Proc. Fla. State Hort. Soc. 100:261-262. 1987.

USE OF COMPUTER TO RECORD, TRANSFER, AND ANALYZE DATA FROM A PACKING HOUSE GRADER OPERATION

D. R. HENSEL
University of Florida, IFAS
Agricultural Research and Education Center
Hastings, FL 32045

AND

S. D. REESE
University of Florida, IFAS
Statistics Department
Gainesville, FL 32611

Additional index words. Potato, TRS-80 Model 100.

Abstract. **In a packing house grading operation, large numbers of research plots are handled daily. It is essential to minimize errors and to record the data as efficiently as possible. A program for a TRS-80 Model 100 portable computer (Radio Shack, a division of Tandy Corp., Fort Worth, TX 76012) was designed to record plot data directly from an electronic scale. The program has the adaptability to accept multiple readings when plot data are stratified (i.e. several weight classes) or single readings. The program is flexible allowing coded remarks or observations for each plot. A printer provides a hard copy simultaneously as data are collected which enables the operator to monitor the system. Data are successfully transferred electronically to a mainframe computer and analyzed without any further hand recording or manipulation.**

Data collection can be a very time consuming process. In a research grading house large numbers of plots are being graded, sized, and weighed, along with the taking of various notes concerning the treatments. Obviously, this is a very important part of any experiment. Errors can be introduced each time data are manually recorded, transcribed, or manipulated. Using an electronic system, data can be collected, recorded, and analyzed with a minimum of personal handling. Essentially no programs existed that met the needs of the Research and Education Center at Hastings. Since this project was initiated, other data collection programs have been published (1, 2).

The AREC Hastings already had an electronic scale which could interface with a computer. Several factors were considered before selecting the TRS-80 Model 100 (Radio Shack, a division of Tandy Corporation, Fort Worth, TX 76012) computer (3). It is relatively inexpensive and local service and technical help exist. The computer has 32K bytes of memory which provides for a sizeable amount of data storage, provided that a relatively simple, small program is used to collect the data. The Model 100 has the capability to access a printer and cassette recorder as standard peripherals and has a built-in modem for telecommunications. The computer is easy to operate, can be programmed for operator checks to reduce errors, and is reasonably fast so it will not slow the other operations of weighing plot data in a grading house. It is compact and easily transported from one station to another.

Florida Agricultural Experiment Station Journal Series No. 8566.

After selecting the Model 100, a suitable program called "Potato Weight" was written for recording potato (Solanum tuberosum L.) yield data. The program allows flexibility from one experiment to another. Some experiments require the stratification of the tubers into various sizes, some with taking of notes, and some may have multiple weighings for large plots. All of these requirements were incorporated into the "Potato Weight" program. The program allows the operator to select whether the potato tubers will be weighed in a single or multiple category. The appropriate screen (LCD) with a cursor will appear. The information identifying the plot, location, and treatment code can be entered and then the sequential weighings for the single plot can begin. The program is written so the sequence of weighings are in the same order as the weight fractions coming from the grader to the scale. First are the small (B size) tubers, next the large (A size) culls, and then the A size ones without defects. If desired, the program also permits the sorting of A size tubers (no defects) into four additional sizes.

After each category is placed on the scale, the computer recognizes the weight when the enter key is depressed. The weight is shown on screen, verified by operator, and the cursor moves automatically to the next weighing. Upon making the last weighing, the operator can verify all weights on the screen, and press the function key (NEXT) to complete the entry. Then the computer will place the data in memory, make a hard copy by printing the data for that plot, and proceed to the next plot.

At the end of the experiment, day, or if the capacity of memory is reached, the data from the Model 100 can be up-loaded to a mainframe computer or down-loaded to a tape. The printed copy prevents loss of data in case of a malfunction. Since the grading plant at the AREC Hastings is located approximately 5 miles away from the main office, an additional Model 100 was acquired to serve as a backup. Whenever the memory capacity of the primary computer is reached or if there is a malfunction, the backup computer can be quickly installed with little or no interruption in the operation of the grading plant.

Several other function keys serve to modify the program as the need arises. The "Potato Weight" program lists the F-1 key as UNDO. This key will undo the last entry in any field. This corrects the problem if some tubers were missed on last weighing. Next, the F-2 key is listed as MULT. This switches the program back and forth from multiple weighings to single weighings. The next key F-3 is CLR which will clear data from all fields, and the entire plot can be done over. The back space key moves the cursor to the preceding catogory. As multiple weighings of the size A (no defects) tubers are being made, a running total is also shown on the screen. The total is printed out on the hard copy but is not recorded in memory since it can be easily obtained from existing data.

Sometimes it is desirable to take notes or make ratings for the experimental units. The program provides a line of up to 14 characters of coded remarks for both cull tubers and for the ones without defects. The coded remarks

are printed on the hard copy and retained in memory. The remarks can be recalled by using a suitable word processing program.

The program has been in use at the AREC Hastings for two seasons and operates suitably. During the first year, the printer experienced problems during dusty conditions. A special booth was constructed which kept the scales, computer, and printer dust free along with grader controls which eliminated the problem.

The data can easily be retrieved from the mainframe and further analyzed by SAS (Statistical Analysis System) as needed. Copies of the program can be obtained by contacting the authors.

Literature Cited

1. Gilreath, J. P. 1985. Description of a basic program for data collection using a portable microcomputer. HortScience 20(2):301.
2. Gilreath, J. P. 1985. FORMATPLUS, a microcomputer program for conversion of data file created using GATHER to files structured for SAS. HortScience 20(4):773.
3. Stewart G. 1981. Getting started with TRS-80 Basic. Tandy Corp., Fort Worth, TX.

Proc. Fla. State Hort. Soc. 100:262-264. 1987.

FALL PRODUCTION OF WATERMELONS: THE POTENTIAL FOR DOUBLE CROPPING AND MARKETS

TIMOTHY D. HEWITT
IFAS, University of Florida
Food and Resource Economics Department
Marianna AREC, Marianna, Florida 32446

DAVID ZIMET
IFAS, University of Florida
North Florida REC, Quincy, Florida 32351

Additional index words. Citrullus lanatus, costs of production, packing, plastic mulch.

Abstract. **Decreased family size and increased age have resulted in a decline in per capita watermelon (*Citrullus lanatus* Thunb.) consumption. The importance of fruit size in affecting this decline is evidenced by the stability of muskmelon consumption. New watermelon cultivars such as Mickeylee and Minnilee which are icebox types could help to curb the consumption decline. These cultivars could be of particular importance to a fall market because of the seasonal decline in picnics and outdoor gatherings.**

To reach the fall market, however, watermelons in North Florida must be planted before the end of July. During the summer season the high incidence of pests and disease is problematic. Higher production costs are a result of these problems. Some of these increased costs may be defrayed by double cropping watermelons behind a spring, polyethylene-mulched tomato crop.

Economic comparisons have shown that watermelon production under mulch is viable in North Florida. In this paper production costs for double cropped (behind tomatoes) standard and 'Mickylee' watermelons were estimated. Analysis of these costs indicates that standard watermelons potentially offer producers significant positive returns. The costs associated with packing 'Mickylee' watermelons in boxes, however, could limit it to the specialty market.

Per capita consumption of watermelons has declined since 1960 from 16.7 lb to a current annual per capita consumption of 11.8 pounds (3). During the same time per capita consumption of muskmelons have remained constant. Crall and Elmston (2) have discussed the demographic and social changes that may be factors in this decline. Households have decreased in size and the mean age has increased over the period. Apparently large watermelons are not needed or desired by many consumers. As a result, small, icebox size watermelons have been developed in Florida to provide an alternative to large watermelons.

Comparison of conventionally planted and plastic mulch planted watermelons have shown that total costs are similar (4). Demonstration plantings have also shown that the plastic can be used for a second crop. Watermelons for a fall market could follow the tomato crop utilizing the same plastic in the areas of North Florida that produce a summer crop of tomatoes. By producing icebox type watermelons some North Florida producers might be able to reach a fall specialty market that is not well supplied at present.

Cost Comparisons

The double cropping of watermelons behind plastic-mulched tomatoes provides a way to increase the benefits of the mulch used on tomatoes. Watermelon production costs, however, would increase for some items because of the double cropping. Cost decreases are experienced in land preparation and mulching and in liming and fertilization (no additional P) (Table 1). As compared to spring single cropped watermelons, double cropping costs increase for herbicide to kill tomato plants and fungicides. Fungicide costs, however, increase because of weather conditions, not double cropping directly. There are also additional packing costs for 'Mickylee' because the cultivar should be packed in boxes for shipping and handling.

Comparison between mulch spring watermelons and double-cropped watermelons. The costs of producing a spring crop of plastic mulched watermelons used in the following analysis are based upon adjustments of the budgets by Halsey (4). The estimated preharvest variable costs per acre of a single-cropped spring standard watermelon crop were $476.58. This is $155.83 more than the $320.75 estimated for the double-cropped 'Mickylee' watermelon crop (Table 1). Major components of this difference are: fertilizer ($44.50 or 29% of the difference), mulch ($75 or 48%) and land preparation costs ($11.21 or 7%).

Florida Agricultural Experiment Station Journal Series No. 8484.