

# ENVIRONMENTAL HORTICULTURE ISSUES

Orange County Extension · 2350 East Michigan St. · Orlando, Florida 32806 · (407) 836-7570

## 2002 Winter Freeze Forecast for Florida

By the Florida Consortium, COAPS and the Florida Climate Center

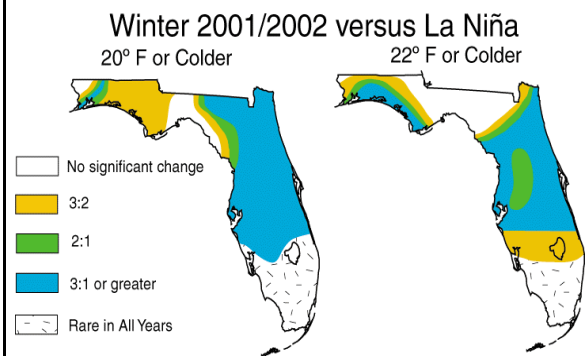
Climate shifts due to El Niño and La Niña are well-known and are now used to predict seasonal temperature and precipitation trends up to 12 months in advance. These climate shifts are particularly strong in Florida and the Southeast United States. During the winter and spring months, El Niño brings plentiful rainfall (40% more than normal) and cooler temperatures to Florida. The last El Niño occurred in 1997-1998 and was one of the strongest on record. Conversely, La Niña is associated with warm and dry winter and spring seasons in Florida and the Southeast. A persistent La Niña is responsible for the warm winter temperatures and drought conditions in Florida for the past three years.

While El Niño and La Niña affect the average temperature of the winter season as a whole, they both tend to suppress the severe arctic outbreaks of cold air that cause damaging freezes in Florida. Changes in the jet stream patterns during El Niño and La Niña play a part in the intrusion of cold Canadian air that make their way this far south. A strong subtropical jet accompanies El Niño and for the most part "blocks" the Arctic air masses from entering Florida. La Niña limits the movement of the Polar jet over the United States, steering winter storms and stronger cold fronts to our north.

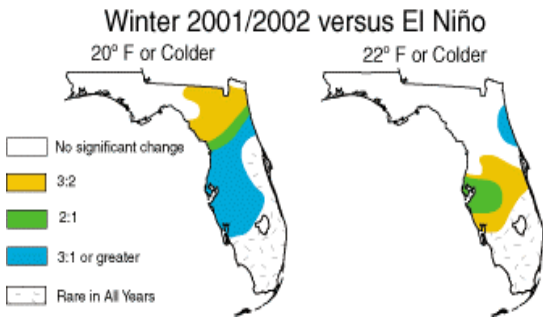
However, in Neutral years the position of

the Polar jet is highly variable and it tends to meander over the entire continent. Due to this "unstable" pattern, the southern tier of the US is more susceptible to the dramatic dips (or troughs) in the jet stream that push Arctic air masses south from Canada. These are the severe Arctic outbreaks that lead to freezing temperatures in the Central and Southern parts of Florida. Near normal sea surface temperatures are expected in the tropical Pacific this year, so the upcoming winter will be considered Neutral (neither El Niño nor La Niña). For this reason we are forecasting an increased risk of damaging freezes.

An examination of minimum temperatures from weather stations all over Florida from the past 50 years shows that freezing events are up to three times more likely to occur in Neutral years than during El Niño or La Niña. The analysis is presented in map form in terms of ODDS, another way of

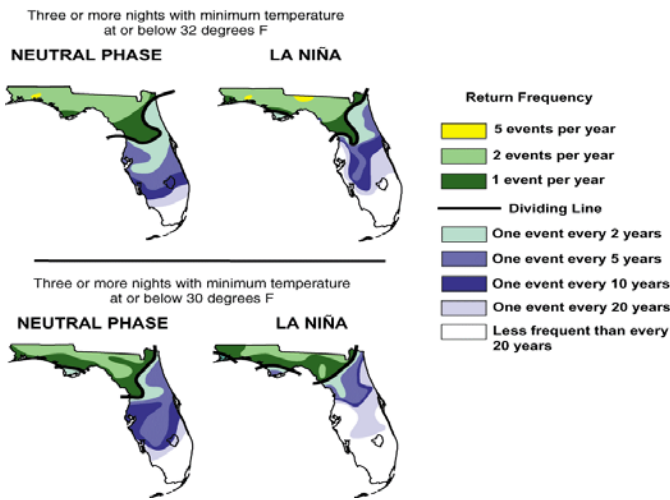


looking at probability. In the areas dark gray, the odds of a freeze event with minimum temperatures at that threshold or below this year are 3:1 when compared to La Niña or El Niño winters. Likewise, the odds are 2:1 in the medium gray areas and only 3:2 where light gray. In the white areas of Northern Florida, freezes of different thresholds are relatively common in all years. In the hatched areas of South Florida, freeze events are rare in all years. The increased risk is more pronounced for colder temperatures (less than 25 degrees), so only thresholds of 22°F and 20°F are shown.



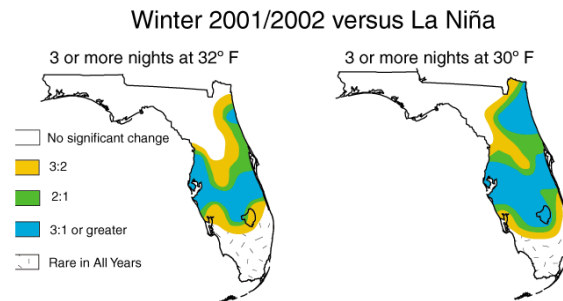
The graphics and discussion above address the INCREASE RISK of a damaging freeze, not the actual probability on one occurring in your area. The maps below show the actual return frequencies of events with minimum temperatures from 32 degrees down to events of 20 degrees or colder. Return frequencies are plotted for neutral conditions in the Pacific (like the upcoming winter) and for La Niña (like the last three years). Substantial shifts in return frequency are apparent at the coldest thresholds of 22 and 20 degrees.

**Return Frequency of Extended Freeze Events**



If a strong cold front is approaching and you want to know if it will bring freezing temperatures to Florida, watch the position of the center of high pressure behind the front. If the high pressure center dips south of Dallas, Texas, there is a good chance Florida will see freezing temperatures. If the high stays north of Dallas, Florida is probably safe. Remember, this is just a rule of thumb and you should monitor the official National Weather Service forecasts and current conditions from FAWN for up-to-date information.

For some sectors, the duration of a freeze event is just as damaging as the minimum temperature that is reached. Enterprises such as aquaculture, nurseries and ornamentals can be adversely effected by extended cold spells. Similar to the analysis done on minimum temperatures, we examined the occurrence of past events where freezing temperatures were recorded for three or more nights in a row. Similar to the colder freeze events, large portions of central and northeast Florida are over three times more likely to see an extended freeze event this win-



ter. Odds of an event with at least three consecutive nights of minimum temperatures at or below the following threshold, when compared to previous La Niña winters (like 1998 and 1999) The maps above show the ODDS of such an extended cold spell occurring this year, when compared previous La Niña winters. The odds are 3:1 in the areas shaded dark gray, 2:1 in the medium gray areas, and only 3:2 in the light gray shading. In the white areas of northern Florida, extended freezes are relatively common in all years. In the hatched areas of South Florida, they are rare in all years.

For more information, visit the COAPS website [www.coaps.fsu.edu/](http://www.coaps.fsu.edu/) or the Florida Automated Weather Network at [fawn.ifas.ufl.edu](http://fawn.ifas.ufl.edu)

## ARE SOILS A SOURCE OF ANTHRAX BACTERIUM?

By Andrew Ogram

Anthrax and the bacterium that causes anthrax, *Bacillus anthracis*, have long been considered prime candidates for use in biological weapons, and public interest in the disease has increased dramatically with recent events. The disease may take three different forms: 1) pulmonary; 2) cutaneous; and 3) gastrointestinal. The pulmonary form arises from inhalation of small *B. anthracis* spores; the cutaneous from results from viable spores entering a cut or abrasion on the skin; and the gastrointestinal form comes from eating undercooked meat from an infected animal. All three forms may be lethal, but the pulmonary form has a much higher mortality rate than the other two.

Naturally occurring anthrax is very rare in the United States, although it does occur in developing nations. The disease is generally spread through direct contact with infected animals, and not through contact with infected people. The most common form of anthrax is cutaneous and is acquired by people working directly with infected livestock in developing nations. The last reported case of anthrax from natural sources in the United States was in 1992.

*Bacillus anthracis* is a rod shaped gram positive cell that produces very hardy and long-lived spores. The primary source of the anthrax pathogen in soils is from infected cattle, and pasture soils may contain viable anthrax spores for long periods of time (years or decades) after a cattle infection. *Bacillus anthracis* is an obligate pathogen, meaning infection of a host (such as cattle) is required for the microorganism to grow. The bacterium is not thought to proliferate naturally in soil.

The presence of these spores in soils does not pose a serious threat to human health for two reasons. 1) Contraction of the disease generally requires infection with much higher concentrations (8,000-10,000 spores) than would typically be found in airborne particulates from an infected pasture. This is also

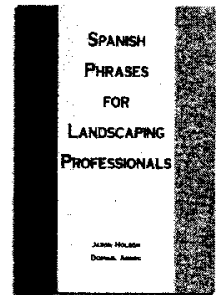
the primary reason this disease is not transmitted from person to person. 2) The spores bind to soil particles that prevent the spores from traveling deep inside the lungs, greatly decreasing the likelihood of pulmonary infection. Few, if any, anthrax cases have been reported for soil-borne disease. Livestock

## NEW PRODUCTS

may be infected when grazing in infected soils.

### English to Spanish Book for Landscapers—

*Spanish Phrases for Landscaping Professionals* by Jason Holben and Dominic Arbini is a 204-page book that contains more than 1600 words and phrases in an easy-to-use format. All phrases are complimented by simple, intuitive phonetics. Published by Stock Pot Publishing, the book sells for \$23.99 plus shipping. Contact: 303-863-1685



**ALCA Launches Landscaper eToolkit**—To keep landscape contractors abreast of the latest business techniques, the Associated Landscape Contractors of America (ALCA) launched eToolkit, a new electronic information service. Those who register for the free eToolkit service will receive tips and tricks of the landscape trade proven successful by landscape professionals. Communications are e-mailed twice monthly and cover a wide range of topics, including personnel issues, technical tips, finance, op-

## INDUSTRY NEWS

erations, production, process efficiencies, equipment, hiring, labor, training, marketing, and more. Visit [www.alca.org](http://www.alca.org) for more information.

**Reduced Prices on Buggy Software**—Most of the University of Florida's entomology CD-ROMs and CEU/Training tutorials have been reduced by 40% to 60%.

These tutorials are authorized for recertification in numerous pesticide applicator categories by Florida, Georgia and West Virginia. Each tutorial provides

computer verification and allows users to print a report listing the name of the person completing the tutorial, the date taken, the score, the name of the tutorial and the questions incorrectly answered. These tutorials are widely used to provide technician training by pest control companies, school districts, and municipal governments. Several are even available for free download. See the Buggy Software Web site at <http://pests.ifas.ufl.edu/software/> for details.

DACS website –If you have any questions on pesticide licensing now you can find it on the DACS website <http://doacs.state.fl.us/onestop/> called Li-

## TWO NEW TRAINING MANUALS ON NATURAL WEED MANAGEMENT NOW AVAILABLE

censing, Permits, Registration. The section called Pesticide Licenses is particularly helpful. At the bottom of the page is a link to Spanish translation software!

To learn how to control weeds in natural areas, turn to the University of Florida's new training manual, **Natural Area Weed Management**.

The 46-page, full-color publication, now available from UF's Institute of Food and Agricultural Sciences, is designed for those who apply herbicides to control invasive vegetation in natural areas of Florida.

The manual contains information on herbicide application and safety in natural areas, said Kenneth Langeland, professor of agronomy and author of the publication. He said the manual is one of two publications recommended for those seeking certification and licensing by the Florida Department of Agriculture and Consumer Services. Priced at \$12, the manual contains valuable information, photo-

graphs, tables and charts.

“The second manual, **Identification and Biology of Non-Native Plants Found in Florida's Natural Areas**, is recommended for identifying invasive plants,” Langeland said. “The two manuals, developed as study guides for those seeking state certification, also are useful resources for land managers and others with an interest in identifying and managing invasive plants.”

Both publications are available through the UF/IFAS-Extension bookstore, PO Box 110011,

## BALL MOSS RESEARCH

Gainesville, Fla. 32611-0011. Call (352) 392-1764 to order the book. Make checks payable to the University of Florida.



School purchase orders are also accepted. For credit card orders, call (800) 226-1764.

Allen Owings, a researcher at Louisiana State University recently did some research on controlling ball moss. Ball moss (*Tillandsia recurvata*) is classified as a “structural parasite. That means it does not extract water or nutrients from the host. Typical recommendations to control ball moss usually include copper fungicides such as Kocide. After Allen heard that sodium bicarbonate (household baking soda) could also control ball moss, but no research was available, he decided to do the research. Tests were run using both 2.5% and 5% (weight per volume). Both concentrations were used both with and without horticultural oil. In the article, Allen says “Field tests confirmed the effectiveness of 2.5% and 5% sodium bicarbonate sprays for killing ball moss.” Treated plants turned dark brown or

*Celeste White*

Celeste White

Orange County Commercial Horticulture & Landscape Maintenance/Pesticide Certification

“Insertion of trade names in this newsletter does not reflect endorsement of products by the University of Florida, IFAS, or University of Florida Extension.”