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Proceedings of

39th Annual Horticulture Field Day

South Mississippi Branch Experiment Station
Coastal Research and Extension Center
Mississippi Agricultural and Forestry Experiment Station

MAFES

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Proceedings of

39th Annual Horticulture Field Day

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South Mississippi Branch Experiment Station
Coastal Research and Extension Center
Mississippi Agricultural and Forestry Experiment Station

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*Scheduled Presenter

Best Cool-Season Plants from the Fall 2011/Winter 2012 Variety Trials at the South Mississippi Branch Experiment Station

Eugene K. Blythe, Michael Anderson, Debbie Murchison, David Lee, Louis DeJean, Scott Langlois, Christine Ladner, and Jordan Gesell
Mississippi State University, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS

Pansy 'Spring Matrix Lemon' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Pansy 'Spring Matrix Ocean' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Pansy 'Spring Matrix White' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Ornamental Kale 'Songbird White' [American Takii]
Available from retail garden centers and mail-order seed companies.

Ornamental Kale 'Songbird Red' [American Takii]
Available from retail garden centers and mail-order seed companies.

Viola 'Floral Power Orange' [American Takii]
Available from retail garden centers and mail-order seed companies.

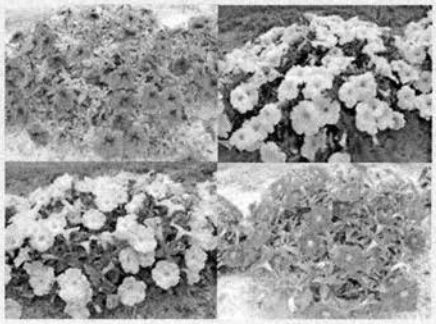
Pansy 'Nature Pink Antique' [American Takii]
Available from retail garden centers and mail-order seed companies.

Pansy 'Nature Plum Purple' [American Takii]
Available from retail garden centers and mail-order seed companies.

Pansy 'Nature Red & Yellow' [American Takii]
Available from retail garden centers and mail-order seed companies.

Top Petunias from the 2012 Winter/Spring Variety Trials at the South Mississippi Branch Experiment Station

Eugene K. Blythe, Michael Anderson, Debbie Murchison, David Lee, Louis DeJean, Scott Langlois, Christine Ladner, and Jordan Gesell
Mississippi State University, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS



Trilogy series Petunias [American Takii]
Available from retail garden centers and mail-order seed companies.

Petunia 'Storm Violet' (grandiflora) [Syngenta Flowers]
Available from retail garden centers and mail-order seed companies.

Petunia 'Hurrah Lavender Tie Dye' (multiflora) [Syngenta Flowers]
Available from retail garden centers and mail-order seed companies.

Petunia 'Plush Purple' (trailing) [Syngenta Flowers]
Available from retail garden centers and mail-order seed companies.

Petunia 'Sanguna White Pearl' (trailing) [Syngenta Flowers]
Available from retail garden centers.

Petunia 'Pretty Flora Purple' (floribunda) [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Petunia 'Sophistica Lime Bicolor' (grandiflora) [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Petunia 'Debonair Dusty Rose' (multiflora) [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Petunia 'Pop Rocks White' (spreading) [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

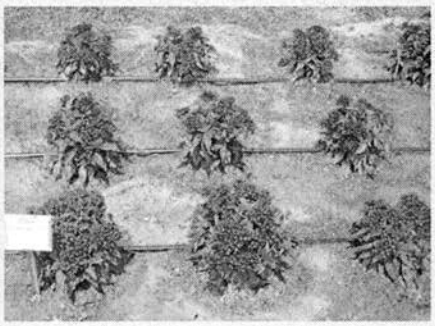
Outstanding Performers from the 2012 Spring/Summer Variety Trials at the South Mississippi Branch Experiment Station

Eugene K. Blythe, Michael Anderson, Debbie Murchison, David Lee, Louis DeJean, Scott Langlois, Christine Ladner, and Jordan Gesell
Mississippi State University, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS

Gomphrena 'Las Vegas White [Benary]
Available from retail garden centers and mail-order seed companies.

Gomphrena 'Las Vegas Pink' [Benary]
Available from retail garden centers and mail-order seed companies.

Alyssum 'Giga White' [Benary]
Available from retail garden centers and mail-order seed companies.



Pentas 'Graffiti Red Lace' [Benary]
Available from retail garden centers and mail-order seed companies.

Begonia 'BIG Red Green-Leaf' [Benary]
Available from retail garden centers and mail-order seed companies.

Begonia 'BIG Rose Bronze-Leaf' [Benary]
Available from retail garden centers and mail-order seed companies.

Melampodium 'Lemon Delight' [American Takii]
Available from retail garden centers and mail-order seed companies.

Sunflower 'Sunrich Gold' [American Takii]
Available from retail garden centers and mail-order seed companies.

Zinnia 'Sunshine Mixture' [American Takii]
Available from retail garden centers and mail-order seed companies.

More Outstanding Performers from the 2012 Spring/Summer Variety Trials at the South Mississippi Branch Experiment Station

Eugene K. Blythe, Michael Anderson, Debbie Murchison, David Lee, Louis DeJean, Scott Langlois, Christine Ladner, and Jordan Gesell
Mississippi State University, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS

Coleus 'Honey Crisp' [Ball FloraPlant]
Available from retail garden centers.

Coleus 'Vino' [Ball FloraPlant]
Available from retail garden centers.

Lantana 'Little Lucky Pot of Gold' [Ball FloraPlant]
Available from retail garden centers.

Lantana 'Lucky Flame Improved' [Ball FloraPlant]
Available from retail garden centers.

Celosia 'Intenz' [Ball Ingenuity]
Available from retail garden centers.

Impatiens 'Fiesta Purple Improved' [Ball FloraPlant]
Available from retail garden centers.

Begonia 'Baby Wing Pink' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Begonia 'Baby Wing White' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

Begonia 'Baby Wing White Bronze-Leaf' [Ball Horticultural]
Available from retail garden centers and mail-order seed companies.

All-America Selections Celebrates 80 Years of Outstanding Garden Performers with AAS Winners for 2012

Diane Blazek, All-America Selections, Downers Grove, IL (Email: dblazek@aas-ngb.org)
Eugene K. Blythe, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS

All-America Selections (AAS), founded in 1932, celebrates their 80th anniversary in 2012. AAS includes a network of over 50 trial grounds all over North America where new, never-before-sold varieties are grown and evaluated by skilled, impartial AAS Judges. Only the best performers are declared AAS Winners. AAS continues as the oldest, most established international testing organization in North America. For more information, visit: **www.all-americaselections.org**.

Salvia coccinea 'Summer Jewel Pink'. Sister to earlier AAS Winner *Salvia coccinea* 'Summer Jewel Red', this dwarf-sized, compact plant has a prolific bloom count throughout the growing season. As a bonus, the blooms appear almost two weeks earlier than other pink salvias used as comparisons. Commercial growers will appreciate the earliness, excellent pack performance and uniformity. Bred by Takii & Co., Ltd.

Capsicum annuum 'Black Olive' (ornamental pepper). The AAS Judges said this entry was a standout, especially in the southern gardens where heat was a major presence during the 2011 trials. All season long this beauty keeps its upright habit with nicely draping leaves and dark purple/black fruit which appears in small clusters along the stems. As summer progresses, the fruits mature to red, giving a beautiful contrast against the dark purple foliage and bright purple flowers. Retailers and growers can sell this multi-use ornamental as a 20" border plant, a great color splash for containers, or as a cut flower in mixed bouquets. Bred by Seeds By Design.

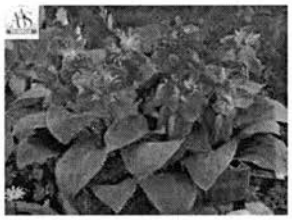
Capsicum annuum 'Cayennetta' (F1 chili pepper). 'Cayennetta' is an excellent tasting, mildly spicy pepper that is very easy to grow, even for novice gardeners. This 3- to 4-inch chili pepper yields bigger fruits from a very well branched upright plant that requires no staking which makes it perfect for a container or patio planter. This variety has good cold tolerance as well as dense foliage cover to protect the fruits from sun scorch and it handles extreme heat very well. Market growers will benefit from the heavy yield and prolific fruit set from each plant. Bred by Floranova Ltd.

Citrullus lanatus 'Faerie' (F1 watermelon). 'Faerie' is a non-traditional watermelon in that it has a creamy yellow rind with thin stripes yet still yields sweet pink-red flesh with a high sugar content and crisp texture. Home gardeners will like growing something unique in their garden and the fact that the vines are vigorous, yet spread only to 11 feet, meaning it takes up less space in the garden. Each 7 to 8-inch fruit weighs only four to six pounds making it a perfect family size melon. Professional growers will appreciate the disease and insect tolerance as well as the prolific fruit set that starts early and continues throughout the season. Bred by Known-You Seed Company.

Catharanthus roseus 'Jams 'N Jellies Blackberry' (vinca). Extremely unique, velvety deep purple with white eye flower color will add excitement to summer gardens. This superb accent plant will work beautifully in Americana color schemes and in combination with blue, pink, white, or lavender. In some settings, the flower petals appear almost black, making this color a designer's delight. Easy to grow plants have excellent tolerance to drought and heat. Mature plants will reach 10-14 inches tall making them a perfect medium height divider. The 2-inch flowers are complimented by deep green shiny leaves. Bred by Kirin Agribio/PanAmerican Seed.

In summer 2012, the following two 2013 AAS winners were also announced:

Canna generalis 'South Pacific Scarlet'. This variety is grown from seed, not tubers. Plants are compact in habit and well suited for both landscape and container use. 'South Pacific Scarlet' canna prefers warm and humid conditions over 77°F. This variety is more vigorous, more uniform, and has more basal branching than 'Tropical Red' canna. Bred by Takii & Co., Ltd.



Echinacea ×hybrida 'Cheyenne Spirit' (coneflower). This stunning, first-year flowering coneflower captures the spirit of the North American plains by producing a delightful mix of flower colors from rich purple, pink, red, and orange tones to lighter yellows, creams, and white. As an added bonus, 'Cheyenne Spirit' does not require a lot of water and offers a wide range of uses from the perennial border, in a mass landscape planting, in a butterfly garden, or as a cut flower. Bred by Kieft Seed.

Bridging the Seasons with All-America Selections: South Mississippi Branch Experiment Station Celebrates 80 Years of AAS Winners

Eugene K. Blythe, Michael Anderson, Debbie Murchison, David Lee, Louis DeJean, Scott Langlois, Christine Ladner, and Jordan Gesell
Mississippi State University, Coastal Research and Extension Center, South Mississippi Branch Experiment Station, Poplarville, MS

All-America Selections (AAS), founded in 1932, celebrates their 80th anniversary in 2012. At the South Mississippi Branch Experiment Station in Poplarville, planting beds around the bridge and gazebo within the rose garden were selected as a new site for the 2012 AAS Display Garden. Most varieties were planted in groups of 12 plants for cool-season crops and 3 to 6 plants for most warm-season crops. Multiple planting dates (winter, spring, and summer) were used to provide a continuing, but ever-changing, display of color and form. AAS award-winning flowers and vegetables from 1934 to 2013 were used in the design.

Right: Mid-winter in the 2012 AAS Display Garden with cool-season color provided by 'Twinny Peach' snapdragon, 'Glamour Red' ornamental kale, and four varieties of viola: 'Endurio Blue Sky Martien', 'Rain Blue and Purple', 'Shangri-La Marina', and 'Skippy XL Plum Gold'. In the background are long, wood-lined beds and traditional field rows used for variety trials.

Left: Mid-spring in the 2012 AAS Display Garden with 'Silver Tidal Wave' petunias providing drifts of color. 'Soraya' and 'Ring of Fire' sunflowers stand tall with their orange and bicolored flowers. 'South Pacific Scarlet' canna makes its debut as a 2013 AAS winner.

Right: Late spring in the 2012 AAS Display Garden, with plants of Rudbeckia 'Cherokee Sunset', 'Indian Summer', and 'Prairie Sun' stealing the show. 'Profusion White' zinnia and 'Purple Majesty' ornamental millet add to the display of color near the bridge, while additional varieties begin to come into bloom near the gazebo.

AAS Winners Used in the Garden Design

Agastache 'Golden Jubilee'	2003
Basil 'Dark Opal'	1982
Basil 'Purple Ruffles'	1987
Basil, Lemon 'Sweet Dani'	1998
Basil, Thai 'Siam Queen'	1997
Calendula 'Chrysantha'	1934
Canna 'South Pacific Scarlet'	2013
Celosia 'Century'	1985
Celosia 'Fresh Look Gold'	2007
Celosia 'Fresh Look Red'	2004
Celosia 'New Look'	1988
Cleome 'Sparkler Blush'	2002
Cosmos 'Sensation'	1936
Dianthus 'Magic Charms'	1974
Echinacea 'Cheyenne Spirit'	2013
Echinacea 'PowWow Wild Berry'	2010
Gaillardia 'Arizona Apricot'	2011
Gaillardia 'Mesa Yellow'	2010
Marigold 'Bonanza Bolero'	1999
Marigold 'Janie'	1980
Marigold 'Moonsong Deep Orange'	2010
Okra 'Clemson Spineless'	1939
Ornamental Kale 'Glamour Red'	2011
Ornamental Millet 'Purple Majesty'	2003
Ornamental Pepper 'Black Olive'	2012
Ornamental Pepper 'Black Pearl'	2006
Ornamental Pepper 'Chilly Chili'	2002
Osteospermum 'Asti White'	2008
Pepper 'Cayennetta'	2012
Petunia 'Tidal Wave Silver'	2002
Portulaca 'Sundial Peach'	1999
Rudbeckia 'Cherokee Sunset'	2002
Rudbeckia 'Indian Summer'	1995
Rudbeckia 'Prairie Sun'	2003
Salvia 'Evolution'	2006
Salvia 'Summer Jewel Pink'	2012
Salvia 'Summer Jewel Red'	2011
Snapdragon 'Twinny Peach'	2010
Sunflower 'Ring of Fire'	2001
Sunflower 'Soraya'	2000
Tomato 'Juliet'	1999
Tomato 'Lizzano'	2011
Vinca 'First Kiss Blueberry'	2005
Vinca 'Jams 'N Jellies Blackberry'	2012
Viola 'Endurio Blue Sky Martien'	2010
Viola 'Rain Blue and Purple'	2009
Viola 'Shangri-La Marina'	2011
Viola 'Skippy XL Plum Gold'	2008
Zinnia 'Crystal White'	1997
Zinnia 'Double Zahara Cherry'	2010
Zinnia 'Double Zahara Fire'	2010
Zinnia 'Magellan Coral'	2005
Zinnia 'Profusion Cherry'	1999
Zinnia 'Profusion Orange'	1998
Zinnia 'Profusion White'	2001
Zinnia 'Zahara Starlight Rose'	2010
Zinnia 'Zowie! Yellow Flame'	2006

Below: 'Lizzano' tomato plants begin to set fruit in a hanging basket by the gazebo, with tasty fruit for summer salads soon to come.

Left: Summer in the 2012 AAS Display Garden with several varieties of celosia, marigold, and zinnia adding flower color to the show, while 'Black Olive' and 'Black Pearl' ornamental peppers provide deep purple foliage color. Small wooden and string trellises will support 'Juliet' tomato plants as the season continues. The wooden bridge invites visitors to pass across to the gazebo where more AAS winners are in bloom.

Right: Recently planted 'Dark Opal' basil, 'Purple Ruffles' basil, and 'Siam Queen' Thai basil provide contrasting foliage color and culinary aroma to the 2012 AAS Display Garden as the summer continues. A single 'Clemson Spineless' okra will provide dramatic foliage and fruit for gumbo in the fall.

LEFT: Late summer and the 2012 AAS Display Garden provides the setting for a segment of Southern Gardening Television with Extension Horticulturist Gary Bachman highlighting several AAS winners. Southern Gardening is broadcast within Mississippi television newscasts and is available for on-line viewing.

Left: Spring planting in the 2012 AAS Display Garden using 4" pots. Most varieties were planted in groups of three to six plants. Other shrubs and perennials used near the bridge included *Baccharis halimifolia*, *Centaurea gymnocarpa*, *Dianella tasmanica*, and cultivars of *Salvia greggii*.

Right: Combination plantings in small whiskey barrel planters demonstrate that AAS winners can be enjoyed in containers when garden space is limited. Each of four planters in the 2012 AAS Display Garden provided a different combination with four or five AAS winners in each planter.

Winter Propagation of Confederate Rose (*Hibiscus mutabilis*) with Hardwood Cuttings

Eugene K. Blythe

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ABSTRACT

Confederate rose (*Hibiscus mutabilis*), a native of southeastern China, is an old-fashioned, ornamental plant often found in older gardens in the southern U.S. Hardy in USDA zones 7–9, plants grow as large shrubs or small trees in warmer areas, but generally die back to a woody base or short trunk in colder areas of their range. Stems from the past growing season that remain on plants during the winter in the warmer regions may be used to prepare hardwood stem cuttings. The current study examined hardwood cutting propagation of confederate rose in response to a 1-second basal quick-dip in auxin [1000 ppm indole-3-butyric acid (IBA), 3000 ppm IBA, 1000 ppm IBA + 500 ppm 1-naphthaleneacetic acid (NAA), and 3000 ppm IBA + 1500 ppm NAA] and a basal wound (along with 1000 ppm IBA only). Cuttings were rooted in a warm, high-humidity environment within a greenhouse. Auxin treatments improved overall rooting percentage and total root length, with 1000 ppm IBA (without and with a basal wound) providing the highest rooting percentages (about 70%) and nontreated cuttings the lowest (44%). A significant increase in total root length on rooted cuttings resulted with the use of 3000 ppm IBA and use of a basal wound plus 1000 ppm IBA compared with nontreated cuttings. Auxin and wounding treatments did not have any significant inhibitory effects on bud break and growth of new shoots on rooted cuttings.

RESULTS AND DISCUSSION

Rooting percentage was improved overall with the use of a basal quick-dip in an auxin solution in comparison with nontreated cuttings. 1000 ppm IBA (both without and with a basal wound) enhanced rooting percentage in comparison with nontreated cuttings, whereas higher rates of auxin (either IBA alone or IBA+NAA) did not result in as great an improvement. This indicates that use of a basal quick-dip in auxin will enhance rooting percentage, with the lowest rate (1000 ppm IBA) being satisfactory and not improved by additional use of a basal wound.

Total root length was greatest overall with the use of an application of auxin in comparison with nontreated cuttings. Cuttings treated with 3000 ppm IBA, as well as wounded cuttings treated with 1000 ppm IBA, exhibited significantly greater total root length than nontreated cuttings. These responses indicate that the moderate rate of auxin (3000 ppm) promoted development of a larger root system compared with no auxin treatment; however, a response similar to that obtained using 3000 ppm IBA could be achieved using the 1000 ppm rate of IBA along with a basal wound.

Auxin treatments used in this study did not have any inhibitory effect on bud break or shoot development on the rooted cuttings, an effect that can occur on stem cuttings of some crops, depending upon the type and concentration of auxin.

Above: Scanned image of a root system.
Right: Hardwood cuttings in the process of rooting, with some initial shoot growth from lateral buds.
Below: Dormant, field-grown plants used as a source of hardwood cuttings.
Below right: Examples of four different clones of confederate rose.

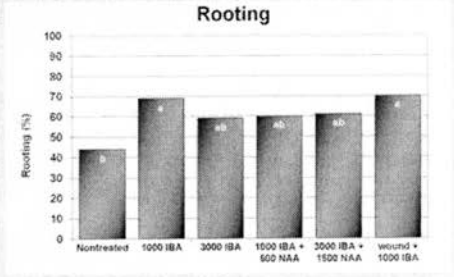
MATERIALS AND METHODS

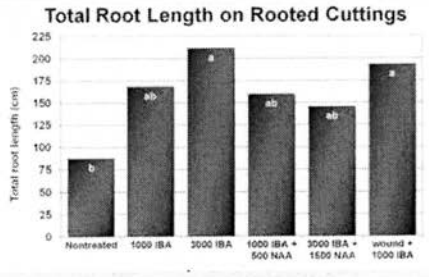
Collection, preparation, treatment, and placement of cuttings took place on February 4. Cutting propagation material was collected from mature plants of 18 different, unnamed clones of confederate rose (with close as a blocking factor) from a breeding program that were growing in field rows in Poplarville, MS (USDA zone 8b). Subterminal cuttings were prepared 4.75 to 5.50 inches in length with 4 vegetative buds, trimming 0.5 inch above and below a vegetative bud.

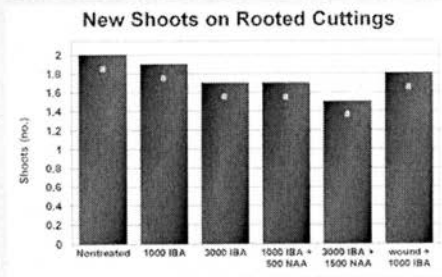
Auxin solutions were prepared by diluting Dip 'N Grow (10,000 ppm IBA + 5000 ppm NAA; Dip 'N Grow Inc., Clackamas, OR) and Dip 'N Grow Lite (an experimental product with 10,000 ppm IBA; Dip 'N Grow Inc.) with isopropyl alcohol and water to produce final solutions containing 50% alcohol. Cuttings in one treatment remained untreated, whereas cuttings in all other treatments received a 1-second basal quick-dip in their respective treatments (1000 ppm IBA; 3000 ppm IBA; 1000 ppm IBA + 500 ppm NAA; 3000 ppm IBA + 1500 ppm NAA).

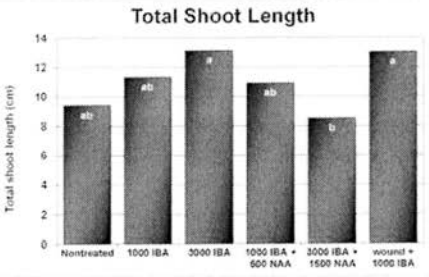
In an additional treatment, cuttings were wounded by slicing on two opposing sides of the cutting base, followed by a basal quick-dip in 1000 ppm IBA. Cuttings were inserted to a depth of 1 inch into individual cells of 6-packs containing a commercial blend of peat, perlite, vermiculite, and pine bark (Fafard 3B) as the rooting substrate.

Cuttings were placed inside a poly-covered, high-humidity enclosure in a greenhouse. Mist was supplied for 10 seconds every hour to maintain high humidity.









Mean values represented by bars containing the same letter within a single chart are not significantly different according to the Shaffer-Simulated method ($\alpha = 0.05$).

Type of Stem Cutting Affects Asexual Propagation of Sparkleberry (*Vaccinium arboreum*)

Jessica Bowerman[1], James D. Spiers[1], Elina Coneva[1], Ken Tilt[1], Eugene K. Blythe[2], and Donna A. Marshall[3]

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[2]Mississippi State University, Coastal Research and Extension Center
[3]USDA-ARS, Thad Cochran Southern Horticulture Laboratory

Introduction

•Commercial blueberries (*Vaccinium corymbosum*) have very specific growing requirements, limiting the potential growing sites.
•*Vaccinium arboreum* can grow in areas that commercial blueberries cannot, making it a potential rootstock.
•In the past, propagating *V. arboreum* has been difficult, and rapid clonal propagation methods will be needed to propagate selected varieties.
•The objectives of this experiment were to determine whether cutting type (softwood, semihardwood, or hardwood), cutting position (terminal or subterminal), IBA concentration, or the interaction of these treatments influenced the rooting success of sparkleberry stem cuttings

Materials and Methods

- A 1:1 peat:perlite substrate was used
- Cuttings were stuck using a completely randomized design in 48-cell trays
- Quick-dip IBA solutions of 0, 1000, 2500, 5000, and 7500 ppm were made from Hortus IBA water Soluble Salts™
- All cuttings were kept under intermittent mist
- Only juvenile wood was used. Cuttings were taken from the native stands in Opelika, AL and from new shoots derived from severe pruning on native stands in Stone County, MS.
- The treatment design was a 3 × 2 × 5 complete factorial design with three factors: 1) cutting type (softwood, semihardwood, and hardwood), 2) cutting position on the stock plant (terminal and subterminal), and 3) IBA rate (0, 1000, 2500, 5000, and 7500 ppm).
- The following measurements were taken:
  - Callus (y/n) and callus caliper
  - Roots (y/n)
  - Number of primary roots
  - Total length of primary roots
  - Shoots (y/n)
  - Number of shoots
  - Total length of shoots

Results

- There were no effects of IBA on parameters measured.
- Source and type did influence rooting percentage.
- Softwood cuttings from terminal and subterminal cuttings had the highest rooting percentage.
- Semihardwood cuttings from Stone County, MS had similarly high rooting percentage
- The lowest percent rooting was observed on hardwood cuttings.

Table 2. Effect of cutting source and cutting type on percent rooting, number of roots and root length of subterminal *V. arboreum* stem cuttings.

Source	Type	Rooting (%)	Roots (no.)	Root Length (cm)
RTJ[z]	Softwood	38.6 a[x]	2.2 a	16.0 bc
SCMS[y]	Softwood	34.6 a	1.9 a	18.3 ab
RTJ	Semihardwood	9.2 b	1.6 a	17.1 abc
SCMS	Semihardwood	28.5 a	2.4 a	23.3 a
RTJ	Hardwood	10.6 b	1.9 a	10.7 c
SCMS	Hardwood	0.7 c	1.0 a	17.0 abc

[z]Robert Trent Jones Golf Trail, Opelika, AL, cuttings from watersprouts.
[y]Stone County, MS, cuttings from plants that had been cut back Feb, 2010 and resprouted.
[x]Shaffer-Simulated grouping for source*type least squares mean (Alpha=0.05).

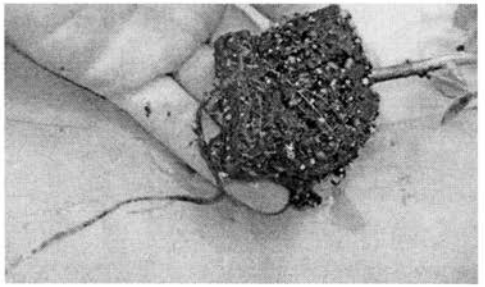
Table 4. Effect of cutting source and cutting type on percent rooting, number of roots and root length of terminal *V. arboreum* stem cuttings.

Source	Type	Rooting (%)	Roots (no.)	Root Length (cm)
RTJ[z]	Softwood	43.3 a[x]	2.2 a	16.9 a
SCMS[y]	Softwood	29.2 b	2.0 a	20.1 a
RTJ	Hardwood	2.0 c	2.0 a	19.3 a
SCMS	Hardwood	2.0 c	2.7 a	6.4 a

[z]Robert Trent Jones Golf Trail, Opelika, AL, cuttings from watersprouts.
[y]Stone County, MS, cuttings from plants that had been cut back Feb, 2010 and resprouted.
[x]Shaffer-Simulated grouping for source*type least squares mean (Alpha=0.05).

Conclusion

•Overall, the IBA concentration appeared to have no effect on any aspect of the experiment.
•The type of cutting (softwood, semihardwood, or hardwood) and the position (terminal or subterminal) had the most influence on the percent rooting.
•Softwood cuttings had much greater rooting success, with 43.3% rooting in terminal softwood cuttings, and 38.6 % rooting in subterminal softwood cuttings, compared to 10.6% rooting in subterminal mature hardwood cuttings, which was the highest percentage seen of the 4 different types of hardwood cuttings.
•In the future, we plan to incorporate bottom heat, as well as determine optimum caliper and shoot development of cuttings for rooting success.



Left: Cutting location in Stone County, MS
Right: Collecting hardwood cuttings at the Robert Trent Jones Golf Course in Opelika, AL

Right: stuck cuttings in the mist bed
Above: a rooted cutting before the substrate was rinsed off

Mississippi State Extension Horticulture Outreach: A History of Southern Gardening

Gary R. Bachman*[1], Tim Allison2, Brian Utley2, Amy Taylor2, Bonnie Coblentz2, Linda Breazeale2, and Keri Lewis[2]
[1]Coastal Research and Extension Center, Mississippi State University, Biloxi, MS; [2]Department of Agricultural Communications, Mississippi State University, Mississippi State, MS

Mississippi State University's gardening public image has a long history of impacting landscapes in Mississippi. This outreach effort, what is now known as "Southern Gardening" with Gary Bachman, has had several forms over its 27-year history.

Southern Gardening is a weekly newspaper column, radio segment and television feature produced by the MSU Extension Service. This outreach is a well-known for reaching out and connecting with the gardening public of Mississippi.

Southern Gardening through the years has made a valuable connection with viewers and readers. They know to look to Southern Gardening as a quality source of good gardening advice and ideas to try in their own landscapes.

The newspaper column was first published in early 1985, shortly before the radio program began airing. The television program began in 1996. All have been produced 52 weeks a year since then.

The newspaper column "In Mississippi Gardens" was originally written by horticulture specialist Milo Burnham, horticulture leader Richard Mullenax and landscape specialist Jim Perry in rotation. Burnham, who worked in Starkville on MSU's main campus, soon took over the duties exclusively. He wrote broadly about vegetable gardening and horticultural topics. He also hosted weekly radio programs by the same name.

In 1996, the column's name changed to "Southern Gardening," and it was written by horticulturist Norman Winter, who was based at the Central Mississippi Research and Extension Center in Raymond. Winter's columns introduced numerous new plants to Mississippi gardeners and suggested landscape ideas and plant pairings.

In May 1996, Winter began hosting the radio program "Gardening — Mississippi Style," which later changed to "Southern Gardening." The first "Southern Gardening" video segment aired July 25, 1996, on Mississippi Public Broadcasting as part of the MSU Extension Service's 30-minute agricultural news program, "Farmweek." The first topic was "Secrets to Successfully Growing Crape Myrtle" with Winter.

In March 2010, Bachman took over as the personality behind "Southern Gardening" television, radio and newspaper columns.

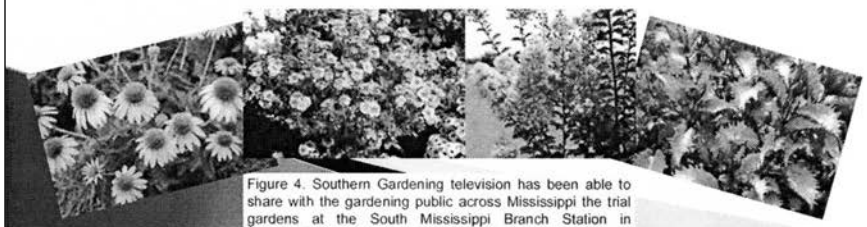


Figure 4. Southern Gardening television has been able to share with the gardening public across Mississippi the trial gardens at the South Mississippi Branch Station in Poplarville.

Figure 2. Milo Burnham (left) and Richard Mullenax (center) and Norman Winter (right) were all past contributors to the public gardening image of Mississippi State University Extension.

Figure 1. The current Southern Gardening television production crew on location at the South Mississippi Branch Station in Poplarville. Producer Tim Allison (left), videographer Brian Utley (center), and Southern Gardening host Gary Bachman (right) working through the shooting script of a landscape segment.

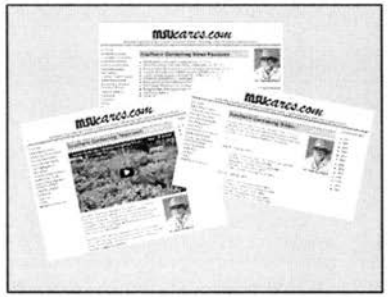


Figure 3. Southern Gardening is available at the Mississippi State University Extension web site with archives of all of the newspaper (from 1997 to present), radio and television products (from 2000 to present).

The Southern Gardening products are distributed to appropriate outlets across Mississippi. The potential consumption of Southern Gardening makes this effort one of the most visible outreach efforts for Mississippi State University Extension Service.

Twelve television and cable outlets air the two-minute Southern Gardening television segments as a regular weekly feature with an audience of up 500,000 viewers. Southern Gardening is also a weekly feature of the "Farmweek" television program on Mississippi Public Broadcasting and satellite nationwide on RFD-TV.

The newspaper column is a regular weekly feature in as many as two dozen newspapers. It is also published on an intermittent basis in many others. The total weekly readership is more than two million.

The daily two-minute Southern Gardening radio programs are a regular feature on 11 stations across the state.

Figure 5. Southern Gardening is a weekly feature on Mississippi State University Extension Service "Farmweek" with hosts Leighton Spann (left, Artis Ford (center), and Amy Taylor (right) who does double duty as the Southern Gardening radio producer.

2012 Ornamental Field Day, South Mississippi Branch Station

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

Armed Forces Retirement Home – Green Roof Assessment

Christine E.H. Coker, Gary Bachman, Susan DeBlanc, and Corey Wheeler
Mississippi State University, Coastal Research and Extension Center

WHAT IS A GREEN ROOF?

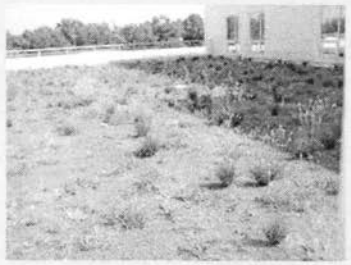
- A green roof system is an extension of the existing roof which involves a high quality water proofing and root repellant system, a drainage system, filter cloth, a lightweight growing medium and plants.

GREEN ROOF BENEFITS

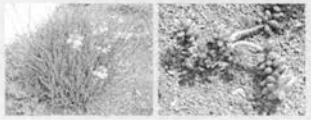
- Public
  - Aesthetic Improvement
  - Water Diversion
  - Stormwater Management
  - Moderation of Urban Heat Island Effect
  - Improved Air Quality
- Private
  - Energy Efficiency
  - Increased Roofing Membrane Durability
  - Fire Retardation
  - Reduction of Electromagnetic Radiation
  - Noise Reduction

DESIGN-SPECIFIC BENEFITS

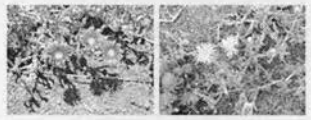
- Increased Biodiversity
  - Economic
  - Ecosystem
  - Social
- Improved Health and Well-Being
- Urban Agriculture
- Educational Opportunities



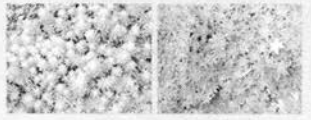
Bulbine fructescens — Sedeveria 'Jet Beads'



Malephora crocea 'Tequila Sunrise' — Malephora lutea

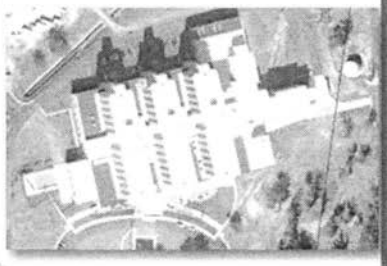


Sedum rupestre 'Angelina' — Sedum lineare 'Variegatum'



Sedum nussbaumeranium — Sedum tectractinum

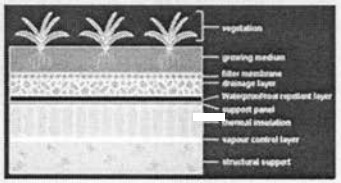
Senecio jacobsenii — Talinum calycinum



THE ROOF(S)

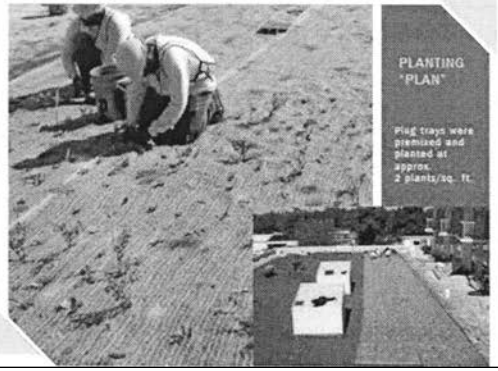
There are 8 green roofs bordered by 4 towers.

The vegetated area = approx. 78,000 sq. ft. = ~ 2 acres



GREEN ROOF COMPONENTS

Principal Green Roof Technology Components Source: National Research Council, Institute for Research in Construction



PLANTING "PLAN"

Plug trays were premixed and planted at approx. 2 plants/sq. ft.

ROOF 1

- Orientation: Northwest Corner
- Percent Coverage: 30%
- Plants Present: 6
- B. fructescens
- M. crocea
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare

ROOF 2

- Orientation: Southwest Corner
- Percent Coverage: 30%
- Plants Present: 7
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. tectractinum
- S. jacobsenii

ROOF 3

- Orientation: North between Towers A and B
- Percent Coverage: 55%
- Plants Present: 6
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. tectractinum

ROOF 4

- Orientation: South between Towers A and B
- Percent Coverage: 45%
- Plants Present: 7
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. nussbaumeranium
- S. tectractinum

ROOF 5

- Orientation: North between Towers C and B
- Percent Coverage: 65%
- Plants Present: 6
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. tectractinum

ROOF 6

- Orientation: South between Towers C and B
- Percent Coverage: 70%
- Plants Present: 8
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. nussbaumeranium
- S. rectractinum
- S. jacobsenii

ROOF 7

- Orientation: North between Towers C and D
- Percent Coverage: 60%
- Plants Present: 9
- B. fructescens
- M. lutea
- Sedeveria
- S. rupestre
- S. lineare
- S. nussbaumeranium
- S. jacobsenii
- T. calycinum

ROOF 8

- Orientation: South between Towers C and D
- Percent Coverage: 50%
- Plants Present: 7
- B. fructescens
- M. lutea
- M. crocea
- Sedeveria
- S. rupestre
- S. nussbaumeranium
- S. tectractinum

- 13 types of plants were specified for the AFRH green roof project.

MISSISSIPPI STATE Gardens
2012 STATE OF THE GARDENS

Department of Plant and Soil Sciences

Pamela Collins, Assistant Professor (Research/Extension), Richard Harkess, Professor (Research/Teaching), Paul Meints, Instructor (Teaching), Brian Baldwin, Professor (Research/Teaching), Department of Plant and Soil Sciences, Mississippi State University, pcollins@pss.msstate.edu

MSU Teaching Arboretum –
at Henry Leveck Animal Sciences Research Center

Teaching:
- 25 year old plant collections
- Serves classes in Plant Materials I & II, Arboriculture & Landscape Maintenance, Silviculture, Plant Taxonomy, Landscape Architecture

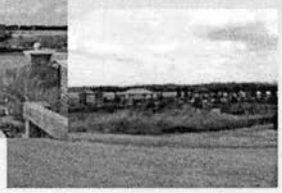
Research:
- Source for research materials
- Isolated plot sites available

Outreach:
- Exhibits large specimens and suitability for N. Central MS

The Gardens at Dorman Hall –
Centrally located on main campus near The Junction

Teaching:
- Plants conveniently located for classes
- Teach identification, design, culture & gardening techniques

Outreach:
- Highly visible to campus students and visitors at all events
- Public grounds surrounding Dorman Hall Greenhouses
- Allows students to participate who are limited to the central campus area
- Great potential for horticultural demonstrations, recruiting and campus tours



Veterans Memorial Rose Garden –
at R. R. Foil Plant Sciences Research Center

Research:
- Rose Trials, Wide range of roses
- Materials available for researchers in multiple disciplines

Teaching:
- Available for wide range of classes, such as horticulture, landscape architecture, photography, home school groups

Outreach:
- Public Access, Prominent Location, Multi-modal Access, Handicapped Available
- Events, Weddings, Tours, Veterans Services
- Research/Extension Demonstrations, Distance and Field Days Capability

Teaching
Outreach
Research

For more information, see: www.pss.msstate.edu, facilities & gardens

MISSISSIPPI MAFES AGRICULTURAL & FORESTRY EXPERIMENT STATION

Sand Creek Arboretum –
at R. R. Foil Plant Sciences Research Center

Research:
- Sustainable Practices in Roses, Native Grasses & Perennials, currently

Teaching:
- Future site for new arboretum with better accessibility, new plant selections

New Signature Tree Garden at SCA

Outreach:
- Excellent public accessibility, handicap capable, multi-modal access capable
- Master plan for aesthetically pleasing design
- Seek private investment and community volunteerism
- Tours and Field Days capability
- Room to grow and complement VMRG and new boulevard entrance

Shrub Rose Research Plot

Prairie Habitat Research Plot – Native Grasses Crossing Blocks

EVALUATION OF 53 ROSE CULTIVARS GROWN IN GROUND BEDS AT THE VETERANS MEMORIAL ROSE GARDEN

Pamela Collins, Plant & Soil Sciences, Mississippi State University, Mississippi State, MS, pcollins@pss.msstate.edu
Ekaterina Jeliazkova, Sheridan Research & Extension Center, University of Wyoming, Sheridan, WY
Dennis Rowe, Plant & Soil Sciences, Mississippi State University, Mississippi State, MS

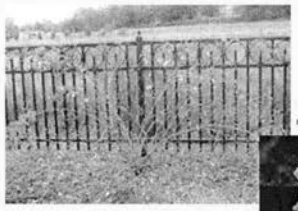

VMRG Ground Beds, 4/2012. Pam Collins

Introduction

- Roses planted in spring, 2008
- Selections chosen from a range of horticultural classes, including modern and old garden roses
- Selections important to demonstrate diverse cultivars that can grow in East Central Mississippi.

Observations

- Data collected in fall of 2008 & 2009
- Growth data included height, width & volume
- Visual ratings for black spot, incorporating defoliation & infection, are based on Horsfall-Barratt rating scale
- Visual plant performance ratings are based on a scale of 1 to10, worst to best and averaged to generate a quality average




Pax, 10/2009. Pam Collins


Yellow Lady Banks, 10/2009. Pam Collins

Table 1: Growth and Quality of 53 Rose Cultivars

Cultivar	Height	Width	Volume	Black Spot	Quantity & Quality Flower	Quantity & Quality Foliage	Plant Habit & Vigor	Quality Average
	cm		m^3	rating				
Cl. Cecile Brunner	386 a	253 abc	27.42 a	7.0 defg	1.3 lm	6.1 defg	8.2 abc	5.1 efgh
Yellow Lady Banks	342 b	223 cd	17.22 b	2.9 qr	1.0 lm	6.3 def	7.9 abcd	5.1 efgh
White Dawn	240 c	134 gh	3.39 cdef	4.4 mnopq	2.4 defghij	7.6 b	7.6 bcdef	5.9 bcd
Don Juan	203 d	108 ghijkl	1.94 def	6.8 defgh	2.2 defghijk	3.8 nopqrs	6.7 fghij	4.2 ijkl
Madame Plantier	184 de	272 ab	13.20 b	8.9 ab	1.0 m	5.1 hijkl	8.0 abcd	4.7 ghijk
Louise Odier	177 def	183 ef	5.82 cd	7.1 de	1.4 jklm	3.1 rst	5.2 lmnopq	3.2 opqr
Henri Martin	177 def	170 f	4.98 cd	7.2 cde	1.0 m	5.5 fghi	7.2 defgh	4.6 ghijk
High Society	167 ef	96 ijklmn	1.26 def	6.0 efghijkl	2.5 defghij	2.9 st	4.1 rst	3.2 pqr
Sally Holmes	150 fg	120 ghijk	1.81 def	5.0 efghijkl	3.2 cd	4.8 ijklm	5.9 jkl	4.7 ghijk
Graham Thomas	141 fgh	198 def	4.98 cde	7.7 bcd	2.4 defghij	3.8 nopqrs	5.4 lmnop	3.9 lmnopq
Dr. Eckener	141 ghi	231 bcd	6.16 cd	7.5 bcde	1.0 lm	3.1 qrst	5.1 lmnopqr	3.3 pqrs
Lady Elsie May	130 ghij	133 gh	1.89 def	6.0 efghijkl	3.0 cdef	5.7 efghi	6.9 efghi	5.2 defg
Dream Weaver	129 ghij	112 ghijk	1.53 def	5.1 ijklmno	2.6 cdefghi	4.6 jklmno	5.5 klmno	4.2 ijklm
Pax	125 ghijk	279 a	7.91 c	7.2 cde	2.2 defghijkl	3.3 qrst	6.4 hijk	4.0 klmno
America	124 ghijkl	89 ijklmnop	0.99 def	5.8 efhijklm	2.5 cdefghij	3.9 mnopqrs	4.6 nopqrst	3.7 lmnopq
Strike It Rich	123 ghijkl	84 klmnop	0.72 def	5.4 ghijklmn	2.4 defghij	3.2 qrst	4.8 nopqrs	3.4 mnopq
Mutabilis	122 ghijkl	139 g	2.29 def	3.9 opq	2.4 defghij	7.2 bc	8.3 ab	6.0 bc
Buff Beauty	113 hijkl	263 ab	7.10 c	6.8 defgh	2.3 defghij	5.4 fghij	6.7 fghij	4.8 fghi
Summer Wind	111 hijkl	127 ghi	1.69 def	3.6 qr	2.2 defghijk	7.2 bc	7.6 bcde	5.7 bcde
Lagerfeld	108 hijklm	86 jklmnop	1.21 def	9.9 a	1.6 hijkl	2.2 tu	3.5 tuv	2.4 rst
Folksinger	107 ijklm	104 hijklm	0.94 def	7.4 cde	1.9 ghijklm	4.6 jklmno	6.0 jkl	4.1 ijklm
Melody Parfumée	106 ijklm	110 ghijkl	1.02 def	8.1 abcd	1.7 hijklm	3.6 opqrs	5.8 jklm	3.7 lmnopq
Duchesse de Brabant	106 ijklm	124 ghij	1.32 def	5.2 ijklmno	3.1 cd	6.4 de	7.4 cdefg	5.6 cde
Moondance	104 ijklm	88 jklmnop	0.64 ef	7.0 defg	3.7 bc	3.5 pqrs	5.9 jklm	4.4 hijkl
Heritage	103 jklm	121 ghij	1.26 def	7.1 def	2.8 cdefgh	5.0 hijklm	6.4 hijk	4.7 fghij
Wild Blue Yonder	97 jklmn	88 jklmnop	0.59 ef	5.8 efghijklmn	1.5 ijklm	4.4 jklmnop	5.8 jklm	3.9 klmnopq
Artistry	97 jklmn	70 mnopqr	0.39 ef	7.7 bcd	2.0 efghijklm	3.4 pqrs	4.6 opqrst	3.3 nopqr
Celine Forestier	95 klmn	170 f	2.38 def	7.9 bcd	2.2 defghijk	4.1 mnopqr	5.2 lmnopq	3.8 lmnopq
Pat Austin	94 klmn	101 ijklm	1.00 def	6.0 efghijk	3.0 cdef	4.5 jklmno	5.4 lmnop	4.3 ijkl
Crimson Bouquet	94 klmn	93 ijklmn	0.66 ef	5.7 fghijklmn	3.1 cde	4.9 hijklm	6.1 ijkl	4.7 fghijk
Rose de Rescht	84 lmno	72 mnopq	0.26 f	8.4 abc	1.5 jklm	3.3 qrst	4.9 nopqr	3.2 opqr
The Fairy	83 lmnop	213 cde	2.95 cdef	4.5 klmnopq	2.5 cdefghij	8.0 ab	9.0 a	6.5 ab
Comtesse du Cayla	79 mnop	109 hijkl	0.82 def	4.2 nopq	2.1 efghijkl	6.7 cd	7.2 defgh	5.4 def
Double Delight	77 mnop	88 jklmnop	0.48 ef	7.8 bcd	2.2 defghijk	3.5 pqrs	4.7 nopqrs	3.4 mnopq
Mardi Gras	77 mnop	62 nopqrs	0.23 f	4.0 nopq	1.5 ijklm	4.0 mnopqr	5.1 lmnopqr	3.5 lmnopq
Julia Child	77 mnop	96 ijklmn	0.58 ef	6.7 defhi	2.4 defghij	4.1 mnopqr	5.8 jklmn	4.1 ijklmn
Gypsy Dancer	71 mnop	85 klmnop	0.44 ef	5.2 ijklmno	2.3 defghij	4.3 klmnop	5.0 mnopqr	3.9 klmnop
Wild Plum	70 mnopq	73 lmnopq	0.30 f	5.0 jklmnop	5.8 a	5.2 ghijk	6.5 ghijk	5.8 bcde
Tropical Twist	68 nopq	52 opqrs	0.15 f	6.4 defhij	2.8 cdefg	3.7 nopqrs	4.5 pqrst	3.7 lmnopq
Salsa	64 nopqr	61 nopqrs	0.78 def	6.3 defghijk	1.7 ghijklm	3.3 pqrst	4.0 rstu	3.0 qrs
Happy Chappy	63 nopqr	116 ghijk	0.69 ef	5.9 efghijkl	4.3 b	5.7 fghi	6.9 fghi	5.6 cde
Beloved	62 nopqr	51 opqrs	0.15 f	6.8 defgh	1.2 jklm	1.7 u	2.5 v	1.8 t
Sun Flare	58 opqr	66 nopqr	0.23 f	5.3 hijklmn	2.2 defghijk	4.6 jklmn	5.5 lmno	4.1 ijklm
Petal Pushers	56 opqr	89 ijklmno	0.38 ef	5.8 efghijklm	2.8 cdefgh	4.2 klmnopq	4.5 pqrst	3.8 lmnopq
Raspberry Punch	50 pqr	38 qrs	0.06 f	5.2 hijklmno	1.9 ghijklm	3.9 mnopqrs	5.8 stu	3.2 opqr
Spring Fever	48 pqr	110 ghijkl	0.54 ef	3.1 qr	2.8 cdefgh	8.7 a	8.7 a	6.7 a
Sun Sprinkles	48 pqr	37 rs	0.05 f	3.7 pq	2.1 efghijkl	5.0 hijklm	5.0 mnopqr	4.0 jklmn
Disneyland	48 pqr	48 pqrs	0.41 ef	5.5 ghijklmn	1.2 lm	2.9 st	2.8 v	2.3 st
Showbiz	42 qr	55 opqrs	0.11 f	7.7 bcd	1.8 ghijklm	3.2 qrst	4.3 qrst	3.1 pqr
Purple Tiger	35 qr	37 qrs	0.05 f	6.8 defgh	1.2 klm	3.2 qrst	3.1 uv	2.5 rst
Crackling Fire	35 qr	29 s	0.02 f	2.4 r	2.9 cdefg	5.1 hijkl	4.6 pqrst	4.2 ijklm
Hot Tamale	35 qr	46 pqrs	0.06 f	4.5 lmnopq	2.7 cdefgh	4.1 mnopqr	4.0 rstu	3.6 lmnopq
Party Lights	29 r	40 qrs	0.04 f	4.8 lmnop	3.0 cde	5.8 efgh	5.5 lmno	4.8 fghi

Table 2: Pearson Correlation Coefficients

	Width	Volume	Black Spot	Quantity & Quality Flower	Quantity & Quality Foliage	Plant Habit & Vigor	Quality Average
Height	.68**	.84**	.11	-.29*	.19	.50**	.25
Width		.76**	.27*	-.22	.26*	.63**	.36**
Volume			.13	-.36**	.21	.47**	.22
Black Spot				-.30*	-.59**	-.23	-.46**
Flower Quality & Quantity					.32*	.21	.52**
Foliage Quality & Quantity						.83**	.93**
Plant Habit & Vigor							.91**

*,**Significant at P≤0.05, 0.01, respectively

Results

- Data analyzed using the Glimmix and Corr Procedures of SAS
- Growth habits range from large climbers to miniature roses
- Height positively correlated to width, volume and plant habit & vigor
- Blackspot inversely correlated to flower & foliage quantity & quality and to quality average
- Plant width positively correlated to blackspot
- Flower ratings positively correlated to foliage ratings and quality average, and inversely correlated to height, volume and blackspot
- Plant habit & vigor positively correlated to growth, foliage and quality average

Conclusions

- Roses are a diverse genus with a wide range of adaptability to physical conditions and to disease response
- Blackspot ratings varied widely when examined in late fall prior to dormancy
- Flower bloom was biased toward cool season bloomers and against spring only bloomers. Small roses are bred to be floriferous, and spring only blooming roses tend to be large.
- High levels of blackspot appear to reduce foliage needed to support bloom
- High levels of blackspot on wide roses may reflect a growth habit near soil where spores can be splashed.


Summer Wind, 10/2009. Pam Collins


Spring Fever 10/2009. Pam Collins

MISSISSIPPI STATE UNIVERSITY


Veterans Memorial Rose Garden, 4/2012. Pam Collins

MISSISSIPPI AGRICULTURAL & FORESTRY EXPERIMENT STATION

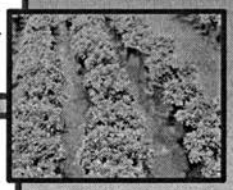
Fungicide Timing Rules to Prevent Azalea Web Blight

Warren Copes, Research Plant Pathologist, USDA ARS

Collaborators: Harald Scherm (Univ. of GA), Austin Hagan and John Olive (Auburn Univ.), Marc Cubeta and Marianela Rodriguez-Carres (North Carolina State Univ.)

GOOD INFORMATION IS KEY TO MAKING SOUND ECONOMIC DECISIONS!

Truth or Myth : Spray coverage is best when water is dripping from the leaves.



Research Facts About Web Blight.

1. Many azalea cultivars are infested with the web blight pathogen (binucleate *Rhizoctonia* fungi) in the nursery. The fungus lives on azaleas 12 months of the year, doing no harm to the plant most of the year.
2. Web blight damage develops in an irregular manner. Every infected plant is not equally damaged even within a block of plants of the same age. Development is slower and less severe on some cultivars.

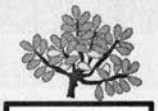
Weather Conditions That Favor Web Blight.

1. Web blight development starts in early to mid-June as temperatures increase.
2. Irrigation provides the moisture conditions needed for slow to moderate disease development.
3. Three or more daily rain events within the last 7 days favor rapid web blight development. This seems intuitive because the effect (rapid development) occurs shortly after the cause (afternoon rains).
4. Moderate summer temperatures and cloudy conditions favor a steady, moderate web blight development. This is not obvious, because development can occur over weeks.
   a. Moderate summer temperatures are typified by days when it is doesn't get above 86 °F until 12 noon and drops below 87 °F by 6 pm.
   b. Extended leaf wetness durations (> 15 hours) favor leaf blight and can occur when it is cloudy and humid for a large portion of the day (either morning or afternoon), particularly when combined with rain, even a minor rain.
   c. A total of 6 to 7 of days of moderate temperatures and/or extended hours of leaf wetness justify spraying. These conditions can occur sporadically over 3 to 4 weeks.

Dates developed in southern AL and MS	Blight tolerance of azalea cultivars	
	Moderately Low	Moderately High
July 9	X	
July 21		X
Aug 1	X	
Aug 18	X	X

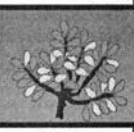
Fungicide Timing Rules.

1. Spraying on calendar dates is the simplest rule to control web blight. Spray only the blocks of equal risk for web blight.
   a. Spray cultivars with lower disease tolerance, such as 'Gumpo's', near July 9 and July 29 and August 18. Spray cultivars with higher tolerance near July 21 and August 18. [Dates were developed in southern AL and MS and may be different in other regions (e.g. later in more northern regions).]
   b. In hotter, drier summers, only two sprays may be needed. In wetter summers, three to four sprays may be required.
2. Scouting is an additional tool that allows you to verify the current status of blight severity. The problem is web blight pressure varies year-to-year. Damage develops more slowly or more quickly depending whether the general weather pattern is hot and dry, or rainy.
   a. The only way to verify if web blight is developing quickly or slowly that year is to look into the canopy of about seven plants per block. By checking even one block of azaleas, it will be obvious when the number of blighted leaves within the inner canopy starts to increase.
   b. Choose one to two blocks of the more susceptible cultivars. Assess risk of web blight based on past and current history of plants (cultivar, plant age, spacing, placement in nursery, weather).
   c. Count the number of dead leaves deep within the canopy of about seven plants per block. Small plants could have 5 to 30 dead leaves. Large plants could have 10 to 60 dead leaves. The important point is to spray when there is an increased count of 10 to double the number of dead leaves per plant from the previous week.
   d. When conditions favor blight, it can develop within days, so the cautious approach is to spray once the number of blight leaves increases.
   e. Scouting takes about five to ten minutes per block. An alternative approach is to spray on set calendar dates.
3. Weather awareness can help you decide when to spray.
   a. If frequent daytime rains are forecast or occur, particularly in July, spray.
   b. Moderate daytime temperatures and/or extended leaf wetness durations favor disease. A total of 6 to 7 days of these conditions, even if spread out over four weeks, signal a need to spray. [If interested, I can provide specific information for tracking these conditions.]



Late-June

Early- to Mid-July Time to Spray



Mid- to Late-July

Fungicides prevent (limit) symptom development by inhibiting pathogen colonization of plant tissue.
Fungicides are a sophisticated technology that will be most effective when combined with good cultural practices that reduce disease pressure.

Science is working when sophisticated, complex disease principles are perceived as simple, user-friendly disease control practices!

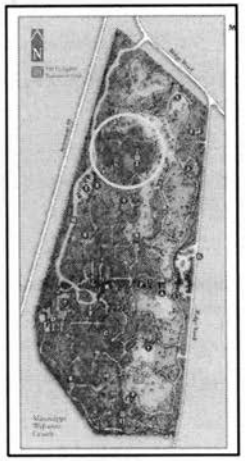
The Gum Pond Educational Exhibit

The Crosby Arboretum/Mississippi State University

Patricia R. Drackett, Director

The Crosby Arboretum

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE



The Gum Pond Exhibit interprets the ***ecological value*** of gum ponds to schools and the public.

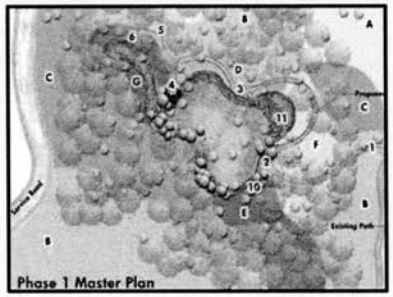
What is a Gum Pond?
A gum pond is a naturally-occurring pond that is found in coastal Mississippi. It is a dark shady shallow swamp in midsummer that is mostly filled with black gum trees, where the name "gum pond" comes from.

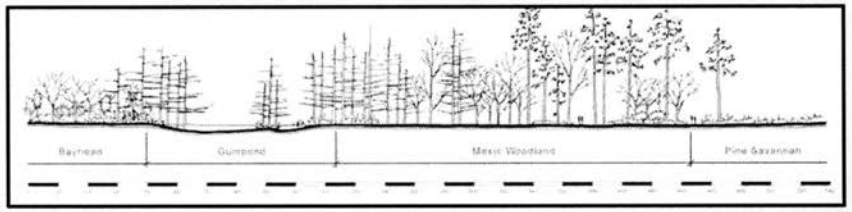
What is special about a Gum Pond?
Gum ponds are becoming rare in Mississippi, and are listed as an important wetland by the MS Department of Wildlife, Fisheries and Parks. Twenty six species of wildlife that are very important to conserve use ponds such as gum ponds.

The Crosby Arboretum is dedicated to educating the public about their environment. This mission is carried out by preserving, protecting, and displaying plants native to the Pearl River Drainage Basin ecosystem, providing environmental and botanical research opportunities, and offering cultural, scientific, and recreational programs.

The Arboretum hosts a variety of educational programs and community events for children and adults, providing opportunities to study and learn about native plant species and coastal ecosystems in a real-life setting.

The Crosby Arboretum's Gum Pond Educational Exhibit centers on a 13,300-square-foot gum pond wetland exhibit with interpretive signage and trails. The Exhibit will serve as an outdoor classroom for area schools and the visiting public, and is the first forested wetland education exhibit to interpret gum pond ecology in the Southern U.S. This two-year project was funded by a 2009 grant award through the National Fish and Wildlife Foundation's Five Star Restoration Grant Program, and Southern Company, the parent company of Mississippi Power.





Project Partners include Mississippi State University and its Extension Service, the MSU Department of Landscape Architecture and Department of Geosciences, Crosby Arboretum staff & volunteers, MS Soil & Water Conservation Commission, The Landscape Studio, Boy Scouts of America, Picayune Troop 5, the Mississippi Native Plant Society, USDA Natural Resources Conservation Service, Pearl River County Master Gardeners and the 4-H Forest Club.





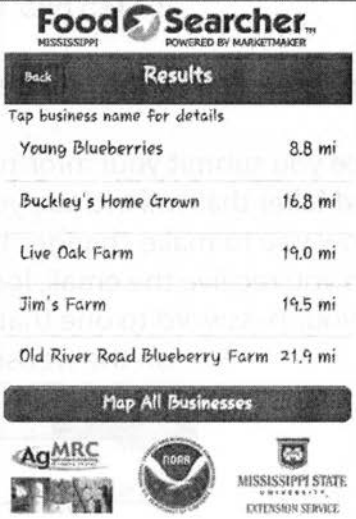


MarketMaker Updates and Smart Applications

Dr. Benedict Posadas, Amanda Seymour and Randy Coker
Mississippi State University, Coastal Research and Extension Center
1815 Popps Ferry Road~Biloxi, MS~39574

What is MarketMaker?

MarketMaker is an interactive mapping system that locates businesses and markets of agricultural and seafood products in Mississippi, as well as in other member states, providing an important link betweenproducers and consumers.



What is new with MarketMaker?

In January 2012, MarketMaker released a mobile website that can be used for all smart phones! The mobile website is: www.ms.foodsearcher.com for Mississippi and is very user friendly. Also to use other states' mobile website, all you have to do is change the state abbreviation in the first part of the web address. For Instance, Alabama's website is: www.al.foodsearcher.com.

One reason why the mobile website is so great is that it uses your location by tapping into your device's GPS location and gives you results that are closest to you!

What Information do I need to register in MarketMaker?

- Business Type
- Products available
- Contact Information
- Hours of Operation
- Up to five pictures (optional)
- Anything else you would like the public to know about your business!

MISSISSIPPI STATE UNIVERSITY
COASTAL RESEARCH & EXTENSION CENTER

MISSISSIPPI STATE UNIVERSITY

Characteristics of a new variegated ornamental ginger cultivar: *Hedychium* 'Ramata'

Hamidou F. Sakhanokho, Anthony L. Witcher, Cecil T. Pounders, and James M. Spiers
USDA-ARS, Thad Cochran Southern Horticultural Laboratory, Poplarville, MS

Abstract

We have developed a new dwarf, variegated *Hedychium* or ornamental ginger cultivar named *Hedychium* 'Ramata'. Flowers of 'Ramata' are mildly fragrant and have not been observed to produce seed. Leaf variegation in the new cultivar is more uniformly distributed than in *Hedychium* 'Dr. Moy' or its two variants, 'Tahitian Flame' and 'Vanilla Ice'. Furthermore, this variegation is very stable. Like its parent, *H. muluense*, plants of 'Ramata' can grow on average 71.6 ± 2.4 cm (about 2 feet) tall compared with most *Hedychium* species and cultivars, which can easily reach 1.5 to 2 m (about 5 to 6.5 feet) tall or more. The new cultivar combines both dwarfism and variegation, two highly desired but rare traits in *Hedychium* plants. Additionally, a potted 'Ramata' plant produces multiple pseudostems originating from the rhizome, giving it a compact appearance. It is well suited to a variety of landscape uses such as a specimen plant, a contrast plant in mixed planters, and in smaller gardens. It is adapted to a wide range of soil types.

Origin

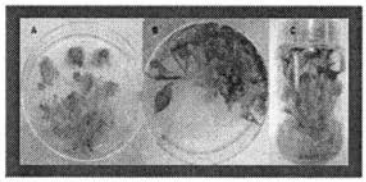


Fig. 1 Somatic embryogenesis in *Hedychium muluense*. (A)Young leaves were transferred in a Petri dish containing a tissue culture medium. After several weeks, callus or a mass of actively dividing non-organized and organized cells are produced around or on the wound made to the leaves. A few months later, somatic embryos (A-B) are formed to give rise to small plants or plantlets (B-C). For various reasons, plants grown in tissue culture sometimes undergo changes called somaclonal variation. An example of this is leaf variegation as shown here in our new ginger cultivar *Hedychium* 'Ramata'.

Comparison of traits

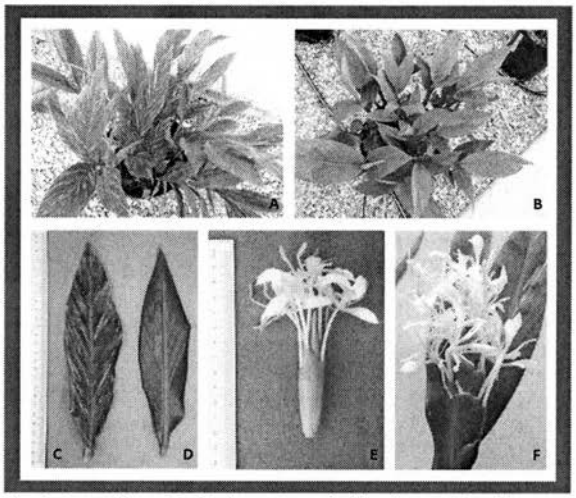


Fig. 2. Comparison of traits between *Hedychium* 'Ramata' and its parent plant *H. muluense* R.M. Smith. (A-B) Six-month-old *H.* 'Ramata' (A) plant and 6-month-old *H. muluense* plant (B). (C-D) Comparison of leaves from *H.* 'Ramata' (C) and *H. muluense* (D) plants. Images are of adaxial surfaces of the leaves. (E-F) Flowers of *H. muluense* (E) and *H.* 'Ramata' plants (F).

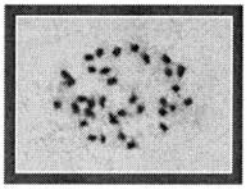


Fig.3 There was no genetic variation in the number of chromosomes for *Hedychium* 'Ramata' as both the new cultivar and its parent plant *Hedychium muluense* have the same chromosome number (*2n = 2x = 34*).

Soil Test

Table 1. Shoot number per plant, plant height, average shoot circumference per plant, shoot dry weight, and substrate pH for *Hedychium muluense* 'Ramata' plants grown in three substrates.

Substrates	Shoots (no.)[x]	Plant ht (cm)[x]	Shoot circumference (cm)[x]	Shoot dry wt (g)[x]	Substrate pH (0 DAP)[y,x]	Substrate pH (100 DAP)[x]
PB	4.0 a	37.3 a	3.02 a	26.7 a	6.08 a	6.14 a
PM:P	5.0 a	32.9 a	2.80 a	25.0 a	4.51 c	4.31 b
PM:PB:P	4.7 a	37.4 a	2.94 a	27.2 a	4.80 b	4.15 b

[z]PB = pine bark; PM:P = 3 peatmoss:1 perlite; PM:PB:P = 3 peatmoss:2 pine bark;1 perlite.
[y]DAP = days after planting.
[x]Means (n = 10 for shoot number, plant height, shoot circumference, and shoot dry weight; n = 4 for substrate pH) followed by different letters within columns indicate significant differences at $P < 0.05$ using the Tukey-Kramer honest significant difference test.

Availability

A patent (US PP22,998P2) was recently issued by the U.S. Patent and Trademark Office for *Hedychium* 'Ramata'. Inquiries regarding licensing may be addressed to: Coordinator, Technology Licensing Program, USDA, Agricultural Research Service, Office of Technology Transfer, 5601Sunnyside Avenue, Beltsville, MD 20705–5131; phone: (301) 504–5989.

We are greatly indebted to Kermis Myrick, Carrie Witcher, Alex Goins, and Tigest Boutwell for technical assistance.

UNLOCKING NATURE'S ARSENAL:
INSECT BIOASSAY FOR SCREENING BOTANICALS

USDA-ARS Thad Cochran Southern Horticultural Laboratory
USDA-ARS Natural Products Utilization Research Unit
University of Mississippi, National Center for Natural Products Research
Mississippi State University, Coastal Research and Extension Center

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Introduction

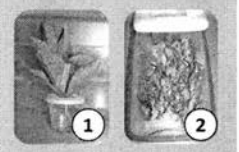
Tissues of many plants are laced with essential oils, which act as chemical defenses against insect herbivores. Therefore, essential oils can provide new and sundry sources of natural insecticides. The diverse chemical composition gives botanical extracts multiple modes of action and perhaps a broader spectrum of biological activity. Some lead compounds block specific insect neurotransmitters, growth hormones, digestive enzymes, as well as purge insects of their symbiotic gut bacteria. Some essential-oil-based insecticides are active at low dosages and are harmlessly broken down by UV, water, and soil. More potent essential oils probably exist that have a faster knockdown at even lower and ecologically safer dosages. As part of our ongoing search for natural insecticides useful in fruit and vegetable production, we developed a rapid serial-time bioassay based on the azalea lace bug, a resilient pest with an extraordinary reproductive rate.

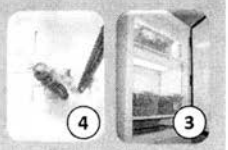
Table 1. Summary of multivariate probit analysis, which compared the relative toxicities of 104 plant extracts (*ex* 35 plant genera) to adult lace bugs, *Stephanitis pyrioides*. The baseline control is technical grade malathion without any synergists added.

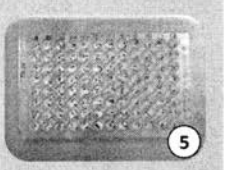
PLANT FAMILY	GENUS	no. spp.	PROBIT slope (range)	highest bo estimate	P
Euphorbiceae	Jatropha	35	2.3 - 4.6	4.6	<0.0001
Geraniaceae	Rose Geranium/Pelargonium	5	2.8 - 4.0	4.0	<0.001
Lauraceae	Cinnamomum	4	0.7 - 3.4	3.4	<0.0001
Zingiberaceae	Hedychium	14	2.0 - 2.9	2.9	<0.001
Lamiaceae	Cyclotrichium	1	2.2	2.2	<0.0001
Ranunculaceae	Nigella	1	0.0 - 2.0	2.0	<0.0001
Apiaceae	Angelica	4	-1.0 - 1.2	1.2	<0.001
Zingiberaceae	Zingiber	1	1.1	1.1	<0.001
Rutaceae	Zantoxylum	1	0.9	0.9	<0.001
Cupressaceae	Cypress	2	-1.8 - 0.8	0.8	<0.05
Cupressaceae	Juniperus	2	-0.1 - 0.8	0.8	<0.01
Apiaceae	Prangos	2	0.7	0.7	<0.01
Anacardiaceae	Pistacia	1	0.5	0.5	NS
Apiaceae	Heracleum	9	-1.1 - 0.4	0.4	NS
Amaranthaceae	Chenopodium	1	0.3	0.3	NS
Lamiaceae	Ocimum	2	-0.1 - 0.3	0.3	NS
Lamiaceae	Salvia	1	0.2	0.2	NS
BASELINE	**Malathion (techn. grade oil)**	-	**0.0**	**0.0**	---
Apiaceae	Ferulago	3	-0.4 - 0.0	0.0	NS
Apiaceae	Notopterygium	2	-1.5 - -0.1	-0.1	NS
Meliaceae	Neem oil (techn. grade oil)	-	-0.1	-0.1	NS
Asteraceae	Tagetes	1	-0.2	-0.2	<0.05
Asteraceae	Eupatorium	1	-0.4	-0.4	<0.001
Schisandraceae	Illicium	1	-0.4	-0.4	NS
Lamiaceae	Iboza	1	-0.5	-0.5	<0.05
Asteraceae	Artemisia	1	-0.6	-0.6	<0.01
Rutaceae	Citrus	1	-0.7	-0.7	<0.001
Zingiberaceae	Curcuma	2	-0.8	-0.8	<0.001
Asteraceae	Achillea	1	-0.9	-0.9	<0.0001
Rutaceae	Phellodendron	1	-1.0	-1.0	<0.0001
Lamiaceae	Monarda	1	-1.1	-1.1	<0.0001
Apiaceae	Echinophora	1	-1.5 - -1.2	-1.2	<0.001
Verbenaceae	Lantana	1	-2.1	-2.1	<0.0001
Hypericaceae	Hypericum	1	-2.2	-2.2	<0.0001
Myrtaceae	Eucalyptus	3	-3.0 - -2.2	-2.2	<0.0001

Methods

Test organisms were adult azalea lace bugs *Stephanitis pyrioides* (Scott), cultured on azalea bouquets (fig. 1) (*Rhododendron* sp.), kept in plastic containers (fig. 2), and warmed in Percival Sci. growth chambers (fig. 3) at 27°C, 65% RH and 14:10 L:D photoperiod. Forceps transferred three adult *S. pyrioides* (fig. 4) from their holding vials to each well of a pastic microtiter plate (fig. 5). Oil emulsions of malathion (positive control: n = 9 replicated trials) and purified essential oils extracted from 104 plant species (Table 1) were each diluted to 10 mg ml^{-1} by adding 9% dimethylsulfoxide (DMSO emulsifier) and 90% de-ionized water. Oil bioassays was replicated at least 5 times for each extract at five concentrations: 0.06, 0.13, 0.25, 0.50 and 1.00 mg ml^{-1}.An appropriate blank for each bioassay was a 10% aqueous solution of DMSO. Treatments were arranged according to randomized complete block design (RCBD), with 20µl of each oil emulsion and blank solution being pipetted into wells (fig. 6). At the bottom of each well was an absorbent disc of Whatman no. 2 filter paper (fig. 5), which prevented bugs from drowning in residual fluid. We observed adult bug mortality under a dissecting microscope every hour for 5 h at 21°C. Probit analyses were similar to those published previously (Sampson et al. 2003, 2005, Wedge et al. 2009).







Results & Discussion

Of the 104 extracts screened, 29 of them (28%, orange region of Table 1) killed more lace bugs faster than had the baseline control—Malathion, a potent organophosphate. The remainder were as potent (pink region, Table 1) or weaker (blue region, Table 1) than Malathion. By far, the most promising sources of botanical insecticides were from 5 genera: *Cyclotrichium, Hedychium, Cinnamomum, Pelargonium,* and *Jatropha*. The mortality plots that are shown as inserts in Table 1 illustrate how low their effective concentrations are and how rapidly bugs die after being exposed to these plant extracts. The steep 'r'-shaped curve is a more desirable characteristic, as its shows quick knockdown, thus the insect can no longer inflict crop injury. The closer plots approach a 's'-shape or a straight line, the slower the extracts knockdown the target pest. That is not to say these compounds are less effective, they are still quite potent, and may be more effective as insect ovicides or as repellents. The levels of mortality exhibited by *Cinnamomum, Pelargonium* and *Jatropha* are impressive though given how impervious the waxy shield of adult lace bugs (fig. 4) can be. Our DMSO emulsifier undoubtedly is a synergist that increases permeability of the bug's cuticle to the essential oil extracts. The top four extracts were 7 – 10 times the toxicity of the Malathion emulsion as well as more potent than the commercial products based on the oils of neem and *Chenopodium ambrosioides*. *Jatropha* is a high oil-yielding crop being developed for biodiesel production. It also shows the most promise for development as a future biological insecticide.

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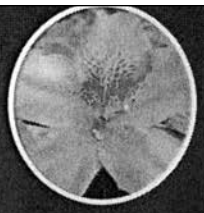
Ornamental Entomology Research at the Southern Horticultural Laboratory: Assisting Southern Nurseries

C. T. Werle and B. J. Sampson



The Strawberry Rootworm: A new method for pest insect monitoring at the nursery

The strawberry rootworm, *Paria fragariae* (Wilcox), is a primary pest of containerized azalea at southeastern nurseries. Control costs at a large nursery have been reported to approach $30,000 annually. There are several chemical options available that can be highly effective when paired with smart cultural practices and a monitoring program.

Monitoring can help pest control professionals decide when to spray. We have developed a trapping station that, when fitted with a solar-powered light, is highly effective at collecting *P. fragariae* (Fig. 1 & 2). Our trapping station can in turn help nurseries save money from their pest control budget (Werle and Sampson, 2011).

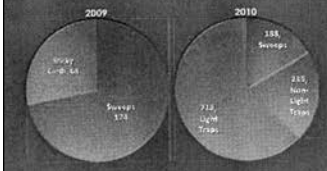


Fig. 1 Total *P. fragariae* collected from 2009 and 2010 monitoring research.

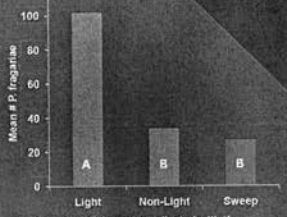


Fig. 2 Mean # *P. fragariae* collected with three methods in 2010. Bars with the same letter are not significantly different. (Tukey's HSD Test: P < 0.05)

Exotic Ambrosia Beetles: Assessing community composition and predicting emergence

Exotic ambrosia beetles are becoming serious nursery pests, tunneling into a variety of tree species and cultivating fungus therein. This fungus, which is what kills the host tree, is fed upon by their offspring.

In collaboration with scientists in OH, VA and TN, we are assessing which species of ambrosia beetles are present and determining their emergence times. This knowledge can then be used by nurseries to apply preventative treatments, currently the best way to protect an ornamental tree crop.

Ambrosia beetles are attracted by ethanol, which is released by stressed trees. We are testing ethanol-based monitoring tools, including slow-release ethanol lures, ethanol-injected trees, and bolts cut from ethanol-injected trees (Fig. 4).

We have identified a dozen species of ambrosia beetles, including three of primary economic importance: *Xylosandrus crassiusculus, X. mutilatus and X. compactus* (Fig. 5) (Werle, Sampson and Oliver, in press).

Fig. 4 Inexpensive soda bottle trap with etoh-injected sweetbay bolt; and tree injection system.

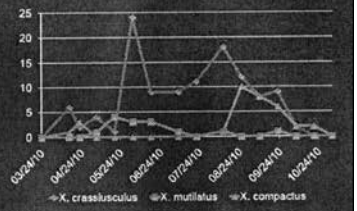


Fig. 5 Seasonality of three *Xylosandrus* ambrosia beetle species in south MS in 2010

Killer Worms: Controlling soil insect pests with nematodes

Immature *P. fragariae* occur in soil around the roots of their host plant, where conventional insecticidal sprays are not as effective. While soil drenches have been shown to be effective at controlling immature insects, and possibly adults in the case of systemics, they can be expensive in terms of labor and product costs.

We plan to test entomopathogenic nematodes (Fig. 3) against *P. fragariae*, with the hypothesis that targeting the immature insects, when combined with conventional sprays targeting adults, will make pest control programs more effective. In addition, the possibility of applying nematodes through existing irrigation equipment may be less labor intensive than insecticidal drenches.

Using chemical ecology to augment pest control efficacy

Many insects utilize pheromones as a way to locate other members of their species; others use plant volatiles, or kairomones. We believe *P. fragariae* may key in on plant volatiles like hexenol, ocimene and caryophyllene, which we have isolated from several plant species known to be hosts (Fig. 6 & 7).

We plan to refine our trap station by including a chemical lure that can increase trapping efficiency. This improved trap station will be a highly effective tool not only for pest monitoring, but it could potentially become a control measure in itself.

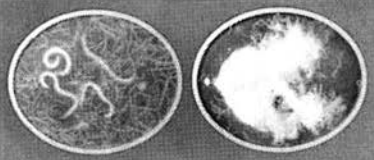
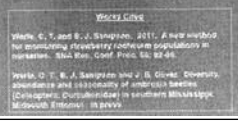


Fig. 3 Entomopathogenic nematodes (*Heterorhabditis bacteriophora*) and an insect larvae infected by nematodes.



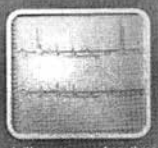


Fig. 6 Chromatogram from three ornamental plant species, showing peaks for plant volatiles.

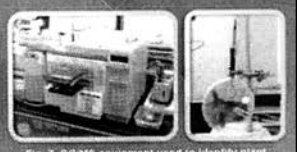


Fig. 7 GC/MS equipment used to identify plant volatiles; and our novel approach for testing plant volatiles with a SPME fiber.

Effects of Pine Bark Source on Production of Greenhouse-grown Annuals

Anthony L. Witcher and Cecil T. Pounders
USDA-ARS Thad Cochran Southern Horticultural Lab, Poplarville, MS

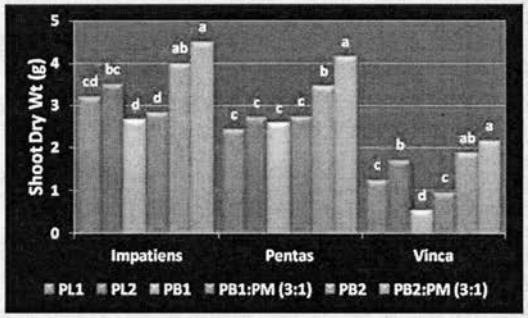


Figure 1. Shoot dry weight of impatiens, pentas, and vinca grown in peat-lite (PL1 & PL2), pine bark (PB1 & PB2), and pine bark/peatmoss [PB1:PM (3:1) & PB2:PM (3:1)] substrates. Means with different letters indicates significance at P = 0.05.

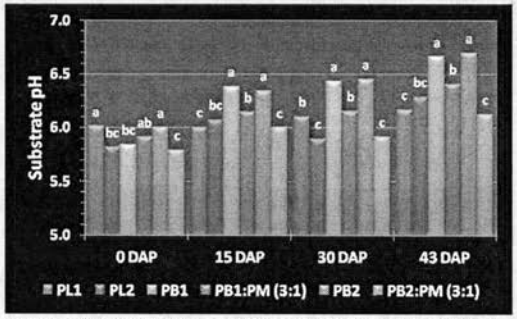
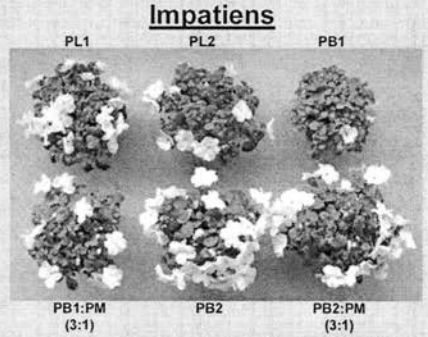
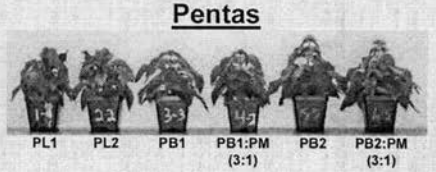
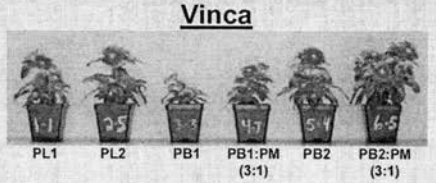


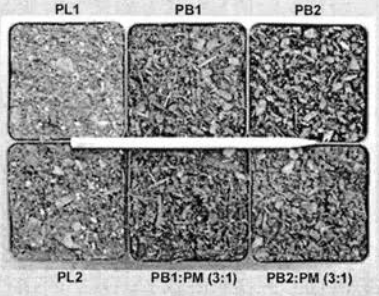
Figure 2. Substrate pH for peat-lite (PL1 & PL2), pine bark (PB1 & PB2), and pine bark/peatmoss [PB1:PM (3:1) & PB2:PM (3:1)] substrates at 0, 15, 30, & 43 days after planting (DAP). Means with different letters indicates significance at P = 0.05.

Greenhouse-grown crops are commonly produced in peatmoss-based substrates. The cost of peatmoss (PM) has continually increased over the last few years and many growers are interested in less expensive substrate components. Many commercially available substrate blends contain pine bark (PB) in various proportions, but these products are relatively expensive when compared with pine bark alone. Pine bark particle size varies among suppliers, which may lead to differences in plant growth depending on production practices. The objective of our research was to evaluate pine bark from two suppliers as substrate components for producing greenhouse-grown annuals. Three annual species (impatiens, pentas, and vinca) were grown in a commercially available peat-lite mix (PL1), a peat-lite mix blended at the TCSHL (PL2), pine bark from two suppliers (PB1 and PB2), and two PB/PM mixes [PB1:PM (3:1) & PB2:PM (3:1)]. At 43 days after planting (DAP), plant shoots were harvested, dried, and weighed. Shoot dry weight was greatest in PB2:PM (3:1), followed by PB2 for all plant species (Fig. 1). Shoot dry weight was lowest in PB1 for impatiens and vinca. Substrate pH was analyzed at 0, 15, 30, and 43 DAP. Substrate pH remained within an acceptable range (5.5 – 6.0) throughout the experiment, except for PB1 and PB2 at 43 DAP (Fig. 2). We demonstrated that pine bark source could affect plant growth, while PB alone (PB2) or blended with PM [PB2:PM (3:1)] could produce plants comparable in size to those grown in a commercial PB/PM blend. PB1 had a finer particle size compared with PB2, thus may have contributed to reduced plant growth potentially due to lower aeration. Growers considering blending their own substrates should conduct preliminary trials under current production practices before selecting a pine bark or particular substrate blend.









Sugarcane Production at the South Mississippi Branch Experiment Station

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History

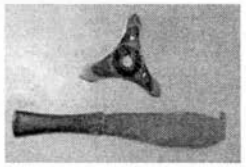
•The South Mississippi Branch Experiment Station (SMBES) has been supplying sugar cane seed to local farmers and hobbyists for approximately 30 years with an average yearly sale of 21,000+ stalks. The four cultivars grown at the SMBES are recommended by the USDA-ARS for syrup cane growers along the Northern Gulf of Mexico. These cultivars have been available for many years as evident in the first two numbers found in the name. These numbers represent the year the cultivar was selected out of the breeding program (i.e. CP 36-111 was selected in 1936). The syrup varieties (CP 36-111, CP 52-48 and CP 67-500) were selected based on growing characteristics; yield, high juice content, disease resistance, strong-erect plant growth, resistance to lodging, resistance to cold injury and ability to produce a high quality syrup. A fourth cultivar, CP 31-511, is a chewing type of sugar cane and is not generally suited to making syrup.

•All four varieties of sugar cane grown at the SMBES have the 'CP' prefix as part of the cultivar name. The CP designation identifies the cultivar as one developed at the 'Canal Point' Research Station. The USDA-ARS Sugarcane Field Station at Canal Point, Florida was established in 1920 with the goal of producing seed cane for the sugar cane research/breeding program in Louisiana. The Southern Florida location is conducive to sugar cane breeding due to its moderate temperature during the months when the plants flower. Virtually all of the sugar cane grown in the Gulf South region are crosses from the Canal Point breeding program.

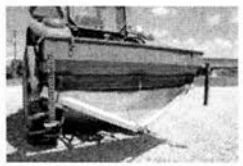
Production Practices

•The SMBES currently maintains approx four acres of sugar cane plots. The areas planted for each variety will change over time based on replanting schedules and customer demand. All new plantings conform to a five foot row spacing with row lengths from 250' to 500'. When possible, a drivable path is reserved every five rows to allow better access to support harvesting operations.

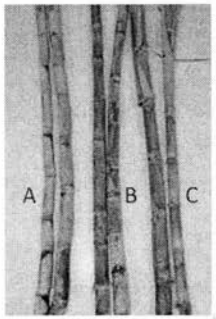
•Starting in 2010, a traditional cane knife method of harvesting was dropped in favor of a more mechanized approach. Several different cutting blade attachments were evaluated on a gas powered brushcutter. The three blade metal brush knife was determined to perform the best as defined by a 'perceived ease of cutting and reduced binding' (when compared to a grass cutter blade and chisel tooth circular blade). This process change resulted in a noticeable reduction in cutting process time and worker fatigue.



•New crops are planted at various times between December and February. The seed cane will survive cold weather if protected adequately from freeze damage. In lieu of bedding the stalks in soil, covering with cane tops has worked with only minimal loss. These stalks are planted approx 4"-6" deep and fertilized once when stalks are about 12"-15" tall with 13-13-13 at 500 lbs/acre.



Variety Characteristics

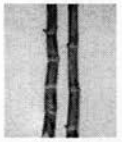


A: CP 67-500
B: CP 52-48
C: CP 36-111

CP 67-500: A bluish-green stalk with heavy wax. A very erect grower similar in height and internode length to CP 52-48. Very resistant to lodging. Subject to sugarcane Smut disease.

CP 52-48: Pale green with a heavy gray to pinkish wax. A very stiff stalk which makes it resistant to lodging. The internodes are shorter than CP 36-111 and the stalk is larger in diameter. Vigorous grower which helps to shade competing weeds.

CP 36-111: Pale green to greenish yellow with faint red-purple markings which develop lengthwise as the stalk matures. The stalk becomes more purple when exposed to the sun. Straight stalks with long internodes, but is subject to lodging.



CP 31-511

CP 31-511: A chewing sugarcane with dark purple stalks. A softer outer rind and fibers which tend to 'stick together' when chewed. Forms large stools with large stalks and is subject to lodging after a few years.

Disease

• Although resistant to some diseases, the cultivars grown at the SMBES are liable to become infected with any one of several diseases (Rust, Red Rot, Mosaic, Smut). Typically, these diseases do not cause significant damage with the exception of Sugar Cane Smut Disease. Smut is a fungal disease that will, over time, significantly reduce yield. There is no approved fungicide for Smut in sugarcane. A reasonable course of action for a beginning Smut infection would be to remove the infected stools as soon as they are identified before spores are released. All SMBES varieties except CP 67-500 have shown excellent/good resistance to Smut.

Seemingly uninfected stalk

Stunted stool with Smut whips

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Comstock J. C. & Lentini R.S. (1991) Sugarcane Smut Disease. Florida Cooperative Extension Service, Agronomy Department, University of Florida. SS-AGR-208.

http://www.ars.usda.gov/main/site_main.htm?modecode=66-25-00-00 (verified 09/09/12)