

## The Internet as a Farming Tool

Access to relevant and timely information is becoming more and more important. Although the Internet is by no means the best or only source of information, it brings a wealth of new tools to supplement traditional sources of information (Figure 1). This linked network of computers gives businesses who utilize it a competitive edge. Although the number of farmers who use the Internet is still small, more and more of them are finding its services invaluable every day (Table 1).

This issue of Cotton Physiology Today highlights just a few examples of how these services and new tools such as ag magazines, radio, farm tours, market news and chat rooms can positively affect your bottom line.

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The Cotton Physiology Education Program (CPEP), now in its ninth year, is funded by a grant to the Cotton Foundation by BASF, makers of Pix®, the original plant regulator. CPEP's mission is to discover and communicate more profitable methods of producing cotton.



Figure 1. Information obtained online, such as updates for the Cotton Risk Management Network, facilitates timely decision making.

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**Table 1. Using computers as well as accessing the Internet are of increasing importance in managing today's farms. Figures released by the National Agricultural Statistics Service on July 30, 1997 (available online at [http://usda.mannlib.cornell.edu/reports/nassr/other/computer/farm\\_computer\\_usage\\_07.30.97](http://usda.mannlib.cornell.edu/reports/nassr/other/computer/farm_computer_usage_07.30.97)).**

State	Farms	Farms That Using With			
		Computer Access	Owned or Lease Computers	Computers for Farm Business	Internet Access
Percent of Farms					
Alabama	45,000	25	21	13	9
Arizona	7,500	46	42	35	16
Arkansas	42,500	25	22	17	10
California	84,000	51	47	30	23
Florida	40,000	41	35	24	19
Georgia	43,000	25	23	12	11
Kansas	65,000	36	31	21	11
Louisiana	26,500	26	21	14	4
Mississippi	43,000	22	15	9	4
Missouri	102,000	33	27	16	10
New Mexico	13,500	47	39	27	14
North Carolina	57,000	30	24	13	10
Oklahoma	73,000	31	26	15	9
South Carolina	21,500	25	20	11	9
Tennessee	80,000	24	17	7	8
Texas	205,000	41	32	21	18
Virginia	47,000	26	20	10	8
United States	2,053,800	38	31	20	13

## Email

To “reach out and touch someone” has never been easier than with electronic mail (email). Query your county agent, state cotton specialist, gin manager, or banker about your needs. Do it immediately while the question is hot on your mind, regardless of time of day. By describing your problem in print, you avoid any possibility for phone messages to be garbled as they are passed from party to party. You also have a record of your question and the answer. If your party is online when your message is sent, you can receive a reply instantaneously. If not, your contact can answer at his or her convenience and think about the answer before pressing the “send” key.

Just how do you send email? You need to install an email program on your computer and hook your computer via modem to a phone or ISDN line (Table 2). Start your email program (some popular ones include Eudora, Pine, Microsoft Mail, to name just a few). Generally there will be a space to address your mail where you enter the URL (electronic address) of your recipient (e.g. [jfurrow@cotton.org](mailto:jfurrow@cotton.org)). Often there is a space in which to put a topic for your message, another space to type the body of your message, and a button to press to attach a file which can be text, pictures, graphs, or combinations thereof. When you have finished composing and addressing your message, you press the send command.

David Wright, cotton specialist with the University of Florida, takes this communication tool a step further by including color images with his messages. County agents use digital cameras to photograph problems in growers' fields (Figure 2). Care is taken to have both close-up and distance shots. The agents upload the GIF images from the camera to their computers and then attach the images to an email message to David. David opens his email, views the attached color images, diagnoses the problem, and, in a matter of minutes, he emails his answer and recommendations back to the county agent. The grower can take action before a large portion of his crop succumbs.

Contrast a turn-around time to complete diagnosis of just minutes via digital camera and email to the old system in which agents actually packaged and mailed plant samples — weeks were lost and the condition of samples compounded growers' and agents' frustrations. Shipped samples were sometimes no longer recognizable as plants by the time a specialist could look at them. Consequently, no diagnosis was possible.



David Wright  
**Figure 2. Cotton flowering out the top as a result of severe water stress — close-up (a) and distance view (b).**

# Connecting to the Internet

In addition to your computer, you will need a modem, phone or ISDN line, Internet service provider (ISP) and software to use the

Internet. Some of the lingo connected with going online is defined in Table 2. There is plenty of help to get you hooked up and going.

**Table 2. Definitions of some terms used in Internet technology. An entire dictionary of computer terms can be found online at <http://www.currents.net/resources/dictionary/>.**

Term	Definition	Example(s)
Adobe Acrobat Reader	free software used to download, read and print Web pdf files	
Download	moving data from a remote source onto your computer's hard drive	pulling Mississippi State's recommendations for Pix <sup>®</sup> applications from their site to your computer so you can print out a copy from your machine
FTP	<u>f</u> ile <u>t</u> ransfer <u>p</u> rotocol: means of sending large information files across the internet	
GIF	one of the preferred image file formats for the Web	
Hardware	physical components of your computer	central processing unit, hard drive, keyboard, modem, monitor, etc.
Home page	start-up screen accessed by pointing your web browser to an individual's, company's, farm's, or university's URL	NCC's home page located on the Web at NCC's URL, <a href="http://www.cotton.org">http://www.cotton.org</a>
html	<u>h</u> yper <u>t</u> ext <u>m</u> arkup <u>l</u> anguage: Web's programming language	
http	<u>h</u> yper <u>t</u> ext <u>t</u> ransfer <u>p</u> rotocol: Web's addressing tool	
Internet	network of computers and supercomputers that reside at universities, government agencies and industry sites; uses FTP, USENET, TELNET and HTTP file protocols	
ISDN line	<u>I</u> ntegrated <u>S</u> ervice <u>D</u> igital <u>N</u> etwork: digital telecommunication lines for high-speed voice and computer data transmission	
ISP	<u>I</u> nternet <u>s</u> ervice <u>p</u> rovider: company that provides connection to the Internet for a fee	
Modem	<u>m</u> odulate/ <u>d</u> emodulate: converts sending computer's electronic signals (1's and 0's) into sounds that can be carried over phone lines and converts them back to electronic signals for receiving computer; plugs into computer and telephone jack (RJ-11) to gain access through your ISP to the Internet	
PDF	<u>p</u> ortable <u>d</u> ocument <u>f</u> ile: requires Adobe Acrobat Reader to download files to your hard drive for printing out book-quality hard copy	
Search engine	computer programs on the Internet that search data on the Web for answers to your specific query	general: Yahoo, Lycos, Alta Vista; specific to agriculture: AgriSurf
Software	computer programs that enable a user to tell his or her computer to perform specific tasks	wordprocessors: Word, WordPerfect; spreadsheets: Excel, QuatroPro, etc.
Telephone lines	carry converted computer signals as well as voice messages	
Upload	putting data from your computer's hard drive on its way through cyberspace to a remote destination	sending your cotton crop's input spreadsheet to your accountant via email
URL	universal resource locator: case-sensitive web address	NCC's: <a href="http://www.cotton.org">http://www.cotton.org</a>
Web Browser	software used to navigate the Web that is usually provided by your ISP and updated regularly	Internet Explorer or Netscape Navigator
WWW	<u>W</u> orld <u>W</u> ide <u>W</u> eb: the portion of the Internet that uses http as its file transfer protocol	

## Discussions with Other Growers

One of the best ways of getting information is to chat with someone who has “been there and done that.” Chatting online is much like talking in your local coffee shop. The key is finding the right person to talk to. With the Internet, you have a whole world of farmers with which to discuss issues. Given that there are so many out there, chances are excellent that some may already have solved problems similar to those you are encountering. Just a few examples include the Cotton Industry Discussion (<http://www.beancotton.com>) and the Boll Weevil (<http://www.icac.org/liststar/listserv.cgi>) lists.

To join in a discussion, just point your Web browser to one of the listed URL's (Internet addresses), and follow the online instructions to subscribe to the list. The Boll Weevil list requires that you fill in your name and user address on a form that pops up when you visit their site (Figure 3). For the Cotton

**Subscribe Digest:** Add your name to the list of users that receive one digest of all messages each day. You will also be allowed to post your own comments to the list.

**Subscribe Check:** Check to see if you are subscribed to the selected list. This may not reflect recent changes.

**Unsubscribe:** Remove your name from the list. You will no longer receive postings nor will you be allowed to post.

Your Name  you@yourhost.com

No Action  the **Press Release** - click [here](#) for more information

No Action  the **Monthly Update** - click [here](#) for more information

No Action  the **Boll Weevil List** - click [here](#) for more information

Submit  Clear the form

Figure 3. Sign-up screen for joining the Boll Weevil Discussion List Serve.

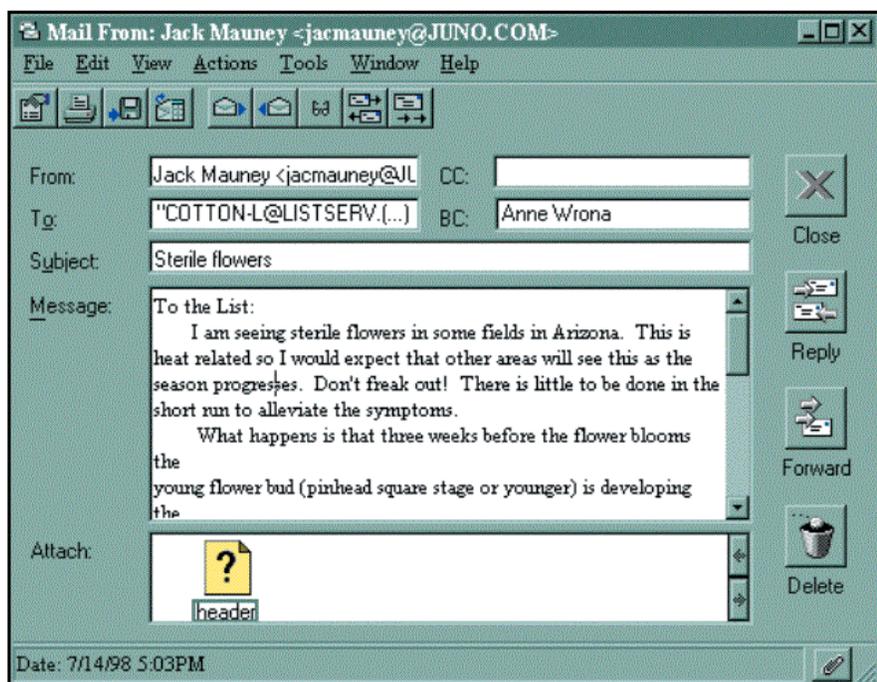


Figure 4. List serve message about formation of sterile pollen when leaf temperatures exceed 95°F.

Industry Discussion List owned by Barry Bean, a Missouri cotton grower, you are asked to type “SUBSCRIBE COTTON-L Your Name.” Once you have subscribed, any topics you want to discuss

should be sent as written text to “COTTON-L@listserv.aol.com.”

Just what kind of information can you get from joining a List Serve? Growers in many parts of the Cotton Belt experienced extremely hot and dry conditions this year. Plant physiologist, Jack Mauney, sent a message to the Cotton Industry Discussion List to reassure growers that although very high temperatures (leaf temperatures over 95°F) cause formation of sterile pollen, once the heat stress has been relieved, those plants should produce fertile pollen and again set fruit (Figure 4).

Consultants and growers regularly post crop reports from around the Cotton Belt. Manufacturers of agricultural chemicals, bioproducts and equipment announce changes in product status. Staying in touch with one of these sites helps to keep you informed of the latest developments in the cotton industry, as well as any anomalies to be expected in the growth of your cotton as a result of unusual weather patterns.

# Weather

Although weather is one of the most critical elements in a cotton production system, it remains difficult to predict. Weather can dictate the success of a growing season, influence the market price, and hamper harvesting and delivery of cotton. Knowing the weather conditions in a specific location is critical for growers, merchants and mills.

Online you can obtain real time charts, maps, and forecasts whenever you need them (Figure 5). When the National Cotton Council's Weather Site is developed, our web page will be updated hourly with data from 500 weather stations.

Access will be through the Members Only section of the page.

**In the meantime, other options for weather information include:** National Weather Service - Interactive Weather Information Network (IWIN)

<http://iwin.nws.noaa.gov/>

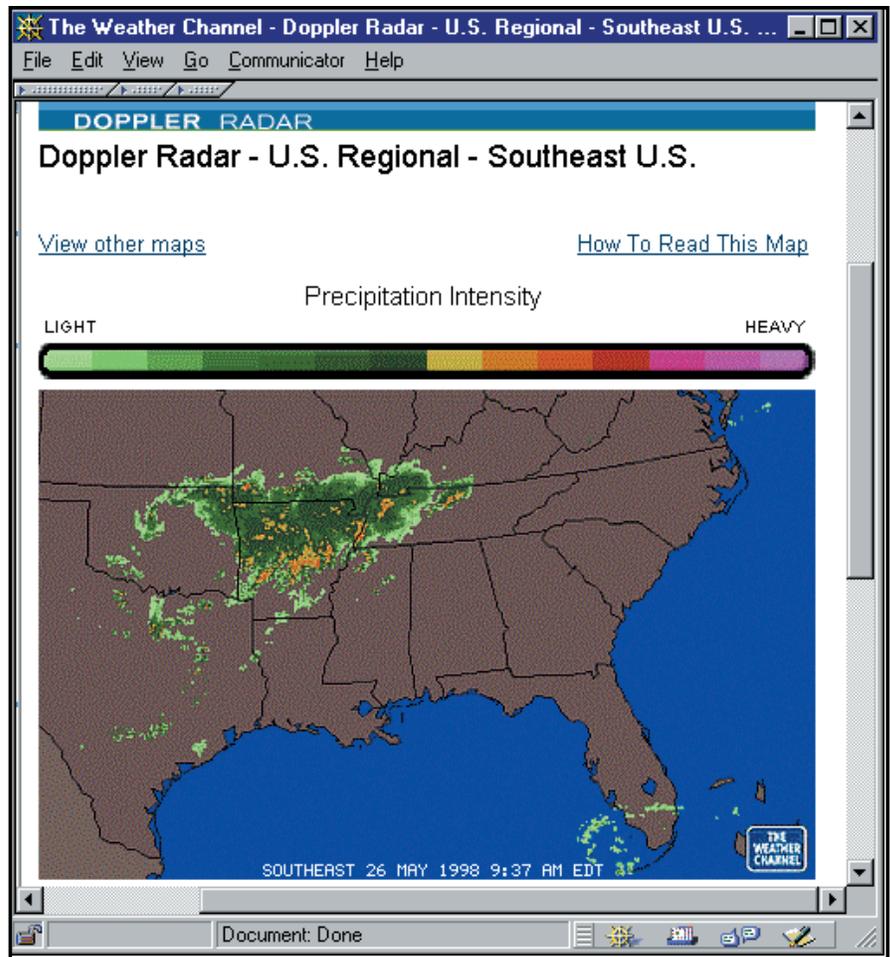
**Agriculturalweather.com**

<http://www.agriculturalweather.com/>

**Agricultural Weather Information Service (AWIS), Inc.**

<http://www.awis.com/>

This NCC Weather Website, currently under development through a Cotton Foundation project, will allow members to access all available weather information, both current and historical, for each National Weather Service weather station in their area. [As many as three weather stations are located in a single county.] The user will also have access to weather maps of the region, a summary of common indicators, forecasts for that station and the state, and any warnings or watches currently in place.



**Figure 5. Doppler radar map obtained online from the Weather Channel at <http://www.weather.com>.**

## Crop Diversification

The Cotton Risk Management Network (CRMN), a tool available to NCC growers, is available in the Members Only section of the NCC website. What are the alternatives for managing risk? What market behavior does one expect? CRMN software is loaded on your computer so that you can keep up with daily market data. Daily, NCC updates online data on futures markets, options, cotton program prices, as well as U.S. and world market prices.

CRMN also serves as a source of dates for upcoming market events such as commodity exchange notice days and USDA reports. Growers can use CRMN to model farm cost and

returns with the software's Farm Model. For example, the expected prices and cost per acre for cotton, corn and soybeans can be entered and cotton's returns can be compared with those from the other commodities.

The World Price Model is another tool included in CRMN. Using ICAC's latest world price forecast for the season, you can input your own supply/demand estimates to see the effect on world prices. For a more detailed explanation about CRMN, visit <http://www.cotton.org> and click on the CRMN link. The Cotton Risk Management Network is a Cotton Foundation project sponsored by Zeneca Ag Products and the New York Cotton Exchange.

## Extension Information

The biggest and most comprehensive agricultural information sites online are those of the state extension programs (Figure 6). They have cataloged years of information and fact sheets that are readily available at these sites. Information is usually updated daily or weekly. Check out some of the URL's in this table (Table 3).

For a big-as-life example of just how useful some of this information is, point your browser to <http://www.ipm.ucdavis.edu/> (Figure 7). Choices abound on this home page, but for this example, use your mouse to click on Pest Management and Identification, then click Pests of Agricultural Crops, then Cotton, then on Insects and Mites, and then finally on Cotton Bollworm. Numerous other choices are available all along this path. But with focus and a goal, you can pull up precisely the information you need to identify that new pest seen for the first time in your crop, as well as University of California guidelines as to how to control the insect. Similar information is available for weeds, nematodes, and diseases. Detailed information on pesticides is also listed.

Growers also frequent this site for degree days, CIMIS (California Irrigation Management Information System) weather information and 5 day forecasts, and pesticide use information.

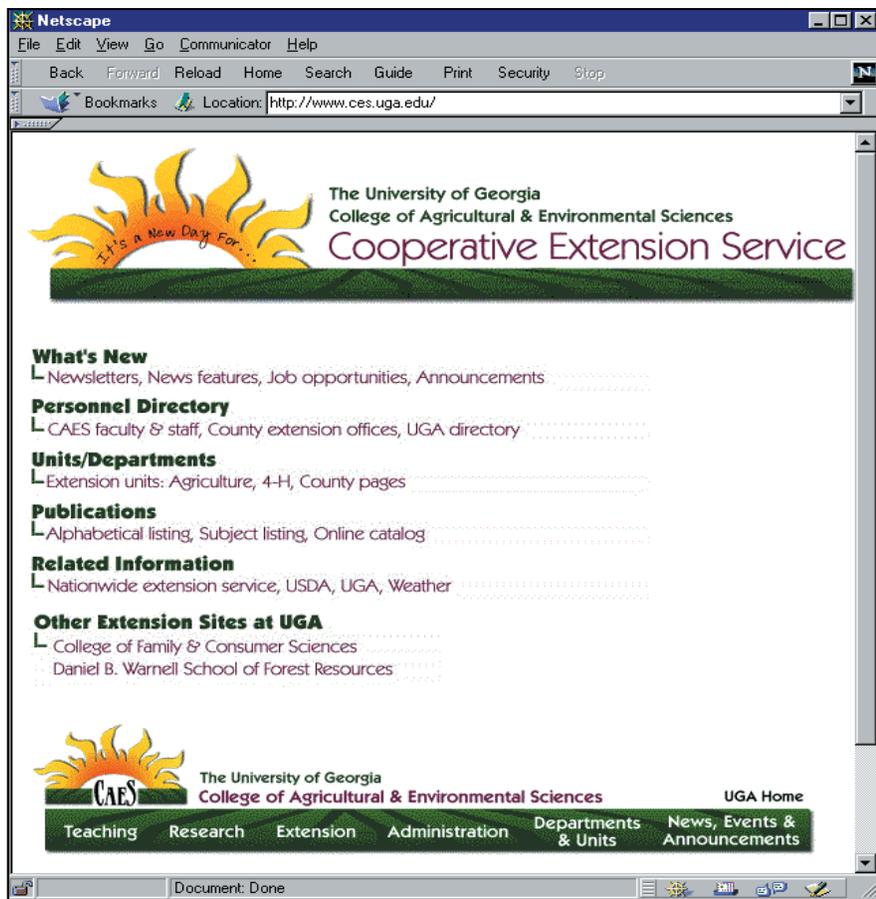


Figure 6. University of Georgia Cooperative Extension Service's home page at <http://www.ces.uga.edu/>.

Table 3. Addresses of some of the numerous university and cooperative extension sites for online information.

State	URL
Alabama	<a href="http://gn.acenet.auburn.edu/">http://gn.acenet.auburn.edu/</a>
Arizona	<a href="http://ag.arizona.edu/extension/">http://ag.arizona.edu/extension/</a>
Arkansas	<a href="http://www.uaex.edu/">http://www.uaex.edu/</a>
California	<a href="http://www.ucdavis.edu/">http://www.ucdavis.edu/</a> <a href="http://www.ipm.ucdavis.edu/">http://www.ipm.ucdavis.edu/</a> <a href="http://www.ucr.edu/">http://www.ucr.edu/</a>
Florida	<a href="http://gnv.ifas.ufl.edu/WWW/AGATOR/HTM/CES.HTM">http://gnv.ifas.ufl.edu/WWW/AGATOR/HTM/CES.HTM</a>
Georgia	<a href="http://www.ces.uga.edu/">http://www.ces.uga.edu/</a>
Kansas	<a href="http://www.oznet.ksu.edu/">http://www.oznet.ksu.edu/</a>
Louisiana	<a href="http://www.agctr.lsu.edu/wwwac/lces.html">http://www.agctr.lsu.edu/wwwac/lces.html</a>
Mississippi	<a href="http://ext.msstate.edu/">http://ext.msstate.edu/</a>
Missouri	<a href="http://muextension.missouri.edu/coop/coop.htm">http://muextension.missouri.edu/coop/coop.htm</a> <a href="http://extension.missouri.edu/">http://extension.missouri.edu/</a>
New Mexico	<a href="http://www.cahe.nmsu.edu/ces/">http://www.cahe.nmsu.edu/ces/</a>
North Carolina	<a href="http://rhema.ncat.edu/CEP/">http://rhema.ncat.edu/CEP/</a> <a href="http://www.ces.ncsu.edu/">http://www.ces.ncsu.edu/</a>
Oklahoma	<a href="http://www.okstate.edu/OSU_Ag/oces/">http://www.okstate.edu/OSU_Ag/oces/</a>
South Carolina	<a href="http://virtual.clemson.edu/groups/extension/">http://virtual.clemson.edu/groups/extension/</a>
Tennessee	<a href="http://utextension.ag.utk.edu/">http://utextension.ag.utk.edu/</a>
Texas	<a href="http://agweb.tamu.edu/">http://agweb.tamu.edu/</a> <a href="http://agextension.tamu.edu/">http://agextension.tamu.edu/</a>
Virginia	<a href="http://www.ext.vt.edu/">http://www.ext.vt.edu/</a>

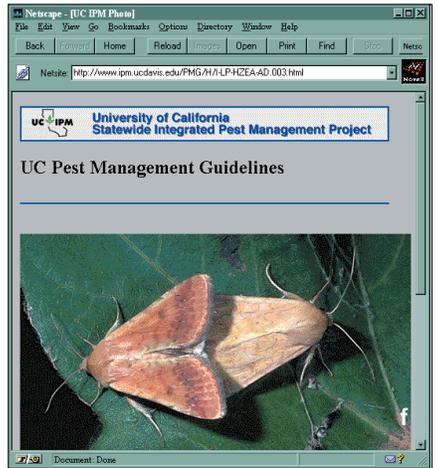
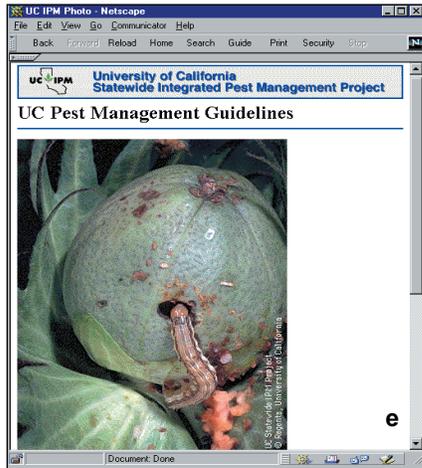
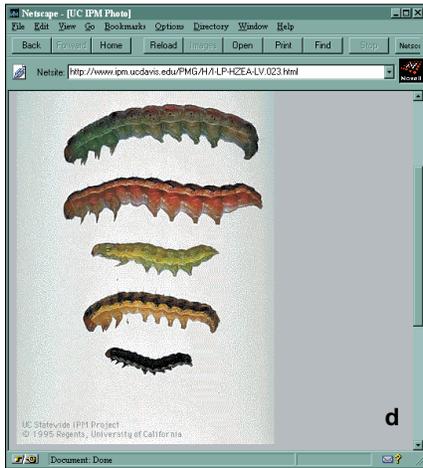
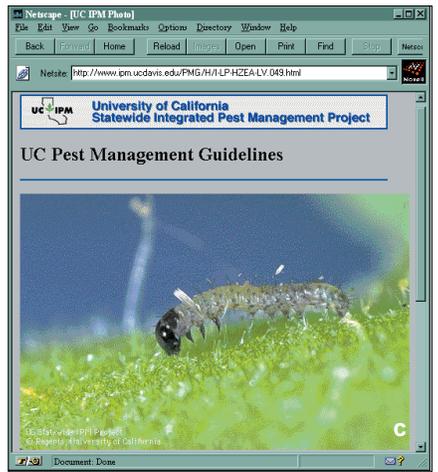
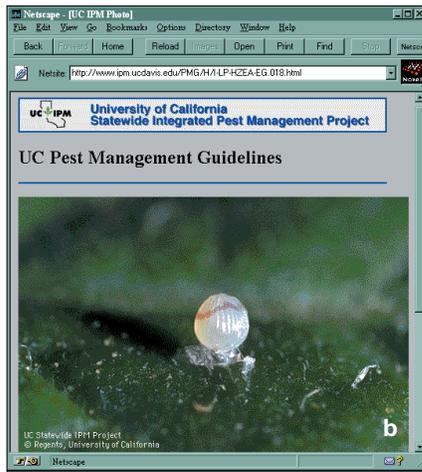


Figure 7. University of California's statewide integrated pest management project home page at <http://www.ipm.ucdavis.edu/> (a) and pages showing development of the cotton bollworm and information about the pest (b, egg; c, newly-hatched larva; d, variation in larvae; e, larva eating a boll; f, moths) .

## Online Trading

Not yet widespread, but a not-too-distant option is to use the Internet to do online trading or agricultural hedging. Options available to growers are at numerous Web sites — some of which are listed in this newsletter. Check it out.

# Market News

Many online services offer market news (Figure 8). Some are free and some require subscriptions. As another part of the National Cotton Council's Econ Central, extensive market price information will be available through the Members Only section of the page. Monthly price series history back to 1975 is available for Cotlook Ltd.'s "A" and "B" Indexes, NYCE December contracts, US spot prices, US mill delivered prices for cotton, rayon and polyester, average prices received by farmers, and ELS spot prices.

Econ Central provides the latest USDA supply/demand projections for the United States and world with graphs of the most recent 7 years for production, mill use, exports and stocks. The latest situation assessment by NCC's Economic Services also is provided. USDA's weekly crop condition and crop progress reports are on file. As the season progresses, other reports from USDA, such as the ginnings and classing reports, also will be available.

Each Friday, the Council's Economic Services produces a market report that is distributed electronically, via e-mail, to members only. In the Members Only section, the report details weekly futures market activity including certificated stocks, on-call cotton, the spec/hedge report, and weekly movement of futures market contracts for cotton, corn, and soybeans. Graphs of futures market values comparing the near harvest contract to the previous year's contract values are available. CCC loan stocks are reported as well as USDA's estimates of grower forward contracting by state and region.

The history of cotton production state-by-state and county-by-county from 1975 to 1996 is in a readily accessible database including annual

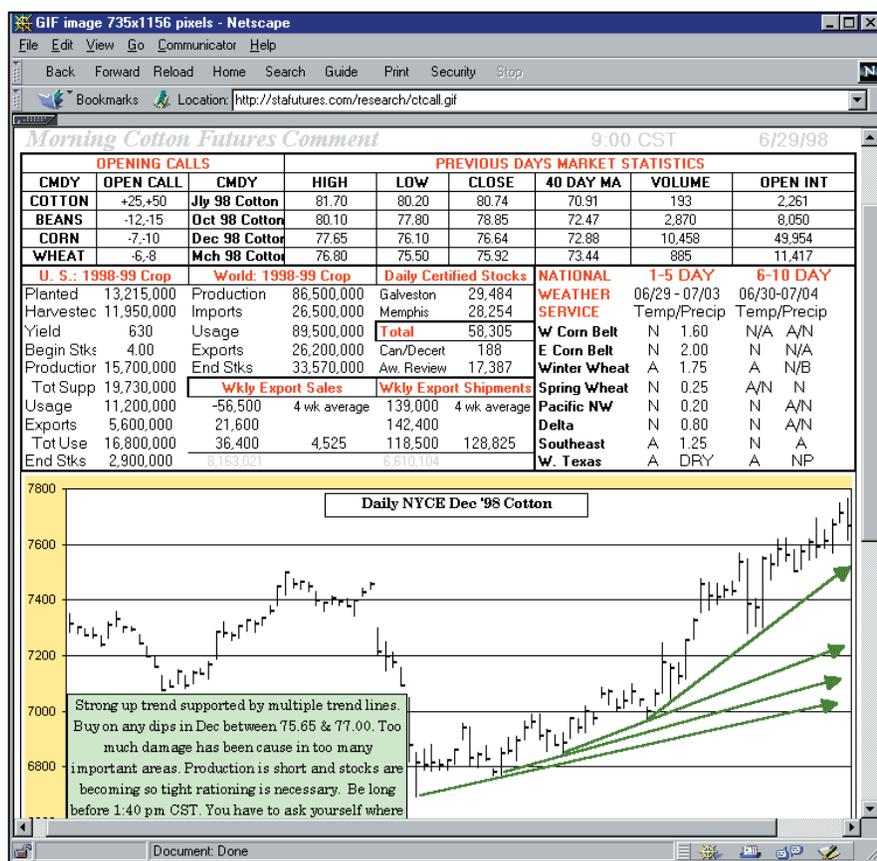


Figure 8. STA Futures Morning Cotton Call Report <http://www.agrisurf.com/agrisurfmarkets/stactcall.asp>.

acres planted and harvested, yield, and total production. Ever wonder just what the economic importance of cotton was in your state? Check under Industry Profile to find the latest economic role of each industry segment by state with estimates of the number of businesses, jobs and business revenue generated.

The NCC is acquiring a textile trade database for cotton and all manmade fiber-containing textiles that will provide access to foreign trade data for 96 countries on a bale equivalent basis to the 10 digit HTS (Harmonized Tariff System) code.

Economists will use this trade database to perform detailed analyses of the changes in international trade. For example, the database will help economists determine more accurately the amount of textile products exported by Japan to the European Union. Then, we can

determine how much market share may be lost because of changes in the value of the yen.

The site will also give access to tariffs, quotas and quota fill rates, current textile news, and other textile related items in an easily accessible and searchable format.

### Other online sources for market news include:

#### New York Cotton Exchange

<http://www.nyce.com/>

#### North Delta Cotton Marketing - Frequently Asked Questions

<http://www.beancotton.com>

#### Cotton Marketing Weekly

<http://ext.msstate.edu/newsletters/cotton/>

#### Nunn's Cotton Letter

<http://www.pchnet.com/nunncotton>

#### USDA AMS Market News

#### Reports - Cotton Reports

<http://www.ams.usda.gov/cotton/mncs/index.htm>

## Scientific Information: *Journal of Cotton Science*

Many scientific journals are now available online. The new *Journal of Cotton Science* presents peer-reviewed articles from all disciplines of the cotton industry. Each article includes an interpretive summary that states the purpose and value of the research discussed. Visit it online at <http://www.cotton.org> and click on the link to the journal (Figure 9). This Cotton Foundation-sponsored project is full of cutting-edge research upon which new technologies can be based to move our industry forward. Calling all entrepreneurs — be sure to visit this site. New issues are posted quarterly.

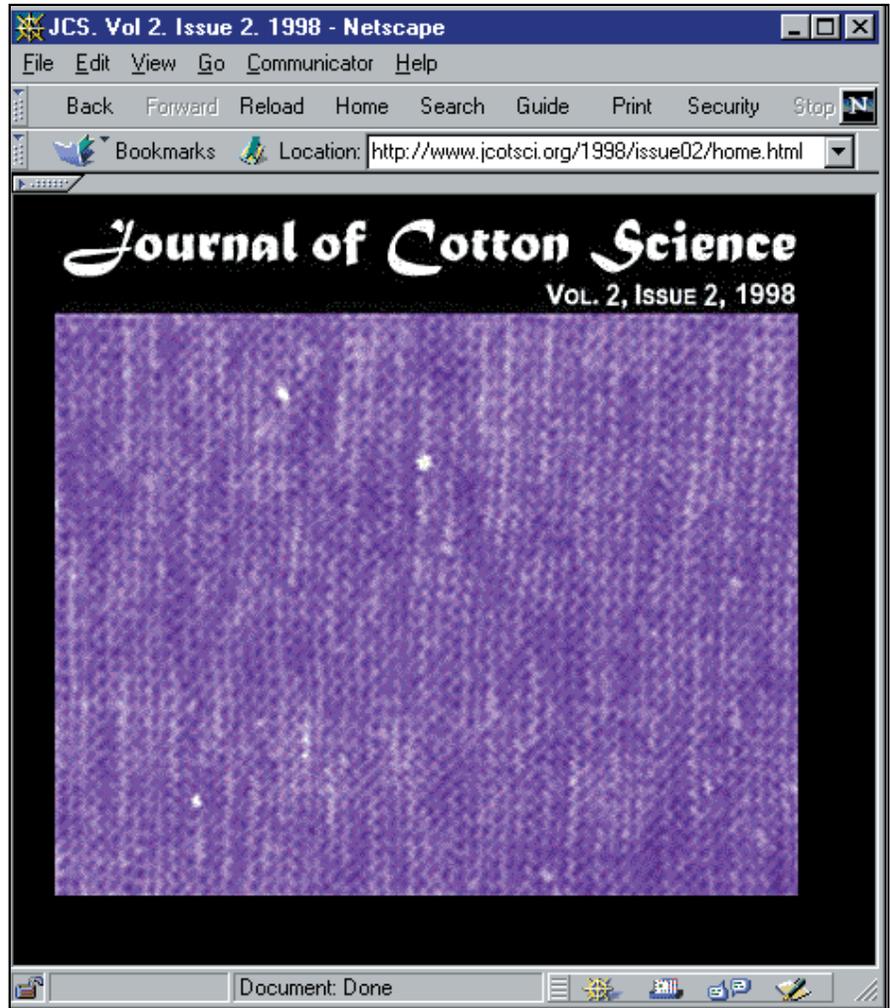


Figure 9. Fabric with white specks on the “cover” of the second issue of the second volume of the *Journal of Cotton Science* at <http://www.jcotsci.org>. Click on this screen to read the research article about mechanically measuring white specks.

## Product Comparisons

Companies post a lot more information about their products on their web sites than they do in their glossy brochures. You can download this information conveniently and not have to write and wait for it to arrive by traditional mail.

# Data Transfer

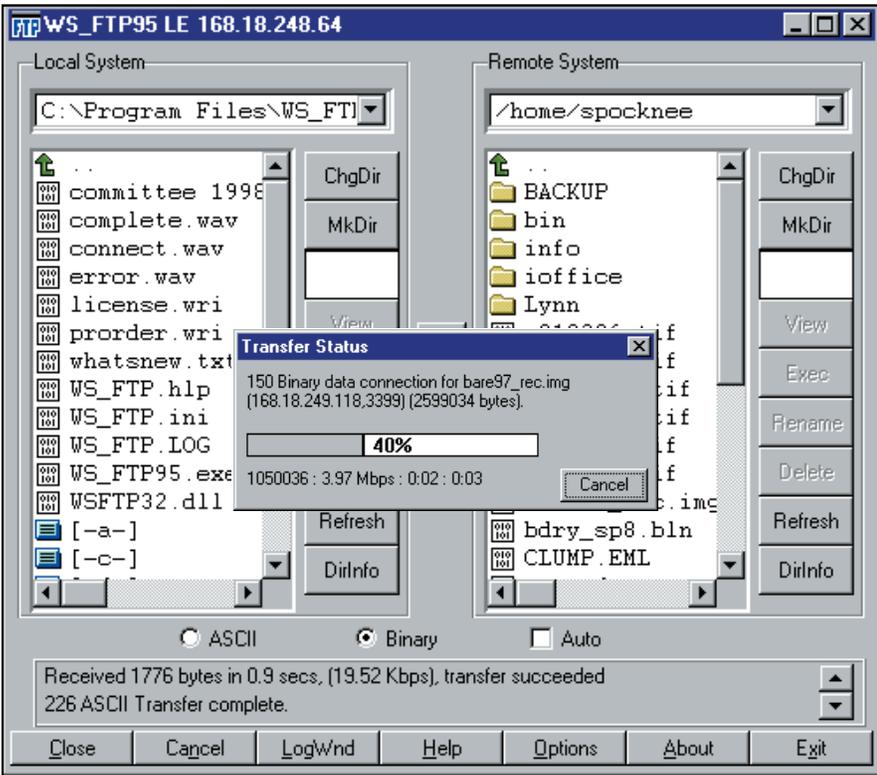


Figure 10. FTP program transferring a file.

In addition to email, FTP (file transfer protocol) can be used to transfer substantial amounts of information such as accounting data from you to your accountant or consultant (Figure 10). This method is particularly useful for data sets of more than 5 to 10 megabytes (such files often contain graphics or other images that take a lot of memory). Some email administrators restrict the size of attachments in order to save space on their servers for other users and applications. If this is the case with your ISP, FTP may be the perfect solution (Figure 10).

You will need software such as WS FTP Pro on both your and the receiving party's computers as to effect a transfer.

# Technical Support

Remote access software allows technicians at help desks to control your computer remotely to help you sort out software problems (Figure 11). They can diagnose problems and step you through problems in a “hands on” fashion.

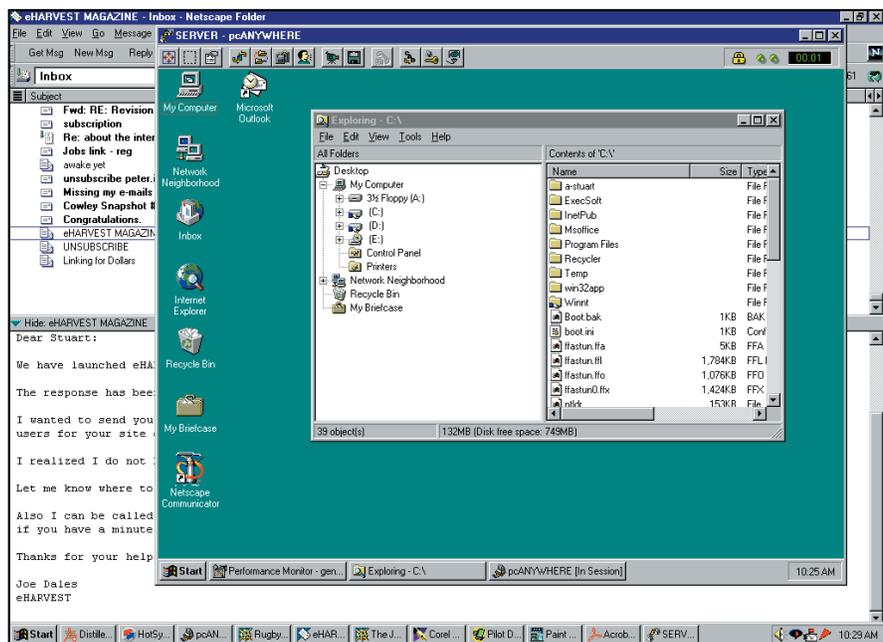


Figure 11. Screen in screen shot showing a PC being worked upon remotely by a software technician.

## Software Downloads and Upgrades

Many software companies allow downloads of demonstration packages — and even full software packages — off the Internet. You can also get patches, utilities and upgrades this way — an instant fix for those times you cannot afford to wait. The AgLink screen (Figure 12) is an example of information that can be downloaded.

**To locate other sources of software upgrades, visit some of these sites:**

**Agricultural Software Directory**

<http://www.agric.gov.ab.ca/agdex/agsoft/>

**Shareware.com**

<http://www.shareware.com>

**Nonags**

<http://www.nonags.com>.

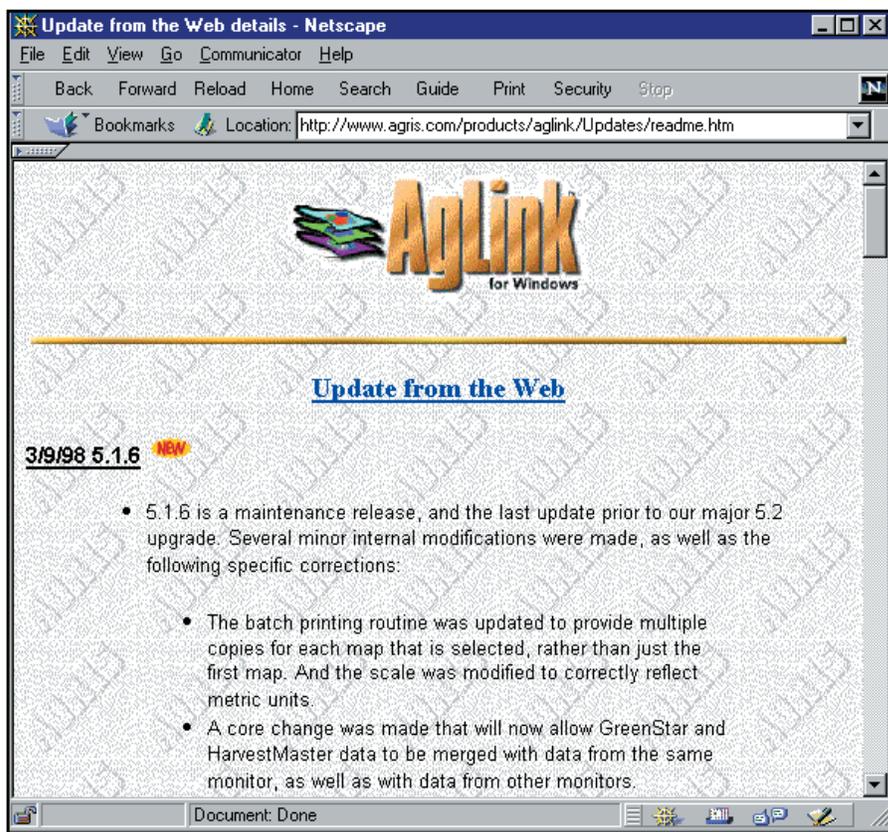


Figure 12. Download page for AGRIS at <http://www.agris.com>.

## Still want more?

We have only presented a brief snapshot of the ways in which you can use the Internet and the places you can go. To get the most out of the Internet, you will need to become proficient in navigating it yourself. Without question, one of the skills that all agricultural professionals will have to develop is the ability to efficiently find and retrieve information from the Internet. If you are not careful, it is simple to get bogged down in reams of irrelevant information. Although there is no best way of avoiding the chaff, there are a few simple steps that can be taken to avoid it.

1. Get to know your search engine. Not all search tools have the same syntax. By understanding the syntax you can target your queries to avoid irrelevant information. The five minutes you spend learning the syntax will probably be the most productive five minutes you ever spend on the Internet, period.
2. If you know exactly what you are looking for and can zero in on some specific key-words, then you will probably get better results using a search engine (ie., <http://www.altavista.digital.com>). If you're not sure of exactly what

you are looking for but just know the general topic, you would probably be better served by digging down through a searchable index (ie., <http://www.yahoo.com>).

3. Ask for help. Use the discussion groups to learn from others who have been surfing the Internet longer than you.
4. Use and support agriculture-specific search and link sites (eg. [www.AgriSurf.com](http://www.AgriSurf.com)). You are immediately cutting through to the layer in which you are interested – agriculture.

## Conclusions

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If you are not already using the Internet, the chances are excellent that you soon will be. The potential for farm management information is boundless. Most likely the

reasons you are, or will soon be, online are not agronomic. Internet access costs are much more often justified in terms of the benefits for education, communication, and

leisure. If you connect to the Internet for these other reasons, you might as well make the most of it for your farming operation, too.

**Mention of a specific product does not imply endorsement of it over any other product.**

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