

***The***

**OCTOBER 1969**

# **Boxwood Bulletin**

**A QUARTERLY DEVOTED TO MAN'S OLDEST GARDEN ORNAMENTAL**



*The old boxwood "maze" at Tuckahoe near Richmond in Goochland County, Virginia.*

*Photograph from the Virginia State Library.*



# THE AMERICAN BOXWOOD SOCIETY

## New Members

(Added since July 1969)

Howland, Mrs. Waldo, 55 High Street, South Dartmouth, Mass.

Steward, Mr. Orville M., Director, The Bayard Cutting Arboretum, P.O. Box 66, Oakdale, L. I., New York.

Walker, Mr. J. W., 4412 Monticello Drive, Lake Charles, La.

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The V.P.I. Circular *Boxwood in the Landscape* is now undergoing revision. DDT, for instance, is no longer recommended. It may be some months before the revised publication is ready: but permission has been given to the *Boxwood Bulletin* to publish the sections on insects and plant disease in the January 1970 issue, in good time for spring and summer spraying.

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On cover: *Homes and Gardens In Old Virginia* says of the famous Tuckahoe garden; "The chief glory of the place, apart from the historical tradition connected with the house, is the box garden. It is a wonderful garden, with trimmed hedges of *suffruticosa*, unsurpassed in Virginia and still in very fair condition in view of its age. Its original date is unknown but owing to the known life term of hedge box it is of a much later date than the house itself." (built in 1710 or 1712) "No attempt is made to keep the garden filled with flowers; a few roses and flowering shrubs and the dominant trees on its outskirts serving to emphasize the fact that the glory of such a garden comes from the box itself."

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"Get ye all three into the box-tree"

. . . . says Maria in *Twelfth Night*, urging Sir Toby Belch, Sir Andrew Aguecheek and Fabian to hide from pompous, foolish Malvolio and watch him swell with conceit as he reads the hoaxing letter Maria has dropped for him to find.

It is Shakespeare's only mention of box, says Eleanor Sinclair Rohde in her all-inclusive *Shakespeare's Wild Flowers, Fairy Lore, Gardens, Herbs, Gatherers of Simples, and Bee Lore*, brought to our attention by Dr. Baldwin.

There is a stage direction (*the men hide in a box-tree*) as Maria drops the letter on the garden walk. Shakespeare must have been familiar with boxwood in London and in the country; but a single box-tree with sufficient height and dense growth to hide three men would have been a well-grown specimen indeed.

However, at the beginning of the scene the stage is set for us by the following directions: *A walled garden adjoining the house of Olivia; two doors, one leading out of the garden, the other opening into the house, whence there runs a broad walk with great box-trees on either side and a stone seat next the wall.* This is better suited to the action; we can picture the scene, with the three men hiding behind the hedge but continually popping their heads through between the bushes to utter their mocking comments on Malvolio's folly.

But, how was the scene set on the bare Elizabethan stage, before painted "sets" were dreamed of? A card with "A room in Olivia's house" replaced by one reading "A room in the Duke's palace" shifted the interior scenes. Even the Forest of Arden probably relied on a sign and the imagination of the audience. But, one cannot even pretend to hide three men behind a card. It is true that Wall, in the play within a play of *A Midsummer Night's Dream*, was impersonated by honest Snout the tinker, his clothes suitably bedaubed with loam and mortar; and the chink in the wall through which the fated lovers communicated, represented by his two fingers held up in the V that Winston Churchill was later to make famous. But *Pyramus and Thisbe*, this play within a play, was Shakespeare the professional actor and playwright, poking fun at the rustics who performed their well-meant but awkward masques before the Queen on her "progresses" to her courtiers' castles and country houses.

There must have been something in the way of real box plants on the stage in *Twelfth Night*; perhaps big pots held bushes as large as could be moved to the stage, perhaps box was freshly cut (although one hates to accuse Shakespeare and his colleagues of such vandalism) and tied in great sheaves to be propped up as a hedge. It is not a very important matter, but "it's a puzzlement"!



*Dwarf Box — Pruned to keep central habit of growth. The Garden of the Powell Waller House in the foreground is designed in geometric forms. Box and holly are used extensively and color is added by tulips and flowering dogwood.*



## PRUNING BOXWOOD

ALDEN R. EATON

### **The Health and Shape of Boxwood Are Improved by Timely Pruning**

It would appear that English-speaking gardeners had to meet the problem of pruning boxwood long before Columbus even thought about the discovery of distant lands. The Oxford English dictionary tells us that tree and dwarf box thrived in 14th and 15th century England and was "much used in ornamental gardening" for the edging of flower beds.

Common boxwood (*Buxus sempervirens*) actually originated in Southern Europe, Northern Africa, and Western Asia; and probably came to America with the early settlers of the mid-17th century. The noted 18th-century botanist, John Custis, referred to boxwood in Williamsburg, Virginia, in a letter to Robert Cary in April of 1726.

In the ensuing centuries, the popularity of boxwood and the ease with which it is propagated resulted in its spread along the Atlantic Coast from

*Common Box — Pruned severely just before new growth.*

*Wythe House Pleasure Garden — The formal boxwood garden in the rear of the George Wythe House is typical of Williamsburg's 18-century green pleasure gardens. Centrally placed, the garden or "bowling green" is lined with tree-box topiary and hedges. The central walk, located during archaeological work, terminates in a pleached hornbeam arbor.*

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Massachusetts to Georgia. In fact, common boxwood has become so prevalent in some sections of our country that it is often referred to as American box.

It is true that many large, ancient specimens of boxwood can be observed around old houses or home sites, which seemingly indicates that they thrive with no apparent care. However, there is no evidence to show the number of fine plants that must have died because of neglect.

Routine pruning is an important factor in keeping boxwood plants in a healthy condition. In addition, there are other reasons too: keeping a plant specimen at a desired size; clipping formal and informal hedges; training topiary pieces; and drastically reducing overgrown and storm-damaged plants. But bear in mind that the natural habit of growth of boxwood is usually its most pleasing characteristic, so pruning and clipping should be limited as much as possible, if there is adequate growing space.

Routine pruning of boxwood includes the removal of all dead, broken, diseased, and undesirable parts of the plant. All dead leaves and twigs lodged in the inner branch crotches should be removed annually. This routine pruning and general cleanup can usually be done most efficiently during the slack winter season, but the temperature should not be below freezing. Boxwood branches are very brittle

and break very easily in freezing weather. If winter season pruning is not convenient, however, it can be done at any time of the year.

Formal boxwood hedges, specimens, and topiaries are usually pruned to keep the plants within certain bounds. This clipping is done normally in early June as soon as the new growth has hardened. Another light pruning is desirable in July. It is best not to shear such plantings after August 1 (July 15 in New York area) because late clippings will encourage new growth which will not normally mature before freezing weather.

Sometimes it is necessary to prune an informal boxwood specimen lightly even though it has plenty of space in which to grow. At times boxwood will form a thick outer layer of leaves so dense that most of the light is excluded from the inner parts of the



*12" Hedge — Common Boxwood. A Garden House is an important feature of the Benjamin Waller Garden. Diamond-shaped beds are balanced on both sides along a long central walk leading from the house, passing through the Garden House.*

plant. It is often desirable to break this outer layer or shell by "pinching", which in this case involves removing small branches with hand pruners, to break up the outer shell and still preserve the pleasing outline of the plant. This opening up of the inner parts of the plant encourages growth back along the branches and generally improves the health of the plant. Pinching should be done in early spring just before growth starts.

Most people consider boxwood a slow growing plant. However, under favorable conditions boxwood specimens and hedges will often outgrow their intended bounds in a few years if pruning is neglected. Hedges will close in on walks; specimens will crowd buildings and other desirable but less vigorous plants. Generally speaking, boxwood will thrive on drastic pruning, and with proper care will recover rapidly.

This drastic pruning is done by first cutting large branches back beyond the foliage on just one side of the plant. The following year the other half of the plant may be pruned similarly. A sharp small-toothed saw should be used to make cuts on branches over three-quarters inch in diameter, and all such cuts should be coated with shellac and tree wound paint. Hand pruners can be used to make the smaller cuts. This type of pruning should be done in March just before new growth starts. All plants pruned in this manner should be fertilized and mulched and given adequate water throughout the year.

At times, hedges require a less drastic treatment. If the depth of cut is now below the foliage line, the whole operation can be done at one time. This pruning should be done in early spring just before growth starts.

### Winter Damage

All boxwood plants, large and small, are subject to snow and ice damage. There are no practical pruning practices which will prevent this damage. It is important that damaged plants be pruned before the new growing season. All broken branches should be removed with clean cuts, and scars cleaned and treated with shellac and tree wound paint. It will help a damaged plant if the undamaged branches are cut back to encourage lower branching.

This winter damage hazard has been with us in Williamsburg for at least several centuries. John Custis noted in a 1737 letter to his friend Peter Colinson that "the severest winter in the memory of man killed a great deal of my Dutch box edging."

Today, boxwood presents about as many pruning problems as it ever did, despite our motto at Colonial Williamsburg "that the future may learn from the past." Further, it would not be going far out on an unpruned limb to predict that gardeners two centuries hence will probably be facing many of the same predicaments, for boxwood will always be a desirable plant because of its many interesting and pleasing characteristics.



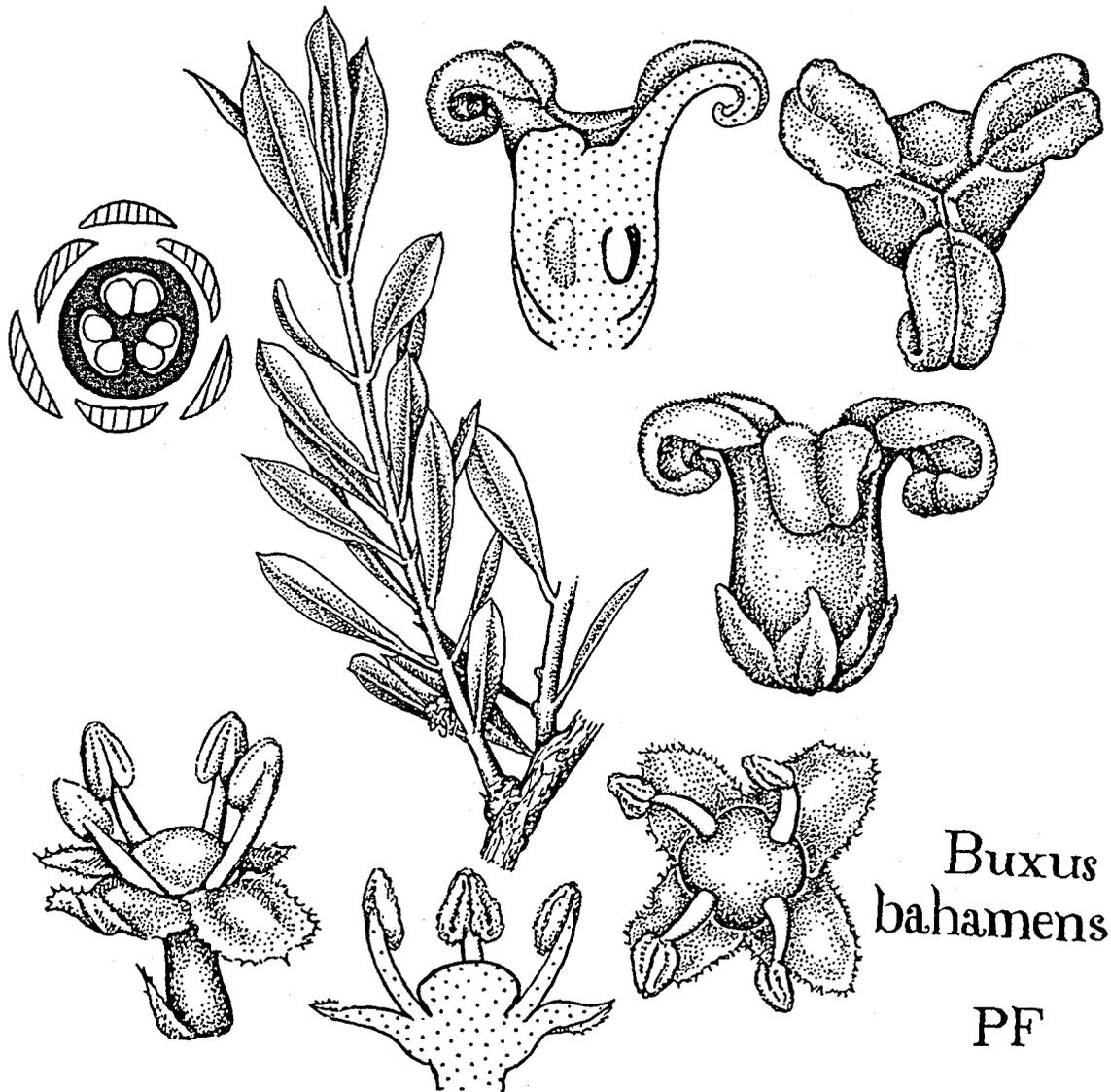
*A Colonial Williamsburg gardener-topiarist — an artist in plant sculpture — uses hedge shears to keep this tall boxwood spiral neatly shaped.*

*All photographs for this article from Colonial Williamsburg, Inc.*

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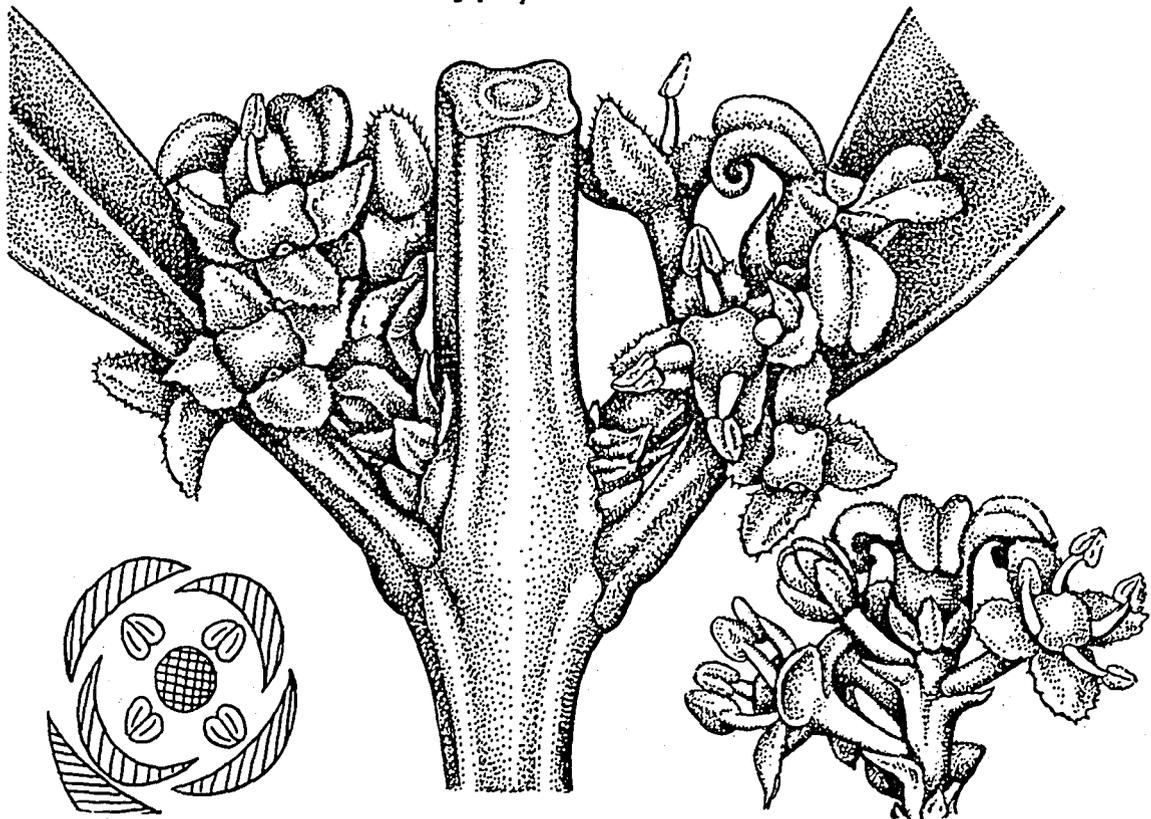
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The complete *Handbook*, covering methods and effects of pruning all kinds of woody ornamentals, fruits, and many tender plants, is available from the Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, N. Y. 11225.



*Buxus bahamensis*

PF



# Bahama Boxwood

DR. JOHN POPENOE

Bahama boxwood, *Buxus bahamensis*, is a tropical relative of our common ornamental boxwoods. It is an evergreen shrub or small tree native to the Bahama Islands, Cuba, and Jamaica. It is not a plant of tropical rain forests, however, and grows only in dry rocky locations where it is exposed to occasional salt spray, a high soil pH, and a hot sun.

There is only one species of *Buxus* in the Bahamas, but the Cuban flora lists 27 for that island. Bahama boxwood, if we may use this as a common name, is found on many islands of the archipelago, where I have seen it from New Providence to Inagua. On Inagua this plant has the common name of parrot wood; I have heard no common name for it on other islands. It is commonly crowded in among scrub growth just back from the seashore and does not distinguish itself in any particular way. The foliage is generally compact and green to yellow green. The accompanying illustration by Priscilla Faucett gives details of leaves and of male and female flowers.

Small plants at the Fairchild Tropical Garden were obtained in 1964. They were pulled up as small seedlings from the scrub at Oakes Field, just outside of Nassau, New Providence. The plants in plastic bags were brought back through quarantine in Miami and planted in containers at our nursery. It was nearly a year before new growth was evident. The most vigorous of four plants has made about one foot of growth in four years. Two of the plants have hardly grown at all in four years so some study of the cultural requirements is needed. All the plants are still in containers. The foliage has been somewhat yellowish, but flowers have been produced for the last two years. Flowering seems to be continuous throughout the summer. Fruits have set but not matured.

If the cultural requirements of this plant can be worked out, it should be a very attractive ornamental for exposed, rocky locations in South Florida. Its hardiness to cold is unknown, but it does not occur naturally where any freezing temperatures occur.

John Popenoe, Director  
Fairchild Tropical Garden  
Miami, Florida

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Opposite page:

*Buxus bahamensis*; botanical drawing made especially for the *Boxwood Bulletin* by Priscilla Faucett of the Fairchild Tropical Garden, Miami, Florida.

Leaves drawn natural size; other botanical details greatly enlarged.

# *Buxus bartlettii*: A New World Box

J. T. BALDWIN, JR.

Samuel J. Record and Robert W. Hess in *TIMBERS OF THE NEW WORLD* (Yale University Press, 1943) state as follows:

"*Tricera*, either as a distinct genus or as a section of *Buxus*, includes about 15 species having their center of distribution in the West Indies, with known extensions into southern Mexico, British Honduras, Panama, and Venezuela. They are rather rare plants, nearly all evergreen shrubs, though occasionally trees 15 to 25 feet tall. The wood is light yellow throughout; odorless and tasteless; hard, heavy, compact, of very fine and uniform texture; closely resembles *Buxus sempervirens*. It is not of commercial value because of the scarcity of the larger sizes, but is suitable for articles of turnery and for engraving."

Some writers estimate the number of species to be about twenty-five with a center of occurrence in Cuba.

Knowledge of this complex of plants has advanced little since 1943. Taxonomic study of this complex and introduction of its representatives into cultivation are urgently needed. Most likely certain of the species have economic or ornamental value.

Dr. John Popenoe is growing *Buxus bahamensis* (*Tricera bahamensis*) at The Fairchild Tropical Garden in Florida. And Amram Kadish, a graduate student at the University of California, Riverside, is attempting to establish a living collection of some of the species for eventual trial in Israel. I know of no other current studies of American members of the *Buxaceae*.

On 13 February 1931 the late Professor H. H. Bartlett of the University of Michigan collected a plant along the river bluffs of El Cayo District, British Honduras, that the late Paul C. Standley of the Field Museum of Natural History (now Chicago Natural History Museum) described under the name *Buxus Bartlettii*. We publish a photograph of the Type Specimen. This was apparently the first representative of *Buxus* (*Tricera*?) to be collected in Central America; the plant shows close affinity with certain members of the family in Mexico, especially with *Buxus lancifolia* of San Luis Potosi. Later collections of *B. bartlettii* have been made in Mexico, rather I should say that specimens so identified have been collected there.

I close with a plea that someone take up a taxonomic study of the complex of plants under discussion, and it seems to me most appropriate that The American Boxwood Society subsidize — at least in part — such a study.

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Next page: *Buxus bartlettii*. Photograph of the type specimen in the Herbarium of the Chicago Natural History Museum, published with permission of the Museum.

652455  
HERBARIUM  
FIELD MUSEUM

TYPE

PLANTS OF BRITISH HONDURAS  
EL CAYO DISTRICT  
EXPEDITION OF THE *Type*  
CARNEGIE INSTITUTION OF WASHINGTON  
AND THE UNIVERSITY OF MICHIGAN  
*Buxus Bartlettii Standl*  
*River bluffs,*  
*El Cayo*  
*13 Feb. 1931*  
H. H. BARTLETT No. 11437

CHICAGO NATURAL HISTORY MUSEUM  
NEGATIVE NO. 051538

|             |   |   |   |   |   |
|-------------|---|---|---|---|---|
| inches      | 1 | 2 |   |   |   |
| centimeters | 1 | 2 | 3 | 4 | 5 |

*Bartlett*

# THE MAIL BOX

Mrs. B. Frank Walton  
Turnbull Street,  
Lawrenceville, Va. 23868

July 31, 1969

Dear Mrs. Walton:

Re: Your inquiry at the ABS Meeting, and in a subsequent letter, regarding the boxwood spraying program at Heronwood.

We use an all-purpose spray called Multi-Fume supplied by HALCO Chemical Co., 14th St. & Lafayette Ave., Kenilworth, N. J. We order direct from the HALCO Company and the cost of our last order was \$77.50 for a 5-gal. pail. I haven't the exact figures here at my desk, but a 5 gal. pail of concentrate of course dilutes into a much larger quantity of liquid spray, and lasts a long time.

Multi-Fume is a mixture of malathion, methoxychlor, kelthane and lindane. Note that it does NOT contain any DDT.

Our normal spraying schedule for boxwood, using Multi-Fume, is mid-May for prevention of leaf miner and psyllid (or "rollers"). One application is generally sufficient, but if heavy rains come immediately after spraying, or if leaf miner reappears within a short time, then a second application is advisable. In late June, we again spray with Multi-Fume, to combat red spider and white fly.

Note that spraying is not the entire answer to boxwood pests and diseases. Your attention is invited to the January 1968 ABS *Boxwood Bulletin*, pp. 42-43, which carry the VPI Revised Circular on Boxwood Diseases. This should be read and re-read by all of us from time to time.

For instance: at Heronwood we several times have had attacks by nematodes in some of our plants. This was confirmed by sending samples of soil and roots in a polyethylene bag to the Plant Pathology Department at VPI, Blacksburg, for diagnosis. Treatment consisted of removing the affected plants, roots and all, and fumigating the soil. We do not have soil fumigating equipment, and so we called in one of the professional tree expert companies to do the job.

Note that the VPI Circular also treats of Phytophthora Root Rot, which has symptoms and treatment similar to nematodes.

The VPI Circular recommends as a spray for leaf miner & psyllid either Diazinon 4E or DDT, but as I have stated above, we do not use DDT at Heronwood due to the cumulative evidence as to its disastrous side effects. In this connection, your attention is invited to the just published July 1969 issue of the *Boxwood Bulletin*, (July 1969), p. 16, which carries a reprint from *Science* on "Persistent Pesticides".

I hope this letter has not been too rambling and diffuse for your convenience. The subject of spraying has so many ramifications that it is difficult to discuss it briefly.

Yours sincerely, and with all best wishes

NEILL PHILLIPS

Admiral Phillips added, in a letter to the editor:

This is no demand bid for publication, but so many people seem to think that Richard Wines and I have a secret formula at Heronwood that I'd be grateful to have this correspondence about feeding, spraying, & diseases published in the *Bulletin*.

Our real secret formula, of course, is keeping every plant healthy through proper food and drainage. Nothing is ever allowed to be planted where it will have damp roots. As for feed, we grow more and more attached to the old-fashioned compost pits. A big square hole, 4' deep and perhaps 8' x 8', is dug by a bulldozer. The pit is dug near the barn, so that manure can be conveniently sent to it, and also near the kitchen garden-nursery-orchard, so that it gets all the various plant by-products or wastes. Wastes include wood ashes to supply essential potash. We obtain wood ashes from the burning brush & dead or diseased trees cut down, also ashes from the household fireplaces.

Now this may shock you, but a few years ago my cook, Mrs. Mary McCaffrey, a great Irish culinary artist who has been in our family for 44 YEARS, said that she thought a great deal of wastage was taking place due to household garbage not being used in garden compost; as had been done at my mother-in-law's place on Long Island, when Mary lived there as wife of the (now deceased) head gardener.

I was rather leery about rats and mice if garbage was put into the compost pits, but the pits were quite near our barn, where several savage cats were established upstairs; and a persistent, rather self-assertive black snake, named Fannie, had lived for years under the floor boards of the barn, where she produced her yearly broods. Fannie, of course, never allowed rats and mice to come near her or her progeny without quickly swallowing them; and they soon got the word.

So a few years ago we started putting all household garbage into the compost pit, just tossing it in when the cans are emptied. It is soon covered up by grass clippings or whatever. It rapidly decomposes and stimulates the decomposition of the vegetative material that is thrown into the pit. In half a year, an 8' x 8' compost hole or pit is filled with a splendid mixture of thoroughly-rotted, sweet-smelling compost which works magic wherever it is applied: sometimes spread as a mulch, sometimes dug in as a fertilizer or soil conditioner.

There is another fertilizer that we have found to be of powerful use: Chicken manure, undoubtedly the most effective of all organic foods. HOWEVER, it must be handled with great care; if used before it is thoroughly rotted, it can burn up everything in sight, and attract an army of flies.

For general fertilizing, aside from our home-made compost, we depend on two factors: *Bone Meal* in the autumn (it requires the winter season to break down and be available to the plant roots in early spring) and *Blood Meal* in the spring and/or early summer; it is quick-acting and gives the plants what they need in the active growing season. We feed some plants again later in the summer but use care not to feed too late in the season, otherwise there may be tender new growth when frost sets in.

Always remember: Fertilizer applied around boxwood must *never* be dug in, or the roots will be damaged. Just water it in or scratch in *very* lightly.

# THE CHRISTMAS BOX

MARGARET ROBERTS YERGER

Christmas is the time when we look at our houses with special scrutiny to see what seasonal decoration suits the family's individuality as well as the house. How fortunate if box bushes are in sight of the entrance, for then the landscape planting can be co-ordinated with the featured decoration on the door!

When boxwood foliage is used on the doorpiece, it may be repeated throughout the house for a unified theme, using with it accessories that express a family interest. If the family is musical the music theme could be carried through the decorations. Perhaps something the family collects: such as baskets, tin, bells, etc. may be used with the boxwood. The easiest way of all for a co-ordinated effect is to use the same color everywhere.

The fun of planning and gathering short snippets of box is almost as much as actually making the decorations, especially when box enthusiasts know they are doing the bushes a lot of good at the same time. Taking short pieces five or six inches long from the ends of branches lessens the danger of snow damage by letting snow sift into the interior of the bush; it makes for a healthier bush by letting light and air into the center to stimulate new growth; it makes for better branching and more shapely bushes. The snippets should be broken piece by piece and not sheared.

Every bit of decorating can be done with short pieces of box — wreaths, balls, swags, cones, backgrounds, arrangements! A very handsome pair of topiary trees is a nice frame to a doorway with a boxwood wreath on it and tie in with the box bushes that possibly flank the entrance.

An easy way to make a topiary tree is to nail a broomstick, sharpened at the top end, to a board cut to fit into a large bulb pan. Weight the board with stones and fill with melted parafin to anchor the stick upright. Paint the entire thing red or gold or the color of your shutters or whatever color is to be featured. Make a boxwood ball by jabbing twiggy boxwood sprigs about six inches long to completely and uniformly cover a large styrofoam ball. This will make a boxwood ball about eighteen to twenty inches in diameter. Jab the pointed end of the broomstick firmly into the center of this ball to make a topiary tree. Trim it to harmonize with the wreath on the door perhaps using just a beautifully tied large bow jauntily perched on top and another on the pot.

Wreath frames can be bought from a florist or made by a clever husband. The frame should be much stronger than you think necessary to avoid having the finished wreath sag. Fine wire in twelve inch lengths is convenient to use in fastening successive groups of box snippets so they overlap as



*Hall table arrangement of boxwood and apples with giant bayberry candle.*

they are fastened to the frame. It is important that the snippets lie with stems in one direction with the foliage of one layer concealing the stems of the layer beneath. Attention should be given to making the circle of box equally full all around. Apples used with a ribbon bow as trim may suit the family who like English and Southern tradition. The form and texture is a nice complement to the texture of box.

Several varieties of fruit may be placed on the wreath in the traditional Della Robbia manner, stressing the sculptural quality associated with the fruit frames around Della Robbia plaques. Fresh fruit is much the nicest, but in areas of freezing weather spoils so quickly that the use of artificial fruit can be forgiven at Christmas time.

In a hall table arrangement tree box branches may be used as background for shiny red apples perched on sticks of varying lengths with a great bayberry candle from Colonial Williamsburg for dramatic height. A small bowl of apples garnished with tiny boxwood sprigs makes an accessory nostalgic of old traditions. This is a fragrant and effective way of repeating inside the house the same motif the visitor just saw on the front door.

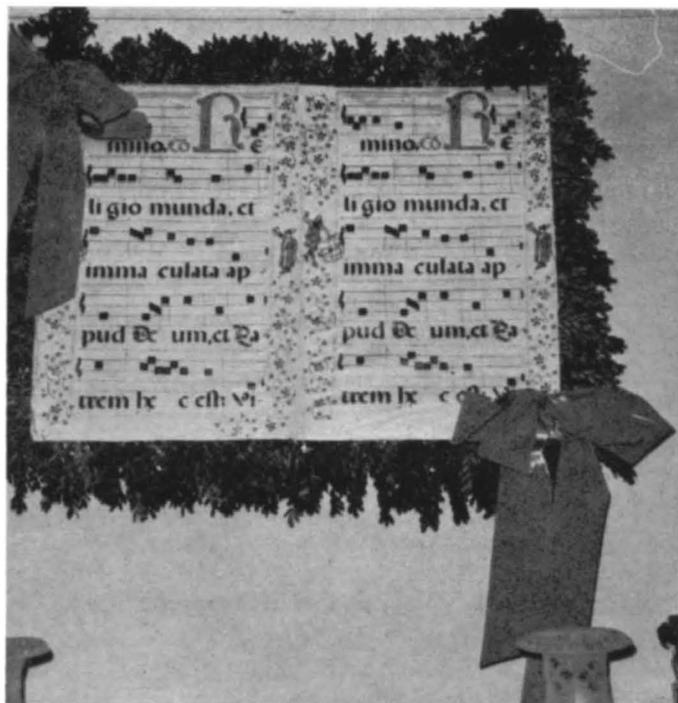


For over the mantle an effective and easy decoration can be made. Gift wrapping paper reproducing illuminated manuscript music can be given several coats of spray shellac to imitate the old parchment and superimposed onto a slightly smaller sheet of stiff cardboard onto which short sprigs of boxwood have been stapled to act as a frame. Large ribbon bows at the corners repeat the color featured in the room. Cut pieces of boxwood, kept fresh in tiny glasses of water, grouped behind mantel accessories or lights unify the overall effect.

On the dining table a fat and fluffy boxwood wreath exactly like the one on the front door can be trimmed with apples or grapes and placed on a gleaming silver tray or mirror. A great tapered candle of bayberry, or tallow, or beeswax can be put in the center, the choice depending on which color goes best with the table appointments. If candelabra are used, nosegays of box with tiny apples or grapes make glamorous trimming.

Extra pieces of box look fresh and festive in bowls of water here and there through the house, and provide a convenient supply of sprigs to give departing guests. There is an old tradition of giving a sprig of evergreen at Christmas as a symbol of good wishes for the coming year.

Whatever traditions you decide to include with your boxwood motif, you'll enjoy doing them yourself from the gathering of the materials to the fastening on of the last bit of decoration. And your friends will enjoy the feeling that it is your own personality welcoming them with the spirit of Christmas.




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## A REMINDER:

About 100 members of ABS have not yet sent in their membership renewals for 1969-1970. If you are among these, please let us have your renewal (dues still \$3.00 a year) by January 1st, so that the *Bulletin* mailing list may be corrected to date, before the January issue goes out.

New members may have misunderstood the Society's dues system. The Society year runs from one Annual Meeting to the next, or May to May. Those who joined the Society in March 1968, for example, were sent the *Boxwood Bulletin* for July and October 1967, and January 1968 as well as the following issue of April 1968; their dues were then again payable (to the surprise of many) in May 1968. This system was adopted in an effort to lessen the great amount of time and energy so generously given by our Secretary-Treasurer, Mrs. Kirby, who like all the other officers and directors of ABS, is unpaid.

If you are among those who have not understood the dues system, or if you have simply overlooked the matter, won't you cooperate by using the ABS return envelope at once?

# Winter Care of Ornamentals

ALBERT S. BEECHER

*Extension Horticulturist, V.P.I.*

## Early Winter

### Water

Winter is a critical period for evergreens and broadleaved plants. Leaves on plants give off moisture into the atmosphere continuously. The rate of this transpiration is greater during periods of high winds. If the ground becomes dry, get out the hose and water your evergreens — spring may be too late.

### Protective Sprays

Winter browning of broad-leaved evergreens can be reduced through the use of protective sprays that help reduce excessive loss of moisture through the leaves caused by excessive transpiration. See your nurseryman or garden center operator for one of these protective spray materials and follow the directions of the manufacturer. It is generally necessary to spray at least twice during the winter season.

### Snow and Ice

Branches of ornamental plants which become heavy with snow or ice may be easily broken by excessive weight. To prevent this damage, tie together the tops of upright evergreens with multiple stems. After a snowstorm shake or brush off the snow as soon as possible.

Heavy snow followed by rain or sleet may be especially dangerous because of the increased weight. Twigs and limbs become increasingly brittle as temperatures fall. Use extreme care in knocking ice off stems and branches. Prop up snow- or ice-laden branches.

In shovelling snow from the walk or driveway be careful not to throw the snow on low ornamental plants. The extra weight may cause limb splitting. Carefully remove drifted snow that settles around the lower branches of evergreens and broad-leaved evergreens. The weight of the snow may be enough to cause breakage of some stems.

Boxwood plants and other ornamentals may be severely damaged by snow sliding off the roof. Valuable plants in the foundation plantings located in a vulnerable spot for snow slides should be protected by temporary snow barriers erected over the plants. Such barriers will help break the fall of snow. Snow guards on the roof would also be beneficial.

### Salt Damage

Salt put on streets, walks or driveways to keep them ice-free may injure the trees, shrubs and flowers nearby during run-off periods. To avoid such in-

jury use sand on icy walks and drives. Homemakers sometimes object to the use of sand because it is tracked into the house. However, salt is tracked in too, and can stain or injure floors and rugs.

Some commercial products are being advertised by manufacturers as being suitable for melting ice, as well as being harmless to vegetation if used in moderate amounts. Garden supply dealers may be able to give further information.

### Winter Pruning

Light pruning of needled evergreens and broad-leaved evergreens may be done now to keep the plant from getting any larger. Many folks delay pruning some of these plants until winter when they can make use of clippings for indoor decorations. Deciduous trees may be pruned during the early winter. Sometimes it is difficult to visualize the effect of winter pruning because the leaves are not present. If you wait until the leaves are fully developed you can visualize the effect that pruning will have on the form of the tree. Trees that are excessive bleeders like the birch, dogwood, elm, maple and yellowwoods probably should not be pruned in winter if this excessive bleeding disturbs you. Bleeding is not seriously harmful to the tree, but it usually causes concern on the part of the tree's owner.

Delay pruning or topping of overgrown evergreens like arborvitae and chamaecyparis until early spring.

### Winter Boxwood Care

Boxwood often needs thinning. This may be done in winter as well as any other season. Thinning boxwood is important to keep the plant at the desired size and to improve the appearance and condition of the plant. Proper thinning will help to develop a strong framework against damage from snow and wind.

Further details on pruning boxwood may be found in Circular 503, *Boxwood in the Landscape*. Contact your Cooperative Extension Office or write directly to the Extension Division, Mailing Room, Hutcheson Hall, Blacksburg, Virginia 24601, for this publication.

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# MARIGOLDS — A BIOLOGICAL CONTROL OF MEADOW NEMATODES IN GARDENS

P. M. MILLER AND J. F. AHRENS

Reprinted by permission from a Bulletin of the Connecticut Agricultural Experiment Station, New Haven. No. 701, May 1969

Parasitic nematodes are microscopic worms which feed on roots of many different plants. They cost farmers millions of dollars each year by damaging crops. How much damage is done by nematodes in flower and vegetable gardens around homes is not so well known. Farmers often use fumigant nematicides to control parasitic nematodes in fields, but these fumigants are difficult to use in small gardens.

Most parasitic nematodes feed on a wide variety of plants in a garden. For example, the meadow or root lesion nematode, *Pratylenchus penetrans* (Cobb) Allen and Sher, is widespread in Connecticut and throughout the Northeast. It has been reported around roots of over 70 different plants (4) including crops, trees and weeds (7). The experimental work reported here indicates how much injury this nematode causes to garden crops and suggests practical methods of control that home gardeners can use to combat it.

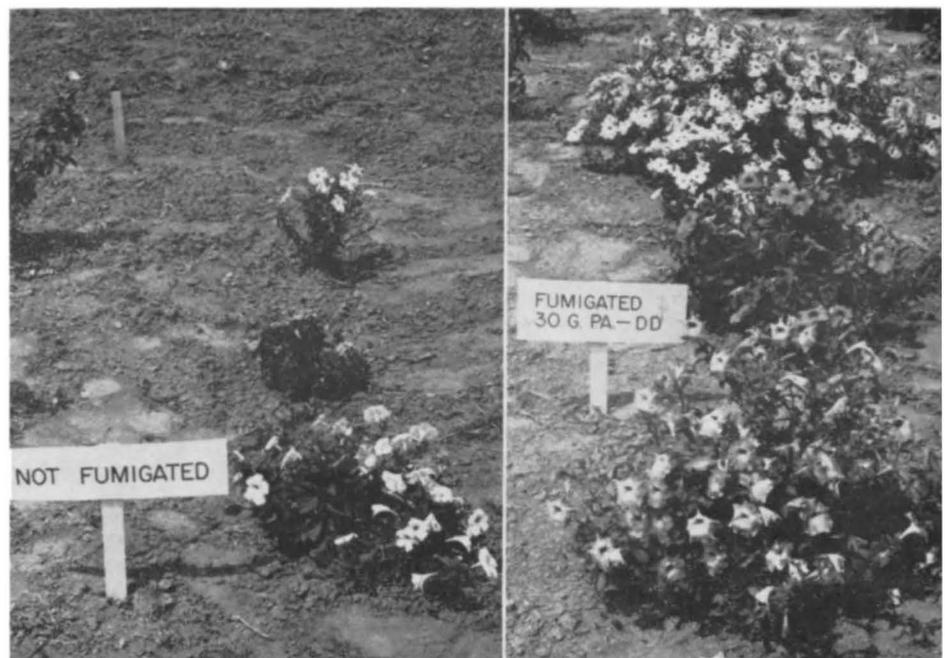
Parasitic nematodes injure many but not all plants in the garden. This was shown in a simple experiment. The nematicidal fumigant D-D, which is a mixture of 1,3-dichloropropene and 1,2-dichloropropane, was applied to a plot of soil at the rate of 25 gallons per acre in the fall. The following spring,

plants were grown in the fumigated soil and compare with similar plants grown in nonfumigated soil. As shown in Table 1, petunias (*Petunia hybrida* Vilm.), zinnias (*Zinnia elegans* Jacq.), eggplants (*Solanum melongena* L.), apples (*Malus* sp.), English ivy (*Hedera helix* L.), and euonymus (*Euonymus japonicus* L.), grew better when nematodes were controlled by the D-D. Better growth of petunias in fumigated soil is shown in Figure 1. However, dahlias (*Dahlia variabilis* (Willd.) Desf.), and forsythia (*Forsythia* spp.) grew well in spite of nematodes in the soil. In another test strawberries (*Fragaria* spp.), tomatoes (*Lycopersicon esculentum* Mill.) and sweet peppers (*Capsicum frutescens* L.), but not sweet corn (*Zea mays* var. *saccharata* (Sturtev.) Bailey), grew better after fumigation. These results show that certain plants in the garden will benefit from fumigation and nematode control.

One might wonder how nematodes get into a garden. Since nematodes feed on many weeds, they may have been in the soil before the land became a garden. Nematodes can also come into a garden on soil or in roots of plants and then infest plants and weeds grown later in the garden. We found many meadow nematodes around several weeds including crabgrass (*Digitaria sanguinalis* (L.) Scop.), pigweed (*Amaranthus retroflexus* L.) and dandelion

Figure 1.

Growth of petunias where nematodes were killed by fumigation with D-D and in unfumigated soil containing meadow nematodes.



(*Taraxicum officinale* Weber) (5). Townshend and Davidson (7) found meadow nematodes very numerous around many common weeds and crops such as mouse-eared chickweed (*Cerastium vulgatum* L.), white and sweet clover (*Melilotus alba* Desr.), annual daisy-fleabane (*Erigeron annua* (L.) Pers.), and cabbage (*Brassica oleracea* var. *capitata* L.). Hence, control of weeds can reduce the rate of build-up of nematodes in garden soil.

We examined flowers as well as vegetables as hosts for meadow nematodes. Soil samples were taken in a garden where both flowers and vegetables were growing and where meadow nematodes were known to be present. Meadow nematodes were plentiful after zinnias, petunias and tomatoes were grown (Table 2). Few meadow nematodes were found in soil where salvia or scarlet sage (*Salvia splendens* Ker-Gawl.) and dahlias had grown, and very few meadow nematodes were found where either small marigolds (*Tagetes patula* L.) or large marigolds (*T. erecta* L.) had grown. The number of nematodes in each soil sample was determined. Then, to determine the stunting of plant growth by these nematodes, zinnia seeds were planted in the soil. After 6 weeks we determined the number of meadow nematodes present inside the zinnia roots, the amount of root injury, and the weight of the plants. The results are given in Table 2. During the 6 weeks the number of nematodes increased in all of the soil samples planted to zinnias except those in which a crop of marigolds had previously grown.



Figure 2. Growth of snapdragons in untreated soil containing meadow nematodes (left) marigold soil (center) and fumigated soil (right).

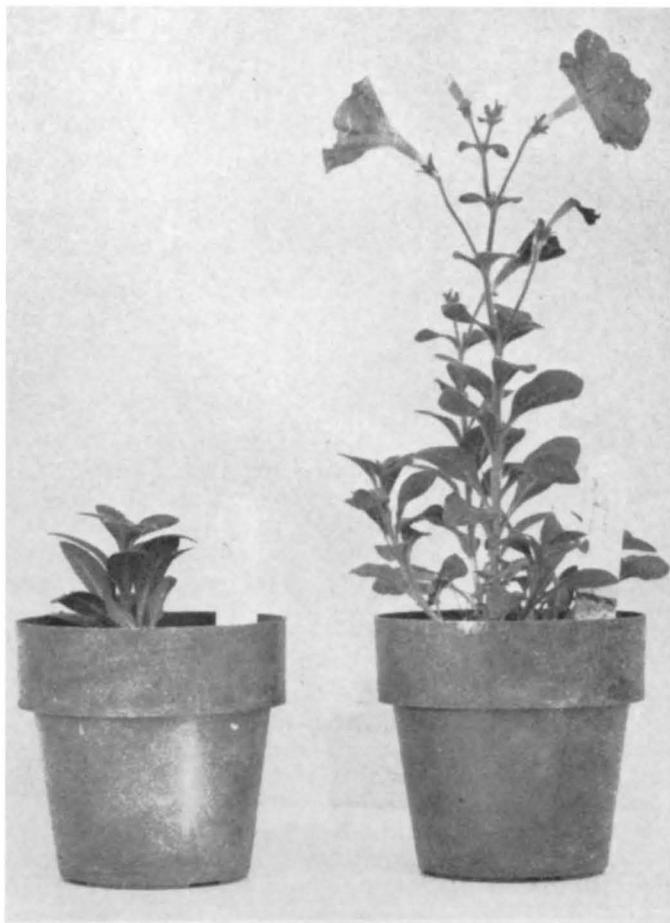


Figure 3. Growth of petunia in nematode-infested soil and in marigold soil (right).

Zinnias grew best in soil that had grown marigolds. Yet nematodes were not the only soil factor influencing growth. Soil from areas that had previously grown beans or zinnias caused stunted growth of zinnia seedlings; yet meadow nematodes were much more numerous at planting time in soil that had grown zinnias than in soil that had grown beans. Beans and zinnias appear to produce residues or encourage organisms that injure zinnias planted later into the same soil.

In another experiment calendulas or pot marigolds (*Calendula officinalis* L.), cosmos (*Cosmos bipinnatus* Cab.), salvias, marigolds, nasturtiums (*Tropolaelum majus* L.), and zinnias were grown for 12 weeks in a soil that contained many meadow nematodes at planting time. Then samples of the soil were analyzed for nematodes. Meadow nematodes increased where zinnias and cosmos were grown but decreased in soils growing marigolds, salvias, and calendulas.

The use of marigolds as a nematode control measure has been examined in the Netherlands and elsewhere (2,3,6). The technique appears made to order for use around the home. We explored the value of marigolds for controlling nematodes in flower beds by growing various plants in soil in which marigolds had grown the previous year, in fumigated soil, and in nonfumigated soil containing many meadow nematodes. The fumigated soil was taken from plots

Table 1. Improving growth of plants around the home by controlling nematodes with a nematicide, D-D a

| Plant                | No. years grown | Effect of nematicide on plants   |
|----------------------|-----------------|--|
| Petunias             | 1               | Plants much larger, increased blossoming on June 8, 400% more bloom on July 21 |
| Zinnias              | 1               | Increased blossoming 55%   |
| Eggplants            | 1               | Increased plant size 25% and increased yields 45%                              |
| Dwarf dahlias        | 1               | No effect  |
| McIntosh apple trees | 2               | Increased shoot growth 47%   |
| English ivy          | 2               | Increased vine growth 85%  |
| Euonymus             | 2               | Increased shoot growth 66%   |
| Forsythia            | 2               | No effect  |

a D-D applied on October 1, 1964 at the rate of 25 gal/acre. Planting was done in the spring of 1965. Each type of plant was planted in four different rows.

that had been treated with 6 gallons per acre of the nematicide ethylene dibromide. Soil from the three areas was placed in pots and planted to tomatoes, petunias, snapdragons, calendulas, sweet williams (*Dianthus barbatus* L.), salvias, or foxgloves (*Digitalis purpurea* L.). Growth of the plants after 7 weeks was affected much the same by marigolds as by fumigation. Snapdragons grew much better in fumigated soil or in soil where marigolds had grown than in the soil containing many meadow nematodes (Fig. 2). Growth of petunias, sweet williams, and calendulas was better following marigolds than following other plants (Figures 3, 4, and 5). Plants grew bigger on the soil where marigolds had grown and where meadow nematodes were scarce (Table 3).

In another experiment, we compared the effects of (1) fumigation with ethylene dibromide, (2) the growth of marigolds and (3) crops of crabgrass, pigweed, rye (*Secale cereale* L.) and buckwheat (*Fagopyrum esculentum* L.) on nematodes in soil and on crops planted later (5). The marigolds, rye, crabgrass, pigweeds, and buckwheat were grown in 1963 and fumigation was done on May 9, 1964. Tobacco was grown on these soils in 1964, 1965, and 1966. Privet (*Ligustrum vulgare* L.) was also grown beside the tobacco in 1964 and 1965. Tobacco plants were 50% bigger the first year on marigold soil and on fumigated soil than on soil where rye, buckwheat, crabgrass, or pigweeds had grown. Growth of tobacco was improved in marigold soil even in the second and third years. Privet grew 40% more shoots where marigolds had grown than where rye or buckwheat had grown.

The idea of interplanting marigolds with other plants has been suggested as a means of controlling nematodes while at the same time producing a crop. In a series of plots to study this experimentally, marigolds were interplanted with strawberries, tomatoes, or gladioli (*Gladiolus hortulanus* Bailey). Plants were 1 foot apart in the row. The interplanted marigold plants were started in the greenhouse and transplanted into the rows 2 weeks after transplant-

ing the strawberries and on the same day that the tomatoes and gladioli were planted. Marigolds were also seeded broadcast on four plots where no other plants were grown.

In a parallel series of plots, strawberries, tomatoes, and gladioli were planted into soil previously fumigated with the nematicide Telone (1,3-dichloropropene and related C3 chlorinated hydrocarbons), and applied at the rate of 25 gallons per acre 3 weeks before planting time.

It soon became apparent that the interplanted marigolds were acting like weeds and reduced the yields of strawberries below that in the untreated areas. Fumigation, however, increased yields of strawberries by 80% compared with unfumigated soil but did not increase the growth of gladioli or yields of tomatoes. By the end of the summer, marigolds, both broadcasted or interplanted, had reduced meadow nematodes to less than 10% of the number in untreated plots.

The plots were rototilled the next spring and replanted to corn and petunias. The petunias grew 35% to 55% better where marigolds had grown or the soil had been fumigated a year earlier. Growth of corn was slightly stunted where Telone had been applied in the previous year.

Thus, growing marigolds suppresses meadow nematodes for up to 3 years and controls one or more other nematodes (5,6) for 1 or more years without injuring other plants. An easy way to use marigolds for nematode control is to rotate plantings of marigolds with plantings that are susceptible to nematode injury.

If marigolds are interplanted 2 or more weeks after the other plant competition is lessened. Interplanting with marigolds may not greatly benefit garden plants during the first season, but benefits become apparent the following year after the nematode population is reduced. Interplanting has the advantage of providing flowers (marigolds) and

Table 2. Meadow nematode populations in soil taken near different flowers and vegetables in a garden, and growth of zinnias in these soils

| Plant near which soil was obtained         | Number of meadow nematodes in 5 oz. soil before zinnias were planted | Number of meadow nematodes in 1 gm. of zinnia roots 6 wks. after planting | Ava. wgt. (grams) of zinnia plant after |                |
|--|--|---|---|----------------|
|  |  |   | Root rating 4-worst                     | 1-best 6 weeks |
| Large marigold ( <i>Tagetes erecta</i> L.) | 1  | 8   | 1.3                                     | 18.1           |
| Small marigold ( <i>Tagetes-patula</i> )   | 2  | 2   | 1.1                                     | 17.0           |
| Salvia                                     | 7  | 103   | 3.3                                     | 14.5           |
| Tomato                                     | 47   | 116   | 3.0                                     | 14.4           |
| Petunia                                    | 27   | 85  | 3.1                                     | 12.3           |
| Dahlia                                     | 11   | 168   | 3.0                                     | 11.5           |
| Large zinnia                               | 35   | 79  | 3.1                                     | 7.3            |
| Small zinnia                               | 22   | 122   | 3.3                                     | 5.7            |
| Bean                                       | 11   | 52  | 2.8                                     | 7.0            |



Figure 4. Growth of sweet william in nematode-infested soil and in marigold soil (right).

another flower or vegetable crop while the meadow nematode population is being reduced. Gillespie (1) discusses interplanting of roses and marigolds for control of pests. She suggests that marigold buds may be clipped if the smell of the flowers is objectionable.\*

Marigolds control nematodes by producing a chemical in the roots which kills nematodes when it is released in soil (8). This chemical is produced slowly and so marigolds must be grown all season to give lasting control. They cannot be grown for a few weeks before or after some other plant and give lasting control.

### Summary

Meadow nematodes injure many plants around the home. Control of these nematodes results in better flowers and more fruit and vegetables from the garden. Chemical control of nematodes in a small garden or around a few established plants is generally impractical. Nematicides are not ordinarily available in the small amounts needed to treat a garden, equipment to apply them is designed for large areas, and most volatile nematicides injure plants that they touch. Growing of marigolds controls meadow nematodes as long as 3 years. Rotating marigolds with plants injured by meadow nematodes or other nematodes provides both flowers and nematode control.

\*Ed. Note: Mrs. Gillespie, in the book cited above (No. 1 in the bibliographical list) says that clipping marigolds also prevents any clashes of color — orange marigolds among pink roses, for example. Dwarf marigolds may be sheared into a thick dark green hedge no more than a foot high.

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Table 3. Growth of flowers and tomatoes in soil containing meadow nematodes and in soil in which marigolds had been grown

| Plant grown   | Soil source       | Avg. wgt. of above ground part of plant after 7 wks. | Number of meadow nematodes in a 2-inch section of root | Average height of plant |
|---------------|-------------------|--|--|-------------------------|
|               |                   | grams  | centimeters  |                         |
| Petunia       | marigold          | 4.8  | 29   | 30                      |
|               | nematode infested | 1.3  | 29   | 10                      |
| Sweet william | marigold          | 2.5  | 3  | —                       |
|               | nematode infested | 0.4  | 23   | —                       |
| Foxglove      | marigold          | 5.8  | 0  | —                       |
|               | nematode infested | 3.2  | 24   | —                       |
| Zinnia        | marigold          | 6.4  | 0  | 38                      |
|               | nematode infested | 0.9  | 34   | 18                      |
| Calendula     | marigold          | 9.3  | 0  | —                       |
|               | nematode infested | 6.0  | 11   | —                       |
| Tomato        | marigold          | 16   | 1  | 54                      |
|               | nematode infested | 6  | 15   | 30                      |

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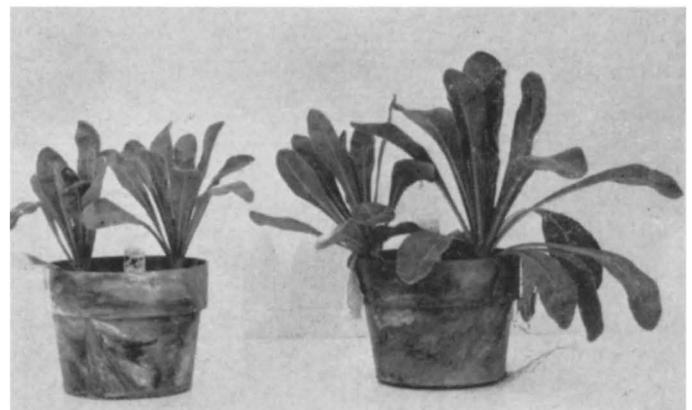


Figure 5. Calendula plants grown in nematode-infested soil, left, and in soil where marigolds had previously grown.

# A DI-VERSE-ITY OF BOXWOOD INTERESTS

Compiled and Arranged by  
ANNA C. KIRBY

Reader Interest Poll for 1968-69

We asked ABS members to kindly write in and let us know  
Of their main interest in boxwood, and in order to show  
That all comments were read (the response simply was great!),  
They were separated into categories to get a percentage rate.

About a fifth of the membership jotted down a word or a phrase —  
A hundred particular interests expressed in as many different ways —  
And these comments picked at random (one may be your very own)  
Give a sampling of the diverse interests and concernment shown.

We heard from boxwood enthusiasts — the botanist and the “buff” —  
From people who own hundreds of plants (but never, it seems, enough!)  
And from those who make cuttings to grow only a plant or two,  
As well as from charter members, and some enrolled as “new.”

GROWING and/or RAISING IT added up to the highest score;  
CARE next, exceeded PLEASURE by only a single point more.  
PROPAGATION, LANDSCAPING, PESTS/DISEASE in this order rated,  
While OTHER groups were miscellany too numerous to be stated.

And submitted below, dear Members, are the responses to the quiz,  
Quoted exactly as you replied to “*My chief interest in boxwood is:*”  
Your comments merely were juggled and arranged, *sans* rhythm, to rhyme,  
Thus making all of you poets — you penned the words, none are mine!

“Raising them to use in landscaping,  
no other plant can compare . . . ”  
“appreciate and watch them grow”  
“propagation” and “general care.”

“It is so very beautiful”  
“enjoying it around our home”  
“for use in garden . . . borders”  
“to care properly for my own.”

“To maintain boxwood on our place”  
“the ornamental of Colonial times”  
“research” — “as a gardener”  
“to learn the 250 different kinds.”

“I’ve had it in my garden always . . .  
the most beautiful . . . evergreen”  
“disease and pest control” — “hobby”  
“care of my box . . . enjoy the magazine.”

“To see more grown in Virginia”  
“historical and esthetic enjoyment”  
“its beauty” — “my favorite shrub”  
“winter survival” — “its unusual scent.”

“Rooting slips” and “maintenance”  
“clone testing” “hardy varieties”  
“culture” “growing specimen plants”  
“eradication of pests and disease.”

“Care, treatment, and protection . . . ”  
“my garden boxwood” “enjoying them”  
“for use on our own place”  
“growing them . . . each one a special gem.”

“For my home and selling some”  
“use in Christmas decoration”  
“enjoying its formal beauty”  
“horticultural” — “preservation.”

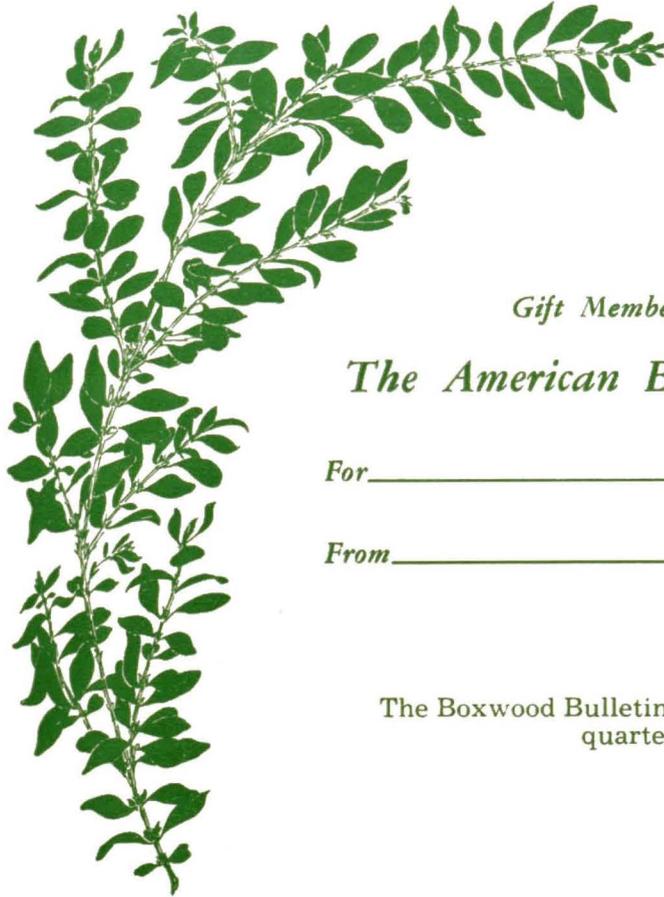
“I have very old and large box”  
“pleasure to see and smell . . . ”  
“seedlings and variability”  
“English box” — “. . . to keep them well.”

“Collecting different varieties . . .  
(offer to contribute notes on same)”  
“kinds we have in our collection”  
“knowing the different plants by name.”

“Assemble collection for public viewing”  
“raising it” — “historical background”  
“in our garden for friends to enjoy”  
“grow it in Arkansas” — “it’s nice to have around.”

. . . ANNA C. KIRBY

September 22, 1969



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*The American Boxwood Society*

*For* \_\_\_\_\_

*From* \_\_\_\_\_

The Boxwood Bulletin will be sent to you  
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Regular membership dues are \$3.00 a year. Other classes of membership available are Contributing, \$10; Sustaining, \$25; Life, \$100; and Patron, \$500. A subscription to the *Boxwood Bulletin* is included as one of the benefits of membership in ABS. The higher classes of membership provide income which permits the publication of more plates and additional pages in the *Bulletin*, as well as the expansion of other Society interests. Names of those holding Contributing, Sustaining, Life and Patron memberships will be published each year in the January issue of the *Bulletin*.

All membership correspondence should be addressed to Mrs. Andrew C. Kirby, Secretary-Treasurer, The American Boxwood Society, Box 85, Boyce, Virginia, 22620.

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