III - AWD 6
japonica - Protected, Small-Medium-Large, 'Black Tie' Annabelle & Lou Fetterman
Division IV - AWD 7
rectic or retic hybrid - Unprotected, Very Large - 'Valentine Day' James Norman
Division IV - AWD 8
retic or retic hyubrid - Unprotected, Small-Medium-Large, 'June Norman' C.M. & Lillian Gordy
Division V - AWD 9
retic or retic hybrid - Protected Very Large, 'John Hunt' Annabelle & Lou Fetterman
Division VI - AWD 11
Non-retic hybrid - Unprotected, Large-Very Large, 'El Dorado' James Norman
Division VI - AWD 12
Non-retic hybrid - Unprotected Small-Medium-'Coral Delight' Jerry & Debbie Hogsette

Division VII - AWD 13
Non-retic hybrid - Protected
Large-Very Large, No award given
Division VII - AWD 14
Non-retic hybrid - Protected
Small-Medium, No award given
Division VIII - AWD 15
Miniature, Unprotected, 'Tammia'
Tom & Mary Adams
Division IX - AWD 16
Miniature, Protected, 'Sugar Babe'
O.L. Jacobson
Division X - AWD 17
Seedling Bloom, 'Japonica #2
John Shira, Jr.
Division XI - AWD 18
Other Camellia Species, 'Chrysantha'
Mrs. John Hintermister

Division XII - AWD 19
Novice Bloom, 'Elegans Supreme'
David & Susan Mikolaitis
Division XIII - AWD 20
Plate of 3, Same
Variety, Unprotected, 'Clark Hubbs Var.'
James Norman
Division XIII - AWD 21
Plate of 5, Different
Varieties, Unprotected,
Paul & Mary Wilson
Division XIV - AWD 22
Plate of 3, Same
Variety, Protcted, No award given
Division XIV - AWD 23
Plate of 5, Different
Varieties, Protected, No award given
24 Sweepstakes Winner, 51 blooms
(GSC Member), Dr. Howard Smith
25 Sweepstakes (Overall) 63 blooms
John Shira, Jr.
26 Founders Award
James Norman

ACS Outstanding Bloom Certificates
C. japonica (in open) (untreated)
Large: 'Happy Birthday', C.M. & Lillian Gordy
Small: 'Pink Perfection', Mrs. Ginger Davis
Miniature: 'Tammia', Tom & Mary Adams
C. japonica (in open) (treated)
Large: 'Leila Gibson', Dr. & Mrs. J.A. Hogsette
Small: 'Ruby Mathews', Eileen Hart
C. japonica (protected)
Large: 'Holly Bright', Dr. C. David Scheibert
Small: 'Black Tie', Annabelle & Lou Fetterman
Miniature: 'Sugar Babe', O.L. Jacobson
C. reticulata: (in open)
Large-V. Large: 'Valentine Day', James Norman
Med.-Lrg.: 'June Norman', C.M. & Lillian Gordy
C. reticulata: (protected)
V. Lrg.: 'John Hunt', Annabelle & Lou Fetterman
Small: 'Freedom Bell', Dr. C. David Sheibert
C. hybrid (in open)
Large: 'El Dorado', James Norman
Medium: 'Coral Delight', Dr. & Mrs. J.A. Hogsette
C. hybrid: (protected)
No certificates awarded
C. sasanqua & related species
Best Bloom: Chrysantha, Mrs. John Hintermister
Best Novice: 'Elegans Supreme',
David & Susan Micolaitis
Gold Certificates: (in open)
Overall: John Shira, Jr. (65)
GSC Member: Dr. Howard Smith (51)

Court of Honor
1 Tomorrow, O.L. Jacobson
2 Rosea Superba, Tom & Mary Adams
3 Dr. Clifford Parks, James Norman
4 Clark Hubbs Variegated, James Norman
5 Dr. Robert E. Schwartz Var., Harold Goforth
6 Man Size, Eileen Hart
7 Frank Houser, Annabelle & Lou Fetterman
8 Cinnamon Cindy, O.L. Jacobson
9 Jonathon, Annabelle & Lou Fetterman
10 Jessie Katz, O.L. Jacobson
11 Mona Jury, C.M. & Lillian Gordy
12 Betty Ridley, John Shirah, Jr.

Ocala, January 14-15, 1995
Sponsor: Ocala Camellia Soc. & Pioneer Garden Club
Number of blooms: 1019

ACS Outstanding Bloom Certificates
Most Outstanding Bloom: 'Frank Houser'
June & James Norman
C. japonica, (in open) (untreated)
Large: 'Showtime', June & James Norman
Medium: 'Esther Smith', June & James Norman
Small: 'Doris Ellis', Alda & Bill Boll
Min.: 'Something Beautiful', June & James Norman
C. reticulata: (Includes hybrids with reticulata parentage)
Untreated - 'Frank Houser Var.',
June & James Norman

C. hybrid (With other than reticulata parentage)
Untreated-'Julia', C.M. & Lillian Gordy
C. sasanqua (And related species)
'Mini No Yuki', Tom & Mary Adams

Best White Bloom: 'Snowman'
June & James Norman

Best Bloom by Novice: 'Professor Sargent Var.'
Mary Thompson

Gold Certificates:
In open, won by C.M. & Lillian Gordy

Chemically treated blooms:
C. japonica (In open - treated): Any size
'Cherries Jubilee', O.L. Jacobson
C. reticulata (In open - treated)
'Valentine Day Var.', C.M. & Lillian Gordy
C. hybrid (In open - treated)
'Julia Var. #2', June & James Norman

PENSACOLA, December 10-11, 1994
Sponsor: Pensacola Camellia Club
Number of blooms displayed: 1892

Division I - Protected - japonica
Best Bloom: 'Hall's Pride', Jim Pinkerton
Best Lrg. to V. Lrg.: 'Show Time,
Jim Pinkerton
Best Med.: 'Mary Alice Cox',
Jim & Elaine Smelley
Best Small: 'Hishi-Karaito', Jim Newell
Best Miniature: 'Men's Mini', Jim Newell
Best White: 'Lucy Stewart', Jim Newell
Hybrid
Best Med. to Lrg.: 'Mona Jury Var.',
Jim Newell
Best. Min. to Sm.: 'Freedom Bell', Jim Newell
Reticulata
Best: 'Big Dipper', Jim Pinkerton
Best Plate of 3-Same-japonicas,
'Tama-No-Ura', George Griffin
Best Plate of 5 - Any Combination,
Jim Pinkerton
Sweepstakes: Jim Pinkerton
Sweepstakes Runner-Up:
George & Jane Griffin

Court of Honor
1. Cotton Tail, George & Jane Griffin
2. Nuccio's Pink Lace, Jim Pinkerton
3. Dr. Clifford Parks, Walter Creighton

Court of Honor (continued)
4. Little Babe, Jim Newell
5. Frank Houser, Jim Pinkerton
6. Margaret Davis, Elaine & Jim Smelley
7. Fragrant Pink, Jim Newell
8. Rose Bouquet, Jim Pinkerton
9. Tomorrow Park Hill, Jim Newell
10. Button 'N Bows, Elaine & Jim Smelley
11. Ville de Nantes, Jim Pinkerton

Division II - Non Protected
Best Bloom: 'Frank Houser', Vernon Vinson
Japonica
Best Lrg. or V. Lrg.: 'Mrs. D.W. Davis',
Dr. L. J. Audioren
Best Med. to Lrg.: 'Nuccio's Cameo',
Chas. Bush
Best Med.: 'Prince Eugene Napoleon',
Chas. Bush
Best Small: 'Little Man', John Geiser
Best Min.: ' Man Size', Bob Gramling
Best White: 'Elegans Champagne', John Davy
Hybrid
Best Med. to Lrg.: 'Debbie', Don Applegate
Best Min. to Sm.: 'Cinnamon Cindy',
Bill Bennett
Reticulata
Best Reticulata: 'Hall's Pride', Ed Atkins
Sweepstakes: Bill Stout
Runner-Up: Bob Gramling
Best: 'Something Beautiful',
Jim & Elaine Smelley

Best Plate of 3 - Japonicas (Same)- 'Alba Plena'
H.D. Moore
Best Plate of 5 (any comb.) Walter Creighton
Sweepstakes: Bill Stout
Runner-Up: Bob Gramling

Court of Honor
1. Mattie R., Charles Torres
2. E.G. Waterhouse, L. Filligame
3. Tom Knudsen, Walter Creighton
4. Helen Bower, Don Applegate
5. Mary Fisher, L. Filligame
6. Winner's Choice, V. Vinson
7. Little Babe Var., Ed Atkins
8. Fragrant Pink, John Davy
9. Pink Frost, Henry Boudolf
10. Men's Mini, Gordon Wesley

Division III
Best Seedling: Fred Jennings
Best Mutation: 'Han-Ling Snow', Dr. T.E. Lundy
Division IV
Other Species (Sasanqua. Hiemalis. etc.)
Best Flower: Sasanqua, Gabriel Olson
Runner-Up: 'Shishi Gashira', Edith Robison
Division V (Novice)
Best Lrg. to V. Lrg: 'Ruffian', Gloria Glaub
Best Med.: 'Betty Sheffiedl', Tappore
Best Small: 'Pink Perfection', Belinda Mahon
Best Miniature: 'Man Size', Mr. & Mrs. M. Hollis

Best Plate of 3 (Same), Frank Creel
Best Plate of 5 (any combination), Dr. Frank Biasco
Sweepstakes: Belinda Mahon

TALLAHASSEE, January 14-15, 1995
Sponsor: The Camellia & Garden Club of Tallahassee
Number of blooms displayed: 1279

ACS Outstanding Bloom Certificates:
Most outstanding bloom, protected:
'Frank Houser Var.', Jim Pinkerton
Most outstanding bloom, unprotected:
'Cherries Jubilee', Paul & Mary Wilson

C. japonica (In Open)
V. Lrg.: 'Drama Girl', Stuart Watson
Lrg.: 'Mike Whitman', Lee Roy Smith
Med." 'Donkelarli', Mrs. Roscoe Whiddon
Runner-up: 'Black Gold', Randolph Maphis
Sm.: 'Something Beautiful', Paul & Mary Wilson
Min.: 'Grace Albritton', D.A. Archibald
C. japonica (Protected)
V. Lrg.: 'Tomorrow's Dawn', Mrs. Alfred Bissel
Lrg.: 'Lady Laura', Jim Pinkerton
Med.: 'Nuccio's Jewell', Jim Pinkerton
Sm.: 'Little Babe Var.', Bill & Sally Hardwick
Min.: 'Firecone', John T. Newsome
C. reticulata (Includes hybrids with reticulata parentage)
In Open: 'Dr. Clifford Parks', Frank E. Bobe, Sr.
Runner-up: 'Miss Tulare', Randolph Maphis
Protected: 'Redwood City Var.', Bill & Sally Hardwick
Runner-up: 'Frank Houser', Jim Pinkerton
C. hybrid (With other than reticulata parentage)
In Open: 'Julia Hamiter', Stuart Watson
Runner-up: 'Debbie', Randolph Maphis
Protected: 'Mona Jury Var.', Jim Pinkerton
Runner-up: 'South Seas', Jim Pinkerton
Best White, Unprotected, 'Snowman' Randolph Maphis
Best White Bloom, Protected- 'Elegans Champagne', Jim Pinkerton
Best Bloom by Novice: 'Mark Chason' Lew Wassler

Gold Certificates:
In open, won by Bob & Ann Grambling
Protected, won by Jim Pinkerton

WINTER PARK, January 21-22, 1995
Sponsor: Camellia Society of Central Florida
Number of blooms displayed: 2000

ACS Outstanding Bloom Certificates:
Most outstanding bloom in show: 'Emma Goeta' Mr. & Mrs. Mack McKinnon
C. japonica (Protected)
Lrg.: "Tomorrow Park Hill", Mr. & Mrs. Oliver Mizell
C. reticulata (Includes hybrids with reticulata parentage)
In Open: 'Frank Houser Var.', Mr. & Mrs. Paul Wilson
Protected: 'John Hunt', Mr. & Mrs. Oliver Mizell
C. hybrid (With other than reticulata parentage)
In Open: 'Julia', Mr. & Mrs. C.M. Gordy
Protected: 'Mona Jury', Mr. & Mrs. Mack McKinnon
C. sasanqua (And related species)
Best Bloom: 'Chansonette', Mr. & Mrs. Tom Adams

Best White Bloom: 'Mary Alice Cox', Dr. John Spencer
Gold Certificate:
In open, won by Mr. John W. Shirah, Jr.
Silver Certificate:
In open, won by Mr. & Mrs. C.M. Gordy

GEORGIA

ALBANY, December 3, 1994
Sponsor: Men's Garden Club of Albany
Number of blooms displayed: 631

ACS Outstanding Bloom Certificates:
Most Outstanding Bloom: 'Hall's Pride', Bill and Sally Hardwick

C. japonica
Very Large: 'Show Time', Dr. Frank Houser
Large-Very Large: 'Mary Ann Houser' Dr. Frank & Mary Ann Houser
Small-Medium: 'Commander Mulroy', Bill and Sally Hardwick

C. reticulata
Best Bloom: 'Hall's Pride Var.',
Bill & Sally Hardwick
Best Miniature: 'Tammia',
Dr. & Mrs. Dan Nathan
Best White: 'Lucille Jernigan',
Ann & Bob Gramling

MASSEE LANE, Fort Valley, Nov. 12-13, 1994
(22nd Annual)
Sponsor: Middle Georgia Camellia Society

ACS Outstanding Bloom Certificates:
Most Outstanding Bloom: In Open:
'Miss Charleston Var.', Bill & Donna Shepherd
Protected: 'Frank Houser', Jim Pinkerton

C. japonica (In Open)
Large: 'Clark Hubbs', Dr. & Mrs. Dan Nathan
Med.: 'Clown', Mr. & Mrs. C.M. Gordy
Small: 'Pink Perfection', Mr. L.G. Sapp
C. japonica (Protected)
Large: 'Helen Bower Var.', Jim Pinkerton
Med.: 'Magic City', Dr. & Mrs. Dan Nathan
Small: 'Pink Perfection', Bill & Sally Hardwick
C. reticulata (In Open)
Large: 'John Hunt', Mr. & Mrs. C.M. Gordy
Med.: 'Betty Ridley Var.', Elizabeth Brown
C. reticulata (Protected)
Very Large: 'Frank Houser Var.', Jim Pinkerton
Large: 'Trophy', Jim Pinkerton
C. hybrid (In Open)
Very Large: 'Mary Phoebe Taylor',
Frank Jamison
Large: 'Mona Jury Var.', Dr. & Mrs. Dan Nathan
C. hybrid (Protected)
Best Bloom: 'Delores Edwards', Jim Pinkerton
C. sasanqua
Best Bloom: 'Kanjiro', Dr. C. David Scheibert

Best Miniature: 'Little Slam Var.', Elizabeth Brown
Best Seedling: J-223, Ruth & Marvin Jernigan

ACS Gold Certificate:
Elizabeth Brown
ACS Silver Certificate:
Mr. & Mrs. C.M. Gordy

PERRY, October 15-16, 1994
Sponsor: Middle Georgia Camellia Society
Number of blooms displayed: 486

ACS Outstanding Bloom Certificates:
Most Outstanding Bloom, In Open: 'Terrell Weaver', Dr. Daniel E. Nathan
Most Outstanding Bloom, Protected:
'Dr. Dave', Dr. Dave Scheibert

C. japonica (In Open)
Large-Very Lrg.: 'Helen Bower Var.',
Howard Smith
Runner-up: 'Lover Boy', Dr. Daniel E. Nathan
Med.: 'Cavalier', Dr. Daniel E. Nathan
Runner-up: 'Dr. Burnside Var.',
C. Warren Thompson
Small: 'Pink Perfection', Austin Barnett, Jr.
Runner-up: 'Amazing Graces',
Dr. Daniel E. Nathan
C. japonica (Protected)
Large-Very Lrg.: 'Royal Velvet',
Dr. Daniel E. Nathan
Runner-up: 'Mary Emma Motes',
Bill Hardwick
Medium: 'Lady Kay', Dr. Dave Scheibert
Runner-up: 'Tar Baby', Bob Gramling
Small: 'Kiku-Toji', Bill Hardwick
Runner-up: 'Dryade', Dr. Daniel E. Nathan
C. reticulata
In Open, Very Lrg.: 'Miss Tulare', C.M. Gordy
Runner-up: 'Joe Nuccio', Bill Hardwick
In Open, Lrg.: 'Frank Houser', Bob Gramling
Runner-up: 'Ming Temple Var.', C.M. Gordy
Protected, Very Lrg.: 'Valentine Day Var.',
Dr. Daniel E. Nathan
Runner-up: 'Valentine Day',
Dr. Daniel E. Nathan
Protected, Lrg.: 'Leonard Messel',
Bill Hardwick
Runner-up: 'Jubilation', Dr. Daniel E. Nathan
C. hybrid
In Open, Lrg.: 'Charlean',
Dr. Daniel E. Nathan
Runner-up: 'Julie Var.', Bob Gramling
In Open, Sm.: 'Galaxie', Bob Gramling
Runner-up: 'Jury's Yellow', Bob Gramling

Protected, Lrg.: 'Mona Jury', Howard Smith
Runner-up: 'Mona Jury', Bob Gramling
Protected, Sm.: 'Freedom Bell', Dr. Dave Scheibert
Runner-up: 'Something Beautiful', Dr. Dave Scheibert

C. sasanqua

Best bloom: 'Granthaminan', Bob Gramling
Runner-up: 'Sparkong Burgundy', Selecia E. Jones

Best Miniature: 'Lipstick', Dr. Dave Scheibert
Runner-up: 'Man Size', Dr. Dave Scheibert
Best White: 'Mary Alice Cox', C.M. Gordy

ACS Gold Certificate: Dr. Daniel E. Nathan
ACS Silver Certificate: C.M. Gordy

VALDOSTA, November 19-20, 1994 30th Annual
Sponsor: Valdosta Camellia Society and First State Bank & Trust
Number of blooms displayed: 1456

ACS Outstanding Bloom Certificates:
Most Outstanding Bloom: 'Frank Houser Var.', Bill & Sally Hardwick

C. japonica (In Open)

V. Lrg.: 'Tomorrow Park Hill', Stuart Watson
Med.: 'Miss Charleston Var.', Parker Connor, Jr.
Sm.: 'Kiku-Toji', Elizabeth Brown
Min.: 'Something Beautiful, Lillian & C.M. Gordy

C. japonica: (Protected)

Lrg.-V. Lrg: 'Nuccio's Pink Lace', Bill & Sally Hardwick
Med.: 'Mary Alice Cox', Jim Pinkerton
Sm.: 'Kiku-Toji', John Newsome
Min.: 'Fircone Var.', Elliott Brogden

C. reticulata

In Open: 'Hall's Pride Var.', Lillian & C.M. Gordy
Protected: 'Big Dipper Var.', Jim Pinkerton
Runner-up: 'Frank Houser', Jim Pinkerton

C. hybrid

In Open: 'Mona Jury Var.', J.L. & Carol Everett
Protected: 'Debbie', John Newsome

Best White, In Open: 'Ruffian', Buford & Nita McRae
Best White, Protected: 'Ruffian', Jim Pinkerton

ACS Gold Certificate: Parker Connor, Jr.
ACS Silver Certificate: Elizabeth Brown

Honor Court Certificates

Bobbie Fain, John Newsome
Betty Sheffield Sup, Jim Pinkerton
Wila Mina, Bill & Sally Hardwick
Something Beautiful, John Newsome
Delores Edwards Var., Jim Pinkerton
Terrell Weaver, John Newsome
Danckelarii, Elizabeth Brown
Magic City, Parker Connor, Jr.
Kay Berridge, Anne & Bob Gramling
Little Slam Var., Elizabeth Brown
My Diane Var., Lillian & C.M. Gordy
Valentine Day, Parker Connor, Jr.

SOUTH CAROLINA

AIKEN, January 7-8, 1995
Sponsor: Aiken Camellia Club
Number of blooms displayed: 954

Most Outstanding bloom In Show: 'Frank Houser Var.', W.H. Rish

C. japonica (In Open)
V. Lrg.: 'Clark Hubbs Var.', Parker Connor, Jr.
Runner-up: 'Dixie Knight Sup.' Parker Connor, Jr.
C. japonica (Protected)
V. Lrg.: 'Tomorrow's Dawn', Sandra & John Penny
Med.: 'Margaret Davis' Mabel & Joe Austin
Sm.: 'Little Susie', Mabel & Joe Austin
C. reticulata
Protected: 'Big Dipper', Jim Pinkerton
C. hybrid
Protected: 'Mona Jury Var.', Jim Pinkerton

Best White Bloom: 'Ruffian', Jim Pinkerton
Gold Certificates:
In open, won by Parker Connor, Jr.
Protected, won by Jim Pinkerton
Silver Certificates:
In open, won by Mrs. N.J. Scavens
Protected, won by Mrs. Alfred Bissell

CHARLESTON, January 28, 1995
Number of blooms on display: 947

Best In Open
Lrg.: 'Cherries Jubilee', Parker E. Connor, Jr.
Runner-up: Borom's Gem,
Parker E. Connor, Jr.
Med.: 'Black Gold', Parker E. Connor, Jr.
Runner-up: 'Maroon & Gold',
Parker E. Connor, Jr.
Sm.: 'Kishi Karaito',
Dr. & Mrs. Herbert Racoff
Runner-up: 'Pink Perfection',
Louise & Roy Homans
Best Protected
Lrg.: 'Vernon Mayo Var.', Mable & Joe Austin
Runner-up: 'Tomorrow Park Hill Fimb.',
Sandra & John B. Peny
Med.: 'Cherries Jubilee', Clara & Fred Hahn
Runner-up: 'Margaret Davis',
Mable & Joe Austin
Sm.: 'Little Susie', Clara & Fred Hahn
Runner-up: 'Something Beautiful', Jim Pinkerton
Best Reticula (Open)
'Valentine Day', Parker Connor, Jr.
Best Reticula (Protected)
'Big Dipper Var.', Jim Pinkerton
Best Hybrid (Open)
'Dr. Zhivago', T.E. Powers
Best Hybrid (Protected)
'Mona Jury', Sandra & John Penny
Best White (Open)
'Swan Lake', Parker E. Connor, Jr.
Best White (Protected)
'Elegans Champagne', Jim Pinkerton
Best Miss Charleston (Open)
Parker E. Connor, Jr.
Best Miss Charleston (Protected)
Clara & Fred Hahn
Best Novice Bloom: 'R.H. Wheeler Var.',
Miles Beach
Best Miniature: 'Fircone Var.',
Ann & Mack McKinnon
Best Seedling Bloom
Jim Pinkerton

Court of Honor: (Open)
Valentine Day, Parker E. Connor, Jr.
Julie Var., Parker E. Connor, Jr.
Jean Clera, Parker E. Connor, Jr.
Carter's Sunburst Blush, Parker E. Connor, Jr.
Cleve James Var., Parker E. Connor, Jr.
All American, T.E. Powers
Runner-up Court: (Open)
Elegans Supreme, Parker E. Connor, Jr.
Lucille Jernigan, Parker E. Connor, Jr.
Moonlight Bay, Parker E. Connor, Jr.
Royal Velvet, Louise & Roy Homans
Lady Laura, T.E. Powers
R.L. Wheeler, Var., Robert E. Deadmond
Court of Honor (Protected)
Emma Gaeta, Sandra & John Penny
Mona Jury Var., Ann & Mack McKinnon
Larry Piel, Sandra & John Penny
Frank Houser Var., Clara & Fred Hahn
Ethel Rhyne, Jack W. Teague
Midnight, Annabelle & Lew Fetterman
Runner-up Court (Protected)
Little Babe, Mr. & Mrs. W.H. Rish
John Hunt, Mable & Joe Austin
Elegans Splendor, Mable & Joe Austin
Halls Pride, Mable & Joe Austin
Clark Hubbs Var., Mable & Joe Austin
Alyne Brothers, Ann & Mack McKinnon

Gold Certificates:
In open, won by Parker E. Connor, Jr.
Protected, won by Annabelle & Lew Fetterman

Silver Certificates:
In open, won by T.E. Powers
Protected, won by Clara & Fred Hahn

HILTON HEAD, November 5-6, 1994
Sponsor: Coastal Carolina Cam. Soc. &
Shelter Cove Merchants' Assn.
Number of blooms displayed: 745

Best Japonica in Open
Lrg. V. Lrg.: 'Show Time',
Mrs. Lib Scott
Runner-up: 'Lady Kay', Mrs. Lib Scott
Best Sm./Med.: 'Magic City', Parker E. Connor
Runner-up: 'Compari, Var.',
Donna & Bill Shepherd
Best Japonica Protected
Lrg. V. Lrg.: 'Mathotiana Sup. Var.',
Jack W. Teague
Runner-up: 'Nuccio's Pink Lace',
Sally & Bill Hardwick

Best Sm./Med.: 'Lady Kay', Jim Pinkerton
Runner-up: 'Dawns Early Light', Jim Pinkerton
Best. Min.: 'Fircone', Louise & Roy Homans
Runner-up: 'Spring Festival', Parker E. Connor
Best Seedling: Sally & Bill Hardwick
Runner-up: Elizabeth L. Brown
Best Untreated Bloom: 'Kiku-Toji',
Denise Heyman
Runner-up: 'October Affair', Parker E. Connor
Best White in Open: 'Mary Alice Cox',
Julian M. Hayes
Best White Protected: 'Ruffian', Jim Pinkerton
Best Hybrid in Open
'Anticipation Var.', Julian M. Hayes
Runner-up: 'Anticipation', Jack W. Teague
Best Hybrid Protected
'Rose Bouquet', Jim Pinkerton
Runner-up: 'Mona Jury Var.', Jim Pinkerton
Best Retic in Open
'Valentine Day', Parker E. Connor
Runner-up: 'Dr. Clifford Parks, Parker E. Connor
Best Retic Protected
'Pleasant Memories', Jim Pinkerton
Runner-up: 'Frank Houser, Var., Jim Pinkerton
Best Sasanqua
'Yule Tide', Elliott Brogden
Runner-up: 'Star Above Stars, Denise Heyman
Court Honor:
Mrs. Hooper Connell, Elizabeth L. Brown
Frank Houser, Jim Pinkerton
Compari, Jack W. Teague
Tiffany, Mrs. Lib Scott
Spring Formal, Parker E. Connor
Flossie Goodson, Jack W. Teague
Anita, Parker E. Connor
Brian Gaeta, Sally & Bill Hardwick
Helen Bower, Var., Parker E. Connor
Elsie Jury, Var., Mr. & Mrs. Oliver Mizzell
Boutonniere, Parker E. Connor
Nuccio's Jewel, Mildred & Bill Robertson
Carter's Sunburst, Jack W. Teague

Gold Certificate in Open:
Parker E. Connor
Gold Certificate Protected:
Jack W. Teague
Silver Certificate in Open:
Elizabeth L. Brown
Silver Certificate Protected:
Jim Pinkerton

VIRGINIA

NORFOLK, November 5, 1994
Sponsor: Virginia Camellia Society
Number of blooms displayed: 210

ACS Outstanding Bloom Certificates:

C. japonica
Lrg.: 'Show Time', Ira Hefner
Med.: 'Dr. Tinsley', James Henkel
Sm.: 'Grace Albritton', James Henkel
Min.: 'Man Size', James Henkel
C. reticulata
Best Bloom: 'Anticipation',
William Miller
C. hybrid
Best Bloom: 'Miss Tulare', Ira Hefner
C. sasanqua
Best Bloom: 'Our Linda', Patricia Walsh

Best White Bloom: 'White Pom Pom',
William Miller

Atlantic Coast Camellia Society and Club News

The Annual Convention of the Atlantic Coast Camellia Society was held October 7-8, 1994 at the Independent Holiday Inn, Myrtle Beach, S.C. Minutes were approved of the May board meeting in Columbia, S.C. The financial state of the society is stable. There were 238 memberships as compared to 248 a year earlier. There was a convention attendance of 91 and the importance of new members was emphasized.

An amendment to Article IV of the Constitution passed that all past presidents be members of the Executive Committee. Our motel was to be torn down and replaced by next summer. As a result the 1995 convention time is on hold until May 1995, when a letter will be sent to members regarding meeting time and place and from the motel as to building status.

The nominating committee presented the slate and elected by acclamation were Ed Powers-President, Bill Hardwick-1st Vice President, Jeannette Waltz-2nd Vice President, Clara and Fred Hahn-Secretary-Treasurer and Gloria McClintock-Asst. Secretary-Treasurer.

After a caucus of states , President Robertson announced those elected: CA-Bill Stewart, NC-John Penny, Bill Delaney, VA-Dot Urquhart, SC-Dave Cannon, Parker Connor and GA-Sally Hardwick, Louise Gerbing.

Dr. Luther Baxter made brief remarks about new insecticides and fungicides, particularly HWG-1608 to be known as Lynx after release in the first half of 1995. Jim Pinkerton gave a beautiful slide presentation of show winning camellias and new ones to be introduced. Six hundred dollars were donated to ACS with $100 of this in honor of our artist, Sadie Aycock Lyons. Our capable auctioneers, Buck Mizzell and Bill Robertson, raised $1,085 and $1,000 realized on the drawings which supply almost 1/3 of our budget.

President Robertson greeted us at the banquet and we all enjoyed prime rib or seafood platter. Ann Brown remembered and prayed for 8 departed members and, along with Carl Allen, reminded us of the 50th Anniversary convention of ACS March 8-11, 1995. Ed Powers introduced our speaker, Dr. Ray Campbell of N.C. State University. Dr. Campbell spoke of the importance of the basics of nutrition and proper pH to all plants which is included in this issue. We departed a delightful convention with dreams of a grand camellia season.

Off season picnics keep the wonderful show season hospitality going through the summer with a Middle Carolina May picnic and a Coastal Carolina picnic later in the month. A Beaufort stew picnic spices the dog days of August and mid-October finds the Middle-Georgia Camellia Club with an oyster roast and Beaufort stew outing before the Fair Show in Perry.

Ocala, FL has a growing group and has resumed a camellia show . Beaufort, SC has just resumed their show and the Apopka, FL show with the help of the park service has had a successful 3 year the second Saturday in December. Please support these new camellia shows and promote the wonderful camellia hobby as well as new members for ACCS and your own clubs.

AN INVITATION TO JOIN

We hope that you will join the Atlantic Coast Camellia Society. Let's enjoy Camellias together.

The Atlantic Coast Camellia Society was organized September 13, 1980 at Myrtle Beach, South Carolina. The purpose of our organization is to extend the appreciation of Camellias and to promote the science of Camellia culture. Through our Camellia shows and programs, and by exchanging knowledge and ideas with the Camellia specialists within our membership, we feel that everyone in the ACCS benefits from being a member of this organization. Whether you are a beginning Camellia fancier or a veteran Camellia competitor, the ACCS is dedicated to providing information, shows, and social events that you will find helpful, entertaining, and enjoyable.

Annual dues for membership in the ACCS are $12.50 for singles or couples. The membership year runs from September to September. A membership entitles you to three issues of Atlantic Coast Camellias, the journal of the Atlantic Coast Camellia Society. These are issued January 1 (spring), May 1 (summer), and September 1 (fall). In addition, your membership provides an invitation to our annual meeting in October in Myrtle Beach, S. C. This event has been especially successful in recent years, with over 100 participants in 1986, and with such keynote speakers as Julius Nuccio and Sergio Bracchi.

A variety of Camellia topics are addressed in articles published in Atlantic Coast Camellias. In addition to regular features concerning Camellia culture in the landscape and in the greenhouse, articles cover such topics as Camellia planting, grafting, rooting, judging, pruning, gibbing, disease control, insect control, new and old varieties, show preparations and results, liming, fertilization, spraying, mulching, disbudding, and nursery production. Numerous photographs and illustrations are provided.

We invite you to join, and welcome you as a member. Please make your check payable to the Atlantic Coast Camellia Society. Fill out the convenient application blank below, and mail it to:

Atlantic Coast Camellia Society
4437 McKee Road
Charlotte, N.C. 28270

NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE ( ) _____

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