Programs to Facilitate Use of a Portable Computer for Data Collection

Phil McInnis, Jr. and Bruce I. Reisch

Department of Horticultural Sciences, New York State Agricultural Experiment Station, Cornell University, Geneva, NY 14456

Additional index words. Omnidata Polycorder 600-Series, Apple Macintosh, software

Electronic data recorders facilitate error-free data transfer and permit rapid analysis of experimental results (Gilreath, 1985). However, one of these devices, the Omnidata Polycorder (Omnidata International, Logan, Utah), is difficult for the novice to program due to its instructional language (Polycode), which is difficult to learn and use. Furthermore, the Polycorder limits the width of its files to 95 characters. This may limit data exchange with other devices. Therefore, we have developed a computer program, *PolyEditor*, for the Apple Macintosh (Apple Computer, Cupertino, Calif.) to generate format and program files for the 600-series Polycorder. A separate program, *PolyTransfer*, was developed to facilitate file transfer to and from the Polycorder and to eliminate the barrier of 95 characters per line. These programs are used in our grape (*Vitis* spp.) breeding program for the collection of field data.

The Polycorder arranges data into a row and column format. *PolyEditor* presents the user with an on-screen template to enter column names, column widths (in characters), and any optional messages for on-line help in the field (Fig. 1). Check boxes for "Key" fields indicate the data field(s) to be supplied to the Polycorder before data collection, such as plant identification number and field location. "Display" check boxes allow the user to designate key fields to be displayed while entering data. The "Date" check box specifies which data fields are to be date-stamped. The user can access an image of the Polycorder screen to visualize the resulting data display (Fig. 1).

Up to 40 data columns can be created with this program, and any column can be up to 90 characters wide. However, total data width must be <360 characters, and all of the keys must be 190 characters in total width. Templates are used by *PolyEditor* to generate the

necessary format and program files for transfer to the Polycorder. These files are stored together as a text file. The template may also be saved for later use. The initial data file containing the key fields may be created with any program that results in a tab-delimited text file, including word processing, database, or spreadsheet software.

The *PolyTransfer* program transmits data, program, and format files to the Polycorder, receives collected data files from the Polycorder, and date-stamps the proper data fields. Data files are converted according to the template file format before data transmission. The program converts the data file back into a tab-delimited file when receiving data from the Polycorder. Data files larger than the limit of 95 characters per line are broken into smaller files before transmitting to the Polycorder and reassembled when receiving data.

Along with the data and format files, the Polycorder uses both "static" and "dy-

namc" programs to collect data. While the static programs are not changed when different data files are created, the dynamic programs are created by *PolyEditor* for specific data templates. The static and dynamic routines work together to allow the user to search for data in any column of the data file(s), enter/edit any data except in the key fields, and display help messages when requested. An additional static Polycorder program is used to transfer data files back to the Macintosh. The number of data files in the Polycorder is never a concern because the routines allow the user to treat the files as one.

These programs allow users with minimal computer skills to create and use data files on the Polycorder, and to transfer these files to and from the Macintosh.

PolyEditor and *PolyTransfer* are written in Visual Interactive Programming (Mainstay, Agoura Hills, Calif.). The static and dynamic programs for the Polycorder are written in Polycode. Construction of a simple cable is required to connect the Polycorder RS232-C -interface to a male eight-pin connector for the Macintosh modem port. *PolyEditor*, *PolyTransfer*, the static programs, instructions [in a HyperCard (Apple Computer) version 1.2 stack] for their use and cable construction are available by request from the authors. Please send a blank 90-mm (3.5-inch) double-sided floppy disk.

Literature Cited

Gilreath, J.P. 1985. Description of a Basic program for data collection using a portable micro-computer. *HortScience* 20:301.

Fig. 1. Creation of a template for the data file using the *PolyEditor* program. Field names are entered in the left column and defined using elements in the corresponding row. The "Character" column sets the maximum number of characters available for data in the indicated field and "Help Information" supplied will be available for viewing on the Polycorder on command. Check boxes indicate options to be selected for each field. Checking the Key box indicates that data for this field will be downloaded from the Macintosh to the Polycorder. The Display box indicates key fields to be displayed continuously during use. The Date box indicates fields to be date-stamped by the *PolyTransfer* program after uploading to the Macintosh. Since up to 40 data columns can be created with *PolyEditor*, the "Page" buttons below allow the users to create and revise additional pages of template fields. The "Help" button, lower right, defines the use of the Key, Display, and Date boxes. The display screen shown on the Polycorder can be previewed at any time while the template is being created. This screen is activated by choosing a menu item under the Polycorder menu. Information to be collected will be displayed on the screen in the area marked "Reserved for Program Use."

Received for publication 23 Oct. 1989. Support from the New York Wine & Grape Foundation and Hatch Project 32487 is gratefully acknowledged. We thank J. Barnard for technical assistance. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked advertisement solely to indicate this fact.