



Uses of Computers for Teachers of Agriculture

The modern electronic digital computer can make simple arithmetic calculations in excess of one hundred thousand per second. It can make simple logical decisions using arithmetic processes at extreme speeds. Because most mathematical equations can be reduced to arithmetic and logic, extremely complex problems can be solved.

Indeed, the computer is most valuable in solving complex problems that require repetitive calculations. Simple problems that must be solved many times can be very profitably programmed on a computer.

The grading of an FFA Judging Contest is an example of the latter. The Agriculture Engineering Department at Louisiana Tech has for many years been responsible for grading the Northeast Louisiana FFA Judging Contest. In 1963, the Tech Computing Center cooperated with the Department in redesigning the score cards for convenient processing. Center personnel then, with advice from the Agricultural Engineering Department, wrote programs that would enable the computer to grade cards, tabulate scores, and select the winners of the contest. Grading required only one-fifth as many people as in previous years. The contest results were passed out sooner than the year before. An added gain was a tremendous reduction in chances for human error in grading and tabulating.

Preparation of this program was expensive in terms of human and machine time. The programming effort could not have been justified on a one year basis, however, because it can be used many years and at many schools, the effort in programming was well worthwhile.

Fortunately, most computing centers have libraries of programs that can be used directly thus eliminating the chore of program preparation. Programs for statistical analyses of many different kinds are available at many computing center. These analyses can be made with an electronic computer in far less time than with the desk calculator. Examples of statical programs available are: analysis of various, curve-fitting, coefficients of correlation, and frequency distributions.

The computer is able to do any work that requires repetitive mathematical and tabulation chores much faster than humans are able to do them.

Computers fall into two categories. The first one developed was the analogue computer. The second one developed was the digital computer. The analogue computer is useful in solving complicated differential equations as well as other kinds of equations. It is not perfectly accurate—that is, the results of an analogue computer may be one or two percent in error. These computers operate on the principle that it is possible to set up an electric circuit that has the same mathematical characteristics as various equations. By measuring the values of parameters such as volts and ohms, it is possible to determine how one or more variables operates when other variables are changed. The results from this type computer are instantaneous.

The digital computer is the other type. This computer works by doing arithmetical operations. Most digital computers are able to add, subtract, multiply, and divide, and by using these processes, to make simple logical decisions. Since most mathematical operations can be broken down into these arithmetical components, it is possible to solve extremely complex problems on the digital computer. Unlike the analogue computer, the digital computer operates on zero percent error. Results are not instantaneous. More complex problems require more time. It uses absolute numbers rather than analogous circuits. The ones most likely to be available at schools are the IBM 1620 and IBM 650.

In addition to the computer, most data processing centers have various ancillary equipment. This usually includes sorters, print-out machines, and collators.

This equipment can be used for many tasks such as keeping address lists up to date, writing repetitious letters and preparing registration cards.