

THE RUTGERS COOPERATIVE EXTENSION BULLETIN BOARD (RCEBBS)

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Computer Bulletin Boards are the combination of software and hardware which permit callers from remote sites to communicate and share information by posting messages, exchanging files and communicate with each other in real time using interactive messaging. With the advent of the personal computer in the early eighties this capability spawned a boom in computer to computer communication, facilitated by the appearance of inexpensive yet sophisticated bulletin board software and modems capable of ever-increasing rates of information transfer.

While computer bulletin boards are today appearing more and more frequently in the corporate and academic worlds there are literally thousands of hobby boards throughout the nation. The software in use on these hobby boards is sometimes more versatile and user-friendly than that used in commercial applications by virtue of the heavy use that the "hobby" systems attract which translates into more feedback to the authors and thus more frequent refinement and revision of their software.

The computer bulletin board system (BBS) has three abilities which should make it of interest to those of us in Cooperative Extension—time-utility, labor efficiency, and accountability.

First consider time-utility. It collects and retains information from callers which it holds in ready access, providing much the same service as a telephone answering machine. Unlike the answering machine, however, the BBS is not limited as to the amount and complexity of information it can store, and it can handle graphical as well as text-based information. The BBS message system is the perfect tool for busy individuals who need to communicate but are not always accessible by phone. It eliminates "telephone tag". A busy farmer can leave a question on an Extension BBS at 11 pm and read the reply at noon the next day while the Extension Specialist he is communicating with is off to lunch.

Second, the BBS is labor efficient. It operates 24 hours a day, seven days a week, making its information available to callers even when no operator is present. It collects the day's messages and lets Extension professionals respond to all their mail in one or more sessions which can be scheduled for convenience. It is also remotely accessible with a portable computer, obviating wasteful travel and even permitting work from home. Information collected and stored on the BBS system accumulates and builds an easily accessible library which is just as accessible to new callers to the system as to the old hands who took part in the original dialogues. This is true of files and bulletins as well as correspondence in the message base provided the operator does not deem particular information dated and delete it when its purpose has been served.

The third virtue of a computer bulletin board is accountability. Any good system will maintain a log of all caller activity from which reports can be generated showing in great detail exactly how much and what sort of activity is taking place during the operational hours of the BBS. This information can be of great help in assessing relevance and popularity of features on the board. It also helps justify expense related to the system operation. The system operator (SYSOP) can soon get to know who the regular users are and which ones may be having difficulty utilizing the system. The log serves the SYSOP as a diagnostic tool when a user is having difficulty but cannot adequately explain where the problem is. Of course the log and the reports which can be generated from it are invaluable for reporting requirements.

The Computer Bulletin Board at Rutgers Cooperative Extension

Rutgers Cooperative Extension has operated a public access computer bulletin board system since October 1987. The system features information and discussions relating to agriculture and the environment. Specifically, it contains text files of most Rutgers Cooperative Extension publications, bulletins and newsletters from Extension Specialists, weather, agricultural news, and terminal market price information for produce and ornamentals as well as herbs, nuts, and exotic crops. The Rutgers Cooperative Extension Bulletin Board System (RCEBBS) also is affiliated with the New Jersey State Data Center and the Bureau of the Census, through which it obtains the latest releases of agriculture census, economic census and general census data. RCEBBS also features a unique, searchable, database of regulations and legislation

affecting agriculture; the database is maintained by Rutgers Cooperative Extension in cooperation with several other state agencies.

RCEBBS is participating in the national Extension CD-ROM project and added a double CD-ROM drive to the system in early 1990. The National Extension Sampler, as the disk finally came to be known, increased the volume of documents available on RCEBBS by approximately ten-fold. What follows is a summary of the contents from the disk itself:

The disc contains over 75 major collections and handbooks from the National Agricultural Library, USDA, and Extension Services across the nation. In addition, there are numerous smaller documents available on the disc, ranging from such topics as water quality to health and nutrition to community and economic development. Listed below are the collections names and sizes of the documents contained on this disk.

	approx. <u>pages</u>	<u>documents</u>
Alabama Pecan Production Handbook	314	27
California Teletip Factsheet Collection	318	293
Cornell Home Fruit Planting Guide	75	4
Cornell Pesticides and Groundwater Guide	18	1
Dear John Horticulture Newspaper Column	504	187
Delaware Police Management Guidelines	39	15
Electronic Mail Userid Lists	29	2
Florida Clothing Collection	68	13
Florida Factsheet Collection	743	90
Florida Manual of Minor Vegetables	148	13
FmHA Instruction Booklet	606	5
Indiana Volunteer Coordinator System	35	4
Iowa Feeling Good Collection	75	8
Kansas Nutrition Collection	179	24
Louisiana Extension Teletips	552	444
Maryland Retirement Planning Guide	61	12
Michigan Food Preservation Collection	244	23
Michigan Home Horticulture Collection	715	61
Michigan Home Maintenance Collection	236	13
Minnesota Cold Climate Collection	81	10
Minnesota Pollution Control Guide	58	5
Minnesota Social Sciences in Forestry	2530	27

	<u>approx.</u> <u>pages</u>	<u>documents</u>
Misc. documents not listed in a collection	1756	221
Montana Guide Sheet Collection	671	159
NAL Dairy Reproductive Management	154	26
NAL Extension Goat Handbook	394	69
NAL National Corn Handbook	257	31
NAL National Corn Production Handbook	167	21
NAL Pork Industry Handbook	857	101
NAL Soil Taxonomy	926	72
NAL Status of Warmwater Fish Farming	366	32
NAL Wood Handbook	231	21
NAL Woodland Workbook	198	20
National Dairy Science Database	2022	275
NC Region Educational Materials Project	1631	93
Nebraska Alternative Agriculture	1286	171
Nebraska Great Plains Songbirds	37	26
Nebraska Nebguides Collection	174	37
Nebraska Wildlife Damage Handbook	806	112
New Mexico Tree Disease Collection	37	4
North Carolina Working with Our Publics	566	38
NRAES Assessing Used Farm Equipment	25	2
NRAES Bramble Production Guide	173	15
NRAES Extinguishing Silo Fires	14	1
NRAES Livestock Building Fire Control	21	2
Ohio Agronomy Guide	32	4
Ohio Horticultural Notes	50	23
Oregon Nutrition Bibliography	1499	16
Oregon Vegetable Variety Recommendations	713	51
PENNPAGE's - Factsheets from Pennsylvania	9951	3581
Purdue Pork Production Handbook	125	14
South Carolina Extension Publications	1605	1012
Texas Adult Day Care Center Collection	308	34
Texas Alzheimer Family Support	50	5
Texas Aquaculture Collection	30	7
US Consumer Resource Handbook	176	28
USDA 1986 Fact Book of Agriculture	133	12
USDA 1989 Accomplishment Reports (NARS)	2984	1777
USDA 1989 Factbook	153	18

	<u>approx. pages</u>	<u>documents</u>
USDA 1989 Year Book of Agriculture	359	67
USDA Complete Guide to Home Canning	133	10
USDA FY88-91 Plans of Work (POW)	4546	2488
USDA Technology Transfer Publication	40	2
Utah Family Collection	86	9
Virginia Adolescence Collection	24	12
Virginia Extension Fact Sheets	824	703
Virginia Food Preservation Handbook	230	25
Virginia Horticultural Factsheets	1446	1092
Virginia Master Gardener Handbook	672	517
Virginia Pesticide Safety Collection	150	83
Washington State Transitions for Growth	303	30
Washington State Youth At Risk Series	153	48
Western Farm Management Collection	1131	85
Wisconsin Urban Phytonarian Handbook	789	163
Virginia Work Simplification Series	20	4

Interest Area Titles and Sizes

	<u>approx. pages</u>	<u>documents</u>
Crops and Horticulture	11,121	4136
Consumerism and Family	11,090	3539
Resources and References	285	33
Natural Resources and Wildlife	4532	766
Livestock	6928	1496
Pests and Diseases	1473	721
Staff Development and Administration	299	42
4-H and Youth Development	1714	397
Community Economic Development	1361	236
Farm Management and Ag. Engineering	1507	412
All documents	49,149	14,750

In a similar manner RCEBBS made available to its users a CD-ROM disk of "The 1987 Census of Agriculture from the Bureau of the Census, which contained data for all states and all of their counties nationwide. Users can quickly view tables summarizing the size and character of agriculture in any county in the nation in greater detail than found in most hard copy versions of this census.

Structure and Features

The Rutgers Cooperative Extension Bulletin Board Service (RCEBBS) is a computer bulletin board accessible to all modem equipped personal computers via telephone.

The Board can support four basic communication forms:

- 1) Messages
- 2) Bulletins
- 3) File Directories
- 4) Conferences

MESSAGES can be left by all callers who register with the Board. They can be addressed to other registered callers as private or public messages [ALL] or to the board operator [SYSOP]. (Registration is accomplished by simply answering a brief questionnaire the first time you call in and then answering a second, more detailed questionnaire accessed by selecting [S] "Script Questionnaire" at the main menu.) The maximum length of a message is limited to 99 lines.

BULLETINS are static messages available for viewing by all users. They can be of any length and the Board can feature up to 99 at any given time. For instance, many Extension newsletters are posted as bulletins, as is the daily Farmer's Forecast and the System rules and subscription information.

FILE DIRECTORIES can hold files which are either text, executable code, or both. The file directories serve as a library of material which can be downloaded by users for use or reading at a later date. Users can also contribute to the store of information available on the board by uploading files to the board. RCEBBS can maintain up to 99 file directories. Directories are a feature used to arrange files by subject matter content. Within each directory individual file names are listed with a one line description of what is in the file.

RCEBBS offers two helpful features for finding information in the file directories, "Zippy Scan" and "Locate a File". "Zippy Scan" searches the file directories for a given word or string of text, searching

both the file names and the descriptions that follow each file. "Locate a File" searches only the file names and should be entered following the DOS convention of a file name and extension. Wild card characters are acceptable when using "Locate a File".

CONFERENCES feature all three of the above features. Conferences usually are used to serve as forums for exchanges in a particular subject matter area. For instance we could have a "Fruit Production" conference or a "Field Crops" conference, or a "Gardening" conference. Access to conferences can be controlled by the system operator (SYSOP). Therefore both public and private conferences can be established by prior arrangement with the SYSOP. The dialogue accumulated as messages over a period of time in a conference could potentially become a valuable database. RCEBBS can search the headers of conference messages for specific words or phrases (strings), making searching of past discussions fairly easy. RCEBBS can maintain up to nine conferences at one time.

At this time RCEBBS has only one conference which is concerned with marketing and open only to Cooperative Extension professionals.

Getting On-Line

The toll free number of the RCEBBS is 800/722-0335; however, this is only accessible in New Jersey to paying subscribers. The board will answer callers whose communications software is set at either "N-8-1" or "E-7-1" but file transfers can only be done when a caller is using the "N-8-1" format. "N" stands for No Parity, "8" stands for 8 Bit Word Length and "1" stands for 1 Stop Bit. The manual which comes with the caller's particular communications software will tell them how to adjust these parameters. RCEBBS also has a second node which operates with a standard phone line with the number 201/383-8041.

On the initial call, callers will receive 6 minutes of access time and will be asked if they want to register. When they indicate that they want to register they are asked for some basic information (Name, Phone, Town). Completion of this initial questionnaire is necessary for subsequent subscription to the system. It also automatically gives them 30 minutes per day of limited access on the standard phone number (non-toll free). However, until a \$15 per year subscription fee is submitted, access to system features is quite limited.

At all times the caller is presented with menus or instructions describing the available options. For more on the menus, file directories and other system features see Appendix A.

Equipment and Software

RCEBBS runs on an Everex System 3000 which has a 80386 processor running the MS DOS 3.3 operating system and 170 megabytes of hard disk storage. The bulletin board software is PCBoard ver. 14.5 which is operated under the Desqview multi-tasking environment with Quarterdeck's Expanded Memory Manager for the 386. The machine has five megabytes of memory and two incoming lines to one internal and one external modem each of which is capable of transmissions at 300, 1200, 2400 and 9600 baud. The bulletin board is also supported by a Mountain tape backup, Hewitt Packard Scanner, and Calera Truescan Page recognition package all of which insure the integrity of the system and aid in the input and formatting of text for use on the system.

Currently one node has a statewide WATS (toll free) line and the other has a standard phone line.

File transfer protocols supported include ASCII, Xmodem, Ymodem, and Zmodem.

Use and Evaluation

As of January 1993 the system has almost 2,700 users and has received 55,000 calls since its inception in October 1987. About 300 users pay the \$15 annual subscription fee which gives them full access to all the features on RCEBBS and one hour per day on the toll free line. Two percent of the callers are engaged full or part time in agriculture, a statistic which echoes the overall ratio of farmer to non-farm population in New Jersey. Another two percent of the callers report being actively engaged in environmental or educational posts or organizations. The average age of our callers is just under 30 years. The majority are male. Most call the system once a week.

Our survey of users' favorite features on the system revealed an almost even split of opinion favoring the bulletins, fact sheets, message base, and other files on the board. In the same survey 43% of those responding said that the RCEBBS had saved them either time or money, some putting a value of up to \$500 on the information they had received from the board. The overwhelming majority of comments from users of the system are positive. Most state that the board is well organized, easy to use, and contains valuable information. Many mentioned that this sort of service has been long overdue from government agencies and the university. Many also mention that the toll free line allows them to make much greater use of the system and derive more benefit from it. This

may be connected to the time needed to explore and learn what is on the board. One can imagine how little use libraries would get if visitors were charged by the minute while inside.

In the past year RCEBBS received 6,272 calls and 921 downloads were recorded on the system. These were files either of Extension Fact Sheets, Bulletins, or files containing executable programs for MS DOS computers collected from the Experiment Stations around the country or uploaded to the system by our users. System reports contain the name of each file transferred and the number of times it was downloaded. 417 different files were accessed in this manner.

In 1992, 1,189 new users signed on to the system. Daily use ranged from 15 to 20 calls per day and the system was in use about 10% of the time overall.

One of the questions asked of callers as part of the registration process is "What is your occupation or the activity you spend most of your time on?". The responses reveal a broad cross section of society uses the RCEBBS with many students and professionals in the mix.

The evening hours from 5 pm to midnight are the most active on RCEBBS reinforcing the utility of an automated 24 hour a day information delivery system such as this.

Future Plans

RCEBBS has enjoyed a high level of use and an equally high level of acceptance and praise from its users. The percentage of potential users from the commercial agriculture sector is still not high enough but we believe that it is incumbent on Extension to provide a worthwhile service via computer before expecting farmers to invest the time and money necessary to access that service. The computer bulletin board as an Extension delivery tool was and is still somewhat ahead of its time. We have learned much in operating this public access system, not only about hardware and software, but about people and their behavior when given access to an information resource which allows them not only to read but also to contribute comments and questions.

CD-ROM drives and the databases they read are now becoming easily available and relatively economical. However they are even more economical to users if offered through the medium of an online service such as RCEBBS. We have incorporated two such CD-ROM based resources into our system and continually look for the opportunity to include more. Major considerations are license restraints placed on

individual CD-ROM databases and the cost of adding additional players to our system.

Text databases searchable by keyword requests were a new addition to RCEBBS in 1989. We have expanded the selection of legislative, regulatory, and marketing information available for searching in this manner as a means of improving the ability of farmers to keep pace with the fast changing world of government regulations and the market. Other possibilities for this format would be pesticide use and safety information, toxicological information relating to pesticides, and an interactive calendar of events which would allow callers to post dates as well as simply to read existing data. The uses for computer bulletin boards are limited principally by one's imagination, not by existing technology or software.

One exception to this has been images, which still were limited by their relatively large size and lack of a uniform software format. However, we are just about to offer a collection of Rutgers Cooperative Extension Fact Sheets and Bulletins as files for download in the encapsulated postscript (EPS) format. These files can be sent directly to a postscript printer using the DOS "Copy" command and will produce a fully formatted document including all fonts, tables and graphics. This is our first venture into using an image-based format for information delivery and it has the limitation of only being immediately accessible to users who have access to a postscript printer. Further evolution of this approach will include offering one or two other image formats which will afford universal access.

An interesting possibility that is now possible with the move to image-based documents is the integration of fax modems and special software to allow the image documents on RCEBBS to also be made available to users who have fax machines. Several companies and institutions are now offering fax document retrieval directly from a touch tone phone. Preliminary discussion of this possibility with Extension audiences has generated strong favorable comment and we will look carefully at this as a future option. Software exists to convert the EPS format files to any of the commonly used fax formats.

Another goal is to make RCEBBS accessible over the Internet. Currently the Internet is not easily accessible to the general public and thus we have not made this link a high priority. But it appears that the Clinton Administration plans to enhance access and capability of this magnificent information highway and thus it would behoove the cre-

ators of any online information repository to eventually make their resources accessible through it.

It is hoped that New Jersey and Rutgers University will be among the leaders in opening up Internet access to the general public.

APPENDIX A

What Will You See?

The Main Menu

To help orient the new user the Main Menu of RCEBBS is reproduced below. The menu is used by selecting the first letter of each menu option and entering it at the command line which follows when online.

In particular new users should note the option "Help Functions" (H). Online help is instantly available for any of the menu functions simply by selecting "H" and then, in response to the request from the board, specifying which menu option you would like to have explained further.

=====RCEBBS MAIN MENU=====

A)bandon Conference	G)oodbye (Hang up)	O)perator Page	T)S)Txt Srch Msgs
B)ulletin Listings	H)elp Functions	OPEN a DOOR	U)pload a File
CHAT between NODEs	I)nitial Welcome	P)age Length Set	UB Upload Batch
C)omment to SYSOP	J)oin a Conference	Q)uick Msg Scan	USERS List Users
D)ownload a File	K)ill a Message	R)ead Messages	V)iew Settings
DB Download Batch	L)ocate Files(name)	REPLY to Msg(s)	W)rite User Info
E)nter a Message	M)ode (Graphics)	RM)Re-Read Mem #	X)pert On/Off
F)ile Directories	N)ew Files(date)	S)cript Question	Y)our Per. Mail
FLAG for download	N)EWS file display	T)rans. Protocol	Z)ippy DIR Scan

SELECT Conferences for Scanning or Reading

The Bulletin Menu

As further illustration of the features available on RCEBBS we have reproduced the Bulletin Menu which appears when "B" is selected at the Main Menu.

=====RUTGERS COOPERATIVE EXTENSION BULLETINS=====

1. CALENDAR OF EVENTS - Meetings and educational events of interest to Extension Clientele.
2. THE FARMER'S FORECAST - Agriculturally oriented weather.
3. HORTICULTURAL ENGINEERING REPORT - Bill Robert's newsletter.
4. PESTICIDE UPDATE - Information on recent changes in pesticide labeling, regulations and applicator training.
5. RUTGERS FRUIT, VEGETABLE & FIELD CROP IPM NEWSLETTER
6. THE GROWING COLUMN - Claire Liptak, Somerset County Agent
7. BUSINESS MANAGEMENT IN AGRICULTURE (Extension Course)
8. SYSTEM USE STATISTICS- for RCEBBS Nodes 1 & 2.
9. FINANCIAL TIP OF THE WEEK- From Rutgers Cooperative Extension Home Economist, Barbara O'Neill.
10. WHAT IS RUTGERS COOPERATIVE EXTENSION-
An introduction to the organization that sponsors this board.
11. NEW YORK TERMINAL MARKET PRICES - Fruit and Vegetables.
12. PHILADELPHIA TERMINAL MARKET PRICES - Fruit and Veggies.
13. INSECT & DISEASE NEWSLETTER - Dr. Louis Vasvary et al.
14. PA. HAY MARKET PRICES
15. HOUSING AND ENERGY NEWS - Dr. Joseph Ponessa
16. FOOD TECHNOLOGY UPDATE - Dr. Don Schaffner, Ext. Food Science Specialist.
17. SUBSCRIBING TO RCEBBS
18. RCEBBS SYSTEM POLICIES
19. AGSAT PROGRAM SCHEDULE
20. FARM BROADCASTER'S NEWSLETTER
21. WEEKLY WORLD WEATHER AND CROP REPORT
22. OTHER AGRICULTURAL COMPUTER BULLETIN BOARDS

Each Bulletin may be displayed on your screen by entering the appropriate number at the prompt which follows the bulletin menu online.

The File Directory Menu

Likewise this is the menu which appears in response to entering "F" at the main menu. The contents of each File Directory will be displayed when the appropriate number is selected.

=====FILE DIRECTORIES=====

- 1) The Agricultural Library
- 2) General Interest
- 3) Pesticide Information
- 4) The Fact Sheet Library
- 5) The Apple Orchard
- 6) U of Mass. Fact Sheets
- 7) RCE Bulletins
- 8) Census Data (via St. Data Ctr.)
- 9) Recent Uploads

A Typical File Directory

Note that the files are arranged within each directory in order of date of posting and the file name is followed by the size of the file in kilobytes and the one line description of the file's contents.

On the RCEBBS, files with .ZIP extension are "archived" and need to be unpacked with a utility program, PKZIP. Such files can only be accessed by IBM compatible computers.

All text files are stored on RCEBBS in nonarchived ASCII format and either have no extension or are followed by an extension other than ".ZIP". These files are accessible to virtually all makes and models of computers.

=====THE RCEBBS AGRICULTURAL FILE LIBRARY =====

BEEF.ZIP	41466	10-08-87	Beef production guide for Lotus (Colorado)
BUSMODEL.ZIP	107629	10-08-87	Wks files for 3&5 yr. farm business models
CALIB.ZIP	8089	10-08-87	Sprayer Calibration Aid for Multiplan (Clemson)
CAPINV.ZIP	9818	10-08-87	Wks files on Capital Investment
CAR.ZIP	8834	10-08-87	Automobile Trade Analysis (Mississippi)
COUPONS.ZIP	40960	12-23-87	Keep track of your store coupons
DFOR.ZIP	12964	10-04-87	Dairy Ration Balancer (Mississippi)

A master list of all files on RCEBBS is created each day under the name MASTER.ZIP.

A complete set of the online help texts is contained in the files PCBHELP.TXT (ASCII text) and PCBHELP.ZIP (Archived ASCII text).

The Doors

The CD-ROMs and text databases on RCEBBS are accessible through a feature called a Door. When in a Door the user is really using an external program that was not originally written as part of the PCBoard software. This gives the system operator great flexibility for expanding features on the board but is virtually transparent to the user. This is the current Door menu:

=====RCEBBS DOORS=====

- 1) TEXT SEARCH DOOR: Contains the following "textbases":
 - A) Summary of NJ law and regulations relating to Agriculture
 - B) NJ Pesticide Control Regulations
NJAC Title 7, Chapter 30, Subchapters 1-10
 - C) Scientific Literature on Alternative Farming Systems. 6,289 citations ranging from 1916 to 1985 created by the USDA and North Carolina State University. Authors: R.H. Miller, L.D. King, P.G. Sullivan
 - D) The Urban Phytonarian Handbook - A complete guide to home horticulture from the University of Wisconsin.
 - E) Alternative Agricultural Opportunities Bibliography
- 2) NATIONAL EXTENSION CD-ROM SAMPLER
12,000 Documents online from around the nation. One of the most extensive information collections available, with full text search.
- 3) U.S. CENSUS OF AGRICULTURE CD-ROM

APPENDIX B

Addresses of Software Vendors

DESQVIEW is a product of Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405.

PCBOARD is a product of Clark Development Company, Inc., P.O. Box 571365, Salt Lake City, UT 84157-1365.

TRUESCAN is a product of Calera Recognition Systems, 2500 Augustine Drive, Santa Clara, CA 95054.

MS DOS is a product of Microsoft Corporation, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717.

PKZIP is a product of Pkware, Inc., 7545 N. Port Washington Rd., Glendale, WI 53217.

You are Cordially Invited to Call Us!

RCEBBS is continually evolving so it may be possible that when you call you will find some slight changes or additions to the features described above. It is our goal to provide the best computer based information service in the state that deals with agriculture and natural resource information.

Your comments and suggestions will be appreciated.