

Proc. Fla. State Hort. Soc. 117:189-193. 2004.

IMPORTANT ISSUES, SOURCES OF CONTINUOUS EDUCATION, INFORMATION AND TRAINING UTILIZED BY MIAMI-DADE GROWERS AND GOLF COURSE MANAGERS

RAFAEL MUÑOZ-CARPENA¹ AND JONATHAN H. CRANE
*University of Florida, IFAS
Tropical Research and Education Center
18905 SW 280 Street
Homestead, FL 33031*

GLENN D. ISRAEL
*University of Florida, IFAS
Agricultural Education and Communication
Gainesville, FL 32611*

CHARLES YURGALEVITCH²
*Miami-Dade County Cooperative Extension Service
Homestead, FL 33030*

Additional index words. drought, extension, flooding, ornamental, plant pests, tropical fruit, vegetable, water quality

***Abstract.* As a part of a recent water conservation survey, fruit, vegetable, and ornamental growers and golf course managers in Miami-Dade County were asked about their sources for training and continuous education, the most common methods by which they become aware of Extension activities, and their frequency of computer and internet use. Usable survey responses were obtained from 167 growers in the area across**

¹Corresponding author.

²Present address: Brooklyn Botanical Gardens, N.Y.

all commodity groups. Background information on survey participants found 55% and 13% of the fruit and ornamental growers were part-time farmers. In contrast, 100% of the vegetable growers and golf course managers worked full-time in their profession. The majority (87-100%) of survey respondents were male. The survey found the University of Florida-IFAS (UF-IFAS) rated as a very important educational source for all crop producers (43-83% of the respondents across groups) and that vegetable producers heavily utilized commercial representatives (67%) and consultants (83%). Golf course managers rated UF-IFAS, USDA-Farm Service Agency, and industry organizations as equally (38%) important sources of information. The most common methods by which producers and managers become aware of Extension programs were newsletters, mailed notices, and word of mouth, in decreasing order of importance. Computer and internet use ranged from 58% by fruit growers, to 75%, 89%, and 100% of the golf course managers and ornamental and vegetable producers, respectively. Only a third of the responding vegetable growers and half of the other groups showed interest in an Extension web site for Miami-Dade programs and information. This knowledge can prove essential for targeting the ever-busier audiences for Extension programming.

Miami-Dade County agriculture has a billion dollar impact on the state economy (Degner et al., 2001a) and the golf course industry in Miami-Dade County is estimated to be worth \$200 million annually (Haydu and Hodges, 2002). There are about 40,411, 15,611, and 12,010 acres of vegetable, fruit, and nursery production, respectively. Miami-Dade's 48 golf courses cover an estimated 8,400 acres of turf (Haydu and Hodges, 2002). The estimated number of vegetable, fruit, and nursery producers ranges from about 80 to 100, 265 to 823, and 573 to 1053, respectively, depending upon the criteria and sources used to estimate it (Degner et al., 2001a, b; Hodges and Haydu, 2000; T. Olczyk, H. Bryan, J. Crane, C. Balerdi, and C. Yurgalevitch, personal communication).

Identification of important issues relating to agriculture and providing educational programs to address and assist the agricultural and golf course industry is a primary mission of the Cooperative Extension Service of the University of Florida. There are also numerous other public institutions and private companies that provide educational information to producers and managers. Many methods for notification of Extension programs and methods for providing educational materials have been utilized in the past. New technologies may have the potential of improving the output of timely information and programs. However, which sources of information, notification, and methods of providing Extension programming are important is unknown. With this in mind a survey was conducted of fruit, ornamental, and vegetable producers, and golf course managers of Miami-Dade County, Florida. Planning programs and optimizing outreach efforts has the potential to further enhance the socioeconomic and environmental status of the local horticultural community in the future.

Materials and Methods

The survey involved a random sample of over 600 agricultural and golf course water users in Miami-Dade County selected from mailing lists obtained from the Miami-Dade County/IFAS Cooperative Extension Service and other growers' organizations in Miami-Dade County. The survey recipients were selected according to the size of their operation to obtain a maximum of 400 surveys per commodity group with

a range in the sizes of operations. This represents close to 50% of the sampled population.

The survey instrument used contained questions concerning the most important issues facing growers and golf course managers, participation in commodity based organizations, preferred sources of educational information and presentation of information, preferred method of notification of educational programs, and computer use. The survey was tailored to each of the four main commodities in Miami-Dade County (vegetables, tropical fruits, ornamental plants and golf courses). The survey protocol adopted follows social sciences methodology to allow statistical analysis of results and the assessment of the influence of the economic, technical, and sociological factors on water conservation practices in the area. Each potential respondent received a letter informing him or her of the purpose of the survey. Two weeks later the surveys were sent out and telephone follow up was done 4 and 8 weeks later. The survey data was analyzed using SAS software FREQ and MEANS statistical procedures (SAS, 1999).

Results

The overall survey response rate was 27% (167 respondents), representing almost a fifth (18%) of the agricultural and golf course land area (Muñoz-Carpena et al., 2003). Since mail-back survey response rates of 10 to 50% are common, and typically may be as low as 20% (Dolan et al., 2000; Nachmias and Nachmias, 1976; Neuman, 1997), the response was considered satisfactory. The importance of various issues facing their economic activity varied substantially across groups (Table 1). The most important (greater number of respondents that considered them important to very important) for each group was farm commodity prices for fruit growers (52% of respondents), water shortages for ornamental growers (60%), trade/competition for vegetable growers (83%), and water shortages (88%) and quality (75%) for golf course managers.

The number of commodity based grower organizations varies by commodity (Table 2). Of those fruit growers surveyed 76% belonged to the Tropical Fruit Growers of South Florida, followed by the Farm Bureau (44%), Lime and Avocado Committee (23%), and Dade County AgriCouncil (12%). All vegetable growers surveyed belonged to the Farm Bureau. Eighty-seven percent of the ornamental growers belonged to the Florida Nursery and Grower Association and 67% to the Farm Bureau. Although the Farm Bureau was originally an insurance company it has traditionally been proactive on farming issues in Miami-Dade County.

The most important sources of educational information varied by commodity group (Table 3). More fruit (63%), or-

Table 1. The percentage of fruit, ornamental, and vegetable growers, and golf course managers rating specific issues as important to very important.

Issue	Fruit	Ornamental	Vegetable	Golf course
Water shortages	44	60	17	88
Flooding	41	45	33	63
Water quality	40	47	34	75
Plant pests	41	46	33	63
Trade/competition	42	30	83	13
Farm commodity prices	52	18	50	NA ^a

^aNA, not asked.

Table 2. The percentage of fruit, vegetable, and ornamental growers belonging to a specific grower's organization.

Commodity group	Organization	Percent members
Fruits	Farm Bureau	44
	Lime and Avocado Committee	23
	Dade County AgriCouncil	12
	Tropical Fruit Growers of South Florida	76
	Florida Mango Forum	10
Vegetable	Farm Bureau	100
Ornamental	Farm Bureau	67
	Florida Nursery and Grower Association	87

ornamental (43%) and vegetable growers (83%) rated the University of Florida's Cooperative Extension Service (UF Extension Service) as a very important source of educational information than any other public or private institution listed. Fifty-four percent and 39% of the fruit growers listed the Tropical Research and Education Center (TREC) and company representatives, respectively, as very important (Table 3). Thirty-five percent and 27% of the fruit growers reported the South Florida Water Management District (SFWMD) and other farmers as very important sources of educational information. In contrast, about 30-40% of the ornamental growers reported TREC, company representatives, SFWMD, other farmers, and family members/friends as very important sources of educational information (Table 3). Eighty-three percent of the vegetable growers rated the UF Extension Service, private consultants, farm associations/groups, and farm media/trade magazines as very important sources of educational information (Table 3). Sixty-seven percent of the vegetable growers identified TREC and company representatives as very important. Fifty percent of the vegetable growers listed USDA-Agricultural Research Service (USDA-ARS), other farmers, and family members/friends as very important sources of educational information. Golf course managers identified family members/friends (50%), farm associations/groups (38%), UF Extension Service (38%), and company representatives (25%) as very important.

Table 3. Selected sources of educational information and the percentage of fruit, vegetable, and ornamental growers, and golf course managers rating the source as very important.

Source	Fruit	Ornamental	Vegetable	Golf course
UF Extension Service ^a	63	43	83	38
TREC ^a	54	34	67	13
USDA-NRCS ^a	19	19	33	13
USDA-ARS ^a	25	32	50	13
SFWMD ^a	35	22	17	0
Company representatives	39	39	67	25
Private consultants	21	31	83	13
Farm associations/groups	16	26	83	38
Other farmers	27	31	50	13
Family members or friend	18	31	50	50
Irrigation company reps	8	23	33	13
Farm media/trade magazines	18	20	83	13

^aUF, University of Florida; TREC, Tropical Research and Education Center; USDA-NRCS, United States Department of Agriculture-Natural Resource Conservation Service; USDA-ARS, USDA-Agricultural Research Service; SFWMD, South Florida Water Management District.

Preference for which method to receive extension information varied by commodity group (Table 4). Fruit growers preferred newsletters (66%), workshops (63%), field days (52%), publications (50%), seminars (45%) and web sites (45%). Similarly, ornamental growers preferred newsletters (67%) and workshops (56%) followed by publications (53%), web sites (47%), and seminars (41%). Vegetable growers preferred workshops, field days, and newsletters equally (67%) followed by seminars, publications, and web sites (50%). Golf course managers preferred seminars (63%) followed by workshops, field days, and newsletters (all at 50%). Interestingly, traditional methods like one-on-one and telephone was rated low to very low across all commodity groups (Table 4).

Notification of future extension programs is critical to program success (Table 5). Fruit and ornamental growers preferred notice of extension programs by newsletters (69-71%) and mailed flyers (60-66%). Notification by word of mouth was about 34%. In contrast, 50% of the vegetable growers preferred notification by facsimile (fax) and word-of-mouth followed by mailed flyers, telephone, and grower groups (all 33%). Newsletters and mailed flyers were preferred by golf course managers. Notification of extension programs through professional groups ranged from 33-40%. Notification by newspapers was rated low (11-24%) and web sites was very low (0-2%) for all commodity groups.

Use of a computer and the internet varied by commodity group with all the vegetable growers surveyed (100%) and most ornamental growers (89%) and golf course managers (75%) utilizing a computer and internet. In contrast, only a little more than half (58%) of the fruit growers surveyed did so. Of those utilizing a computer/internet in their operation ornamental (83%) and vegetable growers (80%) and golf course managers (100%) use their computer daily. This is in contrast to 49% for fruit growers. When asked if they would use an extension web site specific to Miami-Dade County only a third (33%) of the vegetable growers and about half the fruit and ornamental growers and golf course managers responded positively.

Discussion

Fruit growers. Fruit growers (52%) rated farm commodity prices more important-very important than all other issues (Table 1). This is probably due to the recent increase in foreign competition as trade agreements take effect and phytosanitary barriers are overcome. A majority of fruit growers indicated the UF Extension Service and TREC are very important sources of educational information (Table 2) and most preferred notification of extension programs via newsletters

Table 4. Fruit, vegetable, and ornamental growers, and golf course managers preferred method of receiving extension information.

Method	Fruit	Ornamental	Vegetable	Golf course
Workshops	63	56	67	50
Seminars	45	41	50	63
Field days	52	38	67	50
Publications	50	53	50	38
Newsletters	66	67	67	50
Newspapers	21	19	0	25
Web sites	45	47	50	38
One-on-one	23	13	0	0
Telephone	11	6	17	13

Table 5. The percentage of fruit, vegetable, and ornamental growers, and golf course managers notified of extension programs by various media.

Source of notice	Fruit	Ornamental	Vegetable	Golf course
E-mail	24	13	17	13
Newsletters	71	69	50	63
Mailed flyers	60	66	33	63
Telephone	8	8	33	25
Web sites	1	2	0	0
Facsimile	11	28	50	0
Word of mouth	34	34	50	25
Newspapers	24	11	17	13
Posted notices	8	10	17	13
Grower groups	35	40	33	13

and mailed flyers (Table 5). Due to budget constraints mailed flyers are not economically feasible and notification via newspapers and web sites more common. This may be a problem in the near term since most fruit growers indicated little use of web sites (1%). Newsletters, workshops, field days, and publications were all identified as preferred methods for receiving extension information (Table 4). In addition, computer use by fruit growers is relatively low (58%). However, use of the computer and internet is becoming more common in extension programming and mailed newsletters may become less common in the near future due to budget constraints. This points to the need to promote computer use among fruit growers if educational information is to be provided in a timely and efficient manner.

Ornamental growers. Ornamental growers identified water-related issues as the most important (Table 1). This would be expected as production of plants without leaf and/or flower defect is critical to marketing and lack, excess, or poor quality water directly affects plant appearance. UF Extension Service, company representatives, and TREC were all identified as important sources of educational information (Table 2) and offering programs to company representatives would probably increase the potential impact of sustainable agricultural practices of ornamental growers. Similar to fruit growers, ornamental growers identified newsletters, workshops, publications, web sites, and seminars as preferred methods of receiving extension information (Table 4). As with fruit growers most ornamental growers identified newsletters, mailed flyers, and grower groups as preferred methods of notification of extension programs; however, but not as current methods of notification of programs. Increasing the use of the internet (e-mail/web) to notify ornamental growers of programs seems a logical path since most ornamental growers indicated they utilize a computer daily (Table 6).

Vegetable growers. Vegetable growers overwhelmingly (83%) identified trade/competition as the major issue of concern, followed by farm commodity prices (50%) (Table 1). This is a reflection of the negative impact foreign competition has had on vegetable production throughout the U.S. due to previous and future trade agreements. Vegetable growers reported a number of important sources of information including UF Extension Service (83%), farm associations/groups (83%), private consultants (83%), TREC (67%) and company representatives (67%) (Table 3). This suggests an opportunity for UF Extension to develop programs for private consultants and company representatives which would increase the outreach and potential impact of programs. Vegetable growers preferred workshops, field days, and newsletters as methods to

Table 6. The percentage of fruit, vegetable, and ornamental growers, and golf course managers utilizing a computer and the internet.

Survey question	Fruit	Ornamental	Vegetable	Golf course
Utilize a computer in their operation	58	89	100	75
Frequency of computer use				
• Daily	49	83	80	100
• Weekly	35	12	20	0
• Monthly or less	16	5	0	0
Would use an extension web specific for Miami-Dade County	54	48	33	50

receive extension information although 50% indicated they prefer receiving information through web sites (Table 4). Computer use by vegetable growers is high (100%) and many (80%) utilize it daily (Table 6). This suggests an opportunity to increase extension programming via the internet. Interestingly, none of the vegetable growers surveyed indicated they prefer notification of extension programs via web sites (Table 5). Since computer use is high among this group it may be possible to increase the use of web sites as a notification procedure for extension programs. There is a clear opportunity to offer practical training for growers and managers on the use of internet resources to obtain Extension information.

Golf course managers. The majority of golf course managers identified water shortages (88%) and water quality (75%) as the most important issues (Table 1). This reflects the importance of water issues for the golf course industry where high quality turf and landscape is critical to the game and attracting players. Highly rated sources of educational information included irrigation companies (50%) followed by UF Extension Service (38%) and farm associations/groups (38%) (Table 3). This reflects in part the fact that traditionally no specialized local Extension support has been available for this industry. There may also be an opportunity for Extension to offer educational programs to irrigation company employees and trade associations thus increasing their educational impact. Use of the computer by golf course managers is high (75%) but was not used as a notification source (0%) (Table 6). It may be possible to increase the use of the internet as a notification source through advertising and prompting at extension events as well as computer/internet training.

Conclusions

The importance of various issues varied by commodity group and reflects current changes in trade and environmental policy throughout the U.S. The fact that the UF Extension Service was consistently highly rated as a source of educational information attests to the long tradition and effort by the University of Florida to provide science-based information to the horticultural industry of Florida. However, opportunities exist to train some of the other information providers for the industry (company representatives, private consultants) in a "train-the-trainers" effort. Utilization of computers is relatively high with most commodity groups but its use to extend information and notification of programs needs improvement. There exist a clear opportunity to offer practical training for growers and managers on the use of computer/internet resources (web, e-mail) to obtain Extension information.

Acknowledgments

The authors thank Tina Dispenza, Sandra Brown, Carmen Kameko, Yuncong Li, Don Pybas, Teresa Olczyk, Carlos Balerdi, Ray Rafie, Wagner Vendrame, Robert Carew, and Joseph Garofalo for their cooperation with this project. Florida Agricultural Experiment Station Journal Series No. N-00672. The University of Florida's Institutional Review Board approved the proposal (UFIRB #2002-556). Funding for this project came from the South Dade Soil and Water Conservation Service and University of Florida, SHARE Foundation.

Literature Cited

Degner, R. L., T. J. Stevens, and K. L. Morgan. 2001a. Miami-Dade Agricultural Land Retention Study: Summary and Recommendations, Vol. I. Fla. Agri. Market Res. Center, IFAS, Univ. of Florida, Gainesville. p. 89.
Degner, R. L., T. J. Stevens, and K. L. Morgan. 2001b. Miami-Dade Agricultural Land Retention Study: Summary and Recommendations, Appendix

B. Fla. Agri. Market Res. Center, IFAS, Univ. of Florida, Gainesville. P. 201.
Dolan, A. H., R. Kreutzwiser, and R. de Loë. 2000. Rural water use and conservation in southwestern Ontario. *J. Soil and Water Conservation* 55:161-171.
Haydu, J. J. and A. W. Hodges. 2002. Economic impacts of the Florida golf course industry, Econ. Information Report EIR 02-4. Food and Resource Economics Dept., Fla. Coop. Ext. Service, Gainesville. P. 34.
Hodges, A. W. and J. J. Haydu. 2000. Florida's environmental horticulture industry. Food and Resource Economics Dept., Fla. Coop. Ext. Service, Gainesville. P. 12.
Nachmias, D. and C. Nachmias. 1976. *Research Methods in the Social Sciences*. St. Martin's Press, New York.
Neuman, L. W. 1997. *Social Research Methods: Qualitative and Quantitative Approaches*. 3rd ed. Allyn and Bacon, Boston.
Muñoz-Carpena, R., J. H. Crane, G. D. Israel, and C. Yurgalevitch. 2003. Water Conservation Survey of Miami-Dade County Agricultural and Golf Course Commercial Water Users. *Proc. Fla. State Hort. Soc.* 116:15-21
SAS Institute, Inc. (1999). SAS 8.01 [Computer software]. SAS Institute, Inc., Cary, NC.