

# green thumb: extension's videotext

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## Videotext for Agriculture

Informational needs of farmers have been expanding at an ever-increasing pace. As a result, the latest technology is being used to create a new information delivery system. Most farmers receive Extension information through publications, meetings, and farm visits. But, some 200 Kentucky farmers have been receiving up-to-date weather, market, and Extension-generated production and marketing information by linking their telephones and television sets to computers in a project called Green Thumb.

Green Thumb is a videotext system that combines the assets of large quantities of computer-based information, storage and retrieval on demand, rapid message transmission, and visual display. This emerging technological hybrid makes information available to farmers in a timely and convenient manner. With the support of the Extension Service, USDA, and the National Weather Service, a test of a pilot system was conducted by the Kentucky Cooperative Extension Service to determine the use and farmer acceptance of such an information system.

## Information Base

Information on Green Thumb came from a variety of sources, including the National Weather Service, the USDA Agricultural Marketing Service, private companies, and Extension specialists and agents. This information was received by a minicomputer at the University of Kentucky, College of Agriculture, where it was sorted and forwarded every 15 minutes to microcomputers located in county Extension offices. Farmers, in turn, selected information from a "menu" listing and dialed the local phone number of the county computer. The requested information was transmitted to the user's Green Thumb terminal for viewing on a TV set.

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In all, about 450 different information items were available to users. Market prices and weather information originated mostly from other agencies, while agricultural advisories on plant diseases, entomology, horticulture, agronomy, agricultural economics, animal sciences, and agricultural engineering were prepared by Extension specialists. Though the Green Thumb system was developed to serve the needs of agricultural producers, some home economics, 4-H, and community development information was included in the data base.

### **Pilot Test**

The experiment was conducted from March, 1980, to April, 1981, in 2 Kentucky counties. One county was predominately large-scale corn and soybean cash grain farms, while the other was composed of smaller farms with beef, dairy, and tobacco the important commodities. In each county, 100 participants were chosen to represent the diversity of agriculture with farm sizes ranging from 50 to 4,000 acres, for a median acreage of 450.

Information on Green Thumb comes from two evaluation studies. The first, conducted by the University of Kentucky,<sup>1</sup> focused on the operational aspects of the project, while the second, carried out by the Institute for Communication Research at Stanford University,<sup>2</sup> examined the impact on users. These studies summarized data from interviews with the users, community influentials, a comparable group of nonusers, Extension specialists, agents, and administrators, and from computer records of frequency and type of information used.

### **Use of Green Thumb**

The 200 farmers who had Green Thumb information available to them used it on the average of 2.4 times per week. However, usage varied substantially among farmers. Some used it many times each day, while others discontinued use altogether during the project period. As indicated in Table 1, market and weather information comprised most of the requests. In fact, market and weather information represented 82% of the usage (52% and 29%, respectively). In contrast, Extension advisories amounted to about 16% of total use, half of which was in agriculture. Use of Extension information appears small relative to the large number of requests for weather and market information. However, Extension information accounted for 19,984 different requests—not a small number by anyone's standard.

We weren't surprised that Extension information was accessed less frequently than weather and market information, since frequency of use is closely related to the frequency of information updating. When commodity markets were open,

**Table 1. Categories of information requested.**

	Number of requests <sup>a</sup>	Percentage of requests
Market	65,873	53%
Weather	35,034	29
Agricultural production	9,869	8
Home economics	2,591	2
Community development	1,480	1
4-H/youth	1,110	1
County information	4,934	4
Menu listing	2,467	2
	123,358	100%

<sup>a</sup>The 13-month totals include extrapolations for missing days due to equipment downtime.

market prices were updated every 15 minutes and much of the weather information was changed 2 to 3 times per day, while most Extension information remained the same for a week or more without becoming outdated.

Together, home economics, 4-H, and community development comprised only 4% of total usage. However, this low level of use didn't provide an accurate test of their potential as only a small amount of information was included on those topics. And, in addition, that information wasn't targeted at appropriate audiences. Participants in the project were chosen on the basis of their farming operations, not whether they were homemakers or had children in the home.

### **Who Used Green Thumb?**

The traditional adoption-diffusion model of agricultural innovations might lead you to expect the most frequent users of a new technology like Green Thumb to be young, highly educated farmers with large farming operations. However, the characteristics of farmers and their farms made little difference in how frequently they accessed the Green Thumb information base. What proved to be important was the type of information requested by different farmers. For example, large-scale farmers made more extensive use of grain futures prices, while operators of small farms were more interested in cash prices. And, as you might expect, operators of mixed farms used a broader spectrum of information types. Extension recommendations were accessed at about the same frequency by all farm sizes and types.

This finding suggests that the use of videotext systems in agriculture won't be restricted to the most progressive farmers, but will appeal to a wide range of users, with use depending

primarily on the appropriateness of the information to a particular farmer's needs.

### **Farmer Reaction**

When asked to evaluate the service at the end of the project period, two-thirds of the farmers said they were either satisfied or very satisfied with the Green Thumb experiment. Those who were dissatisfied generally reported delays in updating of information due to technical problems as the primary source of dissatisfaction.

When documenting benefits to their farm operations, 59% reported that Green Thumb saved them time in getting information and 42% indicated that it saved them money in some phase of their farm operation. Likewise, over 50% of the farmers said the Green Thumb weather information helped them make better farming decisions on planting and harvesting and 42% said they received higher prices for farm products because of the Green Thumb marketing information.

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Perhaps the most meaningful indicator is that 46% said they'd be willing to pay an average of \$18.65 per month for a Green Thumb-type system in the future. At the end of the test period, farmers who participated in the Green Thumb experiment placed greater value on such an information service, as indicated by their willingness to pay nearly twice as much for the service as farmers who hadn't participated in the project.

The bottom line seems to be that from a cross section of types and sizes of farms in these two Kentucky counties, about half of the farmers perceived some benefit of this type of information system and would be willing to invest some of their own resources in a future system. However, even though farmers found this new information delivery system useful, it probably won't replace other sources of information, at least not immediately. Users ranked Green Thumb about third or fourth in importance behind such widely used information sources as radio, TV, and buyers. Farmers saw it supplementing other sources, but not replacing them, especially not in the short duration of this project.

## **Organizational Concerns**

In general, the tasks associated with Green Thumb were integrated into the roles of existing Extension specialists, agents, and administrators. This arrangement is realistic in that state Extension Services probably won't be in a position to add large numbers of additional staff to implement a future Green Thumb-type system. However, the reallocation of time and some retraining of existing staff, as well as the availability of some specialized support staff such as programmers and editors, will be required. Agricultural agents and specialists can expect to spend 10-15% of their time on this type of information system.

A videotext system can improve Extension's ability to deliver information. With a visual display on the user's TV screen, it's possible to communicate many ideas in a graphics format. Some examples suggested by specialists were the identification of insects and plant diseases, pruning techniques for trees, graphs of market trends, maps of soil types, and clothing designs.

An inherent feature of a videotext system is that it can be used to target a specific audience, who, in turn, can select only what they want to receive. Green Thumb was designed for farmers, but the same system has the capability of serving homemakers, youth, and community leaders. Therefore, rather than just an agricultural information system, videotext can provide a total Extension communication system.

A Green Thumb-type information system is consistent with the increased adoption of personal and business computers in that the same terminals can serve multiple purposes. They can be used to perform tasks of data analysis, as well as be a communication system for accessing videotext databases.

An attractive aspect of the use of computers in information delivery is their relatively low cost for both the sponsoring agency and the farmer. Costs can remain moderate because of low initial hardware costs, the flexibility in the use of the equipment, the availability of public sources of information (National Weather Service, Agricultural Marketing Service), the potential for cost sharing with the private sector (agribusinesses, farmer cooperatives, financial institutions), and the possibility of a modest user fee. Therefore, both Extension and farmers face low risks and the potential for large returns in the use of this technology.

In the long run, greater efficiency for Extension can be expected through reaching larger audiences, reduced travel, fewer publications, lower mailing costs, and possibly fewer meetings. Although a videotext system is an impersonal delivery method and therefore can't be expected to substitute

for personal interaction, it can be an important method for delivering information to large numbers of people rapidly.

## The Future

Though this pilot test of a new information delivery system has provided answers to some important questions, it has also raised others. How does the delivery of information through a videotext system fit into Extension's educational mission? What information is appropriate to a Green Thumb-type system? Should Extension be delivering weather forecasts and market quotations? Should such a system be restricted to agricultural information only, or should it include information on home economics, youth, and community development as well? If it were to include all program areas, how does one target the information to the appropriate audience? And finally, how does this technology relate to other uses of computers in Extension programs?

Green Thumb is one of the first field tests of a videotext information system in the United States. The results of this pilot effort have demonstrated that such an information system is technically feasible and that there's high farmer acceptance. The fact that this delivery system happened to be tested in agriculture by the Cooperative Extension Service is fortunate because we now have answers to some difficult questions and we have begun to formulate others. In light of criticisms that Extension has made little use of new technologies in communication,<sup>3</sup> we need to examine thoroughly the potential application of this new information delivery system. We're on "the cutting edge" with this new technology and can have a stake in its future.

## Footnotes

1. Paul D. Warner and Frank Clearfield, *An Evaluation of a Computer-Based Videotext Information Delivery System for Farmers: The Green Thumb Project* (Lexington: University of Kentucky, 1982).
2. Donald Case and others, *Stanford Evaluation of the Green Thumb Box* (Stanford, California: Stanford University, 1981).
3. U.S., House of Representatives, Agriculture Subcommittee on Department Operations, Research, and Foreign Agriculture, "Issues Areas for Cooperative Extension System Oversight" (Unpublished memo, November, 17, 1981).