

Ibaraki University Agricultural Information

Bulletin Board System

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Introduction

It has been said for a long time that Japan is going to start for highly informational society. Our daily life is sure to have become informational and computerized rapidly in such various kinds of social field as finance, mass-communication, transportation, and so on. While agriculture cannot be an exceptional case of this rapid new trend, Japanese agriculture faces its most difficult problems to be solved at present, which are as follows; how to internationalize its productivity, and how to survive from freely imported agricultural products.

At first, Japanese agricultural production must become more effective and the circulation of agricultural products must be modernized and simplified to lower the price of the products. From this point of view, the computerization in agricultural business is expected to play its great role in the field of communication of agricultural information.

Secondly, the modern farm management work, itself, is very complicated for an average husband or house wife in a small-scale family farm. Their daily management work must be aided by some personal computer application so that they may concentrate their attention to their production activities. The situation is quite the same as in the U.S.^{1) 2)}

Under the circumstances mentioned above, it should be inspected what a status of computer communication and application there exists around rural farming areas of Japan at the present time.

In 1987, 3,657 computers (including some personal computers) were working at agricultural cooperating unions throughout Japan mainly for their own accounting businesses, and 53 computers at agricultural control centers were for the production control, the analysis of farm management, and so on.³⁾ Each of the Japanese prefectural governments are constructing their own agricultural information center in order to make their agricultural extension works more effective, and 598 personal computers have been equipped with at 541 prefectural agricultural extension work offices (610 offices in total throughout Japan) as terminal and stand-alone facilities, on which such application softwares as a word processor, a spread sheet, and so on, are running for daily work use in addition to the communication with their host computers.

The rural type CATV is running at 12 localities and other 5 CATV stations will come to be in action at other areas within 1988, which are going to offer some agricultural information together with the daily TV programs.

The cable broadcast telephone systems, which are utilized chiefly in the transmission of agricultural information, have been spread far and wide in Japanese rural farming areas since 1956. In 1986, 635 stations of the systems are still actively working and broadcasting everyday to 1.44 million terminals in total.⁴⁾

On the other hand, they say³⁾, about 500 microcomputers are estimated to be in action in order to control the environment within horticultural vinyl sheet houses and domestic animal cottages. Speaking with the micro and personal computer, the real number of them, applied to the agricultural business, cannot be enumerated so correctly at the present time, because they have been increasing in their numbers very rapidly since 2 or three years before. The aims of their applications are variously ranging from the environment control mentioned above to hobby use only.

Though not a few domestic application softwares for agricultural use have been released from many software houses in Japan, most of them support only a part of farm management works, and, if not so, they are very expensive, so we have experimentally developed some "integrated" farm management application softwares as an integration model with assistance of many of our undergraduate students. Among these applications, there are, for example, "Swine farm management system"⁵⁾ and "Agriculture sensus information retrieval system"⁶⁾. "Swine farm management system" isn't so complete and integrated in a large scale, but it has been welcome by many swine farmers, who are using it for their practical daily use, on account of its convenience and easy handling. In this system, they can select such many of their own jobs as the word processing, the bookkeeping, the noting on field works, the sale record keeping and the calculation on feeding at one touch of a function key. It means "integration".

However, our application programs are being improved and evolved constantly even at the present time. In the process of planning, coding and debugging these application programs, it is needed that our laboratory contacts so frequently with our users, the farmers dwelling at remote local areas, who are able to tell us where some troubles happened to occur on the way of running and what they want in their system when the next version is released, and ask us so frequently how to handle our application softwares. The new improved versions should be issued soon after the completion of debugging and adding some new functions. So we could not help setting up an easy and convenient communicating system, titled "Ibaraki University Agricultural Information Bulletin Board System (IUAI BBS)", which is a personal computer communication system between our laboratory and our users.

BBS system planning

IUAI BBS was designed for the NEC PC9801 personal computer equipped with a hard disk of the content of 20~80 megabyte memory. COMSTAR 2424 was used as its modem, because of its reasonable price, where an average Japanese farmer can afford to buy it.

The NEC PC9801 has become the most popular personal computer recently in Japan. Many kinds of peripheral equipments and more than 8000 application softwares are available in 1988. The

more application softs there are, the less effort we will make when we are developing the new soft wares.

COMSTAR 2424⁷⁾ can send data at the speed of 2400/1200 bps (bits per second) in the mode of class 5 level of MNP protocol, as you will see on Table 1.

Both the host and terminal program, whose name were "IH24A" and "RIFGTERM", were code in MS-C language⁸⁾ running on an operating system, MS-DOS (Micro Soft disk operating system) version 3.1, and were planned so as to make the followings possible;

- ① to send the image data and display them on a screen as soon as possible,
- ② to send and receive such binary data as compiled programs without any errors,
- ③ for the host side to maintain and control easily a lot of files stored in user's hard disk, not in the host's disk,
- ④ and for terminal users to

Table-1 Specifications of COMSTAR2424AT MNP MODEM

●Data communication	full duplex system
●Transfer rate	2400/1200bps start-stop synchronous system CCITT V. 22bis
●Signal frequency	1200HzLow Band 2400HzHigh Band
●Access mode	hand/auto
●Interface level	CPU: ±5~15V LINE:600 Ω
●Hand seek	CCITT V22bis
●Error free function	MNP class5
●Auto-dialing	PB/DP(10pps/20pps)
●Automatic transfer function	①CCITT V.25bis ASYNC 9, 10, 11bit ②AT command

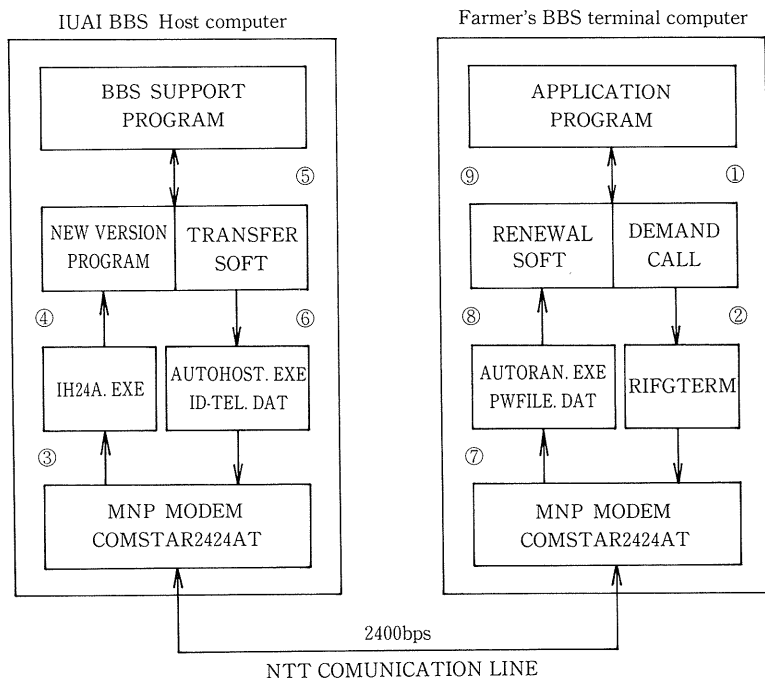


FIG.1 Program maintenance process by using IUAI BBS system.

send their mails to us and other users at minimum key touches, that is, in a easy way.

The features mentioned above are very important not only in case where the host and users communicate with each other, but also especially where BBS functionates as a data base of agricultural information. As most of our users have not received any formal education on the computer science at present, the feature ③ and ④ are absolutely necessary for our user to access to the host computer through BBS network and for the system operator to send the newly revised programs, which have been debugged in a case or added some new functions in another case.

As for the terminal software, named "IRFGTERM", it is expected that it must be an auto-start program, and then display some screens of the menu of jobs so that users may select an appropriate job according to their will soon after a start button is pushed. In case our users want to download some information from BBS into a file stored within their hard-disk, it is hoped they can do their jobs without any complicated and troublesome procedures. A program, "MENU.COM", offered in the version 3.1 of MS-DOS⁹⁾, was very helpful in our coding process.

A front end processor for the transformation into kanji-character, named "MTTKV2"¹⁰⁾ released from a soft house, "Kanri Kogaku Kenkyuujo", was employed as our standard kanji-character input program.

IUAI BBS should support at least a bulletin board, an electronic mail, and an electronic conference service for its user, which are ordinally supported in a common BBS.

Structure and functions of IUAI BBS system

The network structure of IUAI BBS is illustrated in FIG.1. The host computer, NEC PC9801 VX21, is connected with ITEM M580 (80 megabyte memory) as an outer hard disk. Though our user is originally supposed to access to the host with his NEC 9801 computer, actually speaking, any personal computer and any modem may be able to be used as a terminal device. NTT telephone line connects between the host and the terminal modem. The telephone number of IUAI BBS is 0298-87-7088. 3 levels of the access speed are supported, which are 300/1200/2400bps.

When the start button of the terminal computer is pressed in, a menu for user's job selection will appear on the display screen. A user may select his own job among the following items by pressing a corresponding function key or the return key soon after shifting a cursor to the corresponding item with cursor shift keys.

- f • 1 Starting up the Farm Management System
- f • 2 Connecting with IUAI BBS
- f • 3 Receiving the revised program or the arranged data
- f • 4 Writing your electronic mail
- f • 5 Starting up the word processor "SHIN MATSU"
- f • 6 Starting up the spread sheet "VP PLANNER"
- f • 7 Starting up the data base "dBASEIII plus"
- f • 8 Starting up the chart "MS CHART"

f · 9 Shifting to MS-DOS

The press of f · 1 function key leads to user's everyday work , that is, bookkeeping, recording on daily farm affairs, and so on.

When a user presses the function key f · 3, his terminal computer will be automatically connected to the host computer through NTT phone line and controlled by the host manager for the maintenance of the user's hard disk. The host manager will be able to send some revised programs or some summarized user's farm data into his hard disk, replacing the old program or the old summary. After pressing f · 3 key, the user must wait a little while until he notices a short comment appear on his display screen. You can see FIG.2 to know how to make this process run.

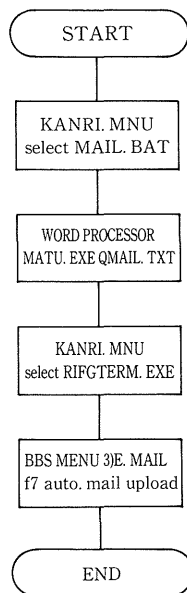


FIG.-2 Automatic electronic mail upload process.

The common terminal application softwares need a little troublesome procedure to upload an electronic mail to the host computer. Such trouble is apt to dampen our user's enthusiasm to the IUAI BBS. In case a user presses the function key f · 4, his control will be shifted to the word processor "SHIN MATSU". After writing a letter, it will be

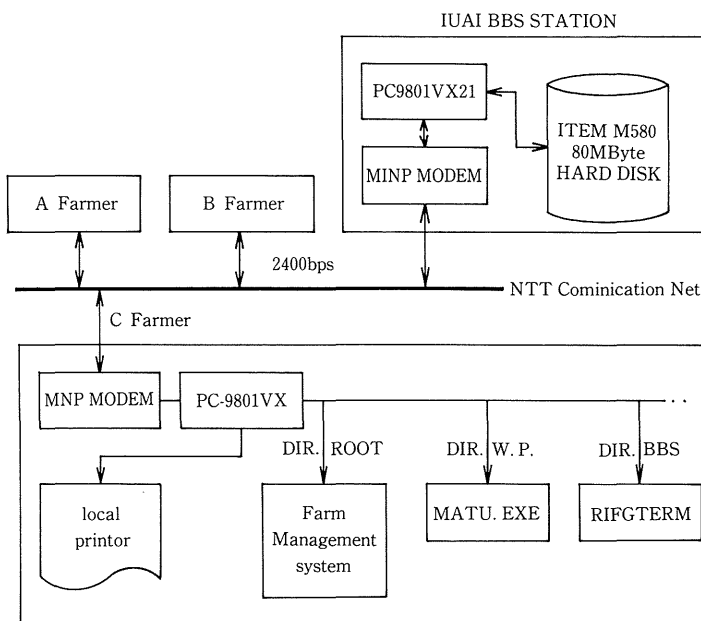


FIG.-3 Systems of IUAI BBS Network

stored in a definite file named "QMAIL.TXT". As you see later, the file can be uploaded at one touch of the function key, when a user wants to upload the mail. See FIG.3 in detail.

If our user selects the function key f • 2, his terminal computer will be automatically connected to the host computer of BBS and he will be able to make use of IUAI BBS. The first menu in IUAI BBS is as follows:

1. Announcement from the system operater
2. Public bulletin board
3. Electronic mail
4. Conference room
5. Public domain for programs
6. Registration office for a newcomer
7. Bulletin board classified by subjects
- E. Disconnection

The item 7 contains still more details, submenus, as follows:

1. Agricultural news (data base)
2. Consultation on general problems of farm management
3. Consultation on farm management system
4. Information exchange on the rural life
5. How to utilize a personal computer (data base)
6. Agricultural graphic image information (data base)
7. Back to the initial menu
- E. Disconnection

During connecting with the IUAI BBS, user's function keys have the following functions respectively. The user can control his action with the press of function key.

- f • 1 Re-connection with the host computer
- f • 2 Stopping of hard copying the screen
- f • 3 Starting of hard copying the screen
- f • 4 Stopping of download
- f • 5 Starting of download
- f • 6 Input of kanji-characters
- f • 7 Automatic mail upload (Sending the text file named "QMAIL.TXT")
- f • 8 Temporary shifting to MS-DOS
- f • 9 Stopping of upload
- f • 10 Starting of upload

The IUAI BBS has opened in April of 1988 and maintained experimentally by the staffs of our laboratory. The total number of participants to the BBS sums up to 120 at the end of september, 1988.

Conclusions

The farm management aided by personal computers will be indispensable to Japanese family farmers in a small scale, some years later. At the present time they can get excellent hardware at reasonable prices, but cannot find easily such softwares as integrated for their farm management and handled at ease. Agricultural concerns must hurry up to develop the softwares for them.

The physical transfer of well laid-out ideas to the computer is easy, but the transfer of poorly developed ideas is nearly impossible. When a system analyst is planning his agricultural application and a programmer is coding its program, they had better consult with their clients as frequently as possible, in order to make the application more effective and convenient for the future user. Furthermore, after the release of the application, they must answer many user's question how to handle it and correct some part of the program on account of debugging and small scale improvements pointed out by them.

Our BBS computer delivery system is on solid ground after many growing pains. Our advancement in developing the agricultural application softwares ha been accelerated since IUAI BBS started. The mutual communication between our laboratory and users makes remarkable progress, and particularly the distribution of some revised programs to each user has become to be completed within only a little time.

Finally our best appreciations are extended to Mr.Hidejirou Yokota (system house "CANS"), who mainly coded the host and terminal program and was so kindly helpful for setting up IUAI BBS.

References

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要 約

- 1) パソコンを導入し、農業経営の効率化を図る機運が高まっている。これまで資源情報計画講座で開発した農業経営の統合ソフトウェアのメンテナンスのために、「茨城大学農業情報BBS」(電話0298-87-7088)を1988年4月より実験的に開局した。
- 2) ホストコンピュータはPC9801VX21, ハードディスク80メガ, モデムにはCOMSTAR2424ATを使用している。任意のパソコン・モデムから, 300/1200/2400bpsのいずれかでアクセス可能である。
- 3) C言語(MS-C)で記述したホストソフトウェア“IH24A”はバイナリ転送が可能である。ターミナルソフトウェア“RIFGTERM”を利用して, ターミナルから画像情報データの利用ができる。
- 4) 改訂・修正された農業経営のプログラムは簡単な操作で, 農家のハードディスクの中に転送できる。また, 資源情報計画講座側は, 農業経営システムによって作成された農家の経営データを, BBSを介してとりだし, 経営研究の素材にすることができる。
- 5) BBSからメール・農業情報などのダウンロード, BBSへメールのアップロードが, 市販ソフトに比較するときわめて簡便に実行できる。パソコンに不慣れな初心者でも取扱に困難を感じない。

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