



The Dog Days of Summer... and 150 of My Closest Friends



Chris Nicholson

It seems like it was yesterday that three feet of snow was covering my fields. As I sit here and write this the thermometer on my porch and the two foot leaders on my Fir trees are both telling me that summer is here.

Shearing season is in full swing for most of us and there is no turning back now. Each year I swear to myself I am going to get all of my shearing done early so that I can focus on other farm related chores in the fall. Will this be the year that I am not shearing the day before I open in November? Probably not but I will try my best. If you are out in field shearing please be sure to hydrate and don't over exert yourself. I try to shear in the early morning and then again at sunset each day. Be safe.

Our twilight meeting was held in June and well attended by our members and representatives from Rutgers. Richard Buckley and Anne Gould offered incredible insight to pest and disease problems. Mr. House-dorf was our host and he did a great job in preparing his farm for our visit. Thank you to all.

One of the problems we faced in the last few years was finding hosts for our twilight and summer meetings. It seems as though the tide has turned and we are now seeing members come forward and offer up their farms for our very important meetings. Please consider getting on the list to host a meeting. Your farm doesn't have to be large or perfectly kept to host a meeting. All of our farms are different in so many ways. I find it incredibly interesting to visit these farms and share information. Think about hosting a meeting. All that you have to do is say yes and we will do the rest of the legwork to pull things off.

Our Summer meeting has been set (see *continued on page 4*)

2012 Census of Agriculture Reveals Changes in Christmas Tree Industry

Prepared from data released by the 2012 U.S. Census of Agriculture by: Bob Bruch, New Jersey Christmas Tree Grower and Agricultural Economist

U.S. Census of Agriculture data released in May 2014 for cut Christmas trees provides insight as to changes in the number of farms, acres in production and trees harvested in the Garden State. In 2012 the number of New Jersey farms growing Christmas trees was 806, down from 1,150 farms reported in the 2007 Census of Agriculture (-30%). Farms harvesting Christmas trees totaled 690 in 2012 compared to 879 farms in 2007 (-22%). Trees harvested in 2012 totaled 68,471 compared to 78,791 in 2007 (-13%). Acres in production totaled 4,611 in 2012 compared to 6,314 in 2007 (-27%).

There were 341 fewer farms producing Christmas trees in 2012 compared to 2007. The majority of the farms ceasing to produce trees (298) were farms with less than 10 acres. Farms with 10 to 49 acres in production also showed a decrease in number but to a lesser extent. While most categories declined, farms of 20 or more acres showed an increase in trees harvested, but on fewer farms.

Table 1: New Jersey Christmas Tree Farms, Acres and Trees Harvested

Christmas Tree Farms by Size		Production		Harvested Trees	
		Farms	Acres	Farms	Number
1 to 2 acres	2012	311	(D)	238	8,436
	2007	429	596	288	(D)
3 to 4 acres	2012	162	551	140	7,190
	2007	228	788	176	9,640
5 to 9 acres	2012	226	1,421	207	15,490
	2007	340	2,054	289	20,616
10 to 19 acres	2012	74	906	71	13,198
	2007	109	1,324	87	18,949
20 to 49 acres	2012	28	734	26	15,092
	2007	36	1,012	31	12,015
50 to 99 acres	2012	7	456	7	(D)
	2007	7	(D)	7	7,000
100 acres or more	2012	(D)	(D)	1	(D)
	2007	1	(D)	1	(D)

2012 Census of Agriculture – State Data Table 42 Woodland Crops (D) disclosure

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SUMMER MEETING SATURDAY, AUGUST 16
(SEE PAGE 4 FOR DETAILS!)

Census of Agriculture

continued from page 1

2012 Census of Agriculture Data Reveals State and National Trends in the Christmas Tree Industry

At the national level there were fewer Christmas tree growers in 2012 than in 2007, fewer acres in production, and a slight decrease in the number of trees harvested. New Jersey followed the national trend. Census data does not distinguish between “choose and cut” and wholesale growers in reporting number. Some states have farms that are primarily are choose and cut, like New Jersey, while other states have farms that for the most part sell wholesale i.e. Oregon. Table 2 provides a comparison by state. Figures in bold print indicate increases either in the number of farms, acres in production or trees harvested in 2012 compared to 2007.



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Growers Association

njchristmastrees.org
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Secretary, at (908) 735-4658
or email [execsecretary@
njchristmastrees.org](mailto:execsecretary@njchristmastrees.org)

DESIGNED AT BURLINGTON COUNTY COLLEGE

Table 2: Christmas Tree Farms, Acres and Trees Harvested by State

State		Farms	Acres in Production	Christmas Trees Harvested
New Jersey	2012	809	4,611	68,471
	2007	1,150	6,314	78,791
Pennsylvania	2012	1,360	31,577	1,028,888
	2007	1,599	34,789	1,179,733
New York	2012	1,185	18,623	274,444
	2007	1,154	20,267	348,043
Maryland	2012	173	2,168	55,926
	2007	229	2,978	77,801
Maine	2012	387	5,694	195,833
	2007	307	4,349	126,908
North Carolina	2012	1,370	40,352	4,288,563
	2007	1,251	37,653	3,085,383
Ohio	2012	607	7,173	151,327
	2007	746	8,005	272,981
Michigan	2012	1,077	37,908	1,739,538
	2007	1,319	41,954	1,572,208
Wisconsin	2012	868	23,651	611,387
	2007	1,136	33,458	950,440
Minnesota	2012	301	6,935	130,527
	2007	368	9,963	202,259
Washington	2012	637	8,327	587,047
	2007	791	11,095	785,304
Oregon	2012	1,517	53,605	6,446,506
	2007	1,852	66,816	6,850,841
United States	2012	15,494	309,365	17,319,060
	2007	17,367	343,374	17,415,971

Announcing: NJCTGA Newsletter Trading Post Ads

Do you have items you no longer use on your farm? Starting in the next edition of the newsletter there will be a section for member ads. You will be able to list either items for sale or items you are looking to purchase. Contact Matt Martini if you have any questions.

For Sale: Hardi Air-Blast cannon sprayer 100G 3pth manual chute \$1,500, Oliver 3 bottom 16" disc harrow \$1,000.00
Salem Co. 930-355-2222, no Sundays,
or email jsmith125@gmail.com
MORE AVAILABLE!!!

ADS ARE FREE, BUT MUST MEET THE FOLLOWING AD REQUIREMENTS:

- For Sale or Wanted items directly related to Christmas tree growing & production only.
- Personal, Business, Services, Commercially/Massed Produced Product ads not accepted.
- Business, Service and Commercial Products require purchase of regular Newsletter ad.
- Description limit: 30 words, text only, no photos or drawings.
- Any drawing or photo included in ad requires purchase of \$35 quarter-page newsletter ad (see ad specifications on page 6).
- List phone number or email address for contact.
- Ads will appear one time only. Resubmit to re-run ad.
- Limit: 1 ad per farm per newsletter edition.

The NJCTGA reserves the right to reject any ads not meeting these requirements. Submit your ad for review to Matt Martini at CherryvilleFarms@Earthlink.net. Ad will be published in next edition of the Newsletter.

National Christmas Tree Association Director's Report

By: John C. Wyckoff, NJ Representative to National Christmas Tree Association



John Wyckoff

Hello from Belvidere where we are in need of rain. Early planted stock looks well, late plantings are showing signs of mortality. Pruning is once again in full swing. As there is really no update on USDA's Christmas Tree check-off program other than board nominations closing June 16, I would like to take this opportunity to talk about The National Christmas Tree Association, for those who may not be familiar. NCTA was formed in 1955 as a voice for our industry.

NCTA: The Professional Organization for The Real Christmas Tree Community

The National Christmas Tree Association (NCTA) is the national trade association representing the Christmas tree industry. NCTA represents more than 700 active member farms, 29 state and regional associations, and more than 4,000 affiliated businesses that grow and sell Christmas trees or provide related supplies and services. Members are located throughout North America, as well as in South America and Europe. It is estimated that those affiliated with the NCTA produce roughly three-quarters of the farm-raised Christmas trees in the United States.

The need for a recognized, nationwide Real Christmas Tree community – with the desire to have its voice heard – has never been

stronger. The NCTA represents the Real Christmas Tree community with one voice to protect and advocate on the industry's behalf.

Vision

NCTA's vision is that a farm-grown tree is a part of every Christmas celebration.

Mission

NCTA's mission is to protect and advocate for the farm-grown Christmas Tree industry.

Guiding Principles

The National Christmas Tree Association will:

1. Conduct its affairs with honesty and integrity
2. Advocate for all segments of the industry
3. Include members and state/regional associations in issue and policy development
4. Communicate fully and accurately with members, state associations and related industries on a continuous and timely basis

I urge you to explore the NCTA site and see the benefits that we reap from having a National representative. For those who may not currently be members of NCTA, a membership may be in order.

John Wyckoff and the Wyckoff family own and operate Wyckoff Christmas Tree Farm in Belvidere, Warren County.

Lightning: A Serious Danger

Article Reprinted from NOAA Website

Summer is the peak season for this deadly weather phenomenon. With an average of almost 1.4 million cloud-to-ground lightning strikes each year and typically leading the nation in lightning deaths and injuries, learning about lightning and its dangers, as well as important safety measures, can greatly reduce your risk from being affected by lightning.

When thunder roars, move indoors... right? The fact is, you are **not safe** anywhere outside. However, if you absolutely can't get to safety, to *slightly* lessen the threat of being struck by lightning while outside:

- Avoid open fields, the top of a hill or a ridge top. Lightning typically strikes the tallest object, so outdoor activities such as fishing, golfing, or sports in an open area may put you in grave danger.
- Stay away from metal objects such as bleachers, fences and poles. Although metal does not necessarily attract lightning, metal is an excellent conductor of electricity and can easily travel long distances.



- A tent offers no protection from lightning, so do not place a campsite in an open field or on the top of a hill. If you are in a forest, stay near a lower stand of trees or set up camp in a valley or other low area.

Under a tree in the middle of a field is probably the worst place to seek shelter. The tree may help you stay dry, but will significantly increase your risk of being struck by lightning.

No place is absolutely safe from lightning, however, some places are much safer than others. The safest location during lightning activity is a large enclosed building, not a picnic pavilion or open shed. The second safest location is an enclosed metal vehicle with windows closed. Try not to touch any metal surfaces inside the car. Soft-topped vehicles such as convertibles, jeeps and golf carts are not safe.

A vast majority of lightning injuries and deaths occur on the water. It is crucial to listen to the weather on a radio. If thunderstorms are forecast, don't go out, especially on boats with no cabin. If you are out on the water and skies are threatening, get back to

continued on page 7



The New Jersey Christmas Tree Growers' Association

and

Foster's Holly Ridge Tree Farm

116 South Chew Road • Hammonton, NJ08037 • 609-561-8575

www.hollyridgetreefarm.com

invite you to join them and your fellow NJCTGA members for the

SUMMER MEETING

Saturday, August 16, 2014

Registration 8am | Breakfast 8-9am | Meeting 9am-4pm

The Foster Family is graciously hosting this year's meeting and trade show and is making it a family affair.

Foster's Holly Ridge Tree Farm consists of 8 acres which are currently devoted to Christmas trees: White pine, Scotch pine, Norway spruce, Blue spruce, Douglas fir, Canaan fir, Fraser fir, and Concolor fir.

A picnic fare luncheon will be provided by the NJCTGA and the Foster Family (please bring lawn chairs).

For directions to the meeting visit our website or:
116 South Chew Road
Hammonton, NJ 08037

Additional activities planned are:

- A tour of the farm narrated by Dennis and Jeff Foster
- Shearing demonstration and hands-on testing of shearing tools
- Spraying demonstration of various equipment and Pesticide Course (CORE and PP2 credits)
- Planting demonstration
- Sales area and baling stations
- Interactive talks by and with Rutgers Cooperative Extension
- Visit with vendors
- NJCTGA Business Meeting

President's Message continued from page 1

the announcement) for mid August. I hope you will attend and gain some valuable knowledge.

If you use the two part tyvek tags when you sell your trees you may be in luck. I have been working with the NJ department of agriculture for the last year on developing "Jersey Grown" tags for our members and it looks like they will be ready for this upcoming sales season for you to purchase. I do not have all of the details as of yet but I will let you know

when this program is ready to roll out to our members. It should be a great program for us all, stay tuned.

Our organization is in really good shape. Although I would like to see a few more members join our group, our membership stands at around 150. Our firm financial footing gives me great pride as your President. The volunteer efforts of our members are paying dividends. Thanks to all who help make us a great group to belong to.

I often wonder why there are farms grow-

ing trees in NJ who do not belong to the NJCTGA. Our dues are little more than the price of a tree or two and you get that back tenfold in knowledge. Recently I posed this question to one of our members and got the perfect answer. I asked why he thought we had 150 members and not 300. His answer rang true and has stuck with me. He replied that we have the 150 who care about their farms and never get tired of learning their trade. So true, so true. Have a great Summer.

Chris Nicholson is our current President and the owner of Hidden Pond Tree Farm in Mendham, Morris County.

Grower's Spotlight:

WANTAGE HILLS CHRISTMAS TREE FARM

By: Tim Dunne



Tim Dunne

When Charlie Lain turned over his successful 800 acre sod farm – Pine Island Turf – to his son in 1996, he wanted to have some meaningful activity during his “retirement”. He found a beautiful, small farm in the hilly country of Wantage Township and decided to plant Christmas trees. He had to clear about 10 acres of overgrown, brushy fields and then he planted about 1000 trees each year for a few years and Wantage Hills Christmas Tree Farm was born.

About six or seven years later, just as the trees were becoming saleable size, health issues forced Charlie to sell the farm. Dr. Keith Hawthorn purchased the farm and had long-term plans to retire from the medical profession some day and raise Christmas trees. He soon figured out he had a lot to learn about raising conifers and he also had a demanding schedule with his medical career. He asked Charlie to stay on as an advisor and become a partner in the operation. That was a good decision for both parties as a successful small Christmas tree farm was the result.



Charlies Lain, his wife Dodi and his grandson Skyler Sarno

Today the 10 acre farm has about 800 trees for sale each December including blue spruce, Norway spruce, Douglas fir, concolor fir and Canaan fir.

Charlie has been a member of the NJ Christmas Tree Growers Association for 14 years.



Hill full of beautiful trees at Wantage Hills Christmas Tree Farm

He especially enjoys talking with other growers at the meetings as I found out at last summer’s annual meeting. I met Charlie probably 25 years earlier at his sod farm in the muck farm lands of northern Sussex County, and we reminisced a little but soon the talk turned to Christmas trees. We talked for about 20 minutes about his farm, his care of the trees and the December sales season. I was impressed with his knowledge and passion for growing Christmas trees.

Charlie feels that the association has many benefits for growers. “The dues we pay are nominal in relation to the information we receive that benefits all the growers. The exchange of ideas along with the social interaction is hard to beat,” Charlie said. Charlie encouraged all growers to become active in the association.



Snow blankets picturesque Wantage Hills Christmas Tree Farm

Charlie has several tips for a new grower. “Grow a Christmas tree you would be proud to show off in your own home,” Charlie said. Charlie also advised growers to “make your sales area safe, clean and welcoming to your customers. He continued “Make sure your helpers are knowledgeable about trees and their care. It is a happy



Nice field of trees, sheared and ready for sale

time of year for families – be sure to thank them and invite them back next year.” Charlie suggested that free hot chocolate, cookies and coloring books are nice extras that

make a difference. “Try to make it a truly memorable experience for the customer and their family,” he concluded.

The biggest issue Charlie faces at the farm today is the needlecast diseases of Douglas fir. Like most growers in NJ, he has had increased damage the last few years. He is unsure about the future of Douglas fir on the farm due to needlecast and the increased spraying regime that is now recommended for control. He is concerned about a customer buying a diseased tree, being turned off from real trees and turning to an artificial tree. He is looking for other species to fill the void.

Charlie is now talking of a real retirement and turning over his role in the farm to his grandson Skyler Sarno. After 50 years in agriculture which included stints as Director of the Cook College Board of Managers, President of the NJ State Board of Agriculture, as a sod producer, and then a Christmas tree farmer, he is due for some time to relax!

Tim Dunne, owner of Woodsedge Farm, Belvidere, Warren County, visits farms throughout the state and writes the Grower's Spotlight.

Rusty, But Never Crusty

By: Richard Buckley

Reprinted from Rutgers' Plant and Pest Advisory



Ann Gould from Rutgers discusses diseases of Christmas trees.

walking around in a farm field on a spectacular summer evening talking trees has a unique charm. Mr. Housedorf throws a pretty good party for sure!

Among other things, we got to see some Swiss needlecast in the Douglas-fir.

And some spruce spider mite damage in the spruce.

But the most fun of all (says the pathologist) was when we went to look at his concolor fir. Over the last few years, white fir, *Abies concolor*, has been gaining ground on Christmas tree plantations as a replacement for Douglas-fir and its needlecast issues. The tree is kind of fickle for a lot of reasons and does get its share of cryptomeria scale. In fact, some folks can't seem to find success with them at all, but when they do perform, they really make a nice Christmas tree. The concolor on Mr. Housedorf's farm are some pretty nice specimens. Seriously, he can grow a nice white fir. Looking around, however, we got a little surprise.

Several trees had small white structures on the bottoms of the needles. At first glance, we were thinking insect eggs, but as we walked around and saw more trees it became apparent that we were looking at a disease. Individual needles had yellow to brown blotches and were slightly bent. Under the blotches were white tube-like structures that turned out to be the fruiting bodies of a rust fungus.

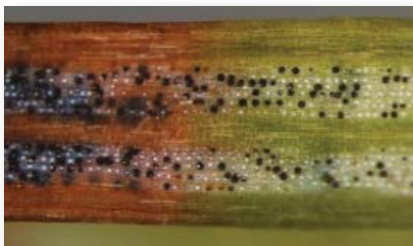
The structures we found on the bottom of the needles are called aecia. Interestingly enough, all aecia caused by rusts on fir needles have a white periderm (cover), so they all look the same to the naked eye. Inside the aecia, however, many of these rusts (*Pucciniastrum* species) produce yellow/orange aeciospores. The fungus from last week had white aeciospores, which is characteristic of the fir-fern rusts.

Fir-fern rusts are caused by one of as many as 10 species of fungi in the genera, *Uredinopsis* or *Milesina*. These rusts affect true firs and have ferns as their alternate hosts. Fir-fern rust, of course, is a generic identification. Unfortunately, we can't accurately identify the causal fungus to species without having an infected fern. The fungus, *Uredinopsis ameri-*

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Last week I had the pleasure of attending New Jersey Christmas Tree Growers' Association Annual Twilight Meeting at Black Oak Farm in Asbury, New Jersey.

Mr. Robert Housedorf was our host and led the group on a walking tour of his trees, while Dr. Ann Gould and I got to answer technical questions on diseases and insect pests. You might think — how boring — but I have to tell you,



Fruits of *Phaeocryptus* appear on undersides of needles.



A photograph taken this past summer showing feeding damage done to Fraser fir during the spring. The injury is to inner needle growth of 2012. The newer, outer growth of 2013 will be infested this fall.



White aecia of fir-fern rust on white fir.

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NJCTGA Newsletter Ad Sizes & Rates

FULL PAGE
7.75" wide x 9.875" high \$100

Half Page
7.75" wide x 4.863" high \$60

Quarter Page
3.795" wide x 4.863" high \$35

If possible, ads should be submitted in PDF format, in 4-color process.

Contact Director Charlie Brown for additional details.

Lightning continued from page 3

land and find a safe shelter. If you are out and cannot get back to land, drop anchor and get as low as possible. Large boats with cabins, especially those with lightning protection systems, are relatively safe. Remember to stay inside the cabin and away from any metal surfaces. Stay off the radio unless it is an emergency.

Some workers are at greater risk than others. People who work outdoors in open spaces, on or near tall objects, with explosives or with conductive materials such as metal have a greater exposure to lightning risks. Workers in these occupations face the most risk:

- Logging
- Explosive handling or storage
- Heavy equipment operation
- Plumbing and pipe fitting
- Construction and building maintenance
- **Farming and field labor**
- Telecommunications field repair
- Power utility field repair

When thunderstorms threaten, don't start anything you can't quickly stop. Pay attention to the daily forecasts (www.nws.noaa.gov) so you know what to expect during the day. Also pay attention to early signs of thunderstorms: high winds, dark clouds, rain, distant thunder or lightning. If these conditions exist, do not start a task you cannot quickly stop.

Assess your lightning risk and take appropriate actions. During thunderstorms no place outside is safe. If you can hear thunder, lightning is close enough to strike. Stop what you are doing and seek safety in a substantial building or a hard-topped metal vehicle.

Know what objects and equipment to avoid during a thunderstorm.

- Stay off and away from anything tall or high, including rooftops, scaffolding, utility poles and ladders.
- Stay off and away from large equipment such as bulldozers, cranes, backhoes, track loaders and tractors.
- Do not touch materials or surfaces that can conduct electricity, including metal scaffolding, metal equipment, utility lines, water, water pipes and plumbing.
- Leave areas with explosives or munitions.



Bottom line is to know the forecast, plan accordingly, and keep an eye on the sky. Don't be left out in the open wondering what to do next. Plan ahead! Your best source of up-to-date weather information is a NOAA All-Hazards

Weather Radio. Portable weather radios are handy for outdoor activities. If you don't have a weather radio, purchase one or stay up to date via internet, TV, local radio or cell phone. Recent advances in cell phone applications can make it easier to track lightning in your area. If there is a high chance of thunderstorms, curtail or postpone your outdoor activities. In groups, make sure all leaders or members of the group have a lightning safety plan and are ready to use it. As soon as you hear thunder, see lightning or see dark threatening clouds, get to a safe location. Wait 30 minutes after the last rumble of thunder before you leave the safe location.

For more information about lightning and lightning safety, visit www.lightningsafety.noaa.gov

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Welcome New Member!

Mark Annunziato, Rosemark Farms
Vernon, Sussex County

Down on the Farm

Do you have a funny farm story, a favorite piece of equipment you'd like to recommend or tips you'd like to share with other Christmas tree growers?

We want to include these tips and stories in future editions of the newsletter. Send them to Donna Cole at execsecretary@njchristmastrees.org



Rusty, But Never Crusty continued from page 6

cana, has been reported on concolor and balsam fir in New York, so maybe that is what we are looking at here. Infected ferns will exhibit yellow/orange leaf spots sometime in late summer and I would be grateful if some found their way into the lab. I am anxious to get an infected fern to see if we can name our critter. At any rate, it seems these white-spored rusts are pretty common in New England and have finally found their way south to the promise land of New Jersey.



Infected needles turn yellow and drop.



The peridium splits to allow the aeciospores to escape to ferns.



Fir-fern rusts produce white aeciospores.

For control, beginning in late-summer (August/September) look around and find the ferns near your plantation. Once the inoculum source has been discovered, mow the ferns down or spray them off



Growers discuss tree care in the field at Bob Housedorf's Black Oak Farm in Asbury, Hunterdon Co.

with a registered herbicide (beware of the caveats and possible environmental restrictions). These fungi have several survival modes that let them live in infected ferns – living and dead – almost indefinitely. Meaning, that despite your eradication program, next spring during the bud break period, we are going to have to protect the new growth with a penetrant fungicide. Yup, more spraying... and for a tree that used to only get "environmental stress!"



Home of the some of the finest Fraser Fir Christmas trees you can find. We currently have a good selection of 8 to 12 foot tall trees available.

Contact Larry Kuhns at (814) 574-8635

For additional information and to see the farm visit:
kuhnstreefarm.com



Soil Science: Sweet and Salty Soil

Reprinted from: New Milford Farms, Garick Subsidiary website

After reading the title you might be scratching your head. Sweet and salty soil? Are you nuts?

Sweet and salty soil actually refers to two common chemical indicators of soil health and quality: pH and EC (electrical conductivity).

You have probably heard pH used in the description of everyday household items such as soaps, shampoos, medicines, and foods, but may not think much about it in relation to soils. pH generally refers to the acidity or alkalinity of a soil. For those that want to nerd it up, pH is defined as the log₁₀ hydrogen ions [H⁺] in the soil solution. pH values are represented on a scale that ranges from 0 (most acidic) to 14 (most alkaline); with pH 7 being neutral. pH values that are less than 7 are termed acidic, while values greater than 7 are termed alkaline or basic.

The availability of plant nutrients like Ca²⁺, Mg²⁺ as well as the health of important microbes (bacteria, actinomycetes, and fungi) is linked to the pH of a soil. Optimum uptake for most plant nutrients and activity for microbes is attained when the soil pH is in the range 6.5 to 7. Soils in the pH 6.5 to 7 range are considered sweet. In soils where the pH is less than 7, lime in the form of calcium carbonate or magnesium carbonate, or gypsum, is added to raise the pH value to the desired "sweet" range. Soils with a pH greater than 7 are often amended with sulfur, iron sulfate, urea, pine needles, or sawdust to lower the pH to the desired value.

Testing the pH of your soil every fall is a good way to monitor soil acidic/alkalinity and to make adjustments, if needed. Methods for measuring soil pH include test strips, colorimetric test kits, and various types of meters used in the field and laboratory. Routine measurements used for annual monitoring can easily and economically be achieved with high quality test strips or a colorimetric test kit.

pH test strips are a fast and economical way to monitor the pH of your soil. A roll of pH test paper has a retail cost of about \$15.

The second chemical measure of soil quality is electrical conductivity (EC). EC is a measure of the electric current carried by soil water. Yes, there is electricity in soil! The electrical current is associated with ions (Ca²⁺, Mg²⁺, K¹⁺, Na¹⁺, NH₄¹⁺, SO₄²⁺, Cl¹⁺, NO₃¹⁺, and HCO₃¹⁺) held in water-filled pores of the soil.

EC is often used as a measure of soil salinity. The greater the concentration of ions in solution, the greater the soil salinity will be. Soil texture also influences EC. In general, EC increases with the clay content of a soil. High electrical conductivity can dramatically affect the growth of plants, soil structure, and diversity of microbes in a soil.

Adding to the concern associated with EC is the new dimension of recycled water (purple pipe) used for irrigation. Recycled water is often slightly to moderately saline, which, when added to naturally high soil salinity can pose a significant management challenge. A similar problem occurs where saltwater has intruded into groundwater and the water table is sufficiently high to make root contact.

Another factor influencing EC is organic matter added as a soil amendment. Manure and compost often add ions to the soil solution that can negatively affect soil quality if the levels are excessively high. The most common methods for decreasing EC are improved drainage and leaching.

Like pH, EC can be easily and economically measured with a small pocket meter. Taking EC measurements of irrigation water, and soil amendments (like compost and manure) should be performed regularly and monitored.

Classes of salinity and EC (1 dS/m = 1 mmhos/cm) adapted from the NRCS Soil Survey Handbook

EC (dS/m)	Salinity Class
0<2	Non-saline
2<4	Very slightly saline
4<8	Slightly saline
8<16	Moderately saline
≥16	Strongly saline

You've now been introduced to the sweet and salty that influences the quality and health of your soil. Get your test strips and meters and start measuring so that you can monitor and manage your soil resources for sustainability.

Remember, soil sustains life!



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