presently contains propagation information pages for over 70 plants, which was gathered from 150 resources including books, journal articles, Web sites, and unpublished notes and manuscripts. A complete bibliography is available on the Web site.

The Hawaiian Native Plant Propagation Web Site provides easy access to this information for anyone with access to the Internet. Extension agents, landscape architects, and nursery personnel can use this information to increase the use of native plants in public and private landscapes. Practitioners of traditional Hawaiian cultural practices can use this information to grow native plants as an alternative to harvesting from native ecosystems, and it can assist conservationists in protecting endangered plant species. Researchers and students can use it to identify those plants for which propagation information is lacking and for which further research would be useful. This Web site realizes the web's potential as an international forum for sharing, organizing, and accessing specialized or difficult to obtain information.

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Computer and Internet Use Among Oregon Master Gardeners

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ADDITIONAL INDEX WORDS. survey, Internet and computer use, extension, volunteer, volunteer demographics

SUMMARY. The Internet has become a tool used in business, education, and leisure pursuits. Extension has used the Internet in a variety of ways including the training of extension staff and volunteers and the dissemination of information. In 2001, a survey was developed to determine the comfort level, familiarity, and use of computers and the Internet by active Oregon Master Gardeners (MGs). Basic demographic data was also collected. We found that 85% of respondents use computers and are very comfortable with computers and the Internet. This extensive use and comfort level suggests that the Internet may be an acceptable alternative to the traditional face-to-face training method for some Oregon MGs.

When the Master Gardener Program started in 1972 in Washington state, the original focus was training volunteers to diagnose and offer solutions to plant problems (Bobbitt, 1997). In the 30 years since the inception of the Master Gardener (MG) program, the services provided have expanded to include community enhancement projects, youth outreach, and a variety of educational projects.

To increase the impact of the MG program beyond personal contact, various types of media are used, including print publications, radio, and television (Meyer, 1997). The intent of using multiple educational methods is to provide consistent, high

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quality information and training while increasing efficiency and effectiveness, and decreasing expenses of both time and money. (Ginsburg, 1999).

Most Americans have access to the Internet (U.S. Department of Commerce, 2002) and this technology can significantly increase educational opportunities available to those who would not normally attend traditional classes due to distance, job, or family (Ginsburg, 1999). The extension service has seen the benefits of this delivery method and has incorporated education through the Internet for faculty, volunteers, and volunteer managers (Lippert et al., 2000; Sherfey et al., 2000). And, a recent study in Minnesota suggests online education, as a method of training MGs, can be as effective as classroom education (Jeannette and Meyer, 2002).

With this in mind, we developed a survey to determine the demographic profile of Oregon MGs and how this group of volunteers responded to using computers and the Internet. We also wanted to determine if there were relationships between demographic components and computer and Internet use and comfort.

Materials and methods

The survey was developed using a 1992 Oregon MG survey as a model and all questions met specifications from the Oregon State University institutional review board. Survey specialists were consulted in the development process to help craft concise questions that would result in useful data (M. Engle, personal communication; D. Plaza, personal communication).

The demographic portion of the survey included questions to determine age, gender, ethnicity, income, education level, community size, and employment of Oregon MGs. Another section of the survey asked questions about computer use, access, ownership, operating platform, and length of time using a computer. Using a Likert scale (Likert, 1932) of 1 to 5 (1 = rather not use and 5 = expert), participants were asked to rate their comfort level and familiarity with both computer and Internet use. Participants also provided information on their Internet use including years of use, weekly usage, for what purposes they most often use the Internet and three questions on types of learning activities they have completed via the Internet. A complete copy of the survey is available online (VanDerZanden, 2002).

Using Perseus survey software (Perseus Development Corp., Braintree, Mass.) a stratified proportional sample of 257 from the currently active 2759 Oregon Master Gardeners was selected to complete the survey. The strata were determined by the counties in the state and number of active Master Gardeners in each county. By setting alpha = 0.05 and the power to 80%, the effective sample size was 187. The survey was mailed to 257 MGs to account for attrition and non-respondents. Three weeks after the survey was mailed, follow-up postcards were sent to non-respondents. Data analysis was completed using SAS (SAS Institute, Cary. N.C.).

Results and discussion

Of the 257 MGs who received the survey, 132 responded for a return rate of 51%. The response was a stratified proportional sample. Current Oregon MGs have high education and income levels, are predominately female (74%), white, European Americans (95%) and over the age of 50 years. They tend to live in rural areas (those areas with a population of less than 29,000), and are most often employed (Table 1). This profile is similar in many categories to Missouri and Atlanta area MGs as reported by Shrock et al., (1999) and Rohs and Westerfield, (1996), respectively.

The Oregon MG profile also illustrates volunteers who use computer and Internet technology extensively as evidenced by the 85% who use computers and 97% of this group who own a computer. Eight-two percent of the computer users have done so for 5 or more years (Fig. 1) and 83% rated themselves a 3 or higher, (defined as adequate or above) on a scale from 1 to 5, when describing their comfort level with using a computer (Fig. 2).

Of the 85% who use computers, 92% indicated they use the Internet. The number of years MGs have used the Internet varies from less than 1 year to 5 or more (Fig. 3). The amount of time spent weekly on the Internet, ranged from 15 min to over 20 h (Fig. 4), with an average of 5 to 6 h online each week. The most frequent uses of the Internet were for e-mail, information gathering, business, travel, and shopping (Fig. 5). As with computer use, 83% of the MGs rated their comfort level using the Internet as a 3 or above, on a scale of 1 to 5 (Fig. 2).

Although this group has high Internet usage, only 15% reported taking an educational course via the Internet, and 7% reported completing a professional development course online. Yet when asked if they were interested in participating in educational, professional development, and personal enrichment courses offered via the Internet, the affirmative responses were 69%, 37% and 56%, respectively.

Table 1. Oregon Master Gardener demographic profile based on a statewide survey conducted in 2001 (n = 132).

Parameter	Respondents (%)
Education level	
High school graduate	13
Four-year college degree (BS, BA)	36
Advanced college degree (MS, MA, PhD)	31
Annual income	
Under $24,999	22
$25,000 to $49,999	33
$50,000 or more	45
Age	
51 years or less	31
52 years or more	69
Community size	
Large city (>100,000 population)	20
Small city (30-000-99,999 population)	10
Town (<29,999 population)	23
Rural area (open country)	46
Employment status	
Employed	51
Retired	42
Homemaker	7

In comparing computer and Internet use of Oregon MGs to national averages for the general population, it is clear this group is on the leading edge of technology use. In 2001, 65.5% of U.S. households reported using a computer, and 53.9% reported using the Internet (U.S. Department of Commerce, 2002). When Internet use by percent of state population is calculated, Oregonians as a whole show a 58% to 64% use rate (U.S. Department of Commerce, 2002), while within the Oregon MG program, 78% report using the Internet.

The only significant correlation ($r = 0.342$) using chi-square tests was between frequency of computer and Internet use, and comfort in using these technologies ($P \leq 0.05$). When demographic data was correlated with the technology data, there were no significant correlations. For example, there was no relationship between computer use or comfort level with gender, age, education level, income, where the MGs live, or employment status. This indicates that Oregon MGs have a similar comfort level using technology regardless of their demographic profile.

Conclusion

Based on the statewide survey in 2001, volunteers in the Oregon MG program have a high familiarity and comfort level with computers and the Internet. Other survey data indicates that current MGs are more likely to live in rural areas of the state and to be employed compared to 1992 data (McNeilan, 1992). Although in 2001 only 22% of the respondents reported taking a course online, they expressed significant interest in completing educational and personal enrichment courses via the Internet, and to a lesser extent completing professional development courses.

High comfort and familiarity with computers and the Internet, combined with their interest in online courses, might mean these new MGs are open to receiving the MG training online rather than in the traditional face-to-face setting. Receiving training via the Internet will allow volunteers to complete the training units throughout the week and save time and money traveling to the training location. Since 1996, Minnesota has successfully trained more than 170 MG volunteers online (M. Meyer, personal communication). Many of these trainees note that flexibility and convenience are two major advantages to online training (Jeannette and Meyer, 2002).

The Internet can be a useful tool to deliver training at a distance. However, it is not suitable for all learners or all educational programs, nor is it

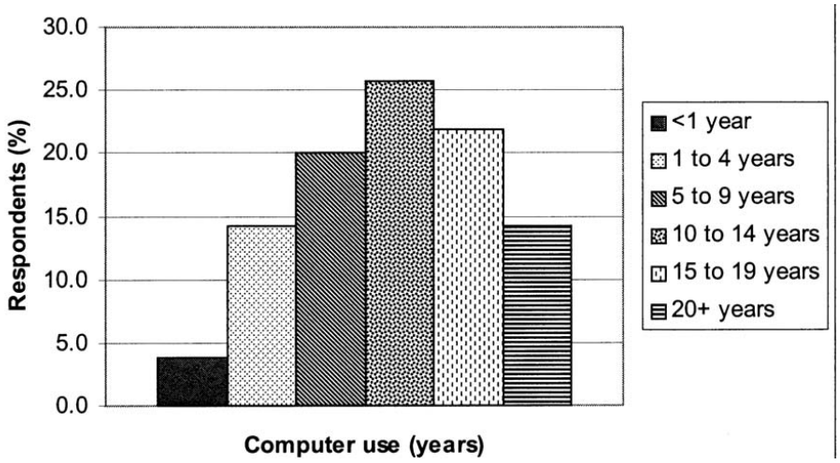

Fig. 1. Years of computer use by Oregon Master Gardeners based on a statewide survey conducted in 2001 (n = 112).

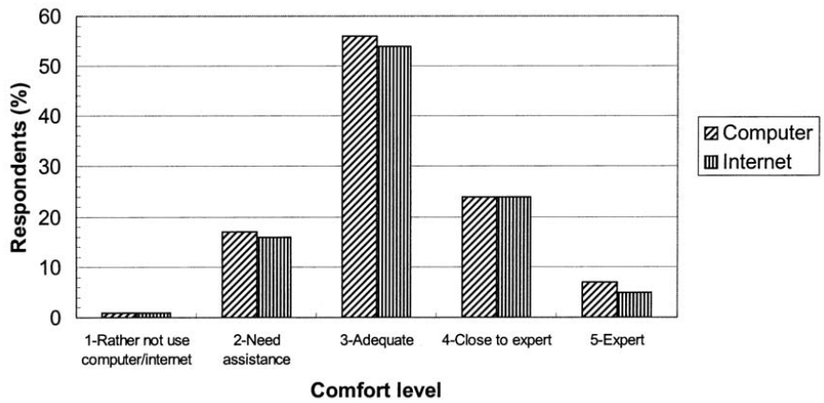

Fig. 2. Comfort level using computers (n = 112) and the Internet (n = 105) of Oregon Master Gardeners based on a statewide survey conducted in 2001.

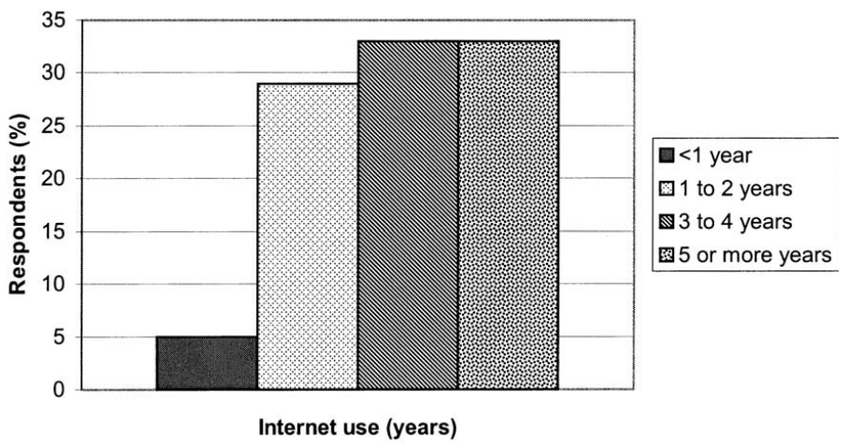

Fig. 3. Years of Internet use by Oregon Master Gardeners based on a statewide survey conducted in 2001 (n = 105).

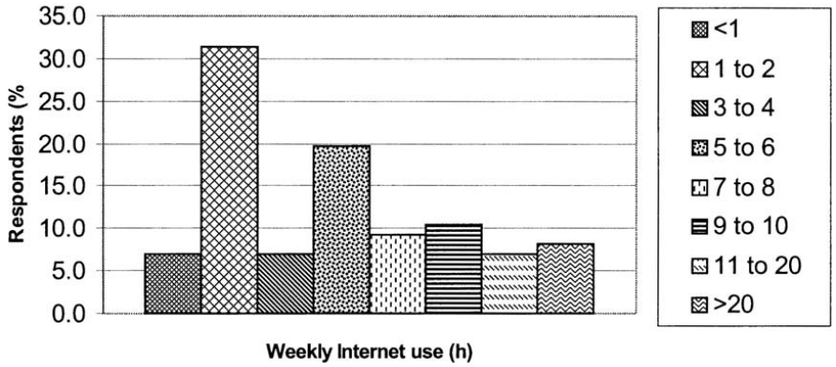

Fig. 4. Weekly Internet use in hours by Oregon Master Gardeners based on a statewide survey done in 2001 (n = 105).

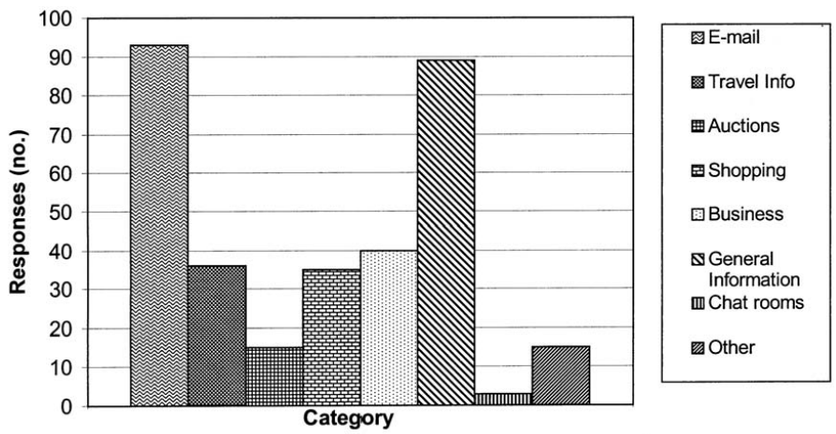

Fig. 5. What Oregon Master Gardeners use the Internet for based on a statewide survey done in 2001 (n = 105).

a quick and inexpensive alternative to traditional classroom training (Bauder, 2002; Cecil and Feltes, 2002). The keys to success for distance education are well developed educational programs and motivated learners, both of which are common throughout the MG program (Jeannette and Meyer, 2002; Stack, 1997; VanDerZanden et. al, 2002). This study suggests that the Internet should be viewed as a serious educational option for delivering MG training.

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