IDEA SHARING SESSION I

NACTA Conference

Teaching Cooperative Principles At the College Level

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Cooperatives play an important role in the agricultural economy. An estimated 30 percent of all farm commodities are marketed through cooperatives, almost 20 percent of farm supplies are purchased through cooperatives, and cooperatives provide credit, insurance, and other services.

Cooperatives also provide a balancing role in the rural economy, and employment and leadership development opportunities for members, directors, and employees.

Education about the basic cooperative principles is important to both those involved in cooperatives now, and those preparing through a college education, to become members, directors, or employees of cooperatives.

Cooperatives, like other kinds of agribusinesses, also need well-prepared employees, and continued training for their employees.

These needs were identified in a study conducted by the University of Minnesota Technical College, Waseca, under the direction of an Advisory Committee, with the support of the Minnesota Association of Cooperatives.

Local cooperative managers, directors, and members were surveyed to determine how needs are being met, what needs were not presently being met, and the level of support needed to meet these needs.

The study indicated a need for education about the basic cooperative principles, and for continued technical training in such areas as financial management, planning, sales, and member relations. While cooperatives are able to provide some of this training, there remains a need for additional education at the college level.

UMW provides one model of how this can be done. Working together with cooperatives, UMW conducts activities such as: (1) a course structured to meet the needs of cooperative personnel; (2) a mini-course to promote cooperative instruction at the secondary level; (3) lectures on cooperatives in other courses; (4) a "Cooperative Emphasis Day" with industry representatives on campus; and, (5) mini-courses to provide technical education directly to members, directors, and employees of cooperatives.

Session Chairperson Mary L. Albrecht KSU

An Analysis Of Students' Feelings Toward Five-Week, One-Hour Agricultural Economics Marketing

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The relationship between students' attitudes toward the quality of five-week, one-hour courses and specific aspects of the courses, structures was analysed in this study. Attention was focused on the degree of seriousness of selected problematic statements as viewed by students.

Data for this study were obtained by questionnaires distributed to 174 undergraduate students in selected departmental classrooms. There were 73 percent usable questionnaires returned. The major section of the questionnaires contained 16 statements to measure the quality of the five-week, one-hour courses as perceived by undergraduate students.

Responses to the 16 statements posed indicated a positive reaction toward the courses and strong support for this new approach in the department. Students especially felt that the level of difficulty of the courses was about right, the workload was sufficient, and the courses will make them more competitive in the job market.

Students responding to statements concerning the recommendation of the one-hour courses to other students, the effectiveness of the courses, personal satisfaction with the course objectives, and the need for additional courses of this nature were also very positive.

Computer Simulation: An Integrating Experience In The Instruction Of Agricultural Marketing

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During the past nine years, I have been responsible for teaching the primary instruction in commodity marketing in a two year technical college setting. In these nine years, there have been a number of marketing situations in which the "right" decisions one year would be the wrong decision in the following year. We have seen supply-driven markets and markets where government policy generated the greatest price impact. To train the student to negotiate the maze of marketing decisions requires a continual shift of focus and selection of a number of different tools. Even with well-selected decision aids to point out the consequences of selling decisions, a lack of focus on overall goals seemed to arise. Teaching the parts seemed to deter from overall perception of the marketing problem.

Against this instructional backdrop I began to experiment with different decision models for agricultural marketing. I have used daily markets and current stiuations to duplicate price market settings, but found that the limitations of the academic term and time of the year in which the course was offered affected the outcome from this instructional technique. It seemed also that the student was being exposed to only one market situation which was likely to change. One compromise appeared to be retaining the realism of the current situation, yet offering many such situations and considering the time frame.

It seemed that a manual game dealing with weekly marketing assignments and aspects of role playing was a beginning to understanding how to best fulfill an assignment in agricultural marketing. The components to the game that evolved were: cash flow management, comparison of marketing options, enterprise budgeting/cost of production, goal setting, and strategies for dealing with uncertainty. These aspects are now incorporated into a market game called "SURVIVAL." The game offers the features of an historical price series to maintain realism with the artifical time environment of an entire marketing year. It also familiarizes the student with key USDA reports and when they are released. SURVIVAL is now evolving into a first line experience in marketing for our students.

The experimentation with manual games emphasized several aspects which were in need of revision/reorganization. These were basically the necessity of including deterministic responses of market prices to certain supply/demand factors. GRISM was created to provide all the elements described above. It will be used in classroom instruction beginning this summer.

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Farm Business Analysis With Computers

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In 1979 Cloud County Community College Agri-Business Department recognized that they had a greater responsibility to the adults in the ten county area it covers. The ten county area surrounding the college is basically an agriculture area.

A feasibility study, using a survey, was prepared for the Farm Business Analysis program. The survey was made by Cloud County Community College agricultural instructors to determine the need of a farm business analysis program. Area farmers, agricultural leaders, and financial institutions were sent a survey asking them for their opinions. The financial institutions and agricultural leaders were asked for a suggested list of potential students. There was a definite need indicated from the survey results and a good list of potential students was provided. A letter was then written to these potential students to determine their interest in enrolling in the program. Their response was very positive, so plans were made to proceed with the Farm Business Analysis program.

The Farm Business Analysis program consists of off-campus night classes taught for students at a central location. The program is for four years: 1st year - Keeping and Using Farm Records; 2nd year - Farm Record Summary and Analysis; 3rd year - Farm Planning and Reorganization; 4th year - (proposed) The Computer in Ag Decision Making.

The major objectives of the Cloud County Community College Farm Business Analysis program is to assist the farmer and his/her family in improving the effectiveness of the farm operation. This will be accomplished by : (1) Developing a set of farm records suitable for a complete analysis of the farm business and (2) becoming familiar with management and marketing principles, essential to a successful farm operation.

The instructors make at least four farm visits during the year with each student to assist them with their current management problems.

We now have TI-59 programmable calculators and Osborne I microcomputers to use with our class members.

Students enrolled in the Farm Business Analysis class are young beginning farmers 20 to 35 years of age.

Their interest in micro-computers lies in how it can help them solve their management problems. the level of interest varies from minimal to enthusiastic. Those with a high interest have the opportunity to spend extra time with the computer to learn its capabilities and adaptation to their own farm business problems.

The computer is used in the classroom as a problem solving demonstration. Since the Osborne is a portable computer it can be easily carried on farm visits and is used on specific farm problems.

The computer is especially useful in farm problem solving with the "super calc" program. This "electronic spread sheet" is ideal for solving "what if" problems such as one encounters in:

1. cash flow projections
2. livestock and crop budgets
3. enterprise analysis
4. ration analysis
5. cost of credit
6. ration formulation

The advantages of having micro-computers in the Farm Business Analysis class are:

Students learn the capabilities and limitations of micro-computers.

2. They learn the kind of data that must be gathered in order to make maximum use of the micro-computer's capabilities.

3. Students learn to interpret Farm Business Analysis data and to use the data to correct weaknesses in their business.

4. The experience gained with the computer helps them decide whether or not they should own a computer.

5. They learn to format their own programs to fit their special needs.

Farm Business Analysis with the use of computers will assist the farmer to be more financially successful.

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June 17-20, 1984
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Using Computers to Aid Farm Business Management Teaching At The University Of Saskatchewan

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Computers are used in both the two-year diploma and the four-year degree level farm business management courses. The two-year diploma level farm business planning course uses the Apple II+and IBM PC microcomputers, and the Saskatchewan Farm Business model developed for the Visicalc software package to project net farm incomes, cash flow and livestock and crop inventories for their own home farms. The students' progress and understanding is assessed by a series of assignments and oral examinations. Students taking the four-year degree level course form management groups and use the Top Management model which is a comprehensive budgeting and forward-planning program to maximize net worth within cash flow constraints over a five-year period for case farm. Final grades are based on (1) increases in net worth, (2) an oral presentation and defense of management decisions made before the class, and (3) a written narrative.

Introducing Farm And Ranch Managers to Microcomputer Application — A Hands-On Approach

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A need for a course in microcomputer applications to farm and ranch problems became evident as interest in microcomputers by potential agricultural users was spurred by a decrease in prices of hardware with increased capability. The course that evolved to meet this need is taught using a hands-on approach with little BASIC programming. This approach helps to overcome a participant's hesitancy to experiment and provides immediate feedback to the student in potential agricultural applications. Course objectives include an introduction to the use and care of microcomputer systems, use and evaluation of applications software, an exchange of ideas on the types and adaption of software for agricultural use, and the use of microcomputers to communicate with other computer systems.

Three types of software were chosen for class use. An **electronic spread-sheet** such as VisiCalc was chosen because of its wide availability, relative ease of programming and "what if" capabilities. A **data base**

management system was selected for its ability to do filing chores such as field records, breeding records, or machine records. The third type of software was a farm accounting system. Although the accounting systems utilize some of the more sophisticated data bases, they are menu-driven items of software requiring little programming other than adjustments needed to fit the accounting system to the farm's bookkeeping needs.

Problems were encountered over the past year the course has been taught. These included problems in software selection and procurement, hardware deficiencies, class sizes, and grading and evaluation of students. Most of the problems were directly or indirectly attributable to an administration perception that all computer classes be taught in the more traditional theoretical approach. This approach has usually been one involving a large lecture session followed by either a scheduled lab or where lab computer use was scheduled on the student's own time. Hardware was purchased initially on a somewhat piece-meal basis and was usually inadequately sized for a hands-on approach. Vendors may have inadvertently contributed to administrative perceptions of hardware needs by advising that 16K or 32K, single disk systems were sufficient for programming purposes. The problem of student evaluation has largely been the subjective nature of evaluating student projects.

A hands-on approach to teaching microcomputer applications imposes certain constraints on hardware, software, and class size. The hardware must all be of the same brand and model to avoid duplication of software and instructions in system operation. The microcomputer must also contain a minimum of 64K random access memory, two disk drives, and a printer to be able to use the majority of agricultural software having any value. Class size is limited in a manner similar to a welding class. A one-to-one ratio of students to computers with no more than twelve to fifteen individuals is most desirable. Instruction occurs as students are at the machines, and the watching student learns little.

Interest in microcomputers by farm and ranch operators and managers as well as agricultural students has been strong and is likely to remain strong for some time. A class in microcomputer applications where participants are introduced to machines and software in a hands-on manner appears to be a realistic and necessary means of meeting their needs. Furthermore, this approach has yielded a bonus by fostering student interest in learning more programming.

Simulated Futures Market Trading Exercises Using Selected Computer Software

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Futures trading, and the information supplied by it, provides many growers the basis for alternatives to simply selling at harvest or after a period of storage. And, familiarity with futures trading can provide a more informed basis for choosing among alternatives.

Since the early 1970's our department has been using a fortran based program developed at Cornell University, Ithaca, New York, to acquaint students with details involved in such trading. That progran in card form along with a concise and straightforward manual for using it is available for $15.00 from the Department of Agricultural Economics at Cornell University.

The program output is (1) statements given students much like those they would have received from a commission house had they actually been using the market, and (2) several types of summary statements which enable the instructor and the class to compare how individual students and the class are faring as the course progresses.

Up to four interday prices for each trading day are plotted in another program developed in our Department which also aids in the exercise. Data such as means, standard deviations, ranges, and spreads are calculated and dicplayed. I would be pleased to furnish photocopies of the Statistical Analysis Systems (SAS) statments necessary to execute this program as we used used it last year.

The Cornell program is limited to four prices used per day, to six commodities or combinations of commodities and future months traded, and in several other respects. In our advanced futures trading course the Cornell program has been modified to overcome some of these limitations. In my opinion, however, the Cornell program offers the easiest way to get started and provides sufficient essentials to get a useful insight.

Prices used in the exercise are obtained from a Commodity News Service machine such as we lease but can be obtained in several other ways. Although the game was developed for speculative exercises it can be used as a hedging exercise and for playing other kinds of spreads.

Greenhouse Projects — A Synergistic Method of Teaching Introductory Plant Science Laboratories.

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The Department of Plant Science at West Texas State University uses a method of teaching Introductory Plant Science Laboratories which allows students to become more directly involved with economic plants. We have observed this method to be effective in teaching production principles and more enjoyable for students majoring in the various disciplines of agriculture.

One portion of the laboratory that has been particularly effective is the greenhouse project which is entitled, "Investigation of a Plant Production Principle." The purposes of this unit are first to instruct and expose students to the principles and procedures necessary to develop and conduct a controlled experiment and to give the students hands-on experience with plant prodution principles. Students work in groups of two, and the number of individual projects being conducted during the semester varies from 25 to 50. Although each group is responsible only for their particular experiment, all of the students in the laboratory are exposed to the other projects. This is accomplished by having each group describe their research project and its progress to the other students in the laboratory.

The procedure for conducting the greenhouse project is to first have each pair of students complete a project proposal on their own. The laboratory instructor then discusses the project and the proposal with each group. Students then complete and submit a corrected project proposal. In accordance with the proposal, students initiate the project in the greenhouse, take care of their project, collect data on the various treatments, and harvest the plant material after 9-10 weeks. Once the data has been collected, each student prepares a final research report in standard research paper format. Preparation of tables, charts, and graphs is emphasized.

Computer Graphics In Landscape Design

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Most students come to my landscape design course with very little in the way of drafting skills. Thus, disproportionate effort and time must be placed on their preparing formal designs. Though a certain level of proficiency in drafting is a desirable skill in landscape design, students become better designers by working on more design problems than by spending a great amount of drafting time on a few designs. A computer graphics program was developed which plots the design and enters the plant names, as specified by the student. This allows them to work on many more design problems and also introduces them to the use and application of the computer.

Computer-Aided Selection of Ornamental Plants

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Students in Landscape Design classes spend too great a proportion of their time trying to find the right plant, and too little of their time in actual design planning. An interactive microcomputer program was developed to provide students with lists of suitable plant material, based on the student's input of site requirements.

IDEA SHARING SESSION II

NACTA Conference

Microcomputers: An Instructional Aid

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Agricultural professors are increasingly interested in integrating computers into their classrooms and laboratories; and with the increased availability of agricultural software packages, this task has come about quite easily. This article describes two distinctly different software packages that can be used in both lecture and laboratory. One package is multidiscipline oriented, and the second package is agronomy oriented.

Computer Assisted Testing System (CATS) is a program written by Jon R. Voskuil (Softside No. 31, No. 32). he program is divided into three modules: (1) creating, (2) testing, and (3) scoring. The creation test module has the flexibility to store three types of questions. Any number of questions can comprise a test (maximum 100) and can be selected in a specific sequence or in a random sequence. The scoring module is designed to store and analyse test results for 100 students. Lowest, highest, and average test scores, and test results by question number to determine which questions are missed most often by students are provided in the scoring analysis.

Farm Weather Center (FWC) is a crop-soil-climatic software package available from Climate Assessment Technology, Inc., Houston, Texas. The program has two operating menus: (1) weather, and (2) field applications. The weather menu provides historical monthly weather data (geographically specific), and also handles the input of on-site temperature and precipitation (field specific). Normal daily and monthly, and current growing season temperature and precipitation can be recalled and plotted. The normal and input climatic data are utilized in the field applications menu to provide: (1) an estimate of soil moisture status, (2) a weekly estimate of crop stages, (3) a plot of crop stage progression, (4) a plot of crop stress levels, and (5) a plot of soil profile moisture content.

The two software packages described can be incorporated into classroom and laboratory instruction to facilitate the learning process (undergraduate and graduate). The time required to implement the programs is small and the cost to acquire the programs is relatively low.

Use Of A Microcomputer and Spreadsheet Software As A Grade Book

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Responding to the chore of recording and averaging of students' grades, a faculty member at West Virginia University experimented with using an Apple R II Plus microcomputer and spreadsheet software called VisiCalc R as a grade book[1] The grade book was set up as a traditional grade book is: to the right of a list of 65 names were seven columns of grades. Average, high, and low grades were displayed at the bottom of each column. As new grades were recorded, a revised work sheet (or grade book) was printed and stored as a file on a floppy disk.

Discussion

Three disadvantages exist. First, learning to use the computer requires time. Time is also required to load the spreadsheet software and previously stored grade book into the computer[2]. Second, adjusting to the standard size of microcomputer screens and computer paper may be frustrating to the new spreadsheet user. Third, work may occasionally be lost because of hardware failure; more often losses occur because of human error. To minimize these losses, a duplicate copy of information must be kept.

But there are advantages to the use of spreadsheet software. Spreadsheet software is conceptually simple. With a limited knowledge about spreadsheet software, one may easily retrieve, update, and print a grade book. The most dramatic benefit is seen in that final grades may be calculated almost instantaneously.

Having learned to use spreadsheet software, the faculty member who conducted this experiment feels that a spreadsheet software grade book is better than a traditional grade book.

[1]Apple and VisiCalc are registered trademarks of Apple Computer, Inc., and VisiCorp TM, respectively.

[2]Approximately 2 minutes in this case, but faster peripheral equipment exists.

Large-Scale Simulation Of Genetic Phenomena In A Basic Genetics Course

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The possible psychological disadvantages of not working with living material in basic genetics courses which do not include a "live" laboratory can be offset by enthusiastically conducting various large-scale simulations of important genetic phenomena. Simulations in which students participate have been successfully incorporated into such a course at the University of Tennessee, Knoxville. Objective statistical measures of instructional effectiveness and/or student opinion of the simulations listed below indicated that they do facilitate learning.

1. Simulation of production of classical monohybrid, dihybrid and trihybrid F^2 generations by drawing random samples from a known 3:1 distribution.
2. Simulation of a DNA segment in the livestock arena. Students hold pieces of poster board representing the bases, adenine, thymine, cytosine and guanine.
3. Simulation of crossing over using two lengths of rope to represent adjacent chromatids at metaphase of a reduction division, demonstrating the frequency of crossing over between loci is directly proportional to the distance between the loci, simply as a consequence of the physics involved.
4. Simulation of the reduction division in which students hold poster-board representations of metaphase dyads above and below a table top which simulates the division plane of the cell. (A set of slides depicting the details of this simulation has been prepared and will be presented.)

Supplementing Lectures In Introductory Animal Science With Minicourse.

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With a course enrollment of up to 150 students per term, there is little opportunity for student-instructor dialogue or student-student interaction when a lecture sytle format is used in an introductory animal science course. Because of diversity of backgrounds, interests and abilities of the students and because of the wide range of material to be presented, it is difficult to include an adequate coverage of all the pertinent material or to meet the needs of each student using the lecture form of instruction. Therefore, the author has developed a series of five minicourses that are being used to supplement and complement the material that is presented in lectures. The minicourses cover the topic areas of environmental influences on livestock production and breeds of livestock, stressing identification and productive characteristics of the various livestock breeds. For three of the minicourses, instructional materials include study guides which are used as the students listen to tapes and view colored slides in the department's Self Learning Center. Students are then evaluated in groups of nine in oral quiz sessions. Undergraduate student assistants aid in the grading as students respond to the instructor's questions. For

two minicourses, a Personalized System of Instruction is followed in which students work from their study guides using resource materials available in the Self Learning Center and library. Several written quizzes per topic have been prepared and a randomly chosen one is administered by a student assistant when a student feels the material has been mastered. Testing continues, using different quizzes, until a score of 90 percent is achieved. Points earned by completing the minicourses account for 20 percent of the total possible points for the course. Student evaluations of these alternative instructional methods have been very positive.

Livestock Facilities For Post Secondary Education — Are They Meeting Our Needs?

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With agriculture and its related food and fiber industries employing one out of every three employees in Minnesota, it is vital the educational systems of this state prepare people with "hands-on" experiences for those jobs.

From our beginning, there has been a need for improved preparation of students enrolled in our Animal Science courses. We utilize field trips to farms as well as to the adjoining Southern Experiment Station to gain the practical experience we believe important. This practice limits our students as to the actual involvement in areas of feeding, breeding, herd health, records, marketing and other day-to-day experiences.

In 1980, UMW requested and received a grant from the National Science Foundation to construct a Livestock Laboratory which will link the basic science with the production of livestock. In addition to the NSF grant, UMW received bonding approval from the legislature for a livestock holding facility to be incorporated with the animal laboratory.

As we designed the 17,000 square feet facility, it was our desire to provide a livestock facility similar to units utilized today by progressive farmers. We were aware of changes necessary in its design to provide effective "hands-on" experience for students. Special considerations were:

- Sanitation room for storage of coveralls, boots, and other items that will help prevent the transmitting of animal diseases.
- Open space in each production area for groups of students.
- Provide an area in the beef/sheep unit that includes a screen, overhead and slide projector to assist the instructor before, during and following the skills and experiences being performed with the livestock.
- Ceiling height in the arena area - approximately twenty (20) feet.
- Entrance to the arena from outside - Twenty-four (24) feet wide by sixteen (16) feet high - electrically operated door.
- Spot heating in the arena and certain production areas allowing for more efficient heating.
- Bleachers are portable allowing for usage elsewhere and providing for more space.
- Ventilation system designed for extreme variance of animals to be housed.
- Waste disposal system designed for maximum number of livestock.

As we move to these facilities within the next few months, we are aware of additional challenges requiring adjustments. I have experienced construction of three educational livestock facilities and have attempted to incorporate ideas based upon our needs and experience. We expect the ideas incorporated in the facility to improve the "hands-on" experience by our students.

Feeds And Feeding Apples

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A laboratory "workbook" has been developed for use in AH 122, Feeds and Feeding at S.U.N.Y., Agricultural and Technical College, Cobleskill. The workbook consists of two computer programs and a twelve-page worksheet.

The worksheet walks students through over 150 calculations involved in each of the ration formulation laboratories. Two lab sessions are devoted to each of three species: dairy, beef, and horse. This worksheet, then, is used in six laboratories.

As a required part of the labs, students will use a computer program (Program No. 1) to aid them in progressing through the worksheet. This program is available on diskettes to be checked out and used on the Apple microcomputers in the library.

Essentially, Program No. 1 asks students for answers to key steps in the ration formulation process. If students enter any incorrect value from their worksheet, more questions may be asked of the student in an effort to pinpoint the error. Then, the error will be displayed and the student will be instructed to rework the ration before running the program again. During future use the student may enter the program at the step in which his last error was located. To expose students to use of files in computing, four files are used in program No. 1. They record the names of students beginning the lab and names of those who have correctly completed the lab. Two are for student use and two are for evaluation purposes.

Whereas program No. 1 checked the accuracy of students' worksheet calculations, program No. 2 does the actual calculating necessary to complete the worksheet. After completion of the six labs using program No. 1, there are three final labs in which students use program No. 2. These last labs give the student the opportunity to formulate and evaluate several possible rations in a single sitting.

Soil Cores: A Supplement To Field Trips In Soil Science

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Providing teaching materials for students is a particular challenge to instructors of soil morphology. Actual field experience with profile exposures such as sampling pits and road cuts is the method preferred by most instructors to allow students to develop expertise in soil morphology. Unfortunately, class schedules, limited travel funds, and difficulty in preparing soil pedon exposures limit the opportunities for students to work with soil profiles. Soil cores collected with a 2 5/8 inch hydraulic soil probe have been used by some instructors as a way to supplement field trips.

Often soil cores must be collected in advance because of the time of the year when the subject is presented or because of work loads. Storage of soil cores is difficult . Freezing the soil cores in an aluminum foil wrap has been an effective storage system. Because of the inability of the foil wrap to hold the soil core rigid, many of the cores routinely become damaged during the storage and transportation process. Three inch diameter PVC pipe with a heavy plastic wrap at each end has proven to be superior to aluminum foil wrap for storage of soil cores. PVC pipe provides adequate support for the soil core and prevents drying of the core due to evaporation during the storage process.

The soil cores have been used in introductory soil science and soil classification courses to increase the exposure of students to soil profiles over what would be available through field activities.

Evaluation Of Advisory Committees

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Because advisory committees at the University of Minnesota Technical College, Waseca, are considered important, much time is spent in evaluating the committees and the members. The evaluation begins before the member is appointed. Faculty, staff, students, and others are asked to submit names of potential members, giving basic background and pertinent reasons why the individual would make a good advisory committee member.

The criteria for selecting advisory committee members include the individual's having 1) a belief in technical education for agriculture, 2) successful first-hand experience in the field, 3) the respect and confidence of his or her associates, 4) adequate time to devote to committee work, 5) a strong sense of responsibility and civic mindedness, and 6) being representative of a particular group of people.

During the ongoing work of the advisory committee, an evaluation of committee members can be obtained through meetings, through having them report on special topics or areas, and through telephone and mail communications.

Each year advisory committees should evaluate themselves. As a part of this, the members should discuss their objectives to make sure they keep in focus the purposes of the advisory group. In addition, simple evaluation forms can ask such questions as "What are we doing that should not be done?" and "What should be done that we are not doing?" Advisory Committees are evaluated during the fall of each year, usually in December by a committee chaired by the Provost of the college. If the evaluation is positive, the members are invited to be reappointed for a three-year term.

The effectiveness of UMW is determined by how well it serves industry; how well it serves industry is dependent on how good the advice is from advisory committees.

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A Survey Of Teaching Loads Of Agricultural Economics Faculty

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Faculty in colleges of agriculture devote a large portion of their professional careers to resident instruction. The intergenerational transfer of knowledge through resident instruction is seen as a vital component for the growth, development, and application of various disciplines and subject matter areas in colleges of agriculture. Effective planning and delivery of resident instruction depends upon the availability of teaching resources. This paper offers data and methodology on constructing and monitoring selected performance criteria of teaching resource levels in colleges of agriculture.

Selected teaching related findings of a national survey of teaching activities by agricultural econmics faculty at land grant universities are reported. More specifically the objectives of this paper are to: 1) describe general characteristics of agricultural economics faculty, 2) estimate teaching and advisee loads of these faculty, 3) contrast teaching and advisee loads across regions of the United States and 4) make recommendations for monitoring teaching and advisee loads on a periodic basis. Survey results were based upon 241 agricultural economics faculty at major land grant universities who held PhD degrees during the study period (1979). Of these respondents, 195 reported some

percentage of teaching appointment. While limited to agricultural economics faculty, the survey methodology may be directly applicable to other departments in colleges of agriculture.

Several regional comparisons of agricultural economics faculty were made. Tests for differences across regions were performed using Student's t-tests. Specific items compared were faculty appointments, years experience at various faculty ranks, age, salary, consulting income, grantsmanship, committee activities, and employment changes. Next, a sub-sample of teaching faculty or faculty with some teaching appointment was identified and contrasted across regions. Specific items contrasted included: number of courses taught, class size, number of credit hours taught, advisee loads, and teaching awards.

To facilitate comparisons across regions, estimates for a hypothetical full time teacher were made. Finally, teaching loads were converted to and estimated on a quarter hour basis. The paper concluded with a recommendation to periodically monitor and report the level of teaching resources in colleges of agriculture.

Young Blades: Ag Students Speak Out

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Agriculture needs a spokesman! It seems the older generation of farmers have had their wings clipped so often they are flying circles and are lacking expression and the will to fight for their beliefs and existence.

The ag students at Cloud County Community College, Concordia, Kansas, have been given the option to write a 400 word paper on any subject in the area of agriculture they want to or to take the final in Soils or Plant Science. To date all class members have chosen to write the paper with a resume of their farm background, parents, and future plans. A picture is also enclosed. These papers are edited by English and Ag teachers before being sent to the area paper, **Grass & Grain**, where they are printed and sent to approximately 20,000 patrons weekly.

The student receives feedback from neighbors who are usually quite complimentary. Many of my associates comment on the effort being done favorably. To date there has been approximately 75 papers printed over a period of 18 months.

MARK YOUR CALENDAR
June 17-20, 1984
30th Annual NACTA Conference
Washington State University
Pullman, WA

IDEA SHARING SESSION III

NACTA Conference

The Artistic Instructor

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The Ohio State University
Agricultural Technical Institute
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Classroom teaching is an art which embodies mental images, organization, sensitivity, and descriptive language. It is an art which must be developed, used, and polished. The master artist is one who has had considerable practice and paints to express thoughts. The student's receptive mind is the canvas on which a mental picture of what is being said is painted. Pictures painted in color are more impressive than black and white. Using words which describe color, sound, odor, size, shape, location, and time in illustrations capture the attention of the listener. Speaking in a conversational tone of voice and speaking from experience or current events where possible, lends credibility to, and stimulates interest in, the subject matter.

An important element in being an artistic instructor is the use of ones self as an audio visual aid. This includes the way one dresses, voice intonation, eye contact, sensitivity to the type and mood of the audience, use of body movements, organization of thoughts presented, speed of speaking, use of proper English, facing the audience as much as possible, avoiding chastisement of the audience, exhibiting enthusiasm, showing a sense of humor, and speaking with confidence and authority. It is important for the instructor to earn the trust and respect of the audience. The first few minutes of the first lecture of a course are very important, since during this time impressions are made on the audience which may be difficult to change later in the course.

Personal Communication-Understanding ding Being Misunderstood

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As teachers of agriculture, we have a unique opportunity to work with both young and old. Whether we like it or not, we are called upon, even expected to be leaders. As leaders, we will cause changes--sometimes in attitudes and in many intrinsic and extrinsic ways.

However problems now exist in agricultural leadership. Agriculture educators need to be proficient in "personal communications." The old saying "he was

misunderstood" can be a damaging yet true occurrence among more and more agricultural educators in today's agriculture. To help improve the quality of leadership, agricultural teachers as "change agents" must have certain qualities.

Change Agents

Change agents need to be able to communicate effectively and possess a variety of communication skills. It is these skills that can help a leader lead others. This means properly sending and receiving messages.

Body Language

Personal communication involves many considerations for the change agent. The term "body language" describes one important way that the agriculture teacher communicates, and it is a nonverbal form. Often the clue to what is being thought or impressions you give others affects your communication, whether you are **sending** or **receiving** messages. Other types of "body language" may be eyebrow, facial expression, even how one listens! The teacher in his leadership role, needs to be aware of other peoples' "body language" as well as his own.

Voice

Human relations and communication skills involve of course the ability to talk or orally communicate. An agricultural educator can be effective many times as a leader by simply being a good listener and developing listening skills. Use of the telephone is crucial to a leader's success in some situations. Voices express emotion. These little aspects of communication can be very important to the agriculture clientele that you must deal with daily. How many times have you said "yes" with your mouth but "no" with your tone?

Improvements

What can we do to help improve our communication skills and our human relations with agriculture and community clientele? There is no real set of steps or precesses that is successful for all. One might study others who indeed do communicate effectively, and many books and magazines can be helpful. The major consideration is, are we agricultural teachers willing to critique ourselves and actually change as a means of being more effective "change agents?" In reality "things truly are easier said than done" when it comes to changing how people come across to other people. The challenge and the need is evident.

A Communication Assessment Study Of Undergraduate Students In The College Of Agriculture

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In this study the level of competency in technical communication skills and the level of proficiency in the language art areas were studies. Specifically, faculty members from the various disciplines in the College of Agriculture at the University of Minnesota, St. Paul Campus, rated lower (freshman/sophomore) and upper division (junior/senior) students on communication skills.

The results indicate that faculty members perceived students as unskilled in the technical communication and language art areas, although upper division students receive higher rating than lower division students. Specific results are reported and discussed in this paper.

Differences Between Rural and Urban Students in The College Of Agriculture at The University Of Nebraska

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A survey was conducted of 717 of the 1783 students enrolled in the College of Agriculture at the University of Nebraska-Lincoln during 1982-83. Survey results of student sex, major, and address compared favorably with official enrollment data of the College. Responses were analysed comparing students that lived on a farm or ranch (rural) to those that did not (urban) and also on the basis of farm experience.

Of the students surveyed, 68.3 percent lived on a farm or ranch when not in school, 12.3 percent had no farm experience, 6.4 percent had 1-2 years experience, 3.9 percent had 3-5 years,and 9.2 percent had over 5 years farm experience. The percentage of rural male students (87.7) was significantly higher than urban males, and females were most likely to have no farm background. Rural students were significantly younger than urban students. The more farm experience, the more likely a student would enter the College as a freshman, which resulted in significantly more upperclass urban students. Urban students needed significantly more semesters to reach graduation. However, neither urban nor rural students thought they had a deficiency of background for agricultural courses.

Students with no farm experience were more likely to major in Horticulture or Natural Resources. Urban students changed majors more within the College, and students with no farm experience changed majors the most. However, there were no significant differences between groups in the certainty of career goals or in the number of times they changed career goals before graduation. Rural students were more likely to have production agriculture as a career goal. Students with little or no farm experience were more likely to enter sales, research, or a government agency.

Students were also surveyed regarding issues important to agriculture. There were no differences in

opinion between groups regarding the profitability of farming or ranching (most though it was profitable), or the work environment on farm or ranch (the majority thought it was superior). However, rural students thought that farmers and ranchers work for less money than other workers. There were no differences in opinion between groups when asked if the lack of a farm or ranch background is a disadvantage in obtaining a job in agriculture. Most thought it was. Rural students thought that farming or ranching requires more training and skill than most other occupations while those with no farm experience thought it required less. Rural students felt more strongly that the Federal Government should increase price supports for agricultural commodities. Urban students felt more strongly that food prices are too high. Rural students agreed more strongly that the U.S. should not limit agricultural exports ,while students with no farm experience agreed significantly less. Rural students felt that we should produce and eat less meat, and students with no farm experience were undecided.

Student Advisement Related To A Family Farm Career

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During the fall semester of 1982, 122 students from seven agricultural majors were surveyed to investigate the relationship between the student's program of study, agricultural background, and career plans. The survey had the objective of determining how this information was related to the student's desires and probabilities of returning to the family farm. The students were surveyed in two junior-senior level undergraduate classes — Farm Management and Agricultural Finance.

Although the information obtained may not be used directly in the classroom, it should help educators and advisors be aware of career situations related to family farming. As educators we need to be concerned about training students who have a high desire to farm after graduation but a low probability of doing so. We also need to be concerned about identifying the types of farms which students will likely return to so that they can be betterprepared.

Specifically, the students were asked to rank their desire to return to the family farm and their probability of being able to return to the family farm full time after graduation. The students also provided information on their families and the farms from which they came.

Results indicate that 30 percent (24 or 81) of the students from family farms had a medium or stronger desire to return to the family farm but less than a 50 percent chance of doing so. Agronomy students on average were from the largest farms and had higher probabilities of returning to the family farm. In general we found that higher probabilities were associated with larger farms. Results also indicate that 38 percent of all students plan not to work on the farm after graduation, but plan to purchase a farm later. In total 54 percent of the students had farming as their career goal; how ever, this percentage varied considerably. Roughly 33 percent of Ag. Econ. students, 66 percent of Animal Science students and over 80 percent of Agronomy majors had farming as a career goal.

A concern we have as Agricultural Economics professors is that agriculture students be well prepared in economics and business fundamentals because 38 percent plan to work off the farm and hope to purchase a farm later when they can afford to. These skills would improve their marketability in non-agricultural production jobs.

Reinforcement Media For Non-Traditional Students

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The continued decline in the number of young men and women living on farms, coupled with an increased awareness of urban and non-farm students to occupational opportunities available in agricuoture has resulted in a growing number of non-traditional students enrolled at the University of Minnesota, Waseca. The range differential of agricultural background skills acquired by students prior to attending UMW has been viewed by many instructors as an increasing and limiting problem. There is evidence that some opportunities have been denied those students when hiring interviewers question their ability to operate machinery, converse effectively with farmers, or understand rural sociological needs.

With assistance from the Fund for the Improvement of Post-Secondary Education, a funding agency of the U.S. Department of Education, the University of Minnesota Technical College, Waseca has released the time and talents of a curriculum coordinator and faculty instructors representing seven basic agricultural disciplines to develop a collection of self-paced instruction called "Reinforcement Units." These units are designed and implemented specifically to reinforce students who do not now have traditional backgrounding with farm machinery, livestock, crops, farm management, horticulture, soils, agricultural business, and rural social understandings. Units are being developed in a multiplicity of media including slide/tape sets, video cassettes, computer software, colored photos, and a variety of print resource materials.

'Reinforcement learning" addresses the need to equalize student learning readiness, particularly in certain specialized fields where an environmental or

internship experience may have profound influence on academic success. Reinforcement segments are being designed specifically in self-paced packages that will supplement student needs in the basic intrductory and important skills courses where foundation materials are critical to success in advanced courses. These units are intended to be used concurrently with normal classroom or laboratory sessions and are set up and available for use by students who may need them during the weeks the courses are taught.

The long range outcomes of the project are expected to impact greatly toward meeting the deficiency problems which are now proving universally frustrating to non-farm students and college agricultural instructors. Through this project a library of reinforcement units common to the needs of all agricultural colleges is now being assembled. Plans for disseminating these units are currently being developed by faculty at the University of Minnesota Technical College, Waseca.

Students At The Interface Between University And Community

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Universities and colleges have often been categorized as "ivory towers" - unique settings isolated from the "real world" and occupied by professors and students who blissfully ignore the problems that confront surrounding communities.

Realizing that undesired isolation of community from university life can and sometimes does occur, I would like to present an approach to teaching that would minimize the separation between community and student life.

My approach involves establishing an interface between university and community, identifying a common ground where students act as a link between two somewhat separate territories.

There are numerous areas where community and university interests overlap. Three case studies including recruiting, landscape design, and internship programs, will be addressed. Participation in these three areas by students in the Department of Horticulture at Clemson University has simultaneously expanded student learning, university efficiency, and community improvement. A process for pursuing the concept of placing students at the interface between university and community will also be presented.

Student Evaluations Of Agricultural Courses: For Improvement Or Reward?

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Basically, there are two central objectives for instructor evaluations. They are teaching improvement (formative) purposes and teaching reward (summative) purposes (Kronk and Shipka, 1980).

The student evaluation is an attempt to provide objective documentation of the instructor's performance. In the last decade, evaluation forms have been constantly revised to improve their reliability and validity (Aubrecht, 1979) in order to serve as objective yardsticks of teaching abilities.

Since it is obvious that the student teaching evaluation is now a permanent part of college life, we must learn to alter our views about it. Objectively, this exercise represents the best and fairest opportunity that the instructor has for demonstrating his or her abilities to the administration.

Studies by Centra (1979) and Carpenter (1980) have shown that administrators make summative decisions based upon a wide range of criteria such as:

Colleague Evaluation
Student Evaluation
Self Evaluation
Alumni Evaluation
Committee Evaluation
Formal Senior Feedback
Classroom Visitation
Student Achievement
Informal Oral Feedback
Department Head Evaluation

Most of these are used in one form or another by all colleges polled. Furthermore, the Department Head evaluation appears to carry the most weight even though this may not be the most objective evaluation on the list (Centra, 1977).

Thus, it is important for the faculty member to realize that the student evaluations are important mechanisms for self improvement (especially the personal comment section [Centra, 1979]); and are a great opportunity to verify his or her abilities to the administration. If viewed in this light, the student evaluation would prove to be enlightening and valuable to all parties concerned.

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Improvement Of Multiple-Choice Questions For Student Evaluation

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Multiple-choice questions are used frequently by agricultural instructors. These questions have a special attraction for teachers of large classes, since grading can be done quickly and objectively by computer. In the process of this grading, computer programs can be utilized to generate statistics on the difficulty and discrimination value of a question. However, many instructors feel these types of questions cannot adequately ascertain whether a student has mastered higher levels of learning, such as application and synthesis of knowledge. The construction of good multiple-choice questions can also be very time-consuming.

In an attempt to improve our ability to write multiple-choice questions that were effective in measuring student mastery of knowledge at all levels of learning, we examined questions from a bank of 1600 multiple-choice test items used in an introductory genetics course. From our teaching experience, certain question formats seemed to cause students difficulty by misleading them. Questions with these formats were grouped into categories, and the difficulty and discrimination values of each category were compared with corresponding values for questions that did not have identifiable problems. Questions without identifiable faults had an average difficulty value of .72 and an average discrimination value of .43. All categories of misleading questions had average discrimination values significantly lower than .43. Questions that had an option of "none of the above," or an option of more than one of the responses, both had difficulty values significantly lower than .72 (.68 and .66, respectively). Open-ended questions (where the responses must be read in order to understand the point of the question), questions stated in the negative, and questions with four responses rather than the standard five, all had nonsignificantly lower difficulty values.

Agricultural Education Recruitment Activities At Kansas State University

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Recruitment of students into agricultural education has persistently affected the supply of vocational agriculture teachers in Kansas. The unavailability of qualified teachers prompted the agricultural education staff at Kansas State University to become more actively involved in expanding numbers in the undergraduate program. A 1979 study to develop recruitment guidelines became the keystone for planning and organizing departmental efforts to attract students into the agricultural education program. Funds to implement the recommendations of this study were provided by the Kansas State Department of Education. Valuable assistance in carrying out the recruitment program was received from a special task force. This group consisted of eleven persons representing the Kansas State Department of Education, Kansas Vocational Agriculture Teachers Association (secondary and post-secondary), agri-business, agricultural media, agricultural education (undergraduate and graduate students), Kansas FFA Association, Kansas FFA Alumni, College of Education, and College of Agriculture.

At Kansas State University, we are optimistic that the outcomes of our recruitment efforts will have a positive effect on providing an adequate supply of vocational agriculture teachers for the state. This optimism is based on a plan that:

1. Assigned responsibility for coordinating recruitment activities;
2. Collected data from undergraduate students on effective recruiting practices;
3. Enlisted advice from the agriculture and education communities across the state;
4. Involved the total agricultural education resources of the state;
5. Stressed the key role vocational agriculture teachers play in influencing a student's career choice;
6. Provided vocational agriculture teachers and high school guidance counselors with an information kit on careers;
7. Developed a program of activities to aid in an organized and systematic approach to recruitment.

These recruitment activities represent what has been done in one state to attract additional students into the agricultural education curriculum. Perhaps a part of this approach will be useful in initiating, redirecting, or intensifying the recruitment of agriculture students in other institutions.

COMPUTER SESSION

NACTA Conference

Agnet As A Teaching Tool

Richard P. Waldren

AGNET is a regional agricultural computer network that began in 1975 at the University of Nebraska. In 1977 it expanded to include the Old West region states of Montana, North and South Dakota, Wyoming, and Nebraska. Washington joined as a cooperating

Invited paper presented by Waldren, an associate professor in the Department of Agronomy, University of Nebraska-Lincoln, NE 68583; before the 29th Annual NACTA Conference, Kansas State University, June 12-15, 1983.