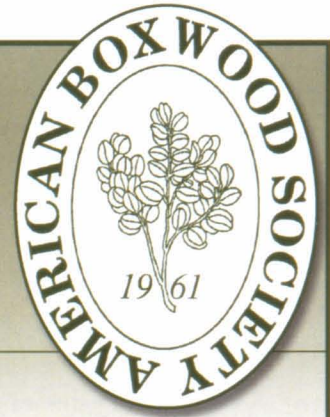


# THE BOXWOOD BULLETIN



The journal of the American Boxwood Society  
devoted to our oldest garden ornamental

Vol. 54 No. 1

Summer 2014



AMERICAN BOXWOOD SOCIETY

MAY 14-16 2014

College Park, Maryland



# The American Boxwood Society

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The Boxwood Bulletin (ISSN 0006 8535) is published by the American Boxwood Society, P.O. Box 85, Boyce, VA 22620. POSTMASTER: Send address changes to the American Boxwood Society, P.O. Box 85, Boyce, VA 22620



# Looking Back

## *The American Boxwood Society in review*

*By John Boyd, Past President*

For the last 3 years I have worked with you and for you for the growth of the ABS. I have had a wonderful time doing this and was joined by so many of my fellow members in everything from talks to garden clubs, to attending MAN-TS, the May symposium and other meetings on boxwood. Things have gone well. As president I have enjoyed every aspect of the ABS.

When accepting the job as President there seemed to be so many things that might overwhelm me, but with the help of the board members and officers, as well as each of you we did a lot to encourage growth of the ABS as well as to line up new projects for ABS members to be involved in to make the world a more beautiful place.

During our time we have seen several things come to the forefront that needed our support. The greatest of these is the fungus, *Buxicola* being found on our side of the pond as our British members and friends so aptly put it. This fungus has been a part of their lives for a number of years and I guess we had thought it of no concern since it was not in America. That has changed. For the last 3 years we, the ABS, have been involved in the study of the fungus on several fronts and have been putting together the information gathered from others and getting this information out to those who need to know. We have few research facilities and

must rely on others to get the information that we share, both for you as members and others. We also, during this time, found out that one of our members found the fungus several years ago in the USA and tried to get parties interested in research but could not get anyone interested. Once someone lost thousands of dollars worth of plants in a mass infestation in North Carolina, enough interest was generated to create concern. I am sorry for those that lost so much but am glad that there is now ongoing research at several levels, even to the point to create unaffected cultivars. This research will go on for years and we at the ABS will try to keep you informed.

To all of the membership that helped me through, I urge you to give our new President Hugh Crump all of the assistance you can. I will continue to give him all my support. Don't wait for him to ask you to be involved, but volunteer before he even thinks to ask. We are all busy, but if we all do our part, the many jobs are easier and quicker.

I will be looking you each of you to be involved. Even though I will be taking a subordinate roll, I will be assisting Hugh where I can and hope to see you each at as many events as you can possibly attend.

Thanks to all – John Boyd, Past President

### **New Board Officers and Board members elected.**

One of the items of business during the General Membership Meeting was the election of Officers and Board members. Mr. Hugh Crump was elected President of the Society. Mr. Crump is from Camerton, N.C. and is the owner of The American Boxwood Company.

#### **Elected to the Board of Directors were:**

Barrett Wilson of Kennett Square, Pennsylvania. **Barrett Wilson** is a Research Specialist at Longwood Gardens in Kennett Square, PA. He is curator of the boxwood collection at Longwood, which is comprised of wild-collected *Buxus sempervirens*. In addition, he is involved in the research and evaluation of hardy trees, shrubs, and perennials. Barrett holds B.S. and M.S. degrees in Horticulture from Auburn University and an M.S. in Forestry and Natural Resources from Purdue University

**Edward M. Kelly** was born and raised in Baltimore, MD and graduated from Loyola and University of Maryland Dental School. After spending three years with the 82nd Airborne, he attended the University of Montreal for post-graduate work in Orthodontics.

Although a plant lover since childhood, retirement in 1999 and a subsequent move to the family's Carroll County farm allowed Dr. Kelly to significantly expand his gardening. He maintains a large garden containing several hundred boxwoods along with a variety of azaleas, rhododendrons, holly and rose bushes. Sadly, the winter ice storm devastated the garden.

The Society also bid farewell to retiring Board members: Dr. Tomasz Anisko of Kennett Square, PA  
Louise Taylor Smith of Fishers Indiana  
Katherine Ward of Winchester, VA



# *Box Books of the International Cultivar Registration Authority for Buxus*

by Lynn R. Batdorf

In 1985, I was appointed as the International Cultivar Registration Authority (ICRA) for Buxus. For three decades, I've performed continuous reporting to both the American Boxwood Society (ABS) and the International Society for Horticultural Science (ISHS) Commission on Nomenclature and Cultivar Registration. Said in different terms, that's about 140 new boxwood cultivars which have been reviewed, documented, authenticated and approved.

Rather than dwell on the various and critical responsibilities of an ICRA, I like to celebrate this three decade anniversary with a question. What boxwood books does the ICRA for *Buxus* have in his home? Well, with over 36 years as curator of the National Boxwood Collection at the U.S. National Arboretum in Washington, D.C., I've had unique opportunities to collect special books. Some are easily available others are exceptionally rare. Some cover general, introductory topics while others have a detailed, highly technical approach. Recently, I found myself cataloging all of them. I learned I have 107 boxwood books (there are multiple copies of several books) which fills 34 inches of shelf space on my bookcase. Below is a complete enumeration of my personal box books.

I implore the reader to give this list a chance. At first glance, it might appear prosaic and tedious. It is not. Indeed, each boxwood book is a very dear friend. I have learned something from each of them. I've learned a lot from several of them. Nevertheless, each has their own unique perspective, always informing the reader. While all are about boxwood, most specialize in discussing a particular topic. They include: nomenclature, culture, garden design, pathology, plant expeditions, garden history, cold-hardiness, world class gardens, or national trials. At the end of my list are my most important books as ICRA, three editions of the *International Code of Nomenclature for Cultivated Plants*. Somewhere in this list, I hope you might find a boxwood book that you will enjoy as much as I have.

Abashidze, Irakli. 1987. *Carving on Box-wood bone crystal*. Khelovneba. Tbilisi, Georgia. This was a gift to me, presented while I was in Georgia. Exceptionally rare and limited in distribution. Includes promotional booklet.

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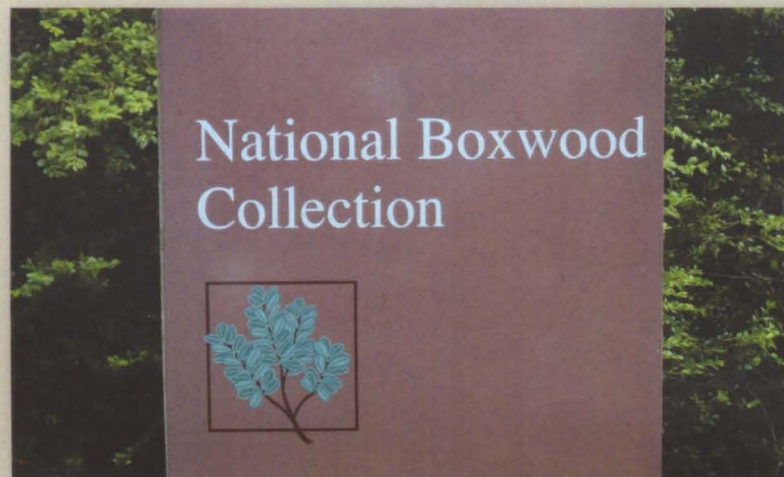
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Photos clockwise from top left corner: United States Arboretum; Touring the Smithsonian Greenhouses; George Bridge Boxwood; George Bridge Welcomes ABS; Members tour Gail Gee's Gardens; Paul Saundus answers members questions; Dr. richard Olsen at the National Arboretum; (middle photo) Gail Gee welcomes ABS.





# *Evaluation of Boxwood Species/ Varieties to Boxwood Leaf Miner*

*By Robert A. Dunn & Bennett Saunders  
Saunders Brothers Inc.*

Boxwood, with its excellent variety of forms and adaptability to a wide range of environmental conditions, has been an important landscape ornamental since antiquity.

However, even the boxwood has a few problems at times and places. Most of us in the Mid-Atlantic region of the U.S. know the boxwood leaf-miner [*Monarthropalpus buxi* (Laboulbene); Figure 1; “BLM”; see inset box for more details about its life cycle] too well, and now we are very concerned about the newly-arrived disease, boxwood blight (caused by *Cylindrocladium buxicola*). Each can be managed by somewhat artificial

means, with the use of insecticides and fungicides. However, those practices can be expensive and perhaps short-lived as the pests adapt to our chemical tricks. Some simply are objectionable to many on environmental grounds or their personal preferences. Can we manage such problems by more positive means?

Many years ago, it was observed at Saunders Brothers that some boxwood selections suffered little damage by BLM while adjacent plants of other varieties and species were much more seriously affected by it. Earlier trials done at the University of Maryland provided encouragement that



**Figure 1. BLM blisters on undersides of boxwood leaves**





**Figure 2. BLM trial planting April 2008**

boxwood genotypes vary considerably in their reactions to BLM and provided simple methods by which to assess relative susceptibility. After our initial trial to see if those differences in BLM reactions would be consistent over years, we set up the extensive tests described in this article.

### **Procedures**

In early April, 2008, 24 different boxwood genotypes were planted in an isolated field that was naturally infested with boxwood leafminer (Figure 2). The trial was surrounded by heavily-infested 'Elizabeth H. Inglis' which provided excellent natural BLM pressure on the test plants. Plants were arranged in a randomized complete block design in the field with a single plant in each of five replicates. On 20 November 2008, three sprigs were collected from each plant and stored in plastic bags until they could be examined. Within the next 2 weeks, 2 leaves were examined from each sprig, for a total of 6 leaves from each plant. In 2009, 4 sprigs were taken from each plant and one leaf examined from each sprig, for a total of 4 leaves per plant. Each leaf was cut so the bottom could be peeled free from the leaf and living larvae were counted under a stereoscopic microscope at 20X magnification

(Figure 3). From that time on, all evaluation of BLM infestation was determined from one leaf from each of 4 sprigs per plant, collected in late October or early November of each year.

Based on the stable data from those first 2 years of the 2008 test, 12 boxwood varieties were randomly assigned to positions in each of 5 replicate blocks, one plant per entry, in April 2010, immediately adjacent to the 2008 trial. In the last week of March 2011, 51 additional cultivars were planted in a similar randomized complete block design in the same area where the two earlier trials were established, using the same heavily-infested Elizabeth H Inglis as the source of BLM to attack the new planting. Nine more varieties were added to that trial in early 2012. Test plots were maintained together.

### **Results**

Susceptibility of each of 55 boxwood entries are shown in Table 1 as the 3-year mean number of BLM larvae per leaf. These are most of the boxwood tested for which we have adequate 3-year data; those in the trials planted in 2012 and later are not included, and a few entries from which we did not get data from at least 3 plants in each year





**Figure 3. Boxwood leaf cut open underside to count BLM larvae.**

also are omitted. The mean numbers of BLM/leaf fluctuate from year to year, but varieties are quite consistent in their levels of ranking. That is, those that are very low in any year generally are very low every year, and the same is true of those at the highest levels of infestation.

Different readers may wish to use these data in different ways; we find it convenient to group entries according to their BLM levels in this way: BLM < 1.0 is Highly Resistant; BLM = 1.1 – 2.0 is Somewhat Resistant; BLM = 2.1 – 4.0 is Somewhat Susceptible; BLM > 4.0 is Highly Susceptible. Those with BLM less than 1.0 certainly are very attractive on their own and as potential breeding sources. Those between 1.0 and 2.0 should be useful in the landscape with little or no need for insecticidal assistance in most years. Those with means above 4.0 probably should not be planted where BLM is likely to be a problem unless insecticidal controls are to be used.

### **Discussion**

These trials measure numbers of BLM offspring found in leaves about 6 months after eggs were laid – reproductive resistance. We do not

have separate data on how severely BLM affects the appearance of the plant (sensitivity to damage). For instance, although ‘Elegantissima’ had a mean BLM level of only 1.9, its leaves often appeared to be more severely distorted than others with somewhat higher levels of BLM.

We do not know how the observed resistance to BLM reproduction may work. Observations during the trial evaluations suggest that there may be several mechanisms, but we do not have the resources for proper experiments to assess those possibilities. Some entries appear to have fewer oviposition sites on them than other boxwood, suggesting that they are less attractive to the flies or are not in exactly the right stage of development for oviposition when the adult flies are active. In leaves of some boxwood, BLM larvae seem to develop more slowly than in others, perhaps because of a lack of some needed nutrient or growth factor. Some varieties seem to form especially dense tissues around the larvae, perhaps walling them off from the tender parenchyma cells that they need to feed upon. It also is possible that some varieties/species produce something toxic to BLM larvae.



These tests have been conducted in one naturally-infested field with one population of BLM. It is quite possible that other BLM populations in other locations might affect some of these boxwood entries differently. It also is possible that very different environmental conditions might change susceptibilities. However, we are pleased that our results are generally consistent with casual field observations of the authors and observations reported in the Boxwood Bulletin and in Boxwood, An Illustrated Encyclopedia. Our trials have simply provided some hard data by which to support some of those field observations and have extended the number of boxwood genotypes for which we have such information.

Resistance of boxwood to BLM offers many advantages in managing it, such as avoiding the cost and risks of insecticide use and freedom from the concerns of insecticide application timing, coverage, and retention. As insecticides become more tightly regulated, resistance offers means to continue to plant boxwood in home landscapes and other areas where insecticide use is least likely to be done and to be done well.

During the BLM trials, we also have noticed apparent differences in occurrence and severity of boxwood mite infestations, *Volutella* canker incidence, and boxwood psyllid symptoms. It is very possible that appropriate screening trials would make it possible to identify species and varieties of *Buxus* that are least likely to suffer damage from each of those pests and diseases, just as now is being done for BLM and blight. Screening trials such as our evaluations of relative varietal BLM susceptibility are time-consuming and laborious. The resources available should be devoted to the most serious threats first, which seem here and

now to be BLM and blight. However, whenever it is possible to identify plants that otherwise suit our needs and also are less susceptible to the predominant pests, we are able to let natural forces replace or at least substantially reduce use of more artificial control measures, a most satisfactory way to simplify our lives.

The boxwood leafminer, *Monarthropalpus buxi* (Laboulbene) is a small insect considered by many to be the most serious pest of boxwood in much of the United States. Although commonly known as boxwood leaf miner, it actually belongs to the insect group known as gall midges; it causes the typical “blisters” on the undersides of leaves shown in Figure 1. When they are very numerous, they can cause serious browning of leaves and defoliation.

BLM is a small fly with a single life-cycle per year. Adult flies emerge from pupae inside boxwood leaves in the spring (usually mid- to late-April in central Virginia), mate soon (a few hours) after emergence, and females then fly to newly-opening boxwood leaves, inject eggs into the undersides of the leaves, and die. They are delicate yellowish-orange flies that are weak fliers, so wind may have a great deal to do with the direction of their movement. The eggs hatch in about 3 - 4 weeks to become tiny larvae that eat tender parenchyma cells around them in the leaf centers. They grow through the warm season, slowing down as weather cools in the fall, and have reached near maturity by early winter. As temperatures begin to rise in the spring, they complete feeding and become pupae within the leaf.

(See Table on Page 14)



### Boxwood Resistance to Boxwood Leafminer

Common or Tag Name	Year Planted	3-year Mean BLM/Leaf	Citation
Abilene	2011	4.3	B. sempervirens 'Abilene'
Argenteo-variegata	2011	0.4	B. sempervirens 'Argenteo-variegata'
Asheville	2011	3.0	B. sempervirens 'Asheville'
Aurea Maculata	2011	1.5	B. sempervirens 'Aurea Maculata'
Beehive	2011	5.0	B. latifolia 'Beehive'
Blauer Heinz	2011	2.5	B. sempervirens 'Blauer Heinz'
Chicagoland Green	2008	6.2	Buxus 'Glencoe'
Cliffside	2011	6.0	B. sempervirens 'Cliffside'
Dee Runk	2008	2.2	B. sempervirens 'Dee Runk'
Elegantissima	2008	1.9	B. sempervirens 'Elegantissima'
(Elizabeth H.) Inglis	2008	7.6	B. sempervirens 'Inglis'
Fastigiata	2008	1.9	B. sempervirens 'Fastigiata'
Golden Dream	2010	0.9	B. microphylla 'Peergold' Golden Dream
Grace Hendrick Phillips	2008	0.6	B. microphylla 'Grace Hendrick Phillips'
Green Beauty	2008	4.4	B. microphylla var. japonica 'Green Beauty'
Green Gem **	2008	6.2	Buxus 'Green Gem'
Green Mound	2008	4.2	Buxus 'Green Mound'
Green Mountain	2008	4.7	Buxus 'Green Mountain'
Green Pillow	2008	0.8	B. microphylla 'Green Pillow'
Green Tower	2010	0.6	
Green Velvet	2008	5.1	Buxus 'Green Velvet'
Harlandii	2011	0.1	Buxus 'Harlandii'
Henry Shaw	2011	3.9	B. sempervirens 'Henry Shaw'
Hohman's Dwarf	2011	0.1	B. microphylla 'Hohmann's Dwarf'
Insularis 'Nana'	2008	0.1	B. sinica var. insularis 'Nana'
Jensen	2008	1.2	B. sempervirens 'Jensen'
Jim Stauffer	2008	1.1	B. microphylla var. japonica 'Jim Stauffer'
John Baldwin	2008	4.4	B. microphylla 'John Baldwin'
Justin Brouwers	2008	5.8	B. sinica var. insularis 'Justin Brouwers'
Latifolia Aurea Maculata	2011	3.8	B. sempervirens 'Latifolia Aurea Maculata'
Liberty	2011	2.6	B. sempervirens 'Liberty'
Morris Dwarf	2008	0.8	B. microphylla var. japonica 'Morris Dwarf'
Morris Midget	2008	1.6	B. microphylla var. japonica 'Morris Midget'
Morrison Garden	2011	3.7	B. microphylla 'Morrison Garden'
Myosotidifolia	2011	1.4	B. sempervirens 'Myosotidifolia'
Newport Blue	2011	0.7	B. sempervirens 'Newport Blue'
Northern New York	2011	3.8	B. sempervirens 'Northern New York'
Ohio	2011	4.7	B. sempervirens 'Ohio'
Winter Gem	2011	1.6	B. microphylla var. japonica 'Winter Gem'
Pier Cove	2011	3.8	B. sempervirens 'Pier Cove'
Pullman	2011	6.6	B. sempervirens 'Pullman'
Pullman (Fiore)	2011	3.6	B. sempervirens 'Pullman' ('Fiore')
Richard	2011	0.0	B. harlandii 'Richard'
Rochester	2011	3.9	B. sempervirens 'Rochester'
Rotundifolia	2008	1.6	B. sempervirens 'Rotundifolia'
Route 50	2010	1.9	B. sempervirens 'Route 50'
Suffruticosa = "English"	2008	0.3	B. sempervirens 'Suffruticosa'
Uptight	2010	3.3	Buxus X 'Uptight'
Vardar Valley	2008	0.1	B. sempervirens 'Vardar Valley'
Variiegata	2011	4.6	B. sempervirens 'Variiegata'
West Ridgeway	2011	0.9	B. sempervirens 'West Ridgeway'
Wintergreen	2008	1.1	B. microphylla 'Wintergreen'
Woodland	2011	3.7	B. sempervirens 'Woodland'
Zehrunge	2011	2.8	B. sempervirens 'Zehrunge'



## The Question Box

**Q:** I work in a garden center in central VA. A customer was told to use Epsom salt at the time of planting English boxwood.

After a couple weeks they all died. Would you ever recommend planting boxwood with Epsom salt? Can it be the cause of the boxwoods death?

**A:** Epsom salt is in reality, Magnesium sulfate, a micro-nutrient. In very very small quantities, it is necessary to the plant in order to produce chlorophyll (green cells) which is required for their survival. Like any other micro-nutrient, it should never be used without a complete soil test and analysis nor without a thorough understanding of both plant physiology and the symptoms they're exhibiting.

I've watch the use of Magnesium sulfate increase greatly through the past several decades, to the point where laymen use it indiscriminately to solve a large variety of plant maladies. In the vast majority of these cases, application of Magnesium sulfate is inappropriate and often, with both the timing and amount of application, can have fatal results.

Your application of Epsom salts, may or may not, be responsible for the death of your boxwood. There are many

important variables which must be considered before and direct cause/effect relationship can be established. A few include: <sup>any</sup>

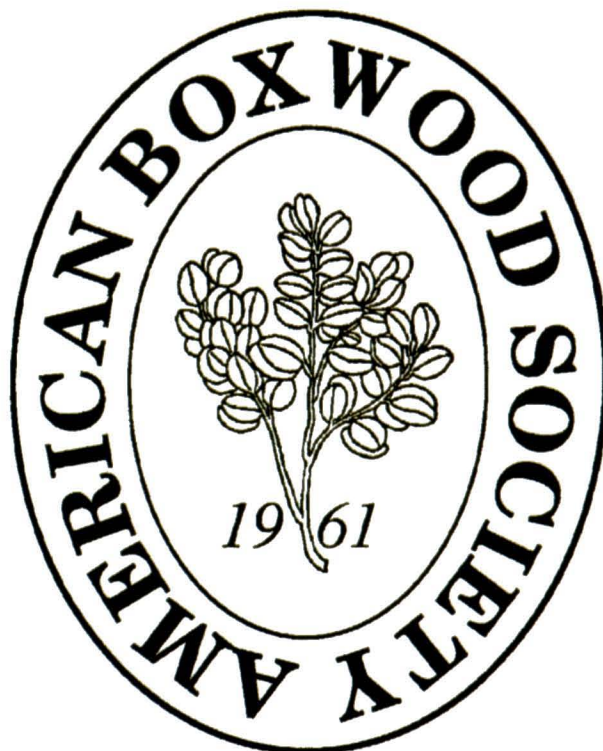
- existing soil nutrient and soil pH level
- time of, and amount of Epsom salt applied
- various site planting conditions, to include post care
- health and condition of the plant proper to planting

What I'm alluding to, is the box may have died because it wasn't planted in an appropriate site, perhaps wasn't watered correctly, etc. This important information isn't provided. <sup>prior</sup>

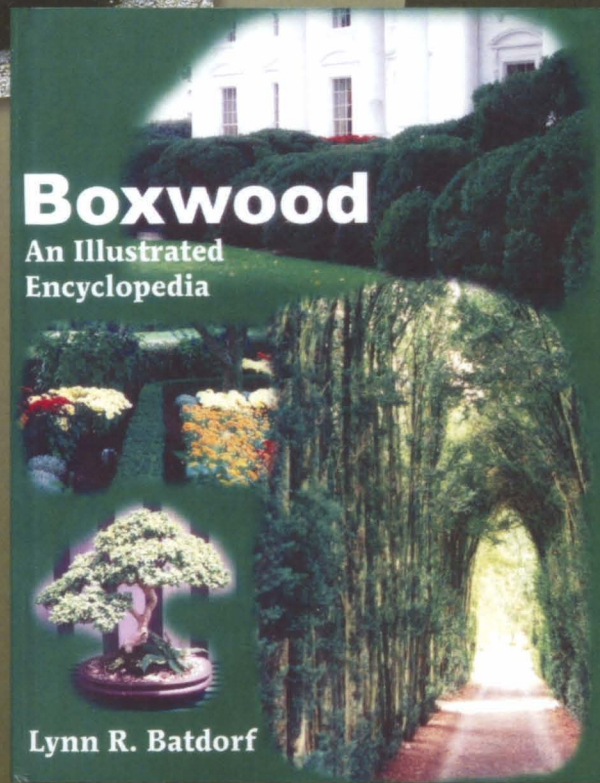
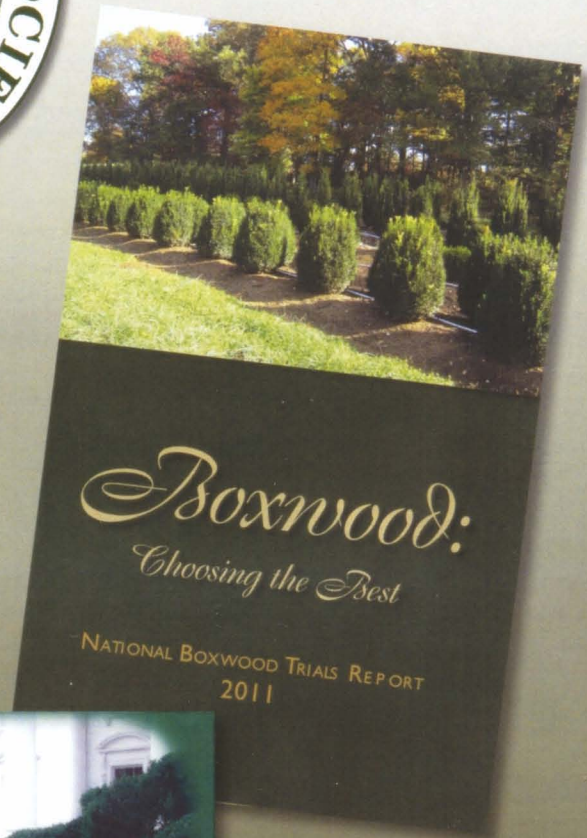
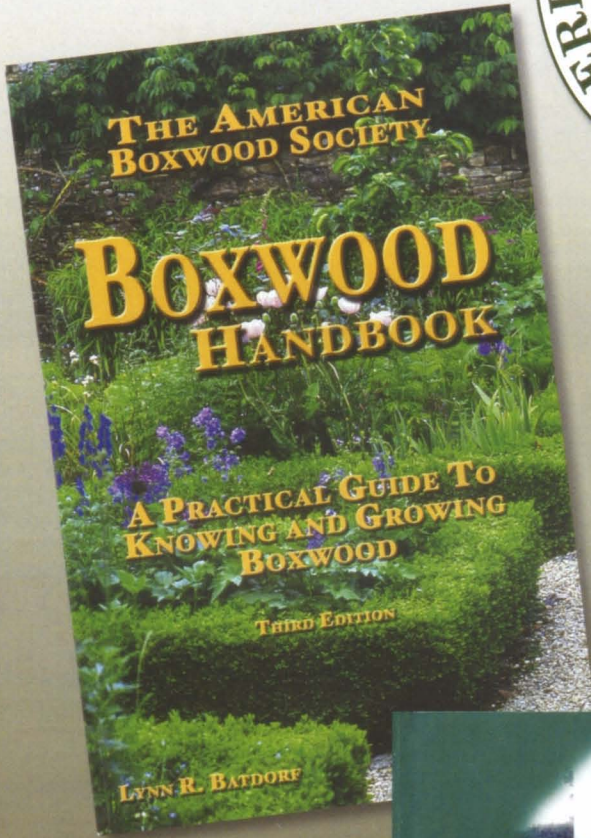
Also the existing soil conditions, the timing and rate of Epsom salt application are also not provided. Thus, while the application of Epsom salts is generally inappropriate, and can be injurious, it is possible that your box died from other conditions relating solely to the transplanting.

If you're willing to provide this additional information, I'd be happy to look into this bit further.

*Have a question about the American Boxwood? Our experts are happy to help. Please email your question to [amboxwoodsociety@gmail.com](mailto:amboxwoodsociety@gmail.com). We may use your question in the next "The Question Box" segment of the Boxwood Bulletin.*







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