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INTERNET FOR THE RURAL DEVELOPMENT IN AGUASCALIENTES, MEXICO*

INTERNET PARA EL DESARROLLO RURAL EN AGUASCALIENTES, MÉXICO

Luis Reyes-Muro[1§], Dora Ma. Sangerman-Jarquín[2], Jesús Axayacatl Cuevas Sánchez[3] and Ceferino Ortiz-Trejo[4]

[1§]Dirección de Promoción y Divulgación. INIFAP. Av. Progreso Núm. 5 Col. Santa Catarina. Del. Coyoacán. México, D. F. 04010. [2]Campo Experimental Valle de México, INIFAP, km 18.5 carretera Los Reyes-Lechería, C. P. 56230, Texcoco, Estado de México. Tel. 01 595 95 4 29 64, (dsangerman@yahoo.com.mx). [3]Universidad Autónoma Chapingo, División de Ciencias Forestales, Fitotecnia. Km 38.5 carretera México-Texcoco, C. P. 56230. Tel. 01 595 95 2 16 14. (cuevasax@chapingo.mx). [4]Dirección de Vinculación con Unidades Operativas. Coordinación de Investigación, Innovación y Vinculación, INIFAP. Av. Progreso Núm. 5 Col. Santa Catarina. Del. Coyoacán. México, D. F. 04010. (ortiz.ceferino@inifap.gob.mx). [§]Autor para correspondencia: reyes.luis@inifap.gob.mx.

ABSTRACT

The incipient use of Internet in rural areas and there was the assumption that the low educational level, older producers, the lack of infrastructure and computer hardware, affect the interest of producers to know and use the medium of communication. Diagnosis was performed to identify factors that determine the use of these electronic media in rural areas of the state of Aguascalientes. In April 2008; 81 producers were interviewed by sampling method in "bola de nieve". Sociodemographic characteristics were identified: gender, age, education, occupation and aspects of computer use, email and Internet. Negative correlation was found between the age of producers and computer use (r^2= -0.43920) and high positive correlation with educational level (r^2= 0.74248), and the need for training in the Internet use (r^2= 0.89646). Notwithstanding the alleged cultural barriers and lack of infrastructure and computer equipment in rural areas, it was possible in three workshops to train 37 farmers in the management of a computer, email and Internet. Under the light of the results, contrary to the assumption that the Internet has no rural penetration, it was found in the area of study, that there is interest in using electronic means of communication as well as the availability of infrastructure (10 000 digital community centers nationwide) so there is a great opportunity for Internet use in the transfer of information on Web pages, email, video conferencing, distance learning, discussion forums, among other tools and applications like a cost-effective to enhance persona l communication, group and institutional development and strengthening rural families.

Key words: electronic communication media, producers, digital community centers.

RESUMEN

Es incipiente el uso de la Internet en el medio rural y existe el supuesto de que el bajo nivel de escolaridad, edad avanzada de los productores, falta de infraestructura y equipo computacional, afectan el interés de los productores en conocer y usar el medio de comunicación. Se realizó un diagnóstico para identificar los factores que determinan el uso de estos medios electrónicos en el área rural del estado de Aguascalientes. En abril de 2008 se entrevistó a 81 productores por muestreo en “bola de nieve”. Se identificaron las características sociodemográficas: sexo, edad, escolaridad, ocupación y aspectos del uso de la computadora, correo electrónico e Internet. Se encontró correlación negativa entre la edad de los productores y el uso de la computadora (r^2= -0.43920) y alta correlación positiva con el nivel de escolaridad (r^2= 0.74248), así como la necesidad de capacitación en el uso de Internet (r^2= 0.89646).

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No obstante las supuestas barreras culturales y la falta de infraestructura y equipamiento computacional en el área rural, fue posible capacitar en tres talleres a 37 agricultores en el manejo de la computadora, correo electrónico e Internet. A la luz de los resultados, contrariamente al supuesto de que la internet no tiene penetración en le medio rural, se descubrió que en el área de estudio si existe interés por el uso los medios electrónicos de comunicación, además de que se dispone de infraestructura (10 000 centros comunitarios digitales a nivel nacional) por lo que hay una gran oportunidad para el aprovechamiento de Internet en la transferencia de información en páginas Web, correo electrónico, videoconferencias, capacitación a distancia, foros de discusión, entre otros recursos y aplicaciones, como un medio económico y eficaz para fortalecer la comunicación personal, grupal e institucional y afianzar el desarrollo de las familias del campo.

Palabras clave: medios electrónicos de comunicación, productores, centros comunitarios digitales.

INTRODUCTION

Today the Internet is a vast web that connects computer networks distributed all over the world, allowing us to communicate, and transfer and search information with no major economic or technological requirements relating to the individual.

The network involves large systems to personal models. In addition, it brings together governmental, educational, scientific, nonprofit and, increasingly, private companies with business interests, making your information available to an audience of more than 30 million people.

Approximately one thousand 460 million people on the planet use the Internet. Brazil is the only Latin American country that figure to 67 million Internet users.

Besides being an economic and efficient means for transmitting information and establishing communication between various sectors of the population. It is commonly used in government offices, businesses, schools, cafes and homes, and it's users are multiple: researchers, students, traders and consumers. According to the February report from eMarketer, in 2001 only 2.2% of Mexicans (1.5 million) had Internet access, and estimated growth for 2004 to 6.4 million people online (Honmex.com. 2001; Honmex. com. 2003; Weborama, 2004). In rural areas, the use of the Internet has been used in successful programs on communication for development, sponsored by the Organization of the United Nations Food and Agriculture Organization (FAO) in Mexico, Chile, Zambia and Zimbabwe (Richardson, 1997).

The National Research Institute for Forestry, Agriculture and Livestock (INIFAP) uses the Internet to inform their users about the results of scientific research and promote their products and services (http://www.inifap.gob.mx). The institute has a website (http://clima.inifap.gob.mx) through which information on weather monitoring in a network of agrometeorological stations. The stations are equipped with sensors for recording the following variables: temperature, precipitation, wind, relative humidity, barometric pressure and solar radiation.

This information is analyzed in periods of 15 minutes and can be used in agricultural systems to improve food production and management of crops and livestock, as well as estimation of crop (Production Estimates and Crop Assessment Division, 2004, USDA, 2008). Despite the influx of visitors to the website of the network of stations (67 957 to 3 October 2006, the date of inception of this research) is unknown what degree of internet penetration in rural areas and factors determine the acceptance and use by farmers. There is the assumption that this electronic means of communication is rarely used in rural areas, under the argument that is beneath the level of education, the advanced age of farmers and lack of infrastructure and computer hardware, coupled with low interest the producers know and use the medium. The aim of this study was to identify factors that determine the use of computers and the Internet and in particular, the access and use of agro-climatic information transferred via internet, and after a diagnosis, conduct a pilot training program.

MATERIALS AND METHODS

The study included the steps: a) diagnosis of Internet use and agrometeorological information sources used by the producers, b) developing a training program for computer use, Internet and agrometeorological information, and c) formation of "clubs" of Internet producers. For diagnosis, during April 2008 was administered a questionnaire to 81 farmers in the state of Aguascalientes, with the sampling method "bola de nieve" from primary respondents (owners of Agro-climatological stations).

As mentioned, a questionnaire was applied to 81 people of which 80 (98.76%) were male and only 1 (1.24%) were female. In the town of Aguascalientes, they interviewed 11 people (13.58%), Calvillo 10 (12.34%), Cosio 9 (11.11%), El Llano 10 (12.34%), Jesús María 2 (2.46%), Pabellón de Arteaga 11 (13.58%), Rincon de Romos 5 (6.17%), San Francisco de los Romo 9 (11.11%), San José de Gracia 9 (11.11%), Tepezala 5 (6.17%).

RESULTS AND DISCUSSION

Sociodemographic characteristics were identified: sex (99% male), mean age (47 years), education (primary 43%, secondary 22%, BS 16%, school 15%, master's 3% and uneducated 1%) and 80% engaged in agricultural activities, 69% of farmers planting under irrigation and the rest in time. Regarding the electronic media: only 37% know how to handle a computer. Those who could not use it say that the reason is the lack of training (57%), without a computer (20%), not interested (4%) did not have the economic resources (4%) and other reasons (15%), 67% have a family that manages computer, 20% use electronic mail (e-mail) and 35% know how to use the Internet. 98% said it is important to use this tool and 96% that it would be useful to producers as a mean of communication.

53% of the people said that through computers, we can be better informed about services and new technologies, others mention that they even improve production (15%), on the other hand, it is helpful to use a new tool (12%), a major media (7%), a method for efficiently conditions (7%), although 4% reported not having time to learn to use this medium and 1% said people could not learn, 63% would like to receive computer training. 68% are willing to train a group of producers (club) for training. Only 17% of respondents know the web page agrometeorological station of INIFAP, while remaining 83% had never heard about it.

From those who know this website, 7% was through the home page Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), 7% by INIFAP, 7% by the Foundation PRODUCE, Aguascalientes, AC , while 36% are from the beginning of the project, 14% learned from neighboring producers, 7% had met a researcher at the INIFAP, 14% from a visit to the Experimental Hall and 7% through print newsletters. Those familiar with the website, 36% visit once a week, 21% once a month, 21% once or more times per day, 21% every six months or harvest season. People who visit the page, 71% found all the information they were seeking instead to 29% could not find what they wanted, especially historical data and technical information on crop and poultry programs.

From those who use the website, 64.28% said they use the information to schedule activities in the agricultural and livestock production, 29% for research, weather forecasting, database and reports executives and 7% knew the page but does not use the information. At 17% it seemed easy to find information within the page. Some of the suggestions of respondents to be aware of the page were: 11.76% suggested training in the use of the Internet, 24% more network broadcast stations and 59% expressed opinions as to publicize the benefits of information, suggest it to small producers, support, accurate predictions, newsletters and training staff.

Figure 1. Producers in the computer literacy workshop.

Negative correlation was found between the age of producers and computer use (r^2= -0.43920) and high positive correlation with educational level (r^2= 0.74248) and a positive response in receiving training in the use of Internet (r^2= 0.89646). Despite the cultural barriers and the alleged lack of infrastructure and computer equipment in rural areas (e-Mexico program) was possible in three workshops to train 37 farmers in the management of the computer, email and Internet for weather data query and its application in agricultural production and forestry.

According to (Laurencio, 2008), the Internet can become a tool for social development, only if the underprivileged are considered and under the light of the results of this work, contrary to the assumption that in rural areas there is no Internet penetration, it has been found in the study area that there is interest in using electronic means of communication as well as available infrastructure, as there are about 10 000 digital community centers (DCC), defined as "open space for learning" (no school) with computers, Internet access and a promoter that helps users to develop skills and abilities with the use of ICTs. (www.emexico.gob.mx-CCD, 2008). This situation represents a great opportunity for the use of the Internet in the transfer of information on Web pages, email, video conferencing, distance learning, discussion forums, among other tools and applications, as a cost-effective to strengthen communication personal, group and institutional development and strengthening of rural families.

In the investigations conducted by (Hudson, 2003; Woods, 2005; Hegen, 2008 and FAO, 2008) it is revealed that there is a lot of information produced in Africa, Asia and Latin America that can be transferred to Internet in a creative way. There are national agencies, including national agricultural research systems, extension services, women's organizations (Women's Resource Center in Zimbabwe), as well as a national and regional NGO's that publish printed newsletters, brochures, manuals, guides, pamphlets and leaflets which do not receive the attention they deserve and diffusion due to high cost of printing and distributing them. Many of these publications are produced on computers, using word processing programs and can therefore be easily transferred through software packages of the Internet to be distributed on-line, in workshops that use computers, performing in rural communities. The static information online can be "recycle" and get a longer validation when combined with interactive Internet applications that support questionnaires, learning games, discussion groups and feedback from users in these communities.

This strategy to support creative services and Internet applications, including actors and actresses in rural Africa, Asia and Latin America, is to implement and use services in different ways: a) subsidizing agencies, national agricultural research systems and groups of rural actors and actresses as NGO's, women's organizations and universities for hosting a creative information service, libraries and resource centers and information-gathering through Internet service providers, b) training the staff involved to provide information to rural areas through other means, to learn to use and implement Internet services. This exercise is quite interesting because they train, learn and teach so they reach communities with a background for learning.

Supporting the production and distribution of content via the internet digital audio (and in the future, digital video) to be used in applications of rural radio campaigns, and programs for the illiterate, in combination with graphic illustrations and photographs.

Table 1. Demographic variables and opinion on the use of computers, the Internet and need for training, correlation coefficients between selected variables.

Variable	Age	Education	Occupation	Use computer	Need to use a computer?	Need to use Internet?	Training needed?
Age	1.00000						
Education	-0.43365	1.00000					
Ocupation	0.01054	0.25380	1.00000				
Usa computadora	-0.43920	0.74248	0.19656	1.00000			
Need to use a computer?	-0.08950	-0.03972	0.29566	0.01504	1.00000		
Need to use Internet?	0.03105	-0.38600	-0.24859	-0.52353	0.12033	1.00000	
Training needed?	0.05119	-0.34169	-0.17441	-0.52353	0.14521	0.89646	1.00000

Age (years)	Education (1= elementary, 2= high school, 3= bachelor, 4= licentiate)	Occupation (1=Agr, 2=Cattle, 3= agrop, 4=other)	Use computer (1=no; 2=si)	Need to use a computer? (1=no; 2=si)	Need to use Internet? (1=no; 2=si)	Training needed? (1=no; 2=si)
60	3	3	2	2	1	1
41	4	4	2	2	1	2
48	2	3	1	2	2	2
40	4	4	2	2	1	1
43	4	4	2	2	1	1
28	2	3	2	2	2	2
47	5	4	2	2	1	2
56	2	3	1	2	2	2
47	1	3	1	2	2	2
54	1	3	1	2	2	2
31	1	1	1	2	2	2
58	1	1	1	2	2	2
19	1	2	1	2	2	2
34	3	3	1	2	2	2
37	2	1	1	2	2	2
47	1	1	1	2	2	2
33	2	3	1	2	2	2
81	1	3	1	2	1	1
64	1	3	1	2	2	2
48	1	3	1	2	2	2
64	1	1	1	1	1	1
62	1	1	1	2	2	2
36	1	1	1	2	2	2
60	4	1	2	2	2	2
40	2	2	1	2	2	2
32	3	3	2	2	1	1
48	2	1	2	2	1	1
40	4	3	2	2	1	1
29	3	3	2	2	2	2
63	1	2	1	2	2	2
43	4	1	2	2	1	1
60	1	1	1	1	2	2
31	2	3	1	2	2	2
28	2	2	1	2	2	2
27	3	3	2	2	1	1
59	1	3	1	2	1	1
60	1	3	1	2	2	2
58	4	4	2	2	1	1
56	3	1	1	2	2	2
37	2	1	1	2	2	2
65	1	3	1	2	2	2
63	1	3	1	2	1	1
29	4	3	2	2	1	1
61	1	3	1	2	2	2

Age (years)	Education (1= elementary, 2= high school, 3= bachelor, 4= licentiate)	Occupation (1=Agr, 2=Cattle, 3= agrop, 4=other)	Use computer (1=no; 2=si)	Need to use a computer? (1=no; 2=si)	Need to use Internet? (1=no; 2=si)	Training needed? (1=no; 2=si)
64	1	3	1	2	2	2
53	1	1	2	2	2	2
27	2	3	1	2	2	2
51	1	3	1	2	2	2
37	5	1	2	1	1	1
42	4	4	2	2	1	1
42	2	3	2	2	1	1
63	3	3	1	2	2	2
54	2	3	1	2	2	2
34	4	2	2	2	1	1
27	4	2	2	2	1	1
36	4	3	2	2	2	2
34	1	1	1	2	2	2
22	3	1	2	2	2	2
53	1	3	1	2	2	2
74	1	3	1	2	1	1
71	1	3	1	2	1	1
20	2	1	2	2	1	1
31	3	3	2	2	2	2
22	2	3	2	2	2	2
47	2	3	1	2	2	2
46	1	3	1	2	2	2
73	1	3	1	2	2	2
58	1	3	1	2	1	2
74	1	1	1	2	2	2
45	1	3	2	2	1	1
59	1	3	1	2	2	2
83	0	1	1	2	2	2
52	2	3	1	2	2	2
46	3	3	1	2	2	2
50	1	2	1	2	1	1
50	1	3	1	2	2	2
52	1	2	1	2	1	2
50	4	3	2	2	2	2
22	2	1	1	2	2	2
24	3	4	2	2	1	1
34	3	4	2	2	1	1

CONCLUSIONS

In the study area, older producers do not use computers, while the highest academic degree have preferences for using this tool.

Most of the producers expressed a need for training in the use of computers and Internet.

Interest in the use of electronic means of communication, and the availability in rural infrastructure, the Internet is

emerging as an economical and effective interpersonal communication, group and institutional development to strengthen rural families.

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