CURRENT SITUATIONS AND FUTURE FIGURE OF AGRICULTURAL INFORMATION NETWORK SYSTEM FOR FARMERS' USE IN JAPAN

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INTRODUCTION

It is said that the ratio of farmers who possess personal computers and use the Internet is around 60 percent and over 40 percent respectively (surveyed in 2005 by the Ministry of Agriculture, Forestry and Fisheries (MAFF)). However, the number of farmers, who use the information network systems for their own business, is limited. This is because the advantages of using information network systems are not obvious.

Under the situations above, I studied the future figures of the use of agricultural information network systems, which will contribute to the improvement of farm management in Japan.

The methods of the studies are as follows.

Firstly, I will make clear the general situations of usage of the agricultural information network systems including the Internet from the results of the surveys conducted by MAFF and myself.

Secondly, I will analyze the cases of farmers' usage of information network systems. The details on how to examine them are; I will make clear the problems, etc. of the agricultural information network systems by analyzing the current situations of (1) the "Azemichi Network System", which is the unique network system for farmers and is managed by the Japan Agricultural Development and Extension Association (JADEA for short), (2) the homepages managed by prefecture government and agriculture extension centers, and (3) the homepages operated by farmers themselves.

Thirdly, I will consider the current situations and the problems of those network systems mentioned above.

Finally, I will propose the future figures of the information network systems for farmers including the involvement in the agriculture extension services in Japan.

THE CURRENT SITUATIONS AND PROBLEMS OF FARMERS' USE OF INFORMATION NETWORK SYSTEMS

General situations of farmers' use of information network systems

The ratio of the farmers who possess personal computers and use the Internet is shown in Table 1. The ratio of farmers, who possess personal computers and use the Internet, among all farmers, is around 60 percent, and over 40 percent respectively. However, the ratio of farmers, who use the information network systems for their own business, is only 20 percent of all farmers.

According to the details of the survey conducted by MAFF, the ratio of farmers, whose purpose for possessing personal computers is "farm management such as bookkeeping, etc.", is about 60 percent of the farmers. However, the ratio of farmers, whose purpose is "acquiring information on marketing, weather, etc." by the use of information network

systems, is about 40 percent.

Moreover, the ratio of the farmers, who use the Internet with mobile phones, is around 30 percent.

In short, the ratio of "Farm houses where farmers use personal computers for their own business" in 2005, is two times as many as that in 2001. However the other situations of farmers' usage of personal computers and the Internet hadn't changed so much between 2001 and 2005.

On the other hand, I conducted questionnaires and field surveys on the content and methods of extension activities aimed at the farmers in both Asparagus production area in Yamagata Prefecture, a northern part of Japan, and sweet potato production area in Chiba prefecture, near Tokyo, from December 2005 to March 2006 (see table 2).

Table 1. Results of Surveys on Farmers' Usage of Personal computers and the Internet

(Unit:%)

Usage of personal computers and The Internet	Ratio	
	2001	2005
Farm houses possessing personal computers	53.1	61.2
Farm houses where farmers use personal computers for their own businesses	9.7	20.7
Farm houses where approved farmers use personal computers for their own businesses	36.2	36.5
Farm houses where farmers use the Internet with personal computers	32.8	42.2
Farm houses where farmers possess mobile phones	74.3	70.9
Farm houses where farmers use the Internet with mobile phones	42.0	31.5

Source: "The survey on farmers' usage of personal computers and the Internet", MAFF, 2002 and 2005

Table 2. Outline of production areas

|	Asparagus production area in Yamagata Prefecture	Sweet potato production area in Chiba prefecture
Number of Farm houses	65	78
Cultivated areas per farm household	About 150 a	About 250 a
Farmers over 50 years old	80 percent	70 percent

Source: made by author based on the questionnaires
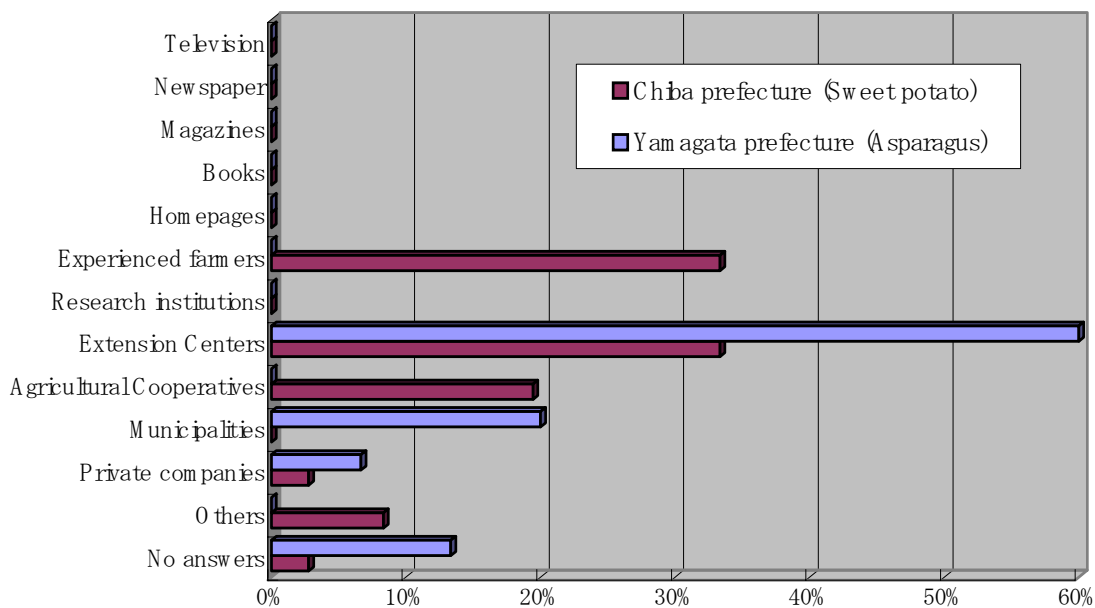
Figure 1. Sources of acquirement of new technical information
Source: Made by author based on questionnaires
Notes: Farmers have to choose two as information sources.
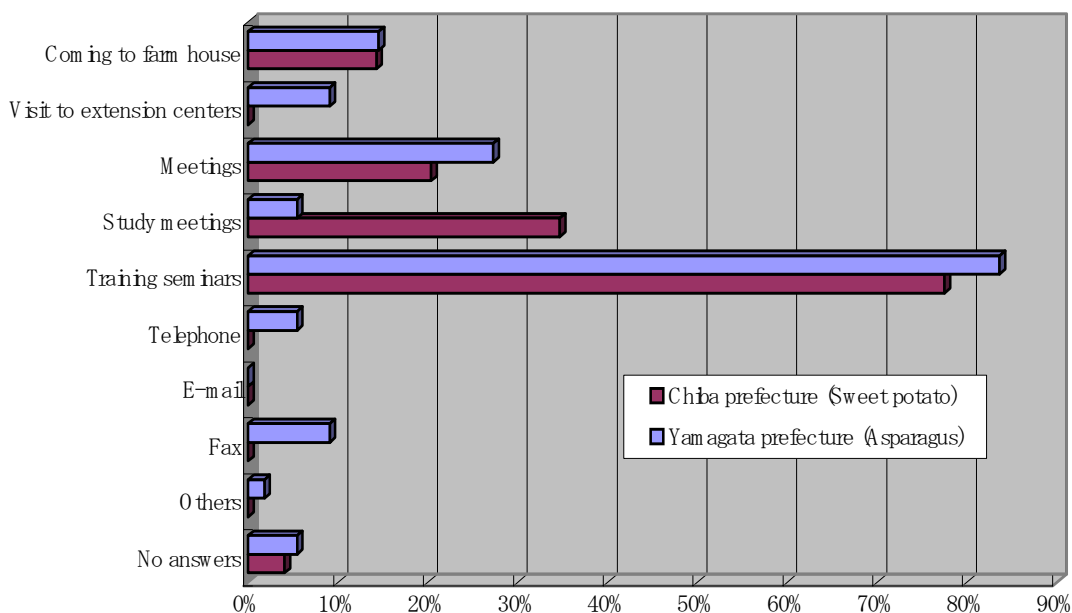
Figure 2. Methods for supporting farmers by extension advisors
Source: Made by author based on questionnaires
Notes: Farmers have to choose two as the methods.

The results of the surveys show that 70 percent of the farmers in both areas are over fifty years old (see Figure 1). The farmers in both areas seldom use homepages for receiving new technical information. The farmers don't use E-mail as a method, either, when the farmers receive advice from extension advisors (see Figure 2).

It is said that the ratio of farmers among all farmers in Yamagata prefecture, who use the Internet with personal computers, is from 20 to 30 percent, according to questioning from extension advisors. This is the similar tendency to the previous survey conducted in 2005 by the MAFF. The extension advisors said that the ratio of the farmers, who possess personal computers and use the Internet with personal computers in the area of Chiba prefecture, is approximately 70 percent and below 50 percent respectively, both of which surpass the ratio of the farmers in the area in Yamagata prefecture. This is because the area in Chiba prefecture is located near Narita Airport and closer to the urban areas.

To sum up the explanations above, farmers don't often use personal computers for farm management despite possessing personal computers. Most farmers also seldom use the Internet for their own management, even if they can connect to the Internet anytime.

On the other hand, fax is more popular among farmers and more often used for farm management. In the area of Yamagata prefecture, 10 percent of farmers use fax, when the farmers receive advice from extension advisors.

Actual cases of using information network system

1. "Azemichi" Network System

The "Azemichi Network System" (Azemichi: a Japanese word which means a footpath between rice paddies) includes electronic forums such as "Free discussion forum", "Technical forum", etc. The Azemichi Network System was started in 1998. Its main purpose is to encourage communications among farmers, extension advisors, etc. participating in the "Local Network System" (the Closed network system for members in the jurisdictions of extension centers or prefecture governments) that had been subsidized by MAFF for four years. Prefecture governments have managed the Local Network Systems, while the Azemichi Network System has been managed by JADEA so far. The participation in the Azemichi network system is free of charge.

Since 1998, the members of the Azemichi Network System have been increasing. At present, over 4,000 farmers, most of who are the experienced farmers, are registered. According to Figure 3, the number of registered farmers varies from prefecture to prefecture. The number of registered farmers is large in the prefectures which conduct the Local Network System, so that the ratio of farmers' living in only 6 prefectures such as Aichi, Niigata, Kagawa, Gifu, Kumamoto, and Shizuoka, accounts for 80 percent of the total participants all over Japan.

The details of usage of the Azemichi Network System show that the number of farmers, who access the system more than one time, is 525 and 425, in 2004 and 2005 fiscal year respectively among about 4000 farmers (see Table 3). On the other hand, the number of farmers, who access the system more than ten times, is 127 and 125 in 2004 and 2005 fiscal year respectively. The ratio of farmers who had accessed the system is only about 10 percent of the 4000 participants in 2005. It can be said that the participants are small portions of all participants. However, the number of participants, who used the system more than one time in fiscal 2005, dropped by 20 percent compared to that of fiscal 2004.

On the other hand, the number of participants, who registered more than one article in

the electronic forums, is 54 and 44 in 2004 and 2005 fiscal year respectively. The ratio of members, who register articles, accounts for only one percent of all members. This means very few people registered articles into electronic forums. The number of articles registered in fiscal 2005, also decreased by 20 percent compared to that of fiscal 2004.

In short, although the number of participants has increased, the connection to the system, references to the forums, and article registration have decreased even during last four years (see Figure 4).
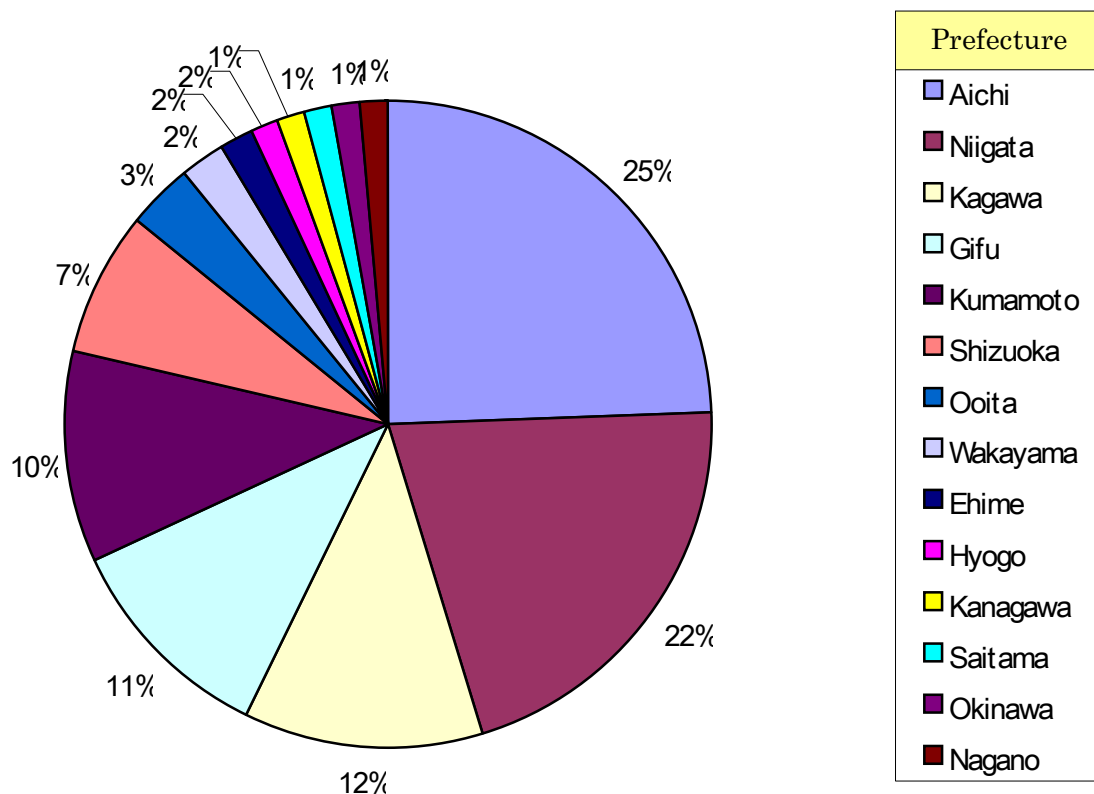
Figure 3. Ratio of farmers' participants of some prefectures in all prefectures
Source: Made by author
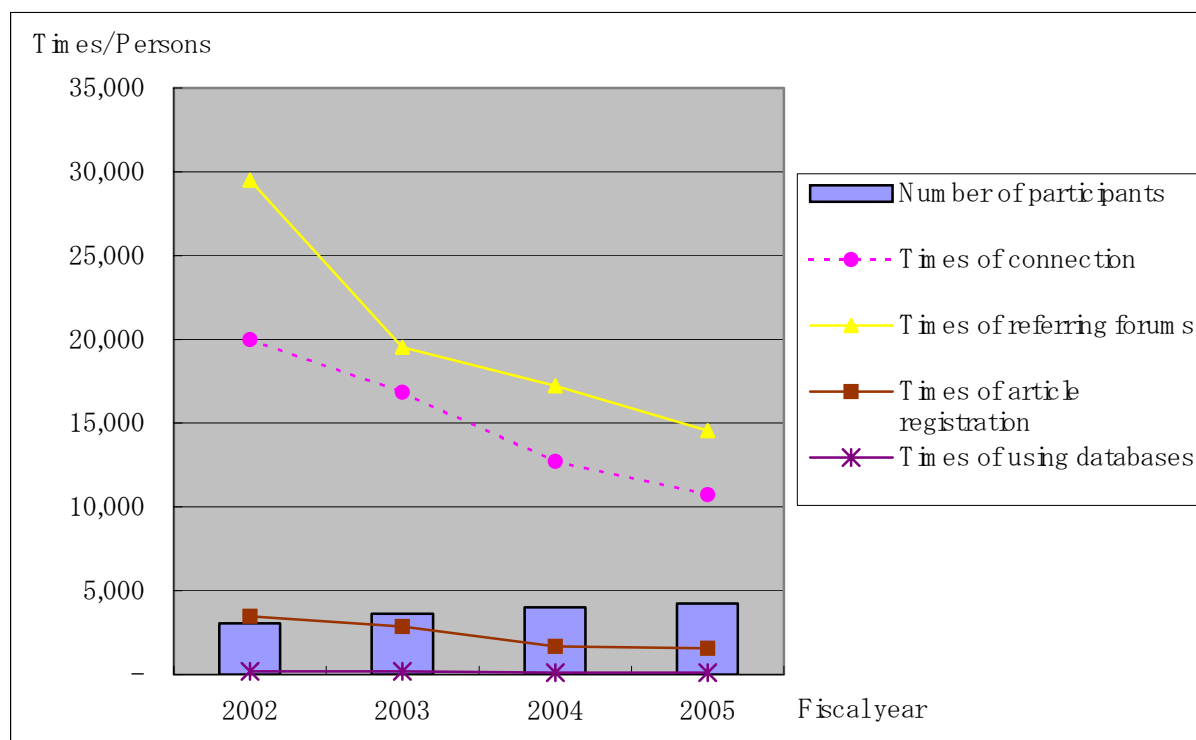
Figure 4. Trends of number of participants, and usage of the Azemichi Network system
Source: Made by author

Table 3. Usage of the Azemichi Network system

	More than 1 connection	More than 10 time connections	More than 1 article registration
2004 fiscal year (Persons)	525	127	54
2005 fiscal year (Persons)	425	125	44
Rate against 2004 (%)	80	98	81

Source: Made by author

Under the situations mentioned above, JADEA has been taking some measures in order to encourage the usage of the Azemichi network system since the middle of fiscal 2005. These measures are as follows.

a. We have asked two young farmers (one is in his twenties, and the other is in his thirties) as board operators to facilitate the communications among members.
b. We have asked 17 online consultants (former researchers, etc.) and 400 researchers belonging to the institutes of national level (National Agriculture and Food Research Organization, NARO for short) to quickly answer the questions asked by farmers (see Figure 5).

According to these measures, the usage of the "Free discussions forum" has improved since April 2006 as shown in Figure 6.

After ten years of operation of the Azemichi Network system, I can point out some problems as follows.

  a. The number of participants hasn't increased as much as our expectations.
  b. Among about 4,000 registered participants, only a few farmers are actually using the system.

Question: How shall I conduct the management of rice?	A farmer from Niigata prefecture
As a result of the continuous rainfall, the rice has not had sufficient sunshine. The rice hasn't grown enough, so that the leaves remain dark color (SPAD(Soil & Plant Analyzer Development): 38 degrees) and young panicles haven't grown enough. Under the conditions above, what should I do? Please give me advice.	
Answer: About the management of rice	Dr. Sasaki (Online consultant)

We are worried about the inadequate growth of the rice, because of low temperature and continuous rainfall.
    I think that topdressing should be applied until the meiosis stage.
    In Tohoku areas where I live, blast has often appeared, so that some control measures should be taken. In Niigata prefecture, however, "Koshihikari BL (Blast resistance Lines)" has been introduced; therefore I think that the control measures for "Koshihikari BL" may be different from those for the other varieties. I recommend you ask extension advisors, officers of a plant protection office, etc. about what you should do.	

Figure 5. Example of the question by a farmer and the answer from an online consultant at the "The technical forum"
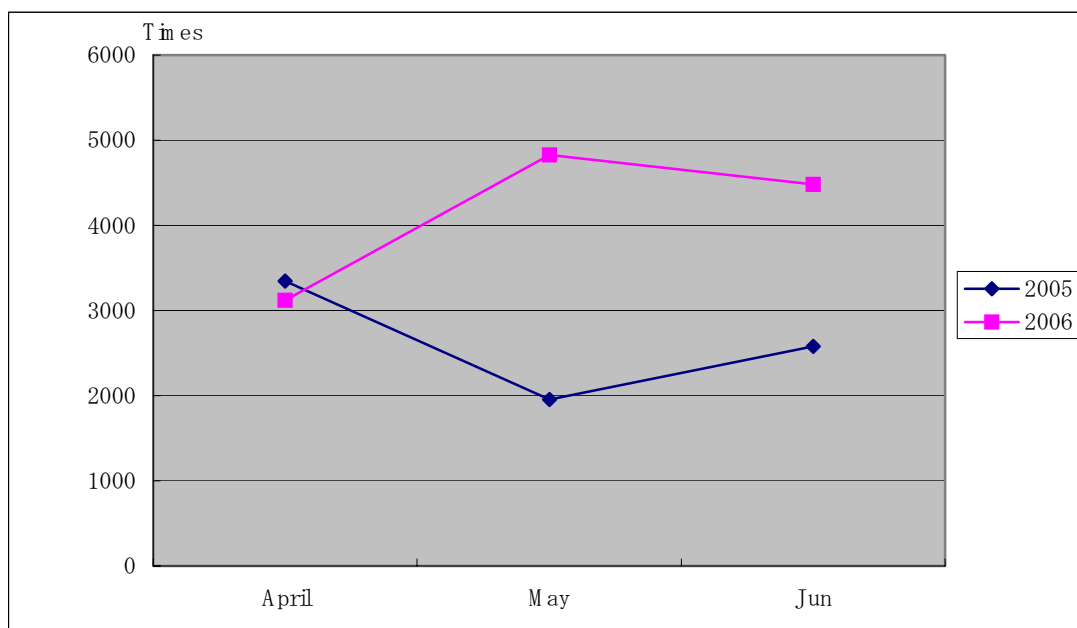

Figure 6. Times of reference of the "Free discussion forum"
Source: Made by author

2. Homepages operated by prefecture governments and agricultural extension centers

JADEA conducted the questionnaires in about 100 extension centers and the surveys by accessing all homepages of agricultural extension centers in 2005 in order to study the current situations of homepages of extension centers.

According to the surveys above, most extension centers (97%) provide information at their own homepages or the homepages of other organizations. The ratio of extension centers possessing their own homepages is about 50 percent. On the contrary, half of the extension centers in Japan don't have their own homepages. Therefore, about 50 percent of extension centers use the portions of the homepages managed by prefecture governments or homepages managed by agriculture development offices, which include extension centers and the other agriculture sections. Some extension centers are using only one page in those homepages for providing information. This means there are the big gaps among extension centers according to the policies of each prefecture government on how to operate the homepages (see Figure 7).
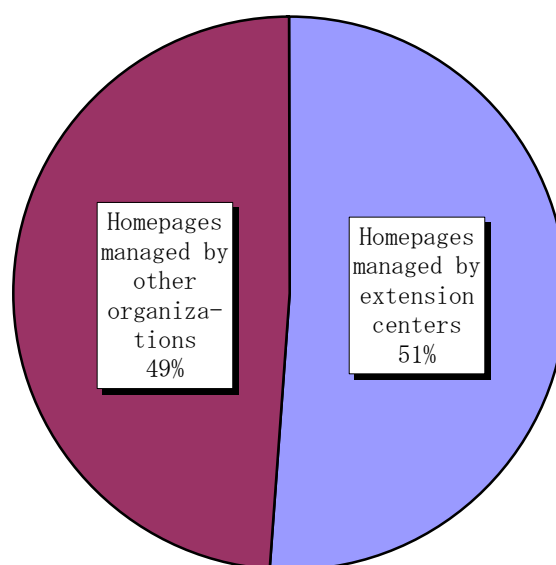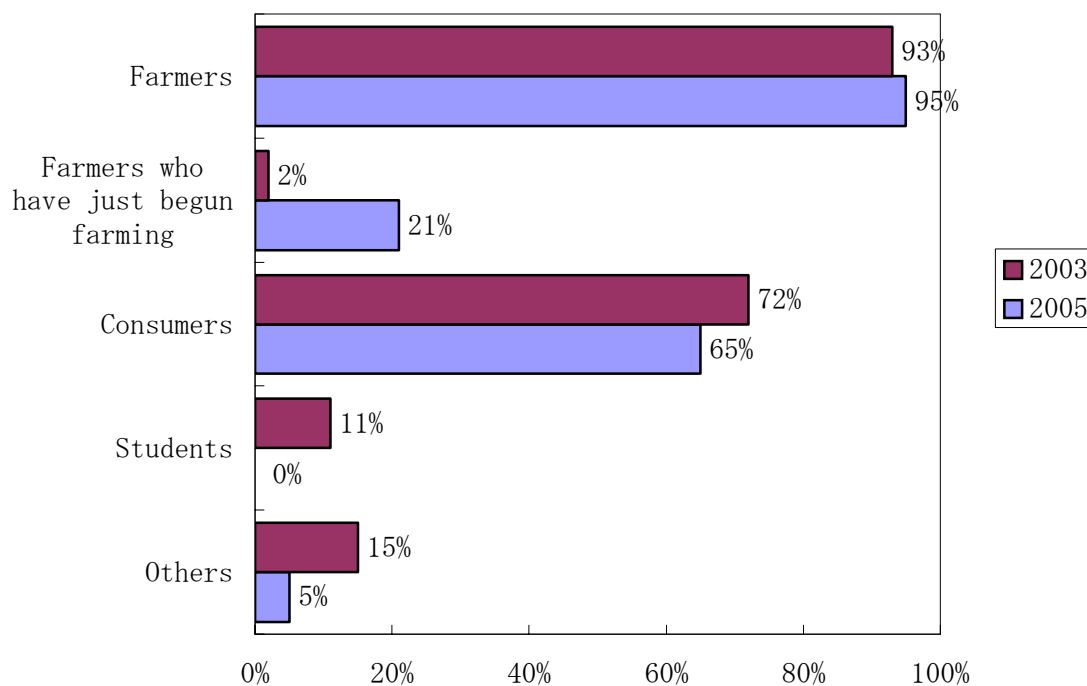

Figure 7. The type of management for homepages of extension centers
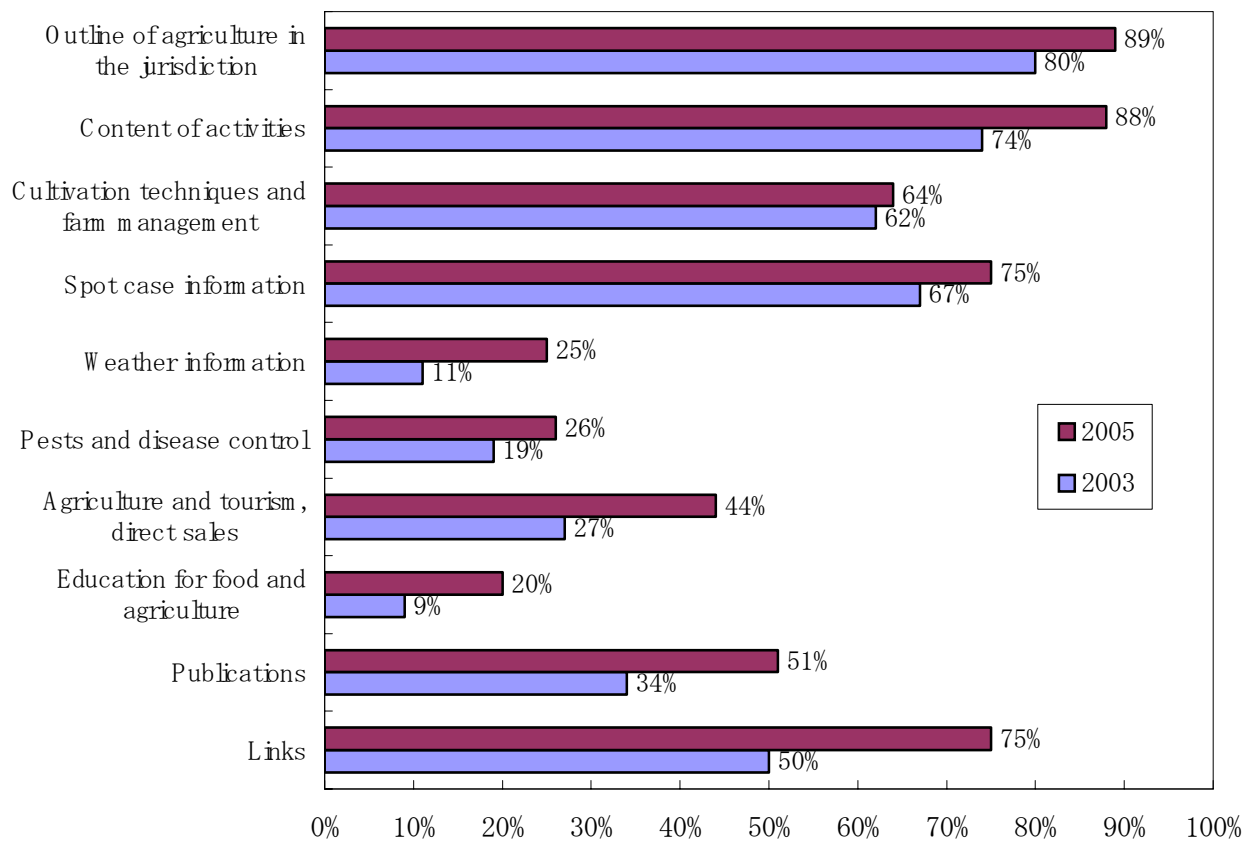Source: Report on the project of support for establishment of virtual extension centers, JADEA, 2005

Main targets of homepages managed by extension centers are the farmers in the jurisdiction and consumers in general as shown in Figure 8. This tendency hasn't changed between 2003 and 2005.

Figure 8. Targets of the homepages of extension centers

Source: Report on the project of support for establishment of virtual extension centers,
JADEA, 2005

Figure 9. Cover pages of the homepages of extension centers
Source: Report on the project of support for establishment of virtual extension centers,
JADEA, 2005

On the other hand, the kinds of cover pages of extension centers are "Outline of agriculture in the jurisdiction", "Content of activities", "Spot case information", "Links", and "Cultivation techniques and farm management", which over 60 percent of extension centers have as cover pages. The details of content of each menu are shown in Table 4. The main targets of "Outline of agriculture in the jurisdiction" and "Content of activities" are consumers, while those of "Spot case information", "Links", and "Cultivation techniques and farm management" are farmers. It can be said that the homepages of extension centers are targeting both consumers and farmers. The menus, which dramatically increased in 2005 compared to 2003, are "Agriculture and tourism, and direct sales" and "Links". That is why, these days, agriculture and tourism and direct sales have been increasingly popular all over Japan, and extension centers are involved in those activities. Also, prefecture governments and extension centers try to increase more kinds of useful information by linking the homepages of the other organizations. Compared to 2003, the ratio of extension centers, which increase the number of cover pages, increased in 2005. It shows that most extension centers have been actively dealing with the homepages by enriching the menus for two years.

As mentioned above, each extension center is positively conducting the management of homepages, however, some problems are pointed out according to the results of the questionnaires as follows.

a. The management of homepages is not definitely considered as a daily job at extension centers.

b. The management of homepages is not considered important in extension activities. As a result, the content is not frequently updated.

c. The special techniques and knowledge are needed for establishing and maintaining homepages, so that the number of extension advisors, who have both skills, is limited.

d. The content has not been made based on acquiring the users' needs.

On the other hand, the main targets for operating homepages are farmers. After asking farmers, however, it becomes obvious that farmers in the jurisdiction of extension centers, who can use the Internet, don't access the homepages of extension centers so often.

Menus	Content
Outline of agriculture in the jurisdiction	Characteristics of agriculture in the areas and introduction of products
Content of activities	Content of activities of extension centers, extension program, introduction of advisors in charge, and structure of extension centers
Cultivation techniques and farm management	Material on cultivation techniques and farm management, research findings and results of surveys
Spot case information	Results and process of extension activities
Weather information	Weather information in the areas, statistics of weather information, etc.
Information on pests and disease, information on chemicals	Forecasts of pests and disease, information on chemicals, etc.

Agriculture and tourism, direct sales	Agriculture and tourism, and the maps, business hours, etc. of direct sales shops in the jurisdiction
Education for food and agriculture	Education for food and agriculture, trial of farming, farm fields of schools, etc.
Publications	Introduction on the publications made by extension centers, etc.

Source: Report on the project of support for establishment of virtual extension centers, JADEA, 2005

### 3. Homepages managed by farmers themselves

Some farmers, mainly in their thirties and forties have been setting up their own homepages. They are using the homepages for promotion of direct sales and communication with consumers. These days, some farmers are providing the records of their daily activities to the public by using blog[1].

The results of surveys, conducted in 2005 by Hokuriku region including four prefectures, show the farmers' ideas for their own homepages as follows.

a. **Publicity of farm management**: to convey the current situations and opinions for the philosophy of farm management to the public
b. **Expansion of channels for sales**: chances for making the new contracts and business, and methods for expansion of channels for selling own products
c. **Communication with consumers**: methods for communications with consumers (by mainly using mail)

Half of the farmers surveyed, sell less than 20 percent of the total sales volume by Internet sales. It means that Internet sales are not the main method of selling products for most farmers (shown in Figure 10). The farmers also point out some problems on the management of homepages as follows.

a. It is difficult to make new content in order to compete with an increasing number of attractive homepages made by other farmers.
b. Preparations are needed to provide the attractive products, which consumers want to buy, although the price of products includes postage.
c. The establishment of homepages does not guarantee that new customers will be acquired.
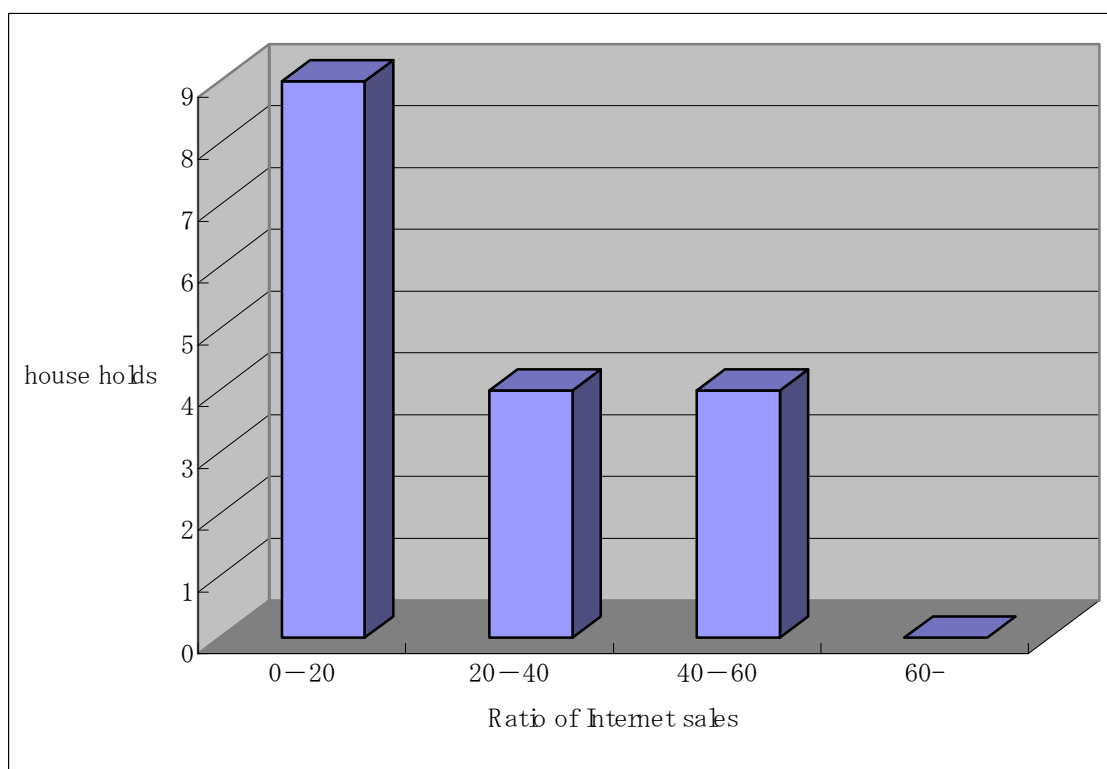
Figure 10. The number of farmers classified by the ratio of Internet sales (17 cases in Hokuriku region)
Source: Report on the project of support for establishment of virtual extension centers, JADEA, 2005

4. Use of information network system at direct sales shops

These days, direct sales shops are supported by computer systems that have been dramatically increasing in Japan. According to the surveys conducted by MAFF in 2004, the number of direct sales shops, managed by municipalities, agriculture cooperatives, etc., accounts for approximately 2,400 all over Japan (see Picture 1). Apart from those kinds of shops, there are a lot of direct sales shops managed by individual farmers.

Farmers can decide the price of their own products by themselves at direct sales shops, so that small-scale farmers can sell their products there. This point is different from market shipment. In recent years, direct sales shops have been rapidly increasing under the sentiment that consumers are more interested in the "community production and community consumption" and "safe and secure foods".

The information network systems by using mobile phones, fax, and personal computers, support the POS (Point of Sale) systems, which have been diffusing in the agriculture sector all over Japan (see Picture 2). In order to know the situations of their own products sales, however, information network systems using computers are not so often used among farmers for the POS systems. Telephones, mobile phones, E-mail by mobile phones, and fax are mainly used.

In urban areas, some farmers sell most of their products through direct sales shops owned by them. For example, some strawberries farmers set up direct sales shops, and the sales have been smoothly expanding so far. This is because strawberries at the direct sales shops are fresh and consumers can directly meet with the farmers (it enables face-to-face

contact) despite the higher price than in supermarkets (see Picture 3). Also, some of the strawberries farmers sell their products by using homepages. In this case, the farmers directly send strawberries to consumers by home delivery services after receiving orders by E-mail.

Picture 1. The inside of a direct sales shop

Picture 2. A farmer can easily input the information of her products into the POS system by using a touch panel

Picture 3. A strawberries direct sales shop managed by an individual farmer

5. Delivery of information to mobile phones

In Nagasaki Prefecture, extension advisors at Shimabara extension center have been sending technical information to mobile phones of about 90 strawberries farmers since August in 2004. The advisors have been providing information once every week or two by mailing list. As of August third in 2006, the total amount of information sent had reached 89. The content of information for provision is the timely information such as cultivation techniques of strawberries, weather information, research findings conducted by extension centers and so on (see Picture 4). The farmers pay 300 Yen (approximately 3 US dollars) a month, because the mail delivery service is one of the services provided by "Agriculture and Forestry Information System of Nagasaki Prefecture" that is a membership system. When a farmer wants to receive the E-mail service, he or she has to become a member of the system and pay a membership fee.

Despite the charge, members receiving the E-mail delivery service have been increasing, thanks to the good evaluation from member farmers. Most of the evaluation by the member farmers are positive, e.g. "I am happy, when the E-mail comes"," It is helpful that I can solve the problems by the delivered E-mail".
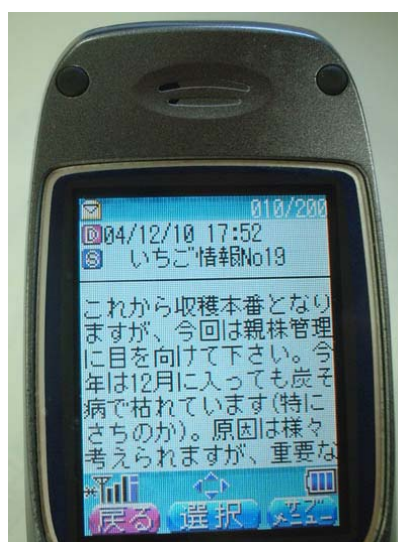
Picture 4. An example of the E-mail received with mobile phones

In Toyama prefecture, extension advisors at Toyama extension center, conduct quick

information provision to 63 "Nashi" pear farmers and 49 rice farmers by sending E-mail to their mobile phones in order to urge them to conduct appropriate tasks (see Picture 5). As a result, the interactive communication system has been established between extension advisors and farmers with an increasing number of questions and opinions from farmers. In Kumamoto prefecture, information on the conditions inside greenhouses is sent to farmers by introducing a security system used with mobile phones. Thanks to this system, the farmers can relax even if they stay at their house.

Picture 5. A "Nashi" pear farmer receiving information with mobile phone

There are an increasing number of Information network systems focusing on the use of mobile phones possessed by most farmers in Japan. Most farmers don't access the Internet, but some farmers are happy to use the information network system on their mobile phones.

CONSIDERATION

Around ten years ago, personal communication network systems, whose purpose was to encourage the communications between farmers, had rapidly spread among some farmers. It can be said that administrative organizations had contributed to the spread of the personal communication network systems to some extent, by providing IT training courses hosted by JADEA, etc. for farmers and having established Local Network Systems.

However, the information network systems have not prevailed so much so far, among the majority of farmers, because of the aging of farmers. On the contrary, some experienced farmers have been setting up their own homepages. In a last decade, most of the personal communication network systems, especially based on local communities, have been closed. One of the reasons is because of high-performance search engines such as "Google" and "Yahoo" that have become popular. Therefore, farmers can easily receive information by using these search engines. As a result, information network systems based on local areas, are not so attractive for farmers any longer. Using the situations mentioned above, I can point out the negative impact of globalization.

The information networks, however, have brought about some advantages for farmers. It is very significant that farmers, who used to be mainly the receivers of information, positively deliver their own information to others. Farmers begin to use their homepages for direct sales shops, because Internet shopping has become very popular among consumers. At the same time, it is necessary that farmers have been open to the public about the traceability of their own farm products and the conditions of their farm management, etc. through information network systems under the sentiment of

consumers' increasing interests for secure and safe foods.

On the other hand, the information network systems of both supporting the management of jobs, and sending technical information to mobile phones, have been become popular despite the stagnant diffusion of the communication network systems used with personal computers. POS systems enable farmers to grasp the real time information of sales of their own products. Therefore, the rapid increase of direct sales shops would not have been achieved without the POS systems that have been introduced with cheaper prices of personal computers these days. Telephones and mobile phones are mainly used to send the data of the sales to farmers. As a result, information network systems using personal computers are not so popular among farmers. An increasing number of farmers use mobile phones, which are more user-friendly than personal computers, when they receive technical information from extension centers, etc.

As mentioned above, the information network systems using personal computers may not prevail among farmers because the majority of farmers are aging. On the contrary, the information network systems, based on the use of mobile phones, show the signs of more diffusion.

CONCLUSION - FUTURE FIGURE OF AGRICULTURAL INFORMATION NETWORK SYSTEMS AND PROPOSAL ON SUPPORT BY EXTENSION CENTERS, ETC. -

Concerning the use of the Internet, the farmers are divided into two groups in Japan. One is a small number of farmers who conduct Internet sales, etc. by using their own homepages. The other is the majority of farmers who can't use the Internet for his or her farm management.

Therefore, extension advisors should conduct the advice for the promotion of information technology using computers towards the two groups of farmers separately. For the experienced farmers, extension advisors should conduct the minimum support such as holding training courses on how to make homepages, and setting up meetings for exchanging information among farmers. On the contrary, for the majority of farmers, the support by research institutes and extension centers, etc. will be indispensable. Especially for older farmers, it will be necessary to conduct training on how to use the Internet, and develop a user interface, which is friendly even for older farmers. In this case, it will be also necessary to consider mobile phones, which are more user-friendly to older farmers (see Figure 11).

Figure 11. Future figure of agricultural information network systems and supports by extension centers, etc

Purposes	Targets and supported content	Supports from **Extension advisors** **& researchers**
"Urging self-reliance for farmers"	Advance farmers <- a) how to make homepages b) Facilitating communication among farmers	Minimum supports

"Development of market of farm products" "Acquirement of needs of consumers"	<u>Ordinary farmers</u> <- a) friendlier user interface b) Use of mobile phones for terminals	Sufficient supports

Source: made by author

It is unnecessary and impossible to accomplish everything by using only an information network system in Japan, if "urging self-reliance for farmers (no reliance on administration, etc.)", "development of marketing of farm products", and "acquirement of needs of consumers" are the ultimate goals for operating information network systems. For example, in order to achieve these goals, the establishment and management of the direct sales shops should be playing an important role in urban areas, as follows.

a. The system, which makes farmers decide the price of their own products, urges the self-reliance of farmers.
b. By shipping farm products to direct sales shops, farmers can develop new markets by selling the products such as "curved cucumber" that cannot be sold at the markets.
c. It is very useful that farmers can know the needs of consumers by carefully observing the behaviors of consumers at the direct sales shops.

In short, the computer systems and information network systems help the management of direct sales shops efficiency.

On the other hand, the technical information network system is not only a supplementary method for meeting with farmers, but also an alternative method for contacting farmers by telephone. Internet sales are not the main methods for the majority of farmers, because most farmers mainly sell farm products at the markets and direct sales shops.

In Japan, we shouldn't achieve all objectives by using only information network systems. Therefore, it is very important to make clear the objectives of management of information network systems such as homepages operated by extension centers. We must think that the information network system is one of the methods for achieving the goal. To sum up, information network systems should be considered as one of the methods for urging self-reliance and the supplementary method for combining the other methods. If this point is made clear, the information network system will contribute to the farmers' self-reliance, the increase of farmers' incomes, and so on, for the majority of farmers.

Notes

1)It is a shortened form of "web log", which is a term used to describe an online journal. Most blogs are run by a single person or group of persons who post their thoughts on subjects or daily happenings. http://www.answerbag.com/q_view.php/5962

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Current Situations and Future Figure of Agricultural Information Network System for Farmers' Use in Japan

Koichi Fukuda

Japan Agricultural Development & Extension Association

Use of Personal Computers & the Internet in Japan

- The ratio of farmers

  Possess personal computers：about 60 percent

  Use the Internet：over 40 percent

- The number of farmers, who use the information network systems for <u>their own businesses, is limited</u>.

Purpose of this Paper

In order to contribute to
the improvement of farm management

To study the future figures of the use of agricultural information network systems

The methods of the studies

1. To make clear the <u>general situations</u> of usage of the **agricultural information network systems** in Japan

2. To analyze the <u>actual cases</u>

   (1) the "**Azemichi Network System**", which is the unique network system for <u>farmers</u>

   (2) the **homepages** managed by <u>prefecture government</u> and <u>agriculture extension centers</u>

   (3) the **homepages** operated by <u>farmers</u>

3. To consider the <u>current situations</u> and the <u>problems</u>

4. To propose <u>the future figures</u> of the systems for <u>farmers</u>

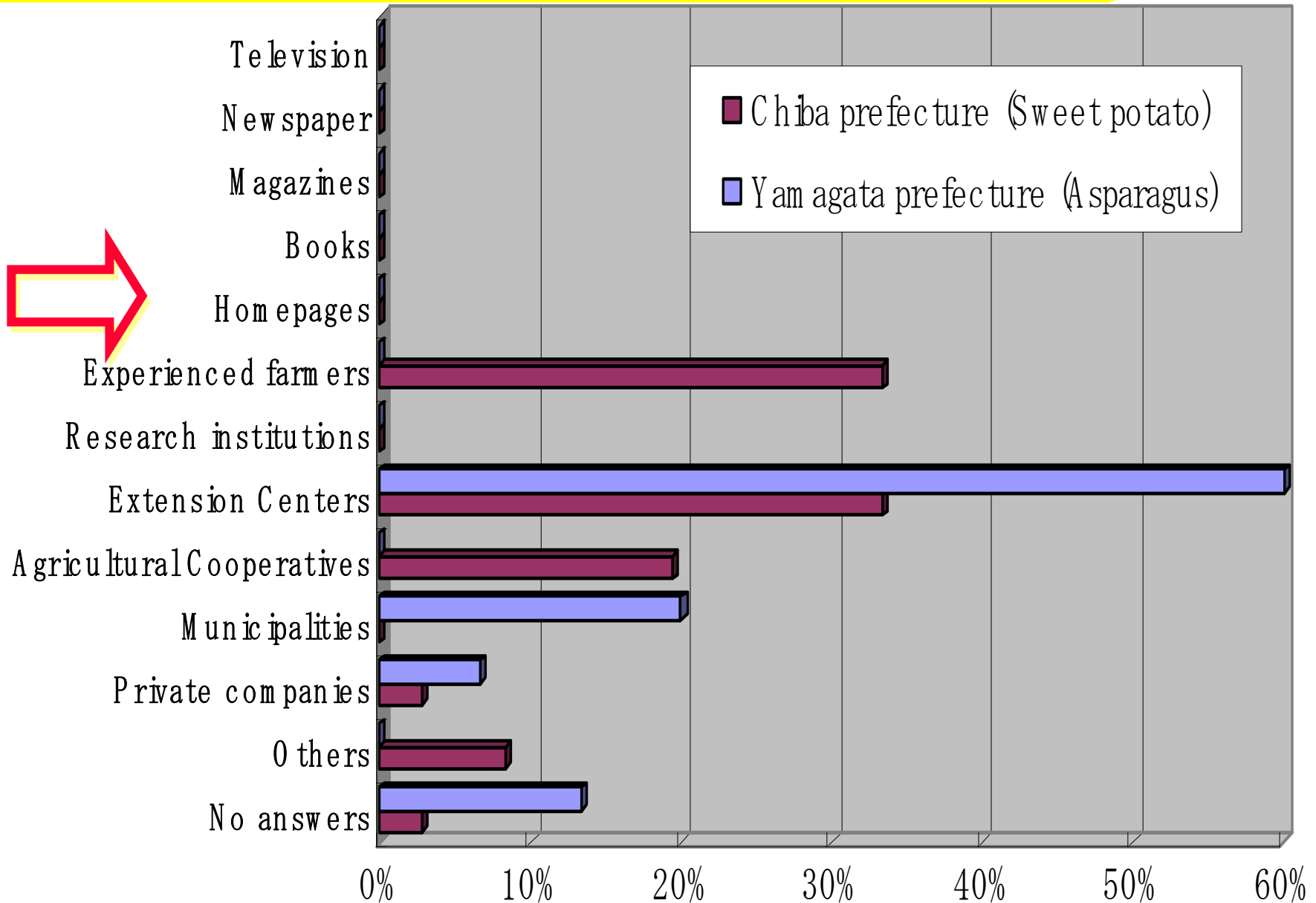# Results of Surveys on Farmers' Usage of Personal computers and the Internet

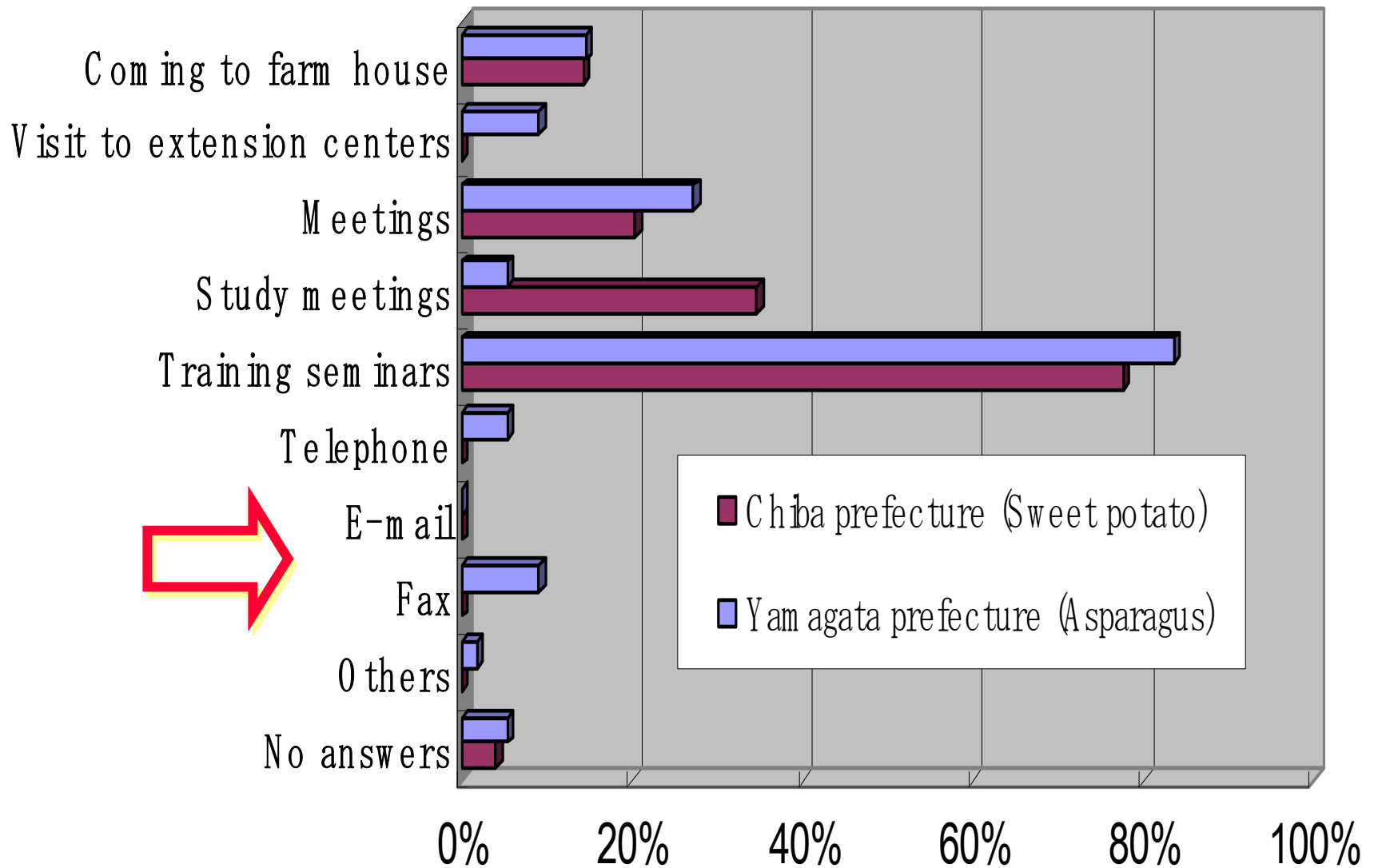| Usage of PC and the Internet	Ratio （%）	
	2001	2005
Farm houses possess PC	53.1	<u>61.2</u>
Use PC for their own businesses	9.7	<u>20.7</u>
Approved farmers use PC for businesses	36.2	36.5
Use the Internet with PC	32.8	42.2
Farmers possess mobile phones	74.3	70.9
Use the Internet with mobile phones	42.0	31.5

The results of the surveys conducted by myself

	Asparagus production area in Yamagata	Sweet potato production area in Chiba
Number of Farm houses	65	78
Cultivated areas per farm household	About 150 a	About 250 a
Farmers over 50 years old	80 percent	70 percent

Sources of acquirement of new technical information

Legend:
- Chiba prefecture (Sweet potato)
- Yamagata prefecture (Asparagus)

Categories (top to bottom):
- Television
- Newspaper
- Magazines
- Books
- Homepages
- Experienced farmers
- Research institutions
- Extension Centers
- Agricultural Cooperatives
- Municipalities
- Private companies
- Others
- No answers

X-axis: 0%, 10%, 20%, 30%, 40%, 50%, 60%

Methods for supporting farmers by extension advisors

Coming to farm house
Visit to extension centers
Meetings
Study meetings
Training seminars
Telephone
E-mail
Fax
Others
No answers

Chiba prefecture (Sweet potato)

Yamagata prefecture (Asparagus)

0%   20%   40%   60%   80%   100%
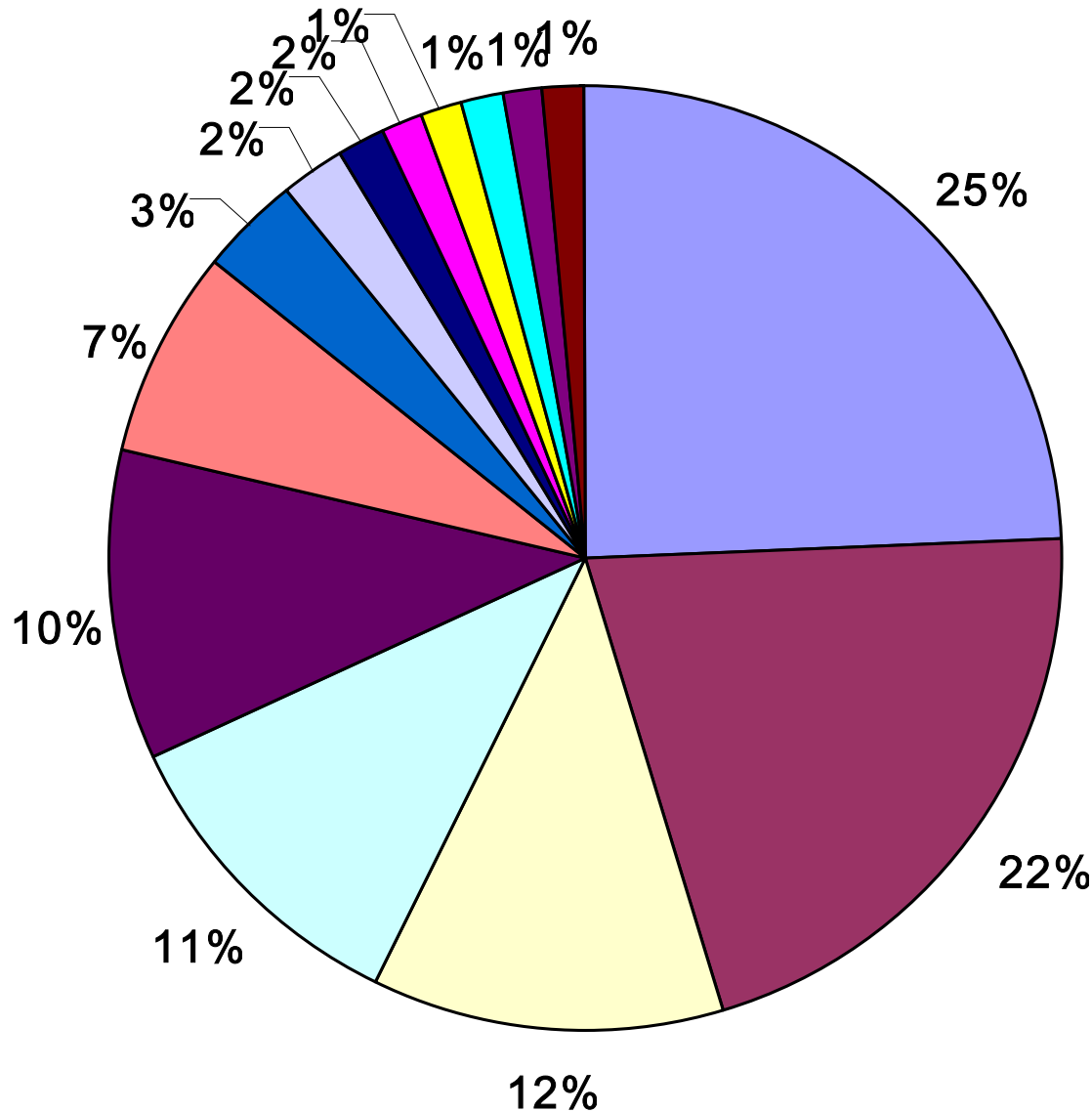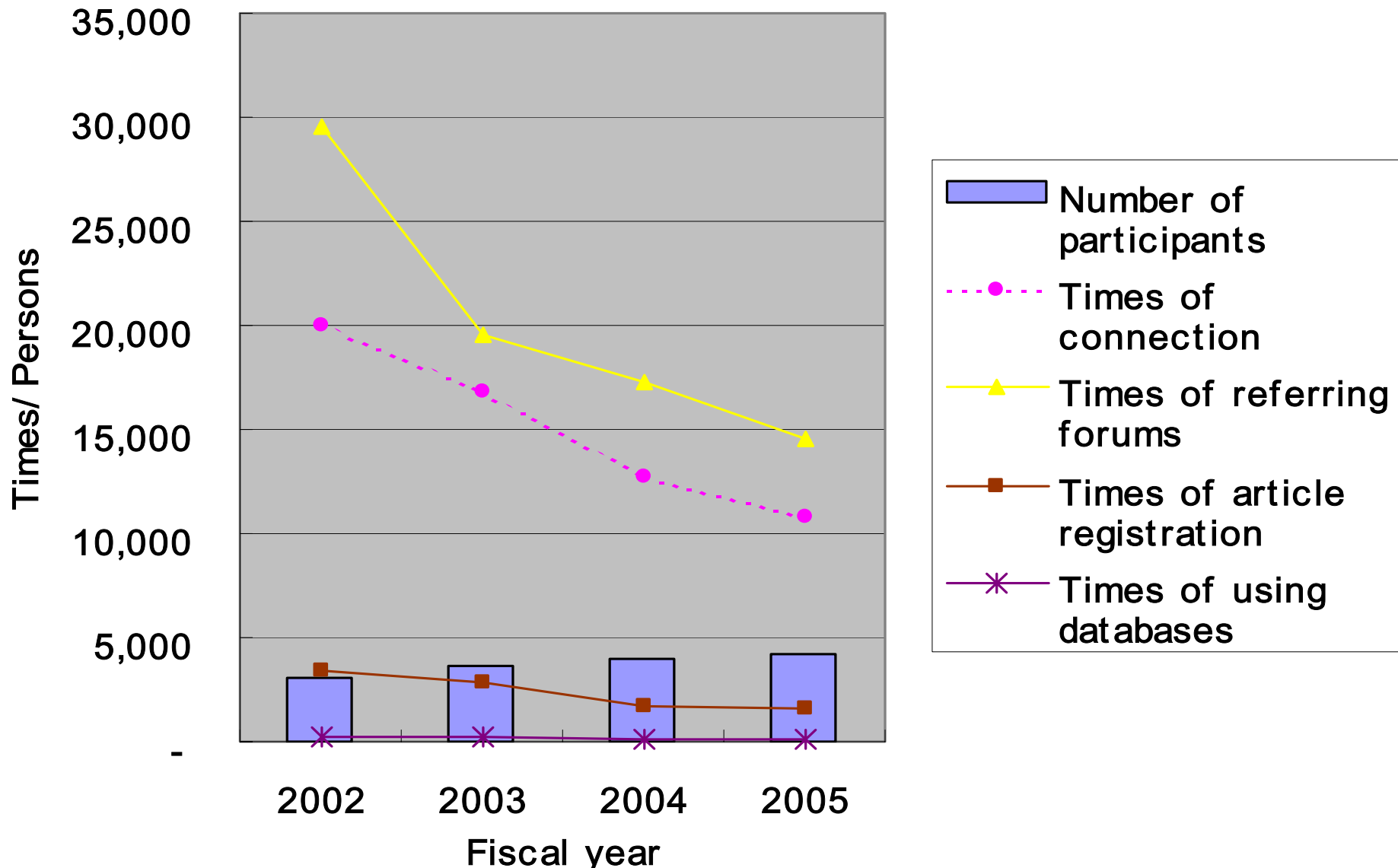
- *Actual Cases* -

1. "Azemichi" Network System

(Azemichi: footpath between rice and paddies)

● Started in 1998

● Main services : electronic forums

● Purpose: to encourage communications among farmers, extension advisors, etc. participating in the "Local Network System"

● Managed by JADEA

Ratio of farmers' participants of some prefectures in all prefectures

Prefecture
Aichi — 25%
Niigata — 22%
Kagawa — 12%
Gifu — 11%
Kumamoto — 10%
Shizuoka — 7%
Ooita — 3%
Wakayama — 2%
Ehime — 2%
Hyogo — 2%
Kanagawa — 1%
Saitama — 1%
Okinawa — 1%
Nagano — 1%

Trends of number of participants, and usage of the Azemichi Network system

Usage of the Azemichi Network system

	More than 1 connection	More than 10 time connections	More than 1 article registration
2004 fiscal year	525	127	54
2005 fiscal year	425	125	44
Rate against 2004 (%)	80	98	81

- To have asked <u>two young farmers</u> as board operators

- To have asked <u>17 online consultants</u> & <u>400 researchers</u> (NARO) to quickly answer the questions

Example of the question by a farmer and the answer at the "The technical forum"

Question   from A farmer from Niigata prefecture

How shall I conduct the management of rice?

As a result of the continuous rainfall, the rice has not had sufficient sunshine.

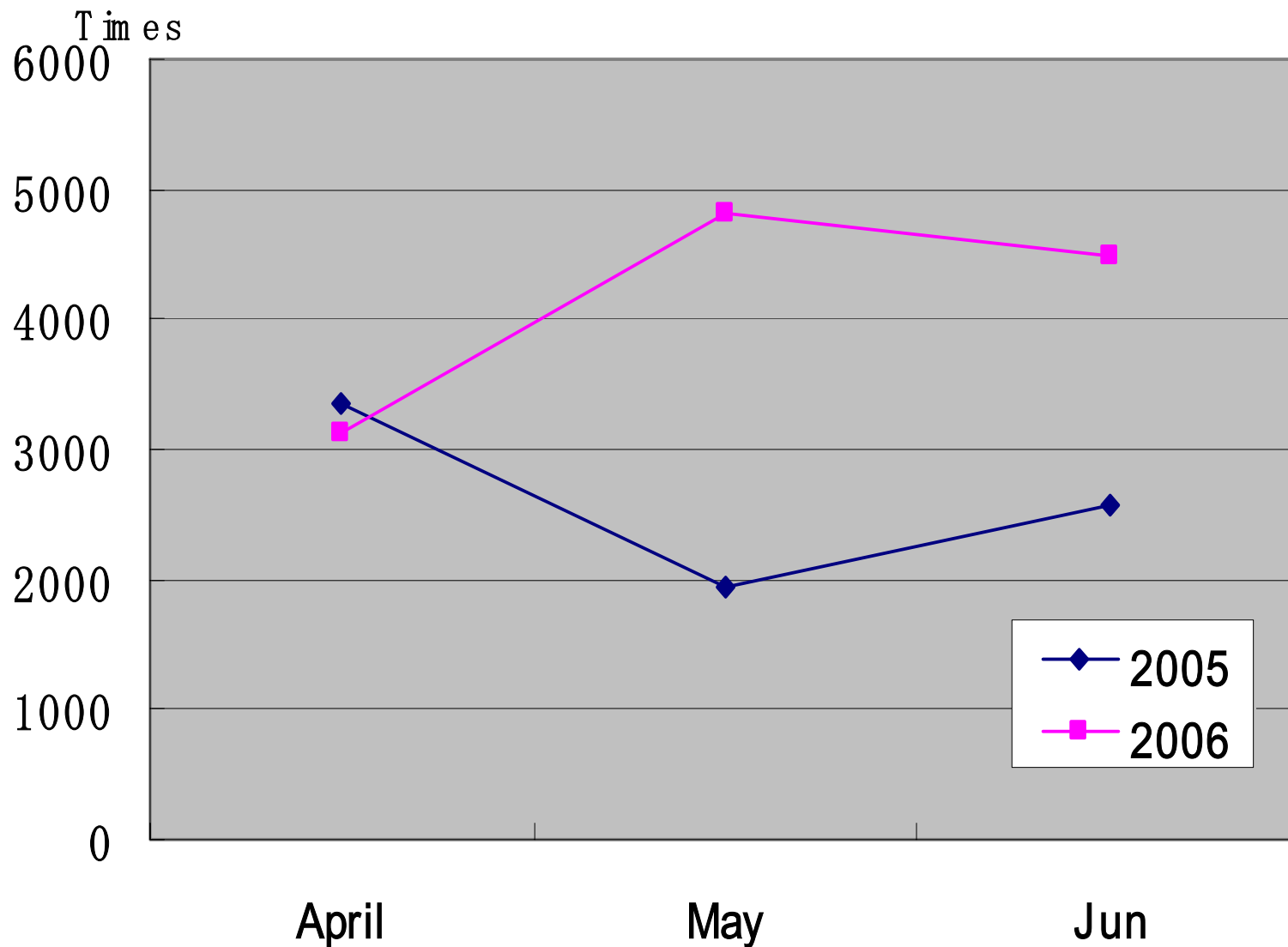The rice hasn't grown enough. What should I do.

Answer   from Dr. Sasaki, the Online Consultant

Topdressing should be applied until the meiosis stage.

The control measures for "Koshihikari BL" may be different from those for the other varieties. I recommend you ask extension advisors, etc. about what you should do.

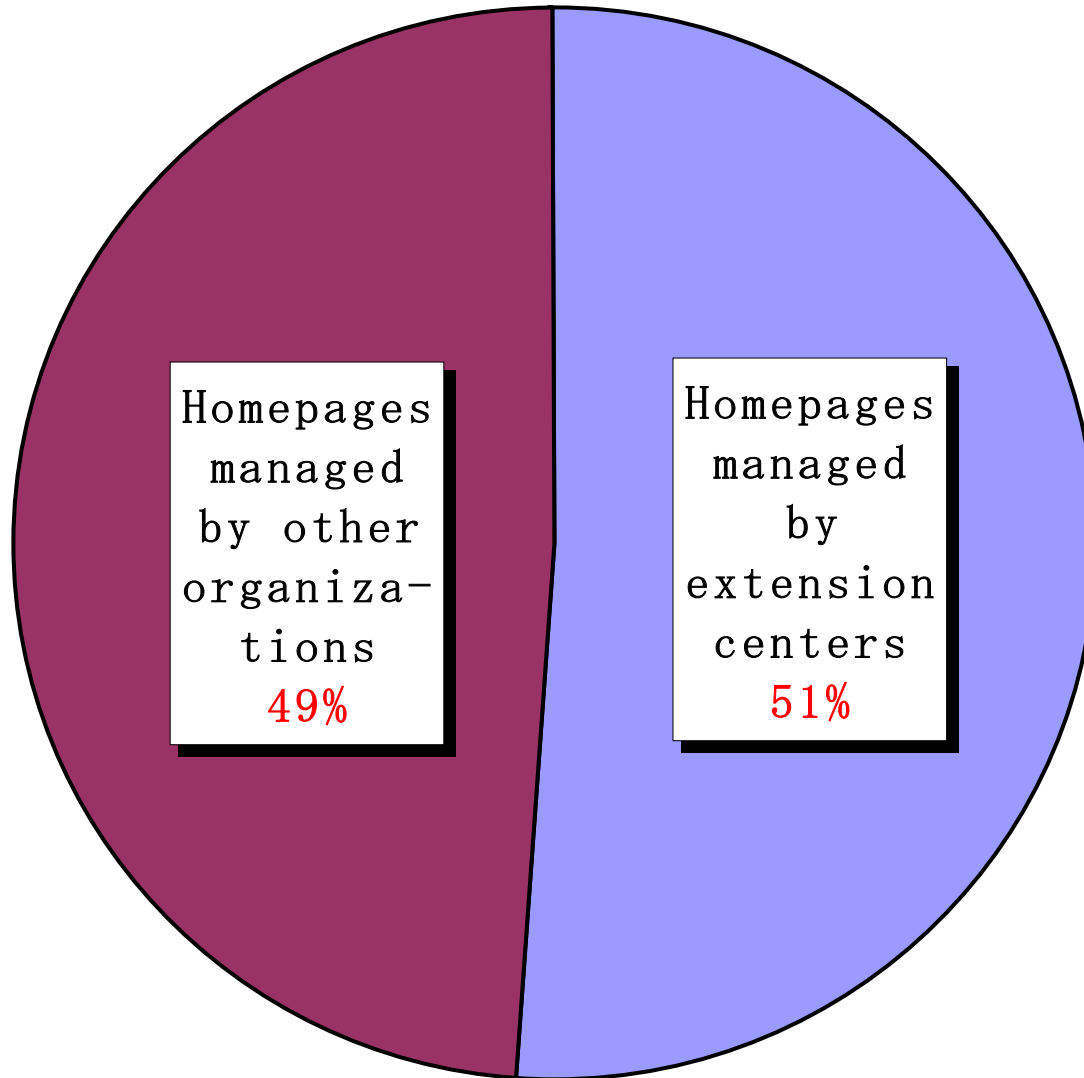# Times of reference of the "Free discussion forum"

Problems

- The <u>number</u> of participants <u>hasn't increased</u> as much.

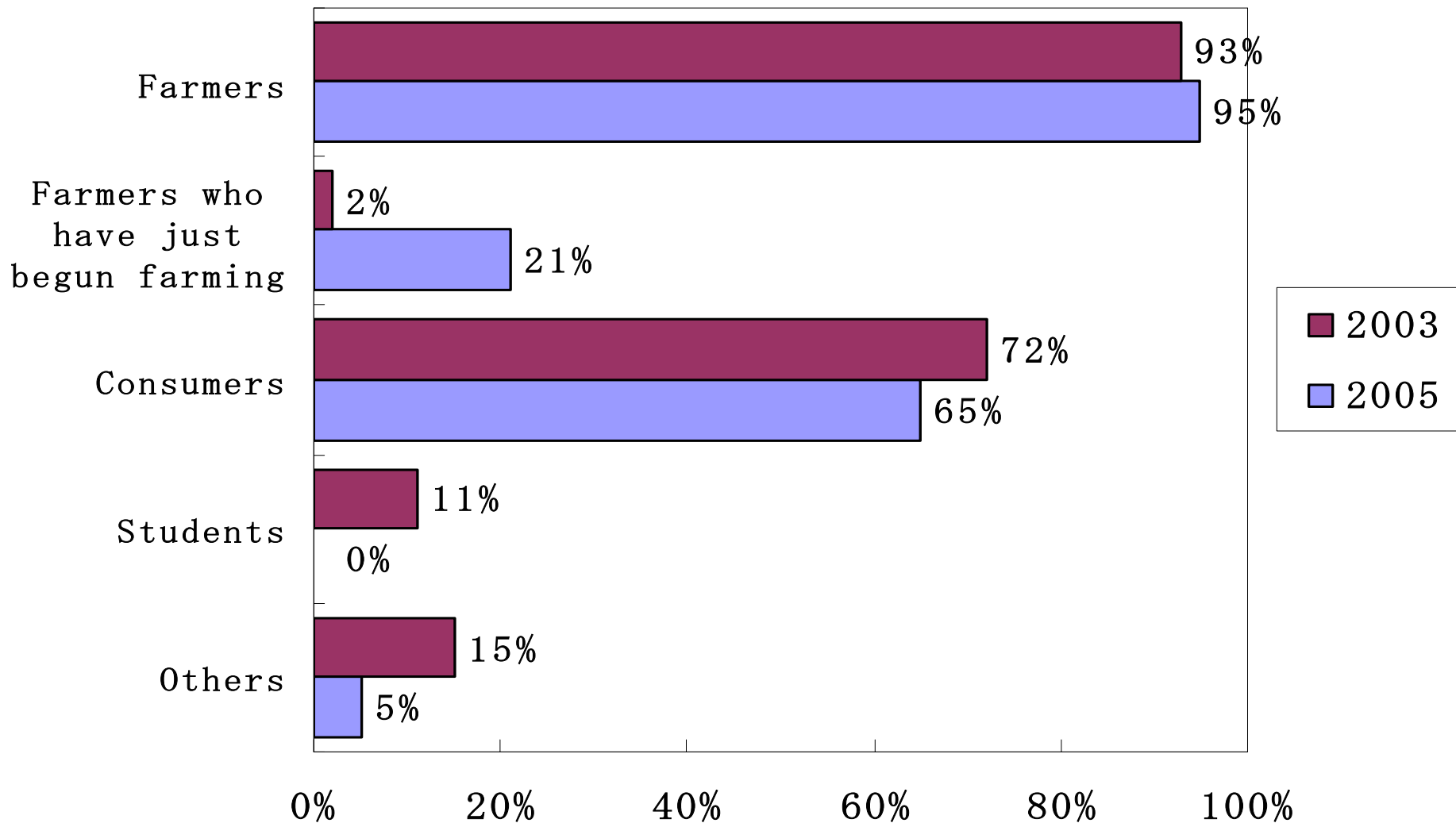- <u>A few farmers</u> are actually using the system.

2. Homepages operated by prefecture governments and agricultural extension centers

- JADEA conducted the <u>questionnaires</u> in about <u>100 extension centers</u> in 2005

- To <u>access all homepages</u> of agricultural extension centers in 2005

- Most extension centers (97%) provide information at their <u>own homepages</u> or the <u>homepages</u> of <u>other organizations</u>.
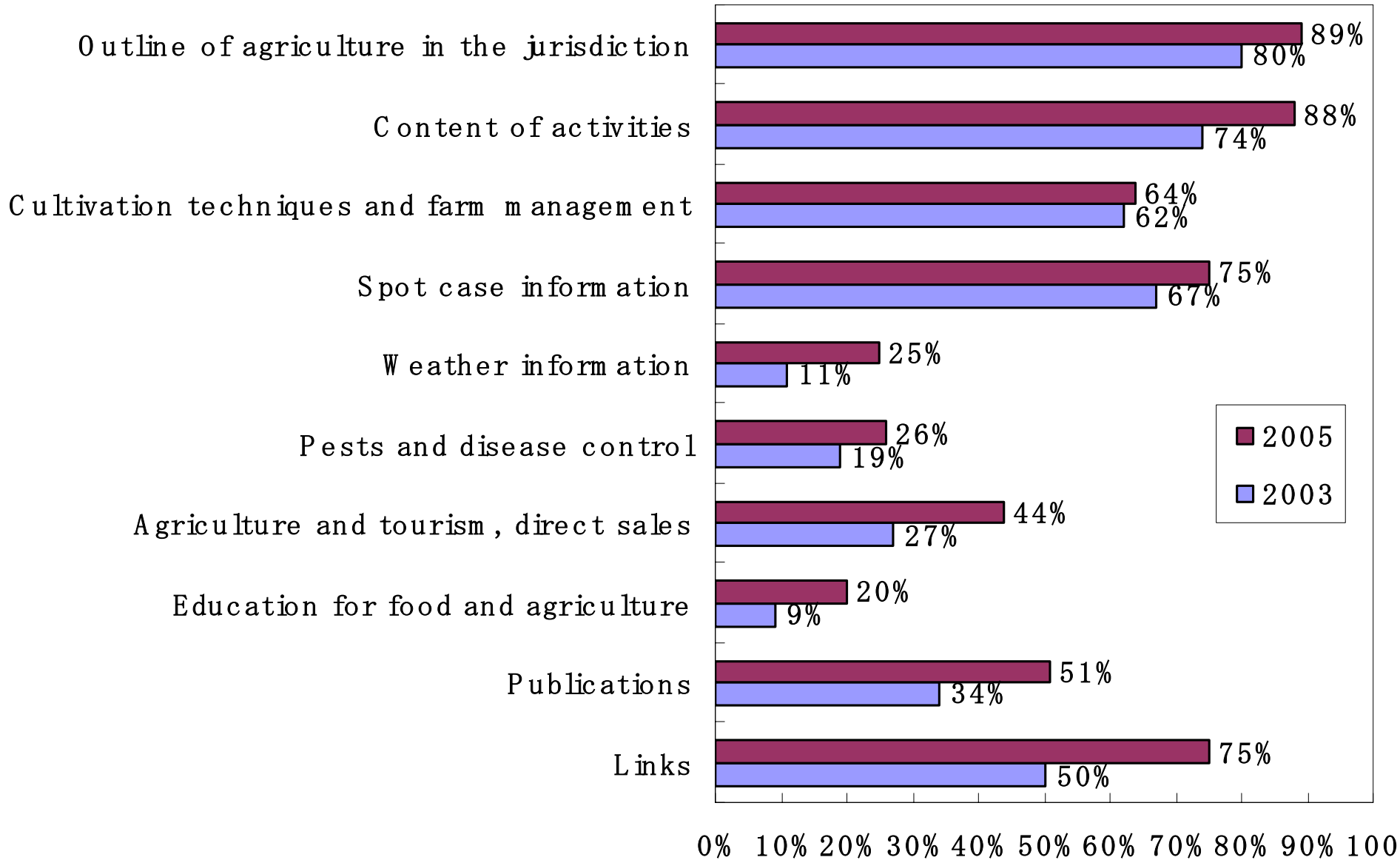
The type of management for homepages of extension centers

Homepages managed by other organiza-tions
49%

Homepages managed by extension centers
51%

Targets of the homepages of extension centers

Farmers: 2003 93%, 2005 95%

Farmers who have just begun farming: 2003 2%, 2005 21%

Consumers: 2003 72%, 2005 65%

Students: 2003 11%, 2005 0%

Others: 2003 15%, 2005 5%

Legend: 2003, 2005

Cover pages of the homepages of extension centers

Category	2005	2003
Outline of agriculture in the jurisdiction	89%	80%
Content of activities	88%	74%
Cultivation techniques and farm management	64%	62%
Spot case information	75%	67%
Weather information	25%	11%
Pests and disease control	26%	19%
Agriculture and tourism, direct sales	44%	27%
Education for food and agriculture	20%	9%
Publications	51%	34%
Links	75%	50%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100

Some problems

- <u>Not</u> definitely placed as <u>a daily job</u> at extension centers

- The content of homepages is <u>not frequently updated</u>.

- The <u>special techniques</u> and <u>knowledge</u> are needed.

- The content has <u>not been made</u> based on acquiring <u>the users' needs</u>

3. Homepages managed by farmers themselves

Farmers' ideas for their own homepages

- **Publicity of farm management** : to convey the current situations and opinions for the philosophy

- **Expansion of channels for sales** : Making the new contracts and business

- **Communication with consumers**: methods for communications with consumers

The number of farmers classified by the ratio of Internet sales (in Hokuriku region)
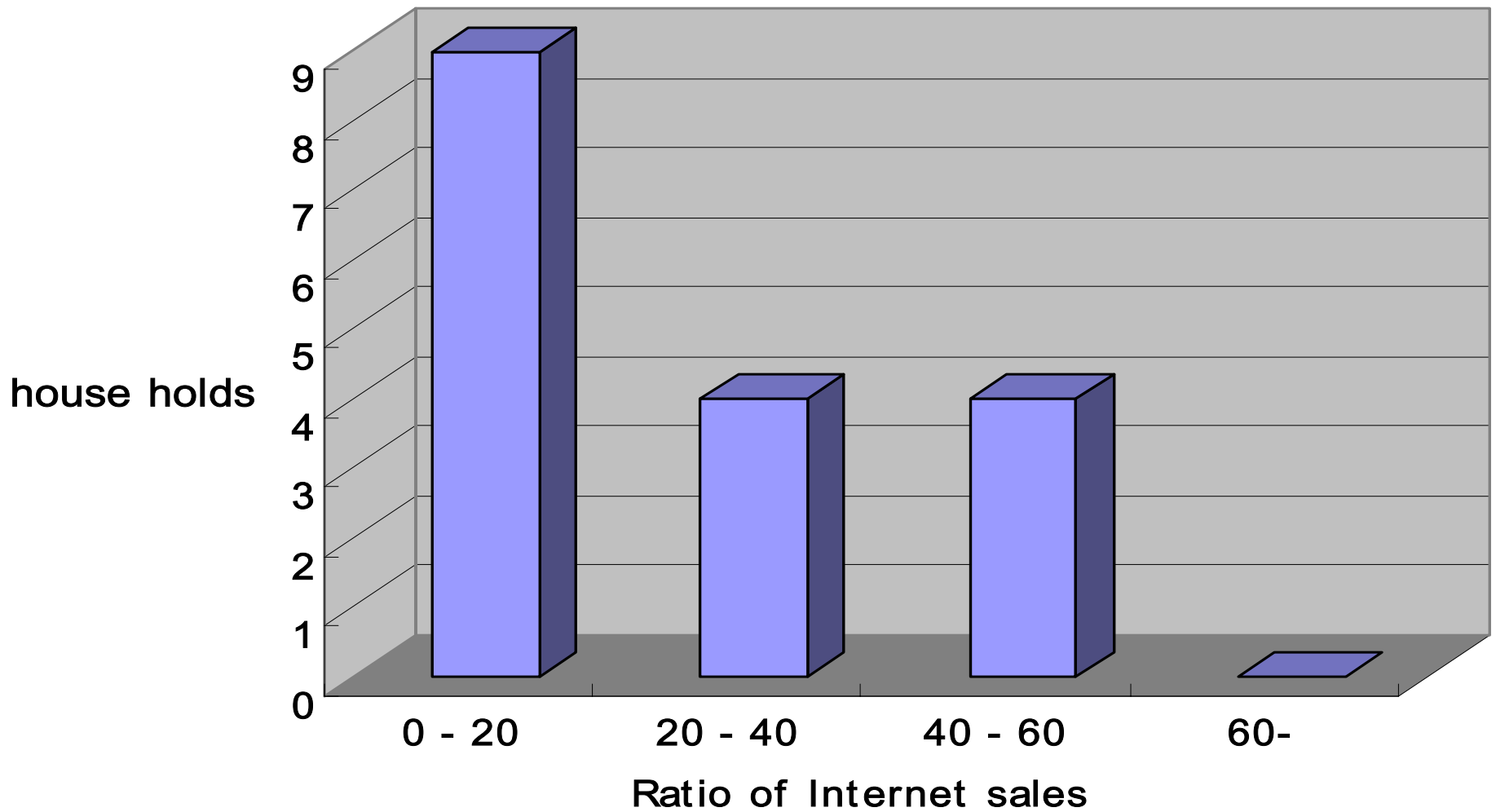
Some problems

- <u>Difficult to make new content</u> : to compete with attractive homepages made by other farmers

- Preparations are <u>needed to provide the attractive products</u> : as the price of products includes postage

- The establishment of homepages does <u>not guarantee</u> that <u>new customers will be acquired</u>.

- Direct sales shops, managed by municipalities, agriculture cooperatives, etc., accounts for approximately <u>2,400</u> all over Japan

- Farmers can decide the price of their products by themselves

- For the <u>POS systems, telephones, mobile phones, E-mail by mobile phones, and fax</u> are mainly used.

- Some of the strawberries farmers sell their products by <u>using homepages</u>.

The inside of a direct sales shop

A farmer can easily input the information of her products into the POS system by using a touch panel

(Case 1)

- In Nagasaki Prefecture, extension advisors have been sending <u>technical information</u> to mobile phones of about 90 strawberries farmers since August in 2004.

- The content of information : the timely information such as <u>cultivation techniques of strawberries</u>, <u>weather information</u>, <u>research findings</u>, and so on.

- The farmers <u>pay</u> 300 Yen (about 3 US dollars) a month.

- <u>Good evaluation</u> from member farmers
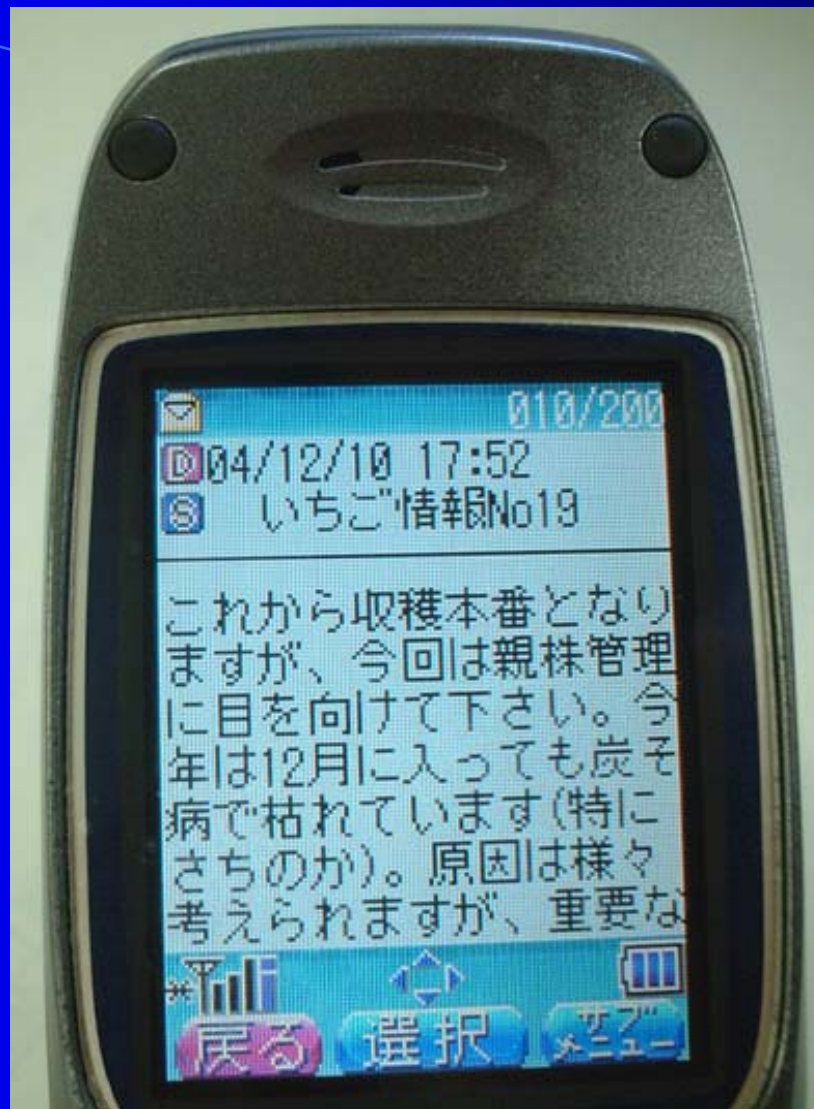
An example of the E-mail received with mobile phones

- *Actual Cases* -

(Case 2)

- In Toyama prefecture, extension advisors provide information to 63 "Nashi" pear farmers and 49 rice farmers by sending E-mail to their mobile phones.

- The interactive communication system has been established between extension advisors and farmers.

(Case 3)

- In Kumamoto prefecture, information on the conditions inside greenhouses is sent to farmers' mobile phones.

- The farmers can relax even if they stay at their house.

A "Nashi" pear farmer receiving information with mobile phone

- Around ten years ago, <u>personal communication network systems</u> had rapidly spread among some farmers.

- <u>Administrative organizations</u> had contributed to the spread of them.
  e.g. IT training courses, Local Network Systems

- In a last decade, <u>most of them have been closed</u>. Because "Google" and "Yahoo" have become popular.

⬇

The Negative Impact of Globalization

CONSIDERATION - No. 2 -

- Farmers, who used to be the receivers of information

  ⬇

   Positively deliver their own information to others.

- Farmers begin to use their homepages for direct sales shops.

- Farmers have been open to the public about the tractability of their farm products

- Sending <u>technical information</u> to <u>mobile phones,</u> have been <u>become popular</u>.

- For <u>POS systems</u>, <u>telephones</u> and <u>mobile phones</u> are mainly used to send the data of the sales to farmers.

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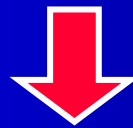
The information network systems using personal computers may not prevail.

The systems, based on the use of mobile phones, show the signs of more diffusion.

CONCLUSION - No. 1 -

Purposes	Targets and supported content		Supports from advisors & researchers
"Urging self-reliance for farmers" "Development of market of farm products" "Acquirement of needs of consumers"	<u>Advance farmers</u> <- a) how to make homepages b) Facilitating communication among farmers		<u>Minimum supports</u>
	<u>Ordinary farmers</u> <- a) friendly user interface b) Use of mobile phones for terminals		<u>Sufficient supports</u>

No.1

We shouldn't achieve all objectives
by using <u>only information network</u> systems

No.2

It is very important to make clear
the objectives of management of systems

No.3

The information network system is
one of the methods for achieving the goal.

If this point is made clear,

No.4 The system will contribute to
the farmers' self-reliance,
the increase of farmers' incomes, etc.
for the majority of farmers.

END

Thank you for listening