

# Science and Profitability - Making Money and Happy Customers

Paige Moody & Lee Ivy



HAPPINESS  
IS  
EXPENSIVE



dreams

# Why we would partner

## Science meets business

- Science
  - To convey the underlying science of many horticultural principles and practices
  - To discuss many components of a complete landscape (turf, trees, shrubs, annual color beds, hardscape & infrastructure)



# Science meets in-field feasibility

- Every task we do in the landscape should be based on science.
- Science isn't always so easily seen.
- Past experience can be backed by science.....or not!
- The science can be profitable!
  - Your customers may crave and pay for it.



- Home
- View Maps
- About
- Map & Data Downloads
- Interactive Map
- Help

**Find Your Plant Hardiness Zone**

Enter ZIP Code:  **Find**

**View Your State Map**

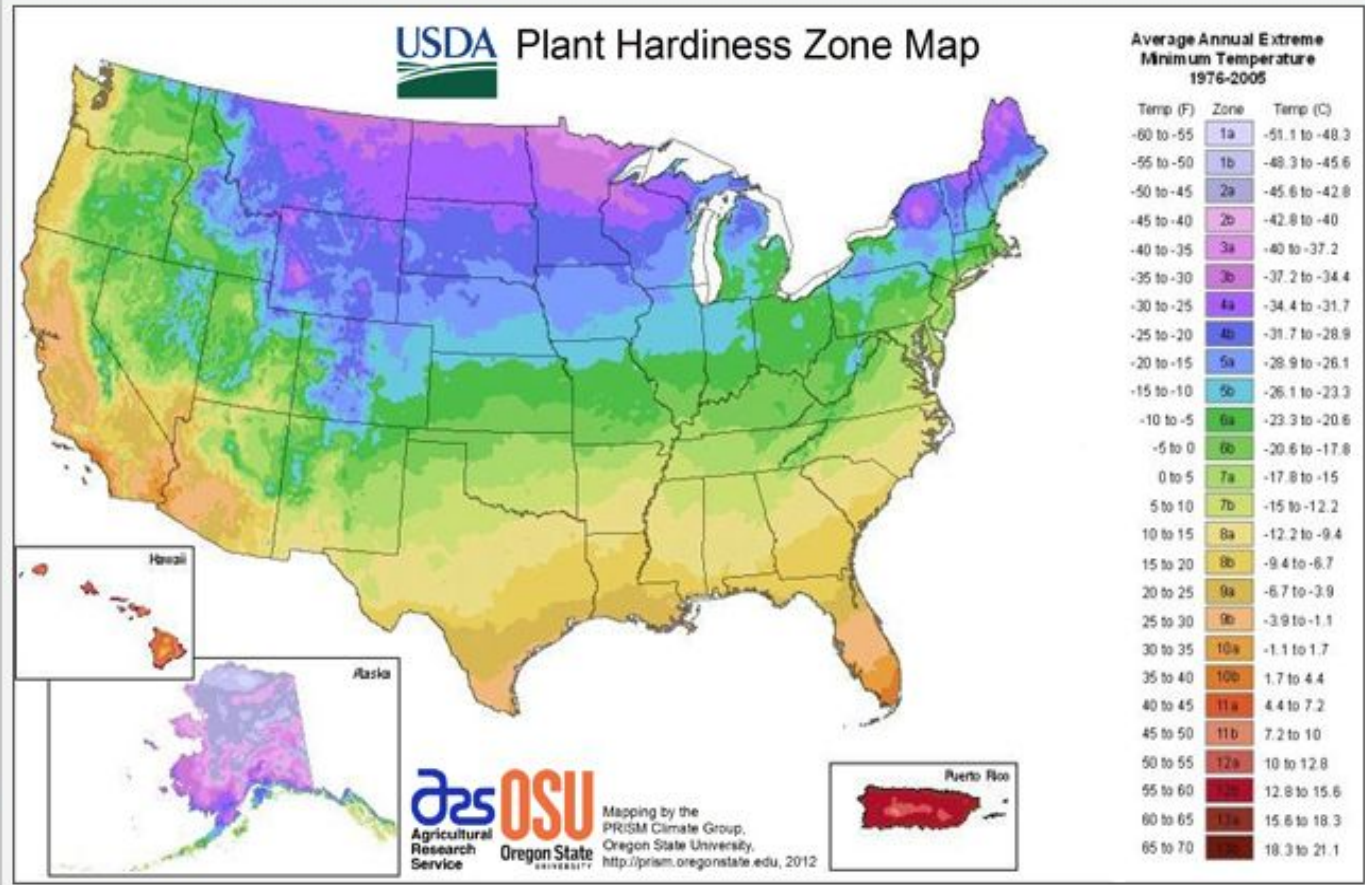
For a static map of your state, click on the map below or

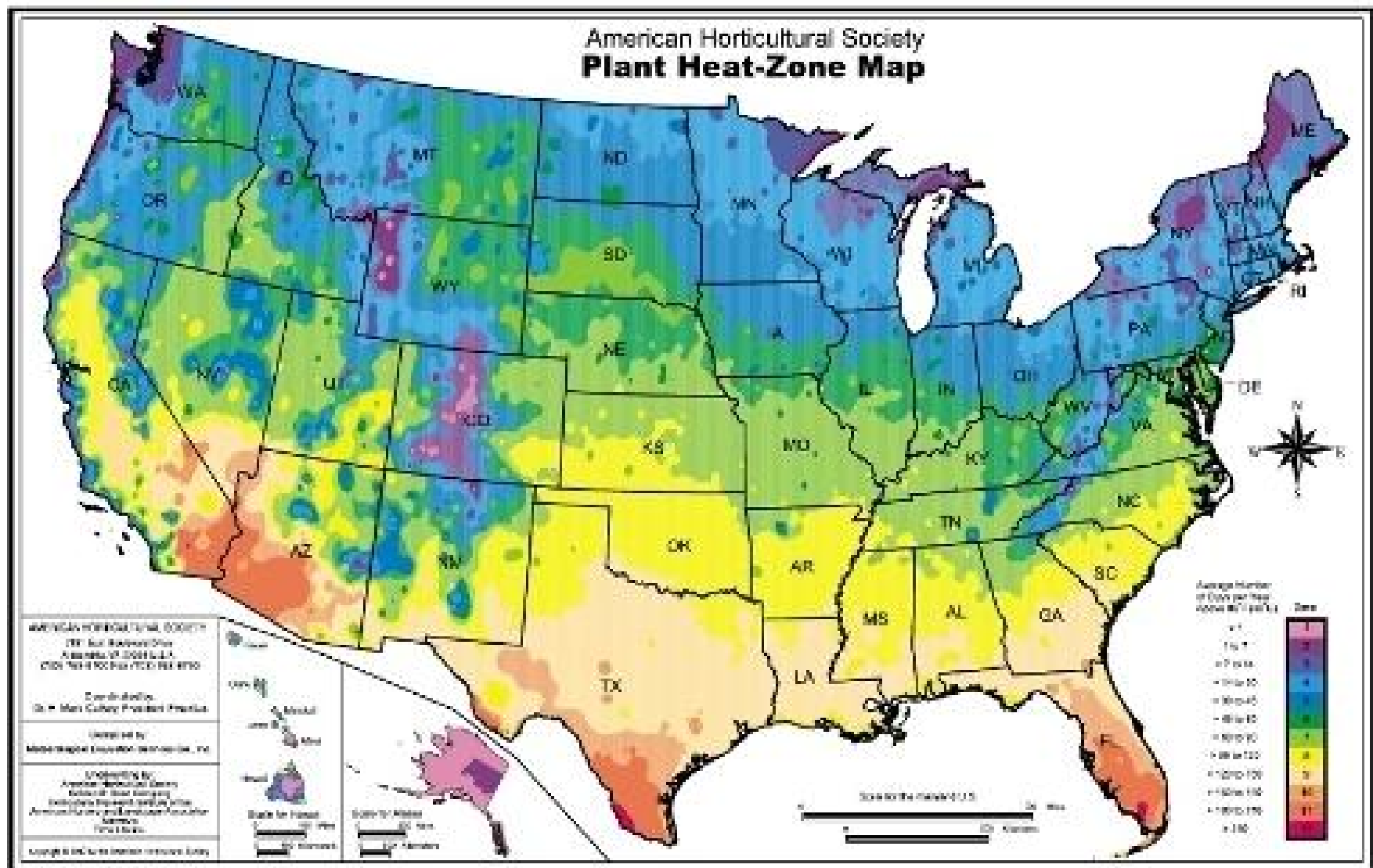
**USDA Plant Hardiness Zone Map**

The 2012 USDA Plant Hardiness Zone Map is the standard by which gardeners and growers can determine which plants are most likely to thrive at a location. The map is based on the average annual minimum winter temperature, divided into 10-degree F zones.

For the first time, the map is available as an interactive GIS-based map, for which a broadband Internet connection is recommended, and as static images for those with slower Internet access. Users may also simply type in a ZIP Code and find the hardiness zone for that area.

No posters of the USDA Plant Hardiness Zone Map have been printed. But state, regional, and national images of the map can be downloaded and printed in a variety of sizes and resolutions.





Hardiness Zones – determined by average minimum winter temperatures

<http://planthardiness.ars.usda.gov/PHZMWeb/>

Heat Zone Map – 12 zones based on number of days > 86F

<http://www.ahs.org/gardening-resources/gardening-maps/heat-zone-map>

# Why we would partner

## Science meets business

- Business
  - To introduce new concepts and/or confirm your current practices
  - It's a chess game.....simple concept!
    - Hand vs equipment
      - Auger
      - Georgia buggy
  - To challenge your standard practices with those presented
    - Line level vs transit



# Why we would partner

## Science meets business

- Business
  - Business assumptions
    - Know your plants - 50 yr old vs 20 yr old choices
    - Profitability
    - Employee retention
    - BMPs
    - Certification & Licenses
    - Honesty & integrity in business

# Shout out to Mr. Stubbs







# Post-interview conclusions

- How many of you can relate to this type of customer?
- What are the things he wants?
  - \$10K budget
  - Trailer parking
  - Walking path through nandina garden
  - Garden all on one level
  - Low maintenance w/ no irrigation
- What things are not possible?
- Is there profit to be made here? Do you want this client/project?

# Issues surrounding design, installation and maintenance

- Categories:
  - Plant selection
  - Soil remediation
  - Construction challenges
  - Climatic fluctuations
  - Pest management
  - Financial negotiations



# Quick Comparisons

**Dream**



**Reality**



# Quick Comparisons

**Dream**



**Reality**



# Plant Selection

- Plant are designed to flourish in the right place, site analysis is key to success
  - Years of breeding work yields certain plant habits
    - Size, shape, bloom, etc.

## Little Ruby™ Dogwood

(*Cornus* 'NCCH1' PP26,542)



A truly unique new dogwood with a compact form and semi-evergreen foliage that sports a red flush on young leaves followed by a dark maroon fall color. If that wasn't enough, it has pink flower bracts that range from single to double. Can be trained as a large shrub or small tree.

For information on licensing, contact Star Roses and Plants, Bradd Yoder, Woody Products Manger, [braddyoder@starrosesandplants.com](mailto:braddyoder@starrosesandplants.com), 410-703-3090.

Developed as a collaborative project by NC State University and the NC Nursery & Landscape Association with support from the Kenan Institute and the NC Biotechnology Center.

# Plant Selection

- Plant installation should be done with future maintenance in mind
  - Yearly mulch applications should be tempered
    - Roots need oxygen for respiration
    - Soil pH can be negatively altered
    - Heat generated from decomposition
    - A 3” application at planting should only be covered with 1” annually
    - Some companies charge for remediation services once a new contract is assumed
    - [Granville Co. Extension Publication](#)

# Plant Selection

- Plant availability shouldn't always govern selection
  - Don't just take the plants that are available
    - Grade B, C & cull plants will always be B, C & cull plants
- Many things can't be undone once the plants leave the nursery





# Plant Selection



- Root pruning in the nursery enhances longevity of trees in the landscape and decreases girdling root presence
- Shaving of the root ball before planting can decrease trunk-girdling roots

# Plant Selection

- Will the customer pay for replacement 5-10 years from now when the roots girdle or the open wounds on the plant have succumb to pest invasion?
- [American Standards for Nursery Stock](#)

## 2.2.1 Classification of Type 2 shade trees

Trees of slower growth than Type 1 that will not usually attain the height measurement in relation to caliper as in Type 1. The height, however, should not be less than two-thirds the height relationship given for Type 1, as shown in Table 4 in Section 2.2.2, below.

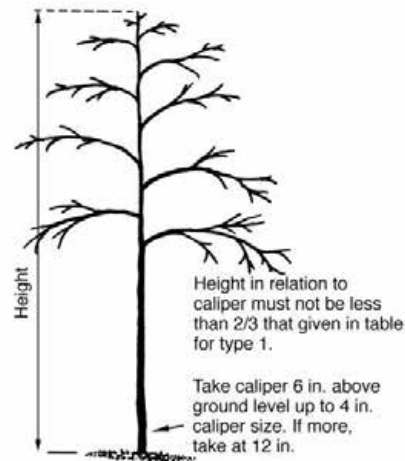


FIGURE 9 – Measurement – Type 2 shade trees



# Plant Selection

- What is our biggest selection challenge?
    - Deer, rodents, other antagonists
      - Deer resistant doesn't mean deer-proof
      - bulbs are tasty to many critters
      - [Chatham Co. Extension Publication](#)
      - [Better Homes and Gardens Publication](#)
      - Warranty work - who is responsible?
- JC Raulston - "deer don't read plant labels"

# Soil Remediation

- How many take a soil test at each site annually? Are you charging for time to take the samples?
- How much would you save on inputs?



# Quick Comparisons

**Dream**



**Reality**





Predictive Home & Garden

# Soil Report

Mehlich-3 Extraction

Client: Lee Ivy  
4415 Beryl Rd  
Raleigh, NC 27606

Advisor:

Sampled County : Wake

Sampled: Received: 08/26/2015 Completed: 09/04/2015 Farm: Barrett Johnson

[Links to Helpful Information](#)

**Agronomist's Comments:**

This report provides Test Results and Recommendations for each sample submitted for testing . Look for Lime Recommendations and N-P-K Fertilizer Recommendations. If lime is needed, application at the indicated rate will raise soil pH to the optimal level for the plant you specified. Common target pH values are as follows: 5.0 for azalea, camellia, rhododendron and mt. laurel; 5.5 for centipedegrass; 6.0 for other lawn grasses, shrubbery, and; flowering plants; and 6.5 for vegetable gardens. N-P-K Recommendations are based on the nitrogen (N) needs of the plants being grown and the soil test results for phosphorus (P-I) and potassium (K-I); a 50 to 70 index for either is optimum. If the exact fertilizer cannot be found, find the closest match and adjust the rate accordingly. Refer to "Understanding the Soil Report" (last page of this report) for additional explanation and links to helpful information.

Sample ID: BMJ01

**Lime Recommendations**

**N-P-K Fertilizer Recommendations \***

Crop 1- Shrubs  
Crop 2-

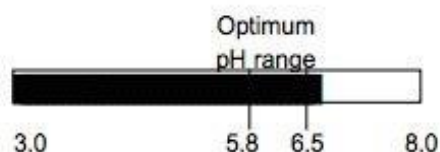
0.0 lb per 1,000 sq ft

20 lbs per 1,000 sq ft 5-10-5

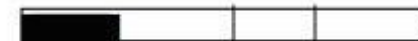
**Lime History:**

**Test Results:**

pH = 6.7



Phosphorus Index (P-I) = 23



Potassium Index (K-I) = 67



Below Optimum Optimum Above Optimum

Lee Ivy

Additional Test Results:	HM%	W/V	CEC	Mn-I	Zn-I	Cu-I	S-I
	0.71	0.70 g/cm <sup>3</sup>	21.1 meq/100 cm <sup>3</sup>	358	521	121	30

\* If you cannot find the fertilizer recommended here, choose one from the same Group (A, B, C or D) listed on the last page of this report.

Note: This soil test does not measure nitrogen (N) levels. N fertilizer recommendations are based only on needs of the designated crop.



NCDA&CS Agronomic Division

Phone: (919) 733-2655

Website: [www.ncagr.gov/agronomi/](http://www.ncagr.gov/agronomi/)

Report No. FY16-SL003683



Predictive Home & Garden

# Soil Report

Mehlich-3 Extraction

Client: Lee Ivy  
4415 Beryl Rd  
Raleigh, NC 27606

Advisor:

Sampled County : Wake

Sampled: Received: 08/26/2015 Completed: 09/04/2015 Farm: Will Fulcher

[Links to Helpful Information](#)

### Agronomist's Comments:

This report provides Test Results and Recommendations for each sample submitted for testing . Look for Lime Recommendations and N-P-K Fertilizer Recommendations. If lime is needed, application at the indicated rate will raise soil pH to the optimal level for the plant you specified. Common target pH values are as follows: 5.0 for azalea, camellia, rhododendron and mt. laurel; 5.5 for centipedegrass; 6.0 for other lawn grasses, shrubbery, and; flowering plants; and 6.5 for vegetable gardens. N-P-K Recommendations are based on the nitrogen (N) needs of the plants being grown and the soil test results for phosphorus (P-I) and potassium (K-I); a 50 to 70 index for either is optimum. If the exact fertilizer cannot be found, find the closest match and adjust the rate accordingly. Refer to "Understanding the Soil Report" (last page of this report) for additional explanation and links to helpful information.

Sample ID: w15

Lime History:

Crop 1- Shrubs  
Crop 2-

### Lime Recommendations

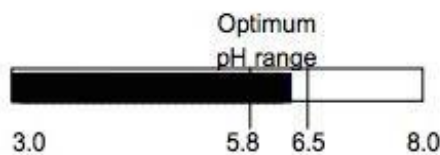
0.0 lb per 1,000 sq ft

### N-P-K Fertilizer Recommendations \*

5 lbs per 1000 sq ft 21-0-0

### Test Results:

pH = 6.3



Phosphorus Index (P-I) = 378



Potassium Index (K-I) = 111



Below Optimum Optimum Above Optimum

Additional Test Results:	HM%	WV	CEC	Mn-I	Zn-I	Cu-I	S-I
	0.86	0.67	24.0	223	484	83	81
		g/cm <sup>3</sup>	meq/100 cm <sup>3</sup>				

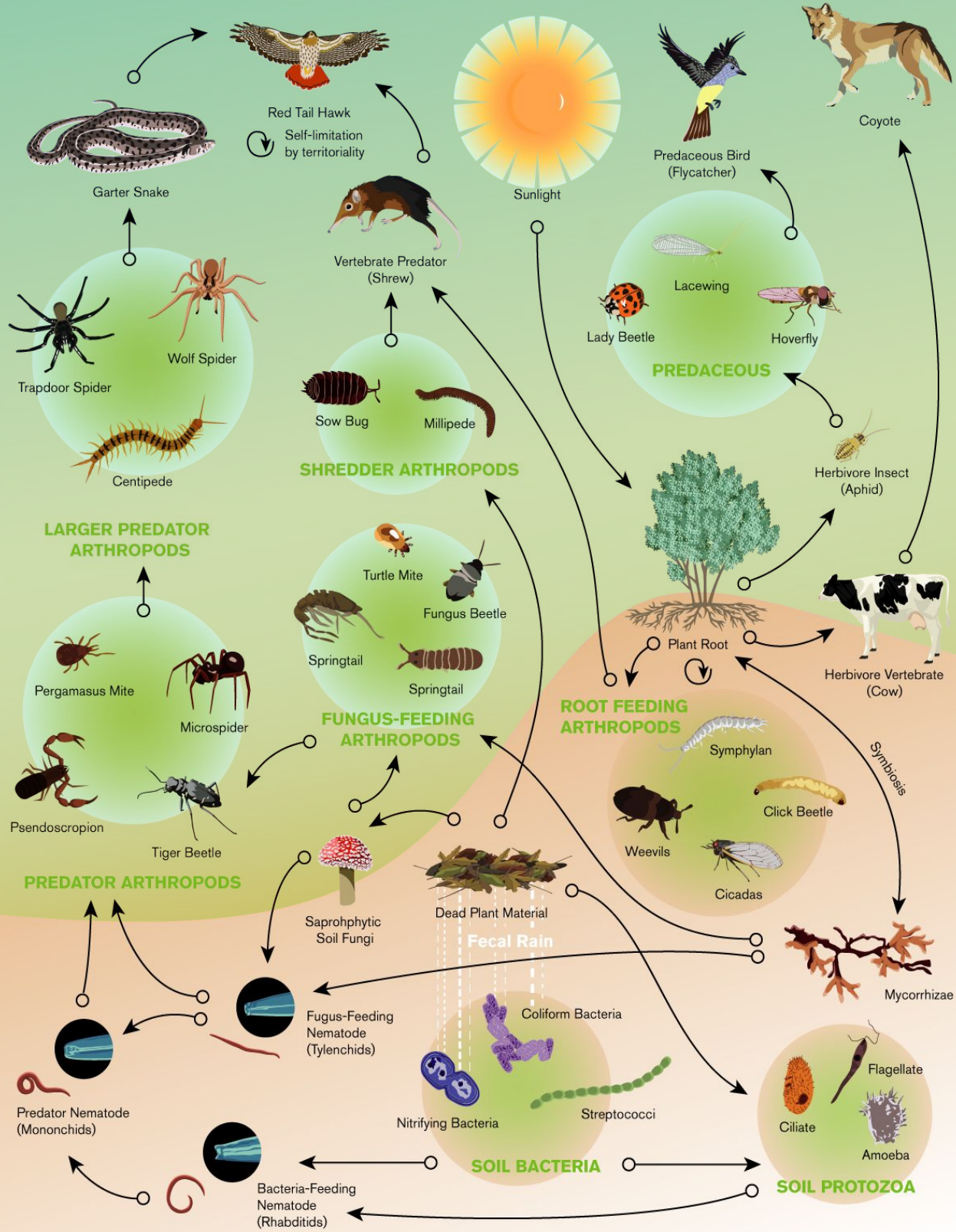
\* If you cannot find the fertilizer recommended here, choose one from the same Group (A, B, C or D) listed on the last page of this report.

Note: This soil test does not measure nitrogen (N) levels. N fertilizer recommendations are based only on needs of the designated crop.



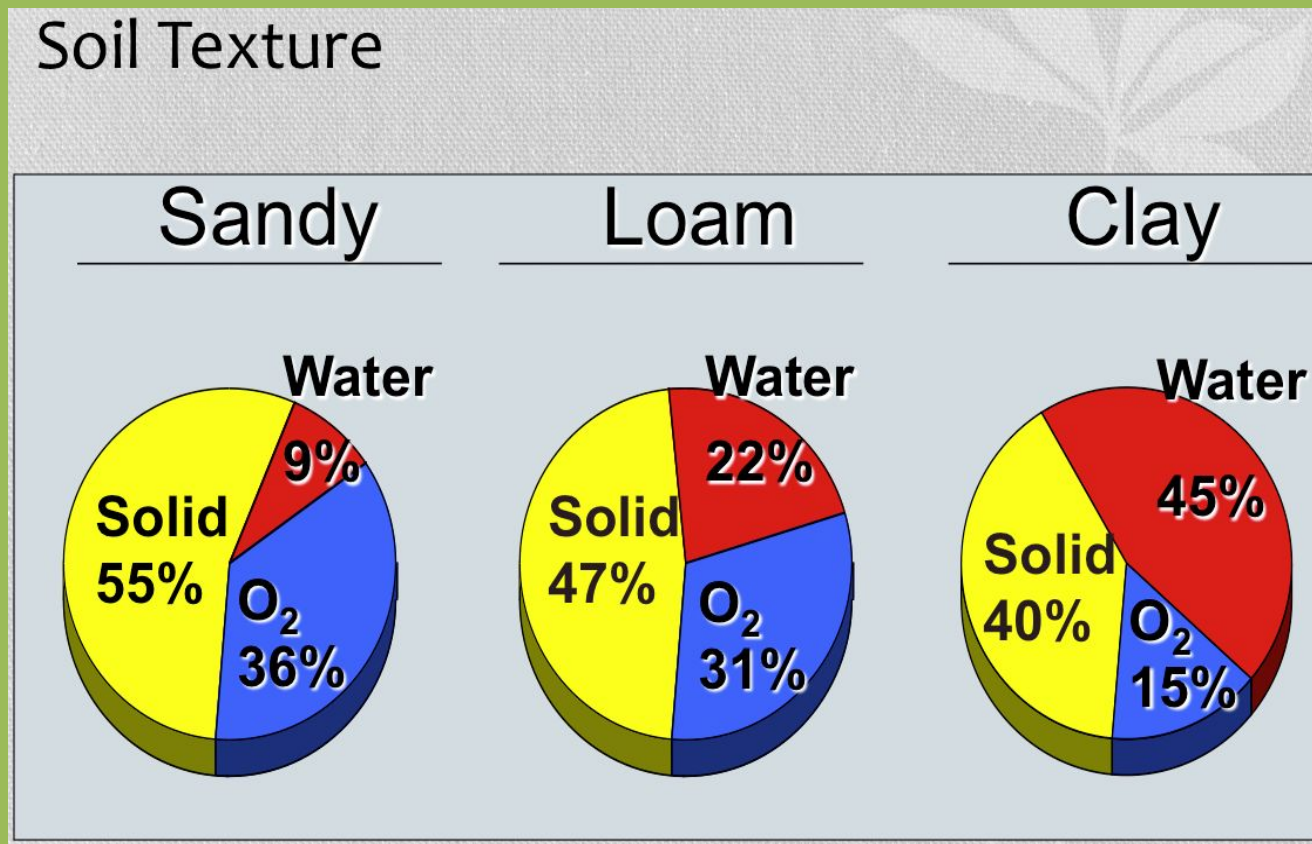
# Soil Remediation

- How much organic matter is in your existing soil?
  - Chocolate cake?
  - Natural soil systems (fungi, bacteria, ants, etc.)



# Soil Remediation

- Are you pre-tilling before planting?
  - What is the expected longevity of plants in the landscape?



# Construction Challenge

- Slope, erosion, existing utilities
  - Everyone in this room always calls NC 811!!
- Truly design build?
  - Do things always function on site as they did on paper? Site analysis is key
- Visit your vendor and develop a personal contact
- How do you move material onsite?
- Does the customer have clear ideas of what a construction project entails? Rookie clients?
  - Noise, mess, access, timeline















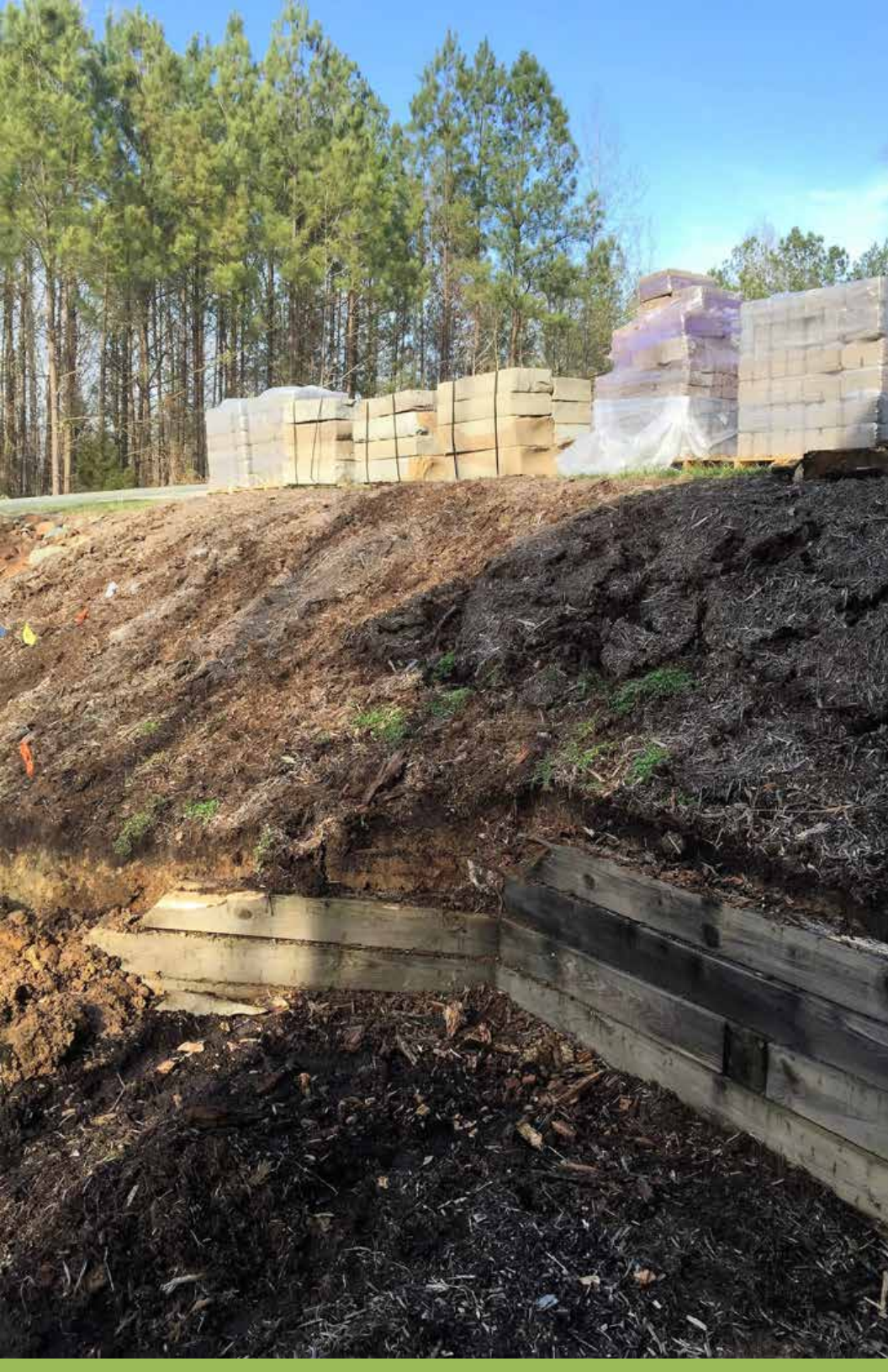














































# Climatic Fluctuations

NC STATE  
UNIVERSITY

DELTA

- We are dealing with a living, breathing organism.



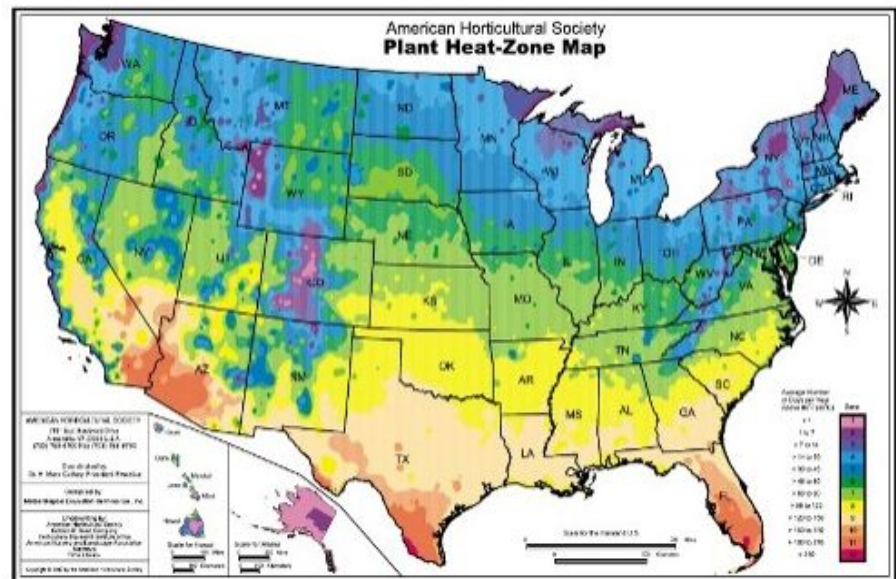


# Climatic Fluctuations

- Excessive heat during an installation or in the years after.

## [AHS Heat Zone Map](#)

### AHS Plant Heat Zone Map



# Climatic Fluctuations

- Does your contract include an Acts of God clause? (hurricane Matthew)
- What does your warranty state about fluctuations?

# Quick Comparisons

**Dream**



**Reality**



# Pest Management

- Antagonists are constantly flying, crawling, migrating and feeding. Ex. pine bark beetle, scale, armyworms (sod farm notifications)
  - Can you explain this to your customer in a way that they will pay for your knowledge and services?
- Do you have a yearly expectation calendar or online notification system?
- [Plant Disease and Insect Clinic](#)

# Plant Antagonist Resources

NC STATE EXTENSION COUNTY CENTERS TOPICS

## Integrated Pest Management

Search Extension...

Meet Our Staff

IPM for ...  
Christmas Trees, Field Crops, Fruit & Nuts ...

Past News  
2016 NC Pest News, 2015 NC Pest News, 2014 NC Pest News ...

Past Alerts  
2016 Pest Alerts, 2015 Pest Alerts

Technical Guides  
Crop Profiles, IPM Elements, Pest Management Strategic Plans

IPM Resources  
Agriculture Associations, Biological Control, Integrated Pest Management ...

Pest Decision Aids

Inspect Trap Data  
NC Trap Data, NC Trap Data Archive, Other Pest Sightings

Weather

Plant Disease & Insect Clinic

Blogs

Agents

Publications & FactSheets

ask EXPERT

Tweets from @NC\_EIPM

Tweets by @NC\_EIPM

Posts ALL POSTS

### Variable Temperatures & Rainfall Adorn December's Weather Mantle

Last month saw a temperature roller coaster as well as near- to slightly below-normal rainfall across most of the ...

State Climate Office of NC blog Posted: Today

### Solving for Pattern: Reimagining our Land Grant System as Networked Knowledge Commons, Part 4

Emergent by Design: Solutions Creating More Solutions Over several previous posts I've written about why Cooperative Extension and the ...

National extension blog Posted: Yesterday

### Resistance breeding for evergreens is beginning to yield results

A postdoctoral researcher continues a longtime forest entomologist's research on breeding resistance to balsam and hemlock woolly ...

IPM in the South blog Posted: Yesterday

### What foliar insecticides are recommended for tobacco in 2017?

The insecticide toolbox in tobacco has changed significantly during the past year. As many growers and extension personnel are ...

Tobacco Growers Information **FEATURED**

### USDA Announces \$5 Million in Funds for Smart Technology Innovations in Agriculture

The RFA for the Cyber Physical Systems program has been ...

IPM in the South blog Posted: Yesterday

### Does strawberry clipper reduce strawberry yield?

During 2016, our laboratory completed a three year project tracking the occurrence and impact of strawberry clipper weevil in annual. ...

2 days ago, Entomology

### Tobacco Production Guides Online

**Pest Alert: Cucurbit Downy Mildew Found in NC, Rapid Response and Implications for Local Growers**  
Date: May 9, 2012 From: Frank J. Louws (1), Wendy Britton (1), Peter Ojamba (1) and Billy Little (2). (1) ...  
— 5 years ago

**Pest Alert: Kudzu Bugs Bugging People**  
Date: March 23, 2012 From: Mike Waldvogel and Patty Alder, Extension Entomology I've gotten several calls/complaints about kudzu bugs covering and ...  
— 5 years ago

**Pest Alert: Kudzu Bugs Bugging People**  
Date: March 23, 2012 From: Mike Waldvogel and Patty Alder, Extension Entomology I've gotten several calls/complaints about kudzu bugs covering and ...  
— 5 years ago

**Pest Alert: Mosquitoes**  
Date: March 19, 2012 From: Mike Waldvogel, Extension Entomology The combination of a continued warming trend (it's called "spring"), moderate rainfall ...  
— 5 years ago

**Pest Alert: Carpenter Bees**  
Date: March 17, 2012 From: Mike Waldvogel and Patty Alder, Extension Entomology Carpenter bees have started appearing. It's a little on ...  
— 5 years ago

**Pest Alert: Bees**  
Date: March 17, 2012 From: Mike Waldvogel and David Tarpy, Extension Entomology We've had several reports of bee swarms. A lot ...  
— 5 years ago

**Pest Alert: Osmia - Blue Orchard Mason Bees**  
Date: March 17, 2012 From: Mike Waldvogel and Patty Alder, Extension Entomology Another solitary bee that will show up within next ...  
— 6 years ago

**Pest Alert: Current Status of Soybean Rust in North America March 9, 2011**  
Date: March 9, 2011 From: Steve Koenning Extension, Soybean Pathology Specialist, and Jim Dunphy, Soybean Specialist, Crop Science Soybean rust is ...  
— 6 years ago

**Pest Alert: Seed Treatments for Corn, Cotton, and Soybean Nematode Control**  
Date: January 31, 2011 From: Steve Koenning, Corn, Cotton, and Soybean Pathology Specialist, Jim Dunphy Soybean Specialist Crop Science: Ron ...  
— 6 years ago

**Pest Alert: Declaration of Exterior Quarantine for the Walnut Twig Beetle and the Fungal Pathogen that causes Thousand Canker Disease in Walnut Trees**


<https://ipm.ces.ncsu.edu/ipm-pest-news/>

<https://ipm.ces.ncsu.edu/tags/pest-alert+2016/>

# Pest Management

- Avoid plants that we know have long-term pest problems. Ex. Leylands, laurels, etc.
- What are the most common antagonists throughout the year? Have you ever made a list? Have you ever seen this site?

## Pest Mgmt Calendar



**Ornamentals and Turf**  
Department of Entomology Insect Note  
NC STATE UNIVERSITY North Carolina Cooperative Extension

### Leyland Cypress Pest Management Calendar

**CAUTION** This information was developed for North Carolina and may not apply to other areas.

PESTS	*	**	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
bagworms	II	2						S						
juniper scale	II	2						S						
spruce spider mite	III	1			S							S		
canker (disease)	II	2					R							

\* Degree of importance of pest: I=Important pest, high probability of occurrence, II=Treat as needed: III=Occasional pest, treat when detected.  
 \*\* Number of applications needed for most effective control. It is usually best to wait 10 to 14 days between applications in cool weather and 7 to 10 days between applications in warm weather.  
 R=rouge out and destroy infected plants; S=Spray.

# Financial Negotiations



- Designer, Landscape Architect
  - dreams vs. reality
- When do you make the move to estimating/pricing/scheduling software?
  - LMN software vs. experience
- Be careful when giving a customer an on-site estimate
  - Don't do it, or price it high!
  - Don't take work at a reduced rate because you priced it on-site too low

# Installation vs Maintenance

- Is a maintenance division a good idea? (Hardscape Magazine)
- Profit margin differences?
- Analyze what you hear and read.
- What fits with your
- company, market and
- profit goals?





# Going forward

How do we make a homeowner's dream a reality?

- Listen to your client
- Build your business practices on science
- Let your personality shine through your sales process
- Believe in and sell your product
- Improve weak areas within your company



# Thanks for listening!

We are open to questions now or in the future.

