In Short ■ by Russell Gum and Russell Tronstad

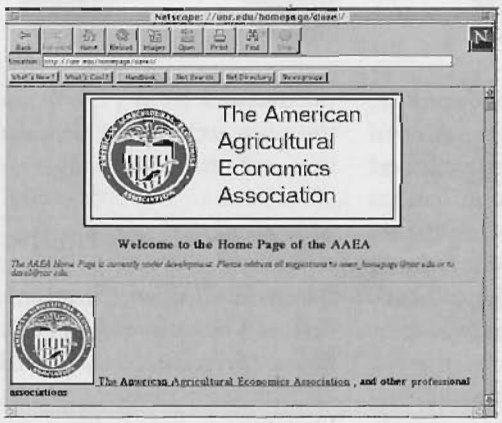
The World Wide Web: Applications in Agricultural Economics

The World Wide Web (WWW) is the fastest growing and now most used method of transferring information over the Internet, the global computer network that links over 37 million computer users in just the U.S. and Canada (CommerceNet/Nielsen Internet Demographics Survey, *http://www.commerce.net/information/surveys/execsum/exec_sum.html).* (Bold italics indicate the WWW address for a citation.) Over eighty countries connect to the Internet, and information delivery via the WWW has been growing at a phenomenal rate of approximately one percent daily in the last year (NetGenesis, *http://www.netgen.com/info/growth.html).* The explosive growth of the Internet is not a fad or a fluke, but the result of a digital free market unleashed *(http://www.economist.com/internet.htm).* Access to global information is now possible with a selection, cost, and ease of access never before available. As stated by John December, "The Web fulfills several 'niches' within the communications landscape like few technologies before it and offers a new set of expectations about information that breaks the traditions of linear print" *(http://sunsite.unc.edu/cmc/mag/1994/nov/websoc.html).* The CommerceNet/Nielsen Survey found that 8 percent, or 18 million, Canadian and U.S. individuals sixteen years of age and older have used the WWW in the past three months.

The WWW offers many significant advantages over current information delivery systems:

- low marginal cost of providing information to an additional user,
- timely vehicle for providing updates of information and software,
- compatability across all operating platforms,
- low cost to customize what an individual wants with user interaction,
- low fixed cost of setting up a server,
- low twenty-four-hour access costs,
- low cost of document storage,
- low cost to deliver fully formatted, graphic, color documents at printing press resolutions.

With a WWW browser (the users' software interface to the WWW) you can do data base searches and retrievals, submit specific information to be processed, send and receive files, retrieve and print publications in high quality formats with the click of a mouse, login to remote computers, participate in news groups, send email, and navigate or view hypertext and hypermedia documents. Clicking on hypertext words brings up related information. Hypermedia allows the user to select multiple types of media (e.g., text, sound, and motion). A WWW server (the software interface for information providers) can interactively collect information and instructions from remote users, process this information, and instantaneously reply to the remote user. Some examples of these capabilities already in place include



- searchable data bases for market news: *gopher://infoserver.ciesin.org/7waissrc%3a/catalog/Agriculture/agricultural-market-news*
- an interactive decision support system for culling range cows: *http://ag.arizona.edu/AREC/cull/culling.html*
- electronic forums for group dialogues about agriculture: *news:sci.agriculture*
- an electronic livestock market for beef and ratites: *http://www.crimson.com/livestock/*

WWW sites for agricultural economics information

The American Agricultural Economics Association has a home page under development *(http://unr.edu/homepage/davell).* A home page is much like a table of contents to a magazine; it gives an overview of what is available from a site. As of December 1995, twenty-four agricultural economic departments in the U.S. and abroad had home pages (most are listed at *http://www.ttu.edu/~aecovl/#academic).* In the U.S., sixteen of seventeen (94 percent) departments had a listing or brief profile of their faculty, staff, or students. Fourteen (82 percent) included a description of their undergraduate and graduate programs. Eight (47 percent) contained course- or class-specific information. Six (35 percent) had links under construction or functioning to Cooperative Extension. Similarly, electronic publications were available from only six of the home pages. Nine (53 percent) home pages had links to other agricultural economic sites.

Two (12 percent) departments listed upcoming seminars or activities. The composition for the other seven sites identified outside the U.S. was similar to the seventeen land grant departments identified.

In addition to information provided by academic departments, the Internet makes available a vast set of other agriculturally related economic data. Goffe *(http://econwpa.wustl.edu/other_www/EconFAQ/EconFAQ.html)* lists over one-hundred different WWW sources of information and data useful to economists. To improve timeliness and reduce publication costs, the Economic Research Service (ERS), National Agricultural Statistics Service (NASS), and World Agricultural Outlook Board (WAOB) release their reports electronically through the Mann Library of Cornell University (past reports can be accessed at *ftp://usda.mannlib.cornell.edu/usda/)*. Most of the data is organized by commodity, and files are generally in Lotus 1-2-3.WK1 format for easy access. Many reports can be received automatically via email within a few hours of their release time (send an email message to **usda-reports@usda.mannlib.cornell.edu** with **send catalog** in the body of the message for subscription information). The entire 1994 *Agricultural Statistics* publication is available electronically from an Adobe Acrobat portable document format (pdf) file *(http://www.usda.gov/nass/acrobat.htm)*. Readers for pdf files are available for virtually all operating platforms and all readers are free to download *(http://www.adobe.com/Software/Acrobat/)*.

The EconData service of Inforum at the University of Maryland includes thousands of economic time series, produced by a number of U.S. government agencies. These series include national income and product accounts (NIPA), labor statistics, price indices, current business indicators, industrial production, information on states and regions, as well as international data *(http://info.umd.edu:86/Educational_Resources/AcademicResourcesByTopic/Economics Resources/EconData/.www/econdata.html)*.

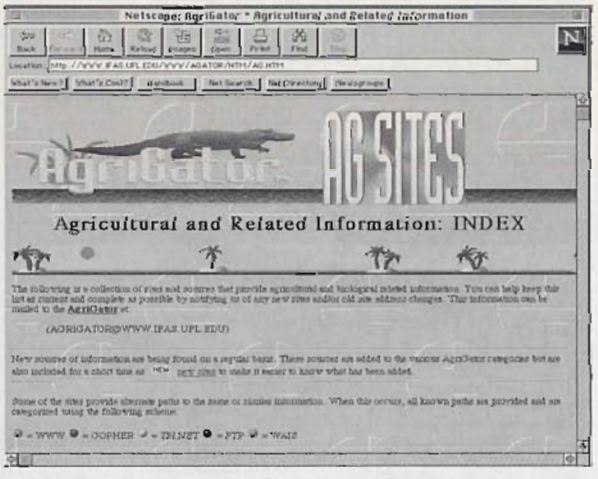
STAT-USA provides economic, business, social, and environmental data produced by more than fifty federal sources. A response to Vice President Gore's call for an Information Superhighway, it delivers hundreds of thousands of federal publications and statistical reports to U.S. businesses and the public *(http://www.stat-usa.gov/)*.

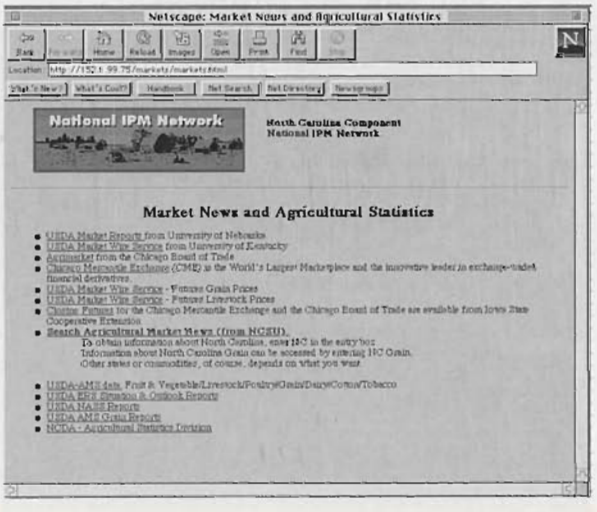
Current agricultural market news is available from several sources. See *http://152.1.99.75/markets/markets.html* for a comprehensive listing of market news sources. A listing of more general agricultural information sources can be found through Florida's AgriGator service *(http://WWW.IFAS.UFL.EDU/WWW/AGATOR/HTM/AG.HTM)*. Updated policy analyses and baseline forecasts are available from the Food and Agricultural Policy Research Institute *(http://ssu.agri.missouri.edu/ssu/fapri/fapri.htm)*.

The WWW will change how we access and share information

Many possibilities exist for enhanced regional, national, and global collaboration with the WWW. For example, instead of every state having their own reference library for collecting market information from the Agricultural Marketing Service, data can be compiled electronically at one location and shared over the WWW. See the Livestock Marketing Information Center's home page for an example of livestock data base sharing *(http://ag.arizona.edu/AREC/lmic/lmic-home.html)*.

The WWW can save substantial printing costs. The Texas Agricultural Extension Service "Leviathan Server" had a volume of transactions in Octo-



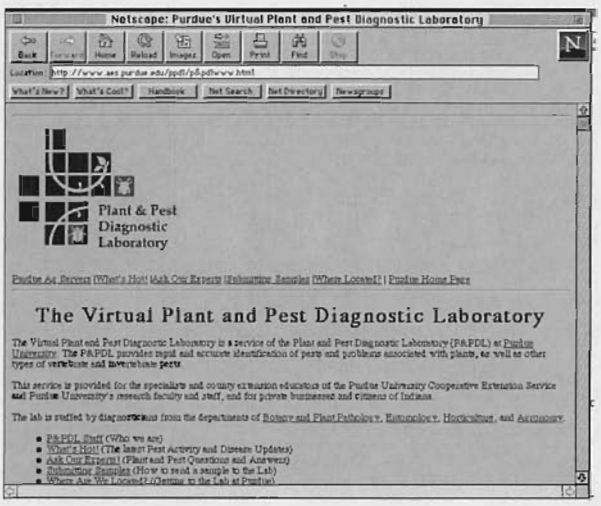


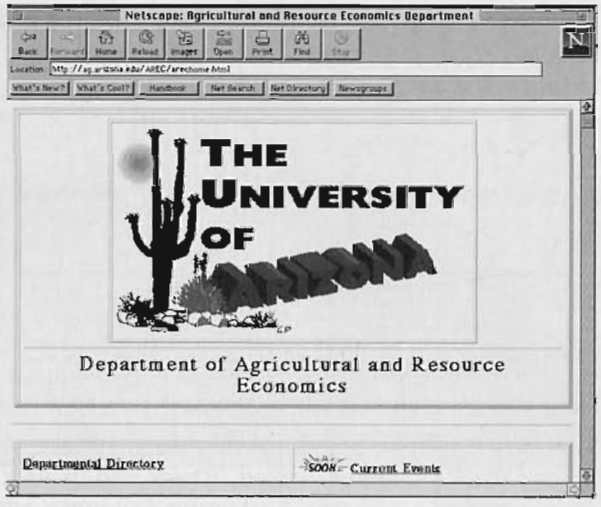
ber 1995 that averaged 14,211 hits and 89 megabytes of file transfers per day for the month of October. If just the "text only" files transferred for October were printed (215MB), estimated printing costs alone would run $3,440 *(http://Leviathan.tamu.edu)*.

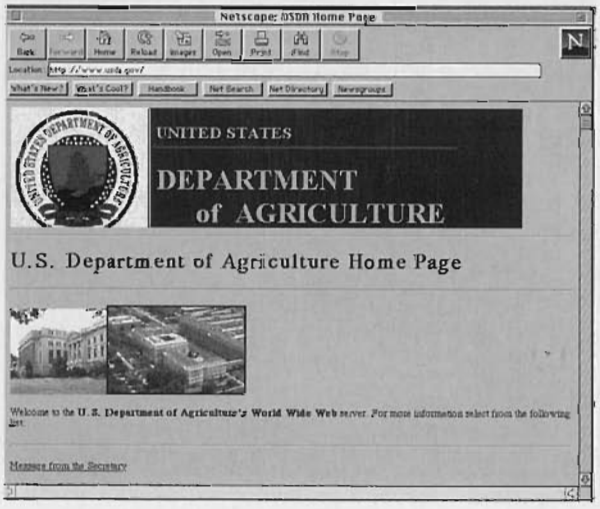
With Java, an object-oriented user-friendly programming language that operates independent of any operating system or microprocessor, we have the ability to deliver WWW pages with animation, sound, and links to real time data *(http://home.mcom.com/newsref/prnewsrelease67.html)*. This is not pie in the sky technowishing. Java browsers and applications are already appearing on the web (see *http:/www.sun.com/)*. Imagine a spreadsheet for comparing alternative mortgage specifications that will run on all the common computer platforms. Through Java, the mortgage applicant can also be linked to real time interest rate quotes. Opportunites exist for decision aides related to agricultural economic subjects to be linked with real time market data.

Extension's original three-broker process of researcher to specialist, specialist to agent, agent to client is not well suited for modern means of information delivery. This process is often untimely, of limited availability, and costly. The infrastructure and technology is available for even remotely located clients to directly access land-grant-developed information twenty-four-hours a day. Instead of specialists and agents delivering short presentations at meetings or traveling to work one-on-one with clients, much information could be brokered directly to clients. For example, rather than an agent or specialist driving to the field to identify a particular insect, weed, nutrient deficiency, pathogen, or disease, the WWW could be used by the farm manager to help make identification directly (e.g., see The Virtual Plant and Pest Diagnostic Laboratory of Purdue at *http://www.aes.purdue.edu/ppdl/p&pdlwww.html)*. This identification information can be provided instantaneously twenty-four-hours a day with the WWW. If the client is uncertain about the appropriate action to take, one-on-one information can be sought electronically or by more conventional methods. In the future, we expect specialists and agents will take even greater advantage of the WWW by making research publications, newsletters, decision aides, and timely information available electronically.

The WWW allows for twenty-four-hour access seven days a week, user controlled interactivity, colorful displays, animated graphics, sound, the ability to automatically connect to real time data, direct access to millions of people, and vast amounts of information. Its an indispensable tool for agricultural economists.







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