

# Using Microcomputers in Meat Science Programs

Boyd Ramsey\*, Leader  
Ron Galyean, Cooperator  
Dwight Loveday, Recorder

Following opening comments by Dr. Boyd Ramsey, a videotape entitled "Microcomputers – The Key to Working Smarter, Not Harder" was presented. The videotape demonstrated several uses for a personal computer in the activities of a meat scientist. Microcomputers can assist the meat scientist in the following ways.

## Word Processing

Microcomputers are a tremendous help in generating exams, letters and reports. Stored information is easily updated and modified for critical reports and letters. Handouts, classroom worksheets and extension materials are quickly developed through word processing software. Coupled with a letter-quality printer, word processors are especially valuable in preparing scientific papers, project proposals and theses.

## Telecommunications

Software is available that will allow you to access data, text and telephone numbers from other computers via telephone lines. You can access a data base stored in the university's mainframe and manipulate this data base at home with your personal computer.

## Data Analysis

Microcomputers probably will not replace data analysis on the mainframe computer, but they are very helpful in compiling and analyzing classroom studies.

## Meat Sales

Sale reports and daily financial statements are easily prepared with the computer's help. The computer performs all the calculations after keyboard entry of sales and revenue on hand. Modern cash registers can be interfaced with computers for preparation of reports and inventory control.

---

\*C.B. Ramsey, Texas Tech University, Lubbock, TX 79409

R.D. Galyean, Texas Tech University, Lubbock, TX 79409

H.D. Loveday, University of Tennessee, Knoxville, TN 37901

Reciprocal Meat Conference Proceedings, Volume 37, 1984.

## Teaching Aids

Computers are valuable teaching tools. However, a recent survey by the AMSA indicated that few universities are using computers in meat science teaching. I have written a program which uses randomly generated data to teach how to calculate most of the weights, percentages and prices used in the meat industry. Likewise, Ron Galyean uses a microcomputer to teach principles of food analysis calculations. These laboratory results can be transmitted directly to the mainframe for storage or analysis. Least cost sausage formulation is another example of applying computers in the meat science classroom.

## Student Records

Spread sheet and/or data base management software is a means of keeping track of student grades. Formulas are entered one time and scores are calculated automatically. Students can easily be informed about their progress after each grade is earned.

## Graphing and Plotting

The microcomputer's ability to graph and plot can greatly enhance visual aid preparation. You have a choice of letter size, print color and print size. Because of the relative ease of making slides and transparencies, our graduate students are not allowed to use handwritten visual aids when presenting graduate seminars.

## Bar Codes

This relative new application for microcomputers offers a fast and easy method for entering information into the computer. I am currently adapting bar codes to score various judging contests and live animal and carcass evaluations.

Two of the major problems hindering greater use of microcomputers in meat science classes are the shortage of programs and the incompatibility of languages that the various machines utilize. There is a need to have compatibility among machines within the department and college, if possible.

Now I will provide each of you the opportunity to gain "hands on" experience with about 35 different programs and several different types of hardware systems. A list of programs and persons providing the programs can be found in Table 1.

**Table 1. List of Programs  
Provided for the Microcomputer Reciprocation  
Session, 1984 Reciprocal Meat Conference**

- |  |  |
|--|--|
| <p>1. Alden Booren and Michael Stachiw – Michigan State University, East Lansing<br/><i>Cost of Meat Protein</i><br/><i>Rank Ordering of Test Panel Data</i><br/>(Radioshack Model 3 or 4)</p> <p>2. Greg Highfill and Mike Burns – Kansas State University &amp; Kansas Board of Agriculture, Manhattan<br/><i>Beef Retail Cuts Pricing</i><br/>(Radioshack Model 16)</p> <p>3. Dave Schafer and Mike Burns – Kansas State University &amp; Kansas Board of Agriculture, Manhattan<br/><i>Live and Carcass Show Data Summaries</i><br/>(Radioshack Model 16)</p> <p>4. Don Kinsman and John Riesen – University of Connecticut, Storrs<br/><i>Placing Scores Calculation</i><br/><i>Least Cost Sausage Formulation</i><br/>(IBM PC)</p> <p>5. Rod Plimpton, Hultz Smith, Dan Uher, Tim Lawlis and</p> | <p>Dave Tshantz – Ohio State University, Columbus<br/><i>Beef Slaughter Costs</i><br/><i>Pork Lean Gain Calculations</i><br/><i>Curing Losses</i><br/><i>Least-Cost Sausage Formulation</i><br/>(Apple III, Apple IIe and Radioshack 3 or 4)</p> <p>6. Chris Calkins – University of Nebraska, Lincoln<br/><i>Labor Analysis</i><br/><i>Cutting Test</i><br/>(IBM PC)</p> <p>7. Boyd Ramsey, Ron Galyean, Jim Clark, Luke Celentano, Sam Buttram, Lewis Shone and Allen Adams – Texas Tech University, Lubbock<br/><i>Meat Science Problems Calculation</i><br/><i>Examination Over Problems Calculation</i><br/><i>Beef Yield Grade Calculation</i><br/><i>Hog Length Prediction</i><br/><i>Ham and Loin and Lean Cuts Percent Prediction</i><br/>(Radioshack Model 3 or 4)</p> |
|--|--|

### Discussion

*Question:* Is using the computer going to necessitate everyone learning to type so that they can use the keyboard?

*Boyd Ramsey:* I can type faster than I can write, even though I've never had a typing lesson.

*Ron Galyean:* Boyd, there are software programs available downstairs from Radio Shack which will teach you to type.

*Question:* How about Apple software? Is there anything besides Radio Shack and IBM?

*Ramsey:* Apple has a great deal of software available, and I think they will continue to have a lot of software written in the future, particularly with the new machines that are coming out. For example, the Macintosh is quite easy to use. I think a lot of people will be able to write programs for that particular machine.

*Rod Plimpton:* I might be able to help with that question. The first computer we bought at Ohio State was an Apple III. We quickly decided that we had better stay compatible, and so the next one we got was an Apple III but with hard disks for megabyte capacity. Now we are getting Apple IIe's. The reason we are doing so is that the new disk drive system and the files created on the Apple III are compatible with the IIe. However, our college is going their own way and buying IBM PC's. The software in the Apple family is plentiful as with the IBM. They're the two leaders, particularly in the third party software.

*Ramsey:* I would like to emphasize one point that he made. Try to maintain compatibility between home and office and within the department, if possible.

*Question:* It took the Kodak Carousel a long time to be adapted by all universities and become somewhat universal. Do you see the same thing happening with the computer?

*Ramsey:* I don't see that happening in the near future. However, I suppose sometime in the future that will happen. We need programs that will convert one language into another. That is, take a basic program for one machine and convert it to a basic program for another machine. However, I don't think such programs are available yet. If we had such programs, one of our problems would disappear. Also, I don't know if we are going to have one type of equipment out there in the future. So far, manufacturers have made almost no effort to work together because they want to continue to sell something that will only work on their machines. When you buy their machine, they want you to buy software from them, too. That's the problem.

*Question:* Some departments have a computer on every faculty member's desk. Could we get those people to comment on the desirability of such?

*Respondent:* I might comment that I don't have one on my desk, but I have one at home. As far as generating tests and letters, I'm just like Boyd. It is far easier for me to type it out, even as slow as I type, and give it to the secretary to duplicate, than for me to handwrite it, then she types it, then I have to go back and correct my scribbles that she interpreted wrong and re-do it again. So I think the time-saving just on documents would be justified.

*Ramsey:* It prevents your spouse from saying "What's your name?" when you walk in at some odd hour. It provides the opportunity to do some work at home that otherwise you would have to do at the office. That really helps keep the home front in a little better shape.

*Question:* I would be interested in hearing from the people who are using computers in the classroom and outside activities.

*Respondent:* We are trying to write programs that we can use in our basic meat science course, which is a 6-hour laboratory course. The students collect data as part of a project that follows cattle from slaughter through wholesale cut-out analyses, through retail cut analyses. As soon as they have finished the project and turned the assignment in, we are able to give them a computer printout of the same project for immediate discussion rather than waiting for the papers to be graded. The other program we are writing will be one to reinforce concepts. We will be able to ask the student, "If we change this, what is going to happen to this?"

*Ramsey:* We have several examples of teaching uses here at Texas Tech.

*Question:* What are you teaching in the computer course shown on the tape?

*Galyean:* Our philosophy is to provide as much early exposure to microcomputers as we possibly can. Essentially, the course is to orient students in the basic uses of the microcomputer. We try to make sure they know how to turn the machine on and not to chew up a diskette. We also teach a very rudimentary course in basic programming so that, later in their undergraduate career, they can put it to practical use in the specific courses in which they are majoring. We think we must cover word processing and electronic spread sheets for our students.

*Ramsey:* I have 17 students in attendance today and I want to hear from one of them.

*Marty Spradlin:* This is the first time I've ever used a microcomputer and it has really helped me. We have been figuring yield grades, ham-loin percentages, dressing percentages, cut-outs, etc.

*Ramsey:* Of the 17 students, some are repeats. On that segment of the course their grades are running more than a letter grade higher when teaching with the computer than with me trying to teach it personally.

*Respondent:* I might share one of our experiences with you. We moved into computer teaching through a least-cost formulation program and there is no question that it enhances capabilities and prospects for the future. Also, through telephone hook-up, we call Cornell and utilize their programs for farm records.

*Question:* Do you think it is better for students to use prewritten programs or that they learn to write programs?

*Ramsey:* Both. Very definitely!

*Respondent:* I'm a vo-ag teacher in Dr. Ramsey's class. We recently acquired an Apple IIe for our co-op class. We had our students write programs to figure hourly wages and monthly pay, and it was really beneficial to them.

*Question:* Do they make hardware so that you can go

through your mainline computer from, say, an Apple, and then come back to your computer?

*Ramsey:* Yes. That is what we did to convert some of the programs to our language. However, it is still a big job to make the conversions.

*Question:* When are we going to have a program available to score the meat judging contests?

*Ramsey:* We have been using a program here for about two years with great success. The Meat Board tried it and for some reason always had trouble. That is another thing I've noticed. Programs run great at home but when you take them away from home, they will crash and you can't understand why they do. What we really need is a machine language program that will be faster. The FFA problem is the retail cut identification. There were 28,500 responses in the ID section alone that had to be graded. We have a computer program that can do that. We have to use more than one machine to get done in an hour, but it works beautifully.

*Question:* Are you using the bar code reader for that?

*Ramsey:* We just got the reader about two months ago. However, we are planning to use it for contests. The bar code reader doesn't work just the way you would like. The wand must be held at about a 20° angle and you have to do it very fast. If you work with it some, you can get it to read. It will never read a code incorrectly because it has check bars in front and back of each bar.

*Question:* Does it make a sound if it reads?

*Ramsey:* Yes, it makes a sound if it reads correctly.

*Question:* Have you had any success writing computer programs for least-cost formulation?

*Ramsey:* Ohio State has one and it is available for your use.

*Plimpton:* The Ohio State program was developed for classroom use to teach concepts. We have two versions. The first version has three limits, moisture, fat and protein; and up to three meat ingredients for the meat block. In the second version, you specify up to six limits, and eight meat ingredients. These are not intended as industry programs but to teach least-cost formulation concepts.

*Question:* Has anyone accomplished the added-water part of the formulation and the recalculation?

*Respondent:* It is being done commercially.

*Question:* Where can the videotape "Microcomputers – the key to working smarter, not harder," be obtained?

*Ramsey:* A ¾-inch VHS tape including both the microcomputers presentation and the use of video tapes in teaching may be purchased at a cost of \$75 by contacting Fred McClung or Liz Johnson, KTX-TV Station, Texas Technological University, Lubbock, TX 79409.