Managing electronic capture of data from field trials

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Compared to taking notes with pen-and-paper, the electronic capture of field data is more than twice as fast. In addition, no preparation of data for analysis is required, there are no transcription errors and operating costs are reduced. A set of criteria for satisfactory applications programme is presented.

Criteria

- Easy to use with displays of appropriate prompts, trapping out-of-range values, etc.
- Ability to suspend data collection then resume later without losing that already collected.
- Ability to "correct" by scanning back through data just collected.
- Ability to review any or all stored data; useful for spot checks on consistency of scoring within/between trials.
- Ability for in-field printouts to safeguard against loss of information even if the computer malfunctions and to enable a quick eye scan of the data before leaving the site.
- Ability for in-field backup to magnetic media; secondary storage is necessary if the portable unit cannot hold all the required data before the user can arrange transfer to the host computer.
- Ability to transfer to and from a host computer system for collation and analysis.

Criteria 1 to 4 demand that a programmable portable computer be used. To enable criterion 5 to be satisfied would require a battery-operated printer, and for 6, a battery-operated cassette recorder. It is vital that criterion 7 be fulfilled in order to capitalise on the time and effort already saved in collecting data.

Example

There are a number of portable or hand-held computers available; this example explains how a Sharp PC1500 system (1) is used to collect field notes. The user is prompted for the trial name, number of bays, plots/bay and variates/plot. When the option to enter data is selected the user is prompted by a display of the current plot's identification. Data can be numeric or alphanumeric, including day-of-year. Incorrect data can be retrieved and edited. At the end of each bay the user has the option of proceeding to the next bay or not. At this point, the computer can be turned off without loss of data. Stored information can be reviewed, edited, printed or transferred to tape in the field. Up to 20 trials with a total of more than 14,000 data items can be held in the memory of the PC1500. For transfer to the host computer the PC1500 is operated as a time-sharing terminal of the host computer the PC1500 is operated as a time-sharing terminal of the host system. Control of data transfer to and from the PC1500 is by software on the host computer which also collates and analyses. Other applications of the PC1500 system involve interfacing to instruments such as a balance (2) and a soil penetrometer (3).

1. Berry, G. J., Cawood, R. J. and Williams, L. 1983. Aust P1. Breed. Genet. Newsl. 33, 3-5.

2. Cawood, R. J., Berry, G. J. and Williams, L. 1984. Aust. Field Crops Newsl. 19,

3. Ford, G. W., Berry, G. J. and Williams, L. 1984. Aust. Field Crops Newsl. 19,