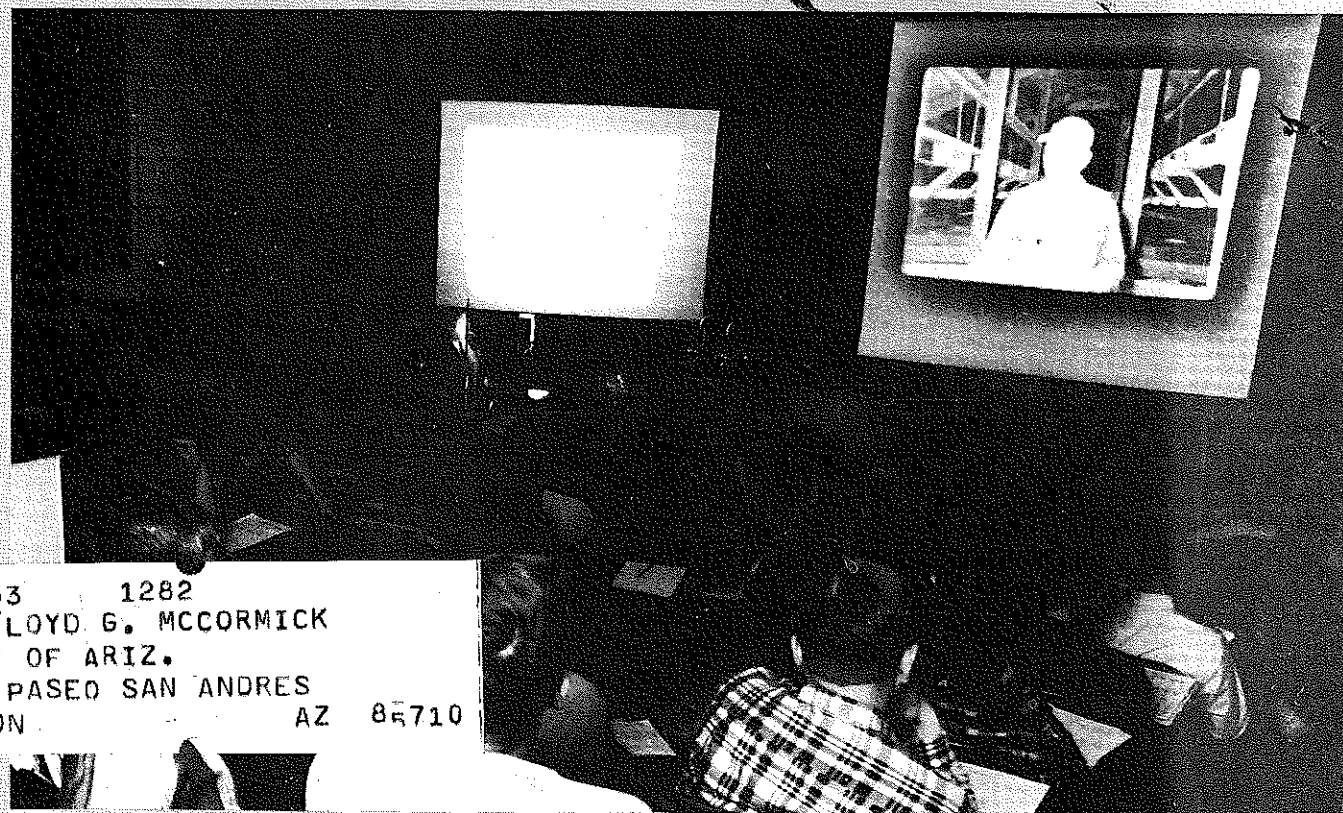


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Magazine



THEME: Economic Literacy Through Agricultural Education

The National Opinion Poll Reported:

- State Supervision is Effective
- Program Has a Broad Mission
- Department of Education is Best Location
- Colleges of Agriculture Best for Teacher Education
- Funding and Job Demands are Biggest Problems
- Overall Grade is "B"



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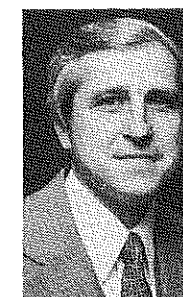
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Sense About Dollars and Cents



JASPER S. LEE, EDITOR
(The Editor also serves as Professor and Head, Department of Agricultural and Extension Education, Mississippi State University.)

Economic literacy is the ability of individuals to use rudimentary economics in their daily work and personal lives. Competencies in economic literacy, especially in the free enterprise system, are essential in the agricultural industry. These need to be substantive and not merely populist political terms such as "supply side economics," "psychoeconomics," and "Reagan economics."

Agricultural educators must cut through the popular superficial economic lingo. Dealing with economic literacy is more than apple pie and motherhood. Times have changed. We can't go back to yesterday. We must develop the economic literacy that deals with current situations and, hopefully, this will help people adjust with changes brought by the future.

Why Important?

The importance of economic literacy has increased with the emergence of modern agricultural industry. Self-sufficient farmers in the late 1700s needed relatively little knowledge of economics. They produced at home almost everything they needed and, by and large, were not concerned with commerce. The agricultural revolution contributed to many changes in agriculture, including the emergence of agricultural industry. And the changes have been drastic!

In 1980, there were 1.8 million farms with 3.8 million workers in the United States. Contrast this to 1790 when 90 percent of all people farmed or to 1950 when there were slightly over 5.5 million farms.

At the same time the number of farms was decreasing, agribusinesses were emerging. Somewhere between 10 and 13 million persons are involved off the farm in agricultural industry. Examples include 308,000 workers in poultry and meat packing; 171,000 in dairy manufacturing; 237,000 in baking; 223,300 in food plants; 313,000 in cotton mills; and 3 million in agricultural supplies of seeds, fertilizers, and others. The non-farm dimension of agricultural industry has contributed to farm efficiency. A good example is more efficient production. Today, one hour of farm labor produces 13 times more food than it did in 1920.

How Much Economic Literacy is Needed?

Vocational-technical agricultural education programs need continual assessment, with appropriate adjustments being made. More and more things are being added to the curricula, and little is taken out. We must be absolutely certain that we include learning activities which develop the competencies needed to effectively function as an employee or entrepreneur in the agricultural industry. The development of certain levels of economic literacy as related to agriculture needs to be achieved through agricultural instruction and not be fully delegated to social studies classes. The exact amount or level of literacy needed eludes me. It should be there, but the question is: How

much is needed? My only answer would be "an adequate amount." And this is an inadequate answer.

What Competencies Are Needed?

The best approach is to determine the competencies needed in economic literacy and plan courses and curricula accordingly. There are several areas in which economic literacy competencies are needed. (These have not been validated as specifically needed by vo-ag teachers, but they do appear in the literature as competencies vo-ag students often need.)

- Distinguish between the common economic systems
- Describe how capitalism (free enterprise) functions in the United States
- Describe the economic functions of production, exchange, distribution, and consumption
- Describe the factors of production in agricultural industry
- Explain four ways of doing business
- Describe the roles and levels of management in agricultural industry
- Explain basic organizational structures
- Explain the role of financing in agricultural industry
- Describe sources of financing for agricultural industry
- Explain the meaning and functions of marketing in agricultural industry
- Describe the importance of efficient agricultural marketing
- Distinguish between types of markets in agricultural industry
- Explain how physical distribution functions in agricultural industry
- Explain the role of government in capitalism
- Describe the price-making process in capitalism
- Explain the role of competition in agricultural industry

This Issue

The September, 1982, issue of THE MAGAZINE addresses the theme of "Economic Literacy Through Agricultural Education." Dr. Roland Peterson of the University of Minnesota has served as Theme Editor. His assistance is greatly appreciated.

Economic Literacy Through Agricultural Education

Why should vocational agriculture educators concern themselves with the level of economic literacy that students possess when they leave their programs? Probably some would say, "That's not a real concern of mine, it's of no interest. I am more interested in teaching practical hands-on skills." Before setting aside the theme section in this issue of THE AGRICULTURE EDUCATION MAGAZINE as boring and uninteresting, consider the implications and importance of the topic. In the April, 1982, issue, Krebs stated that if what is learned is to be used . . . it needs to be applied. He further stressed the value of problem-solving methodology which results in real decision making. Crunkilton (1982) suggested that to be an effective problem-solving teacher, one must know the student's situation, background and needs, as well as the community situation and needs, so that accurate and careful decisions can be made.

Economic Plight

The agricultural situation today is ripe for developing a sense of economic literacy. Some farmers are being forced to sell their machinery at auctions so they may pay off long overdue loans, while others are considering limited or no applications of fertilizers and pesticides. Main line farm machinery manufacturers and other agricultural supply firms are straining under severe financial pressures. With all of this, it seems time to carefully examine and plan the teaching of basic economic understandings to students in vocational agriculture classes. The importance of a healthy, growing, and productive agriculture is very prominent in today's economic discussions. Alampi (1982) stated that miracles have been occurring in agricultural production. He indicated that:

Fifty years ago, the American farmer produced only enough food for eight to ten people. Now the American



Economic literacy can be developed through on-farm supervision. (Photograph courtesy of the National FFA Center)



By ROLAND L. PETERSON, THEME EDITOR
 Editor's Note: Dr. Peterson is Associate Professor, Division of Agricultural Education, University of Minnesota, St. Paul, Minnesota 55108.

farmer produces enough to feed over 78 others and 23 of those are in other countries. The United States' balance of payments depends upon the productivity of the American farmer. Production from one of every three acres is presently exported . . . In fiscal 1981 alone, U.S. agricultural trade with other countries provided a net surplus of \$27.3 billion.

In testimony before the Joint Economic Committee of Congress, Schuh (1982) traced some of the history of farm prices and proposed that the changes in the agricultural economy may be affected by more than traditional cycles, trade restrictions, embargoes, or commodity markets. He proposed that the emergence of a well-integrated international capital market and the shift from a regime of fixed exchange to a regime of flexible exchange rates are key reasons for the problems in agriculture today. Schuh further stated that the shifts caused by these two developments have had important consequences for agriculture. He suggested that at one time agriculture was nearly isolated from changes in the monetary and fiscal policies, whereas today it bears the burden of adjustments to changes in those policies. He illustrated this fact by stating that . . .

When the Federal Reserve Bank pursues tight monetary policies, it attracts international capital to the U.S. This inflow of capital bids up the value of the dollar, thereby making our exports less competitive in international markets. This is reflected immediately in lower prices here at home. Eventually it leads to a decline in exports. When the Federal Reserve tries to stimulate the economy, the reverse occurs. By causing interest rates to decline in the domestic economy it leads to an outflow of capital. This causes the value of the dollar to fall, thereby causing our exports to be more competitive. This again is reflected immediately in a raise in prices here at home. Eventually, it leads to an increase in exports.

Economic Emphasis

Feldman (1982) in an article on the U.S. and world economy and the impact of studying world economics for high school students stated that . . .

Relationships between nations parallel those between states, towns, or even individuals. Much of what we do affects other people as well as ourselves, often in ways we did not anticipate. Our export and import policies affect our domestic economy; conversely the policies used to "control" the domestic economy have an impact on the economics of other nations. The value of the dollar on the world money market for instance, will have more effect on the economies of other countries than it will have on domestic prices, while high interest rates will attract foreign investment here and change the domestic money market.

. . . lack of understanding about international economics gives students a one-sided view of domestic economics.

She presented several ideas regarding the teaching of economic concepts about international economics. She suggested the use of games and simulations with titles such as "Why Trade With Other Countries" which reflected the impact of environment on the price of several agricultural products and its impact on business worldwide. Interestingly, nearly all of the simulations she used involved agricultural products.

When we plan our teaching for vocational agriculture, what is our ultimate objective? Do we resort to easy-teachism and focus on teaching facts, simple skills, and record keeping exercises that last for several weeks? Not to be overly critical of those necessary activities, but what are the problems we attempt to teach? Do they deal with solving problems that may have a real economic impact on a student's farming program? . . . or an economic policy? Do we bring the classroom discussions to a final conclusion that results in a student (high school or adult) taking action that may involve reorganizing their farming enterprises? . . . or completely changing an enterprise? . . . or purchasing an insurance policy? What issues are students in our programs capable of understanding? Have we taught our students to think logically through a difficult situation?

Problem-solving teaching when properly organized

presents real situations to students and teachers because the focus is on real problems. Hopefully, vocational agriculture students acquire more than manipulative skills. They need the ability to think through and logically solve real economic problems. In the building of a vocational agriculture program, developing students' abilities to deal with the real economic impact of agriculture production merits a high priority in making them economically literate. Vocational agriculture has made a real contribution over the years in making agriculture efficient and productive. Hopefully, the program today will provide opportunities for developing efficient management and marketing of products from a worldwide perspective.

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The Cover

A "farm visit" by means of projection equipment and amplified telephone brings an economic situation to the agriculture classroom. (Photograph courtesy of Dr. John Herbst, University of Illinois.)

Questions and Answers . . .

How We Teach Students to Talk to the Banker and Tax Collector

By GARY SANDE AND VERN GROEN

Editor's Note: The authors are vocational agriculture instructors at Lanesboro High School, Lanesboro, MN 55949

"Economic literacy" — what does the term mean? Our home-grown definition of economic literacy is: being able to talk to the banker and to the tax collector. This definition implies keeping good records and making use of the information kept.

The program of "economic literacy" education at Lanesboro, Minnesota, is built around supervised occupational experience program records. Using the students' records as the basis for instruction makes it easier for both the instructor and the students to successfully complete each instructional unit.

This article will outline in question-and-answer format how we teach economic literacy to our vo-ag students in grades 9-12. It should be noted that our program has been evolving over several years with more pieces fitting into place each year. This year's program is not what it was two

(Continued on Page 6)

How We Teach Students to Talk to the Banker and Tax Collector

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years ago. The program is being further refined and updated each year.

Q: When is the unit on SOE records taught?

A: The "Records" unit is the first unit taught to the ninth grade class.

Q: Why should students keep records?

A: Our purposes include the following: (1) to prepare a financial statement and operating record for creditors, (2) to determine the profitability of each individual's enterprise, (3) to determine the profitability of the student's complete SOE program, (4) to provide the necessary information to have a tax return properly prepared, and (5) to aid in planning for future changes and/or expansion.

It is emphasized that the purpose of keeping records is not to show a profitable and efficient farm/business operation, but to show what is really happening! This means that all information must be accurately recorded and that all expenses must be listed at a realistic market value.

Q: How are SOE records presented to ninth graders?

A: Each member of the ninth grade class works through a sample problem. Our "Sample Student" has two enterprises: 1) Feeder Pig Production and 2) Finished Hog Production. The combination of these two enterprises allows for transfers in and out of each enterprise, depreciation of purchased breeding animals, supplemental and capital gains of breeding animals sold, cost basis of animals purchased for resale, and other considerations.

Q: What procedure is followed in completing the "Sample Student's" records?

A: The class members enter the entire year's transactions in the following systematic order:

- 1) Enter the Jan. 1 Opening Inventory
 - A. Assets
 1. Farm assets (no., wt., market value)
 2. Personal assets (cash, savings, property (motorcycle, etc.) We try to discourage the purchase of such non-productive items as cars and motorcycles.
 - B. Liabilities (farm and personal)
 - C. All unused blanks are red lined to prevent any further entries in the beginning inventory.
- 2) Prepare net worth statement (assets minus liabilities)
- 3) Enter monthly transactions (Jan.-Dec.)
 - A. Sales (cash & non-cash)
 - B. Purchases and expenses (cash & non-cash)
 - C. Transfers (Out of one enterprise — into other enterprises — keeping all numbers, weights, values, the SAME)
 - D. Monthly livestock check (born, died, bought, and sold)
 - E. Feed fed to each enterprise
 - F. Other income (wages, gifts)
 - G. Personal spending (Where did the money go?)
 - H. Cash flow and checkbook balance
- 4) Close out records (as of Dec. 31)
 - A. Complete ending inventories, (no., wt., market value)
 - B. Assign miscellaneous livestock costs (cash & non-cash) to each enterprise. The following are included as misc. expenses: supplies, breeding expenses, entry fees, show expenses, hauling, straw, electricity, equipment and machine use charges, barn rent, and interest. These items should be given fair market or custom rate value and charged accordingly to give a realistic cost picture.

- C. Calculate feed costs. Use cash market prices! REMEMBER: NOTHING IS FREE AND THERE ARE NO BARGAINS! Use realistic prices and costs for all transactions (both cash & non-cash).
 - D. Total all columns in the SOE records.
 - E. Transfer Ending Inventory to next year's records (beginning inventory). Do not change any numbers, weights, and values. Ending inventory must equal next year's beginning inventory. All transactions must occur in one year or the other — there can be no "midnight" changes in inventories.
- 5) Summarize and analyze the sample student records.

Q: How are the student records summarized and analyzed?

A: In an effort to minimize the time and "agony" of summarizing and analyzing records, our students use a microcomputer for the summary and analysis of their records.

Q: What is included in the summary and analysis?

A: The summary and analysis provides students the following information: 1) work units (accomplishment of a 10 hour day) from each enterprise, 2) total income from each enterprise (sales + value transfer out + ending inventory), 3) total expenses for each enterprise (expenses + value transfer in + beginning inventory), 4) enterprise net return (total income minus total expense), and 5) production and efficiency factors.

Q: What production and efficiency factors are calculated by the computer program?

A: The information varies with the enterprise. The summary and analysis for "Hogs: Produce Feeder Pigs" provides the following information: 1) average number of hogs, 2) average number of pigs, 3) number of litters farrowed, 4) total lbs. produced per litter, 5) total value produced per litter, 6) lbs. of feed fed per litter, 7) feed cost per litter, 8) total costs per litter, 9) return over feed cost per litter, 10) return over total costs per litter, 11) return for \$100 feed fed, 12) pigs born per litter, 13) pigs weaned per litter, 14) percent death loss, 15) average weight of feeder pigs sold/transferred, 16) average price per feeder pig sold/transferred, 17) feed cost per feeder pig, 18) total costs per feeder pig, 19) approximate hourly wage from the enterprise. Work units, total income, total expense, and enterprise net return are also calculated.

Q: How is the student's summary and analysis information used?

A: The sample student's results are compared with the averages of our adult farm management report. This allows the students to compare efficiencies with those of full-time farmers and to evaluate the "reasonableness" of the production factors in the sample. The class members then offer suggested changes for the "sample student" to consider to improve his net profit and efficiencies.

Q: When do the ninth graders begin keeping their own SOE records?

A: Ninth graders start their records on Oct. 1. They complete opening inventories (may have none) and a net worth statement. They do for themselves what they have just finished doing for the "sample student."

Q: Why do the ninth graders keep SOE records on only a partial year (Sept. or Oct. through Dec.)?

A: We have found that having the students start, update, close out, summarize, and analyze their own records in a short time span allows them to relate entries in their records to the resulting production and efficiency factors. This seems to stimulate the students to do a more accurate job of record keeping on their own — even through the summer months! The students are also establishing a Jan.-Dec. calendar tax year.

Q: How often are the SOE records updated?

A: "Records day" is the first Friday of every month in all vo-ag classes — NO EXCEPTIONS. The records must be checked over by the instructor for completeness.

Q: What method is used to insure that all students complete their work?

A: SOE records are counted as a test score with the following values: completed on Friday = 100 points, completed by the following Monday = 50 points, later than Monday = 0 points. This provides a good incentive for the student to complete his/her records on time.

Q: What procedures do the students in the tenth, eleventh, and twelfth grades follow in completing their SOE records?

A: They follow exactly the same procedure as the ninth graders. Having more years of their own records to measure and compare progress, they spend more time reviewing their records and looking for opportunities to make further progress.

Q: How are State FFA Degree applications completed?

A: After the eleventh and twelfth graders have updated their application forms with the last year's summary and analysis information, those who have surpassed the minimum qualifications for earnings and leadership are encouraged to submit their applications to the FFA district. They also go through the interviews even though they may be just above the minimum qualifications for earnings and leadership.

Q: Why should all qualified members go through the reviews and interviews?

A: We compare the State FFA Degree application form to a loan application form and we compare the interview to an interview by a knowledgeable ag banker.

Q: How are the State FFA Degree interviews similar to those of a banker?

A: In both situations, the student must explain his/her 1) financial status, 2) past and current SOE program and achievements, 3) skills, competencies, and abilities possessed, and 4) plans for improvements.

Q: Are eleventh graders encouraged to apply for the State FFA Degree?

A: Yes. Our feeling is that the experience of going through the interviews will give them more confidence when they talk to their banker and/or tax preparer. The experience will also help them when they re-apply as seniors. In most cases, the experience of the interview will be of more value to the student than will the degree.

Q: What reasons are there for teaching an income tax unit to high school vo-ag students?

A: Our reasons for teaching the unit include the following: 1) to determine what information is needed for filling

out a tax return — what records need to be kept, 2) to determine legal requirements for filing taxes (note: self-employed persons must file if cash earnings are more than \$400, 3) to report all taxable income, 4) to report all allowable expenses and deductions, 5) to take advantage of allowable depreciation (ACRS), 6) to take advantage of allowable investment credit, 7) to take advantage of tax management plans (i.e., encourage dad to pay wages to children to reduce family tax load), 8) to establish student as a "cash basis" farmer, 9) to clear up misinformation about taxes (i.e., no age requirements for filing, earnings requirements for filing, and dependency tests.)

Q: When is the income tax unit taught?

A: Since all self-employed persons (including self-employed students) must file their tax returns by March 1, the tax unit has first priority during February. We discuss tax management in November and December.

Q: At what grade level is the unit taught?

A: All vo-ag classes (grades 9-12) complete the tax unit. The eleventh and twelfth graders need to spend less time with the basics, so they can spend more time with tax management. By using this method, we are indirectly teaching the parents of our students.

Q: What reference materials are used?

A: In addition to relevant magazine articles, we use the following IRS publications: 1) "Understanding Taxes Unit," 2) "Farmer's Tax Guide," 3) "Your Federal Income Tax (publication 17, and 4) 1040 Instructions."

Q: How is the Federal Form 1040 taught?

A: Students work through example problems in the "Understanding Taxes" booklet using Form 1040. Form 1040-A is ignored.

Q: How is the "Farm Tax" section taught?

Students work through our sample student's Federal tax return. The forms used to supplement the 1040 are the following: 1) Schedule F - Farm Income and Expenses, 2) Form 4562 - Depreciation (ACRS), 3) Form 4797 - Supplemental Gains, 4) Schedule D - Capital Gains, 5) Form 3468 - Investment Credit, and 6) Schedule SE - Self Employment Tax.

(Continued on Page 8)



Students develop economic literacy skills by working in farm supplies stores. (Photograph by Gary Gray, Mississippi State University)

How We Teach Students to Talk to the Banker and Tax Collector

(Continued from Page 7)

Q: Do students fill out their own tax returns?

A: Yes, all students fill out their tax returns using information from their SOE records. Some students may need additional forms and schedules to complete their returns (i.e., Schedule C - Profit/loss from business).

Q: How are state income tax forms completed?

A: After completing the Federal tax forms, the students, under the guidance of the instructor, fill out the appropriate tax forms.

Q: Do the students file their Federal and state tax returns as completed in class?

A: Preparing the final tax forms and the actual filing of the returns with the IRS and state is the responsibility of the student, his/her parents, and the parents' tax preparer. The student is informed that information on his/her tax returns (as well as that on the parents' return) must be sup-

ported by good records and receipts. The students are also informed that their tax returns must contain all information for the entire tax year (i.e. interest earned, other income).

Q: Can the amount of time required to teach "Economic Literacy" in the high school vo-ag program be justified?

A: It may appear that we are over-allocating the time spent teaching records and taxes. However, with the current and predicted farm economic situation regarding prices, interest rates, and land cost, we may need to spend even more time helping our students become economically literate, at least by our definition of BEING ABLE TO TALK TO THE BANKER AND TAX COLLECTOR.

Although this article deals mainly with livestock enterprises, the same principles and philosophies are followed in our treatment of students with crops, agribusiness, and other SOE programs.

Hopefully, our basic course outline for teaching economic literacy can be adapted to your vo-ag instructional program and help your students become more economically literate.

THEME

Economic Principles: The Foundation of Economic Understanding

Every teacher knows that certain principles of teaching make the learning process more efficient. The author, in a methods class taught by Dr. H.M. Hamlin many years ago, learned that the attributes of interest, thought, and use were essential if teaching was to result in viable learning. The material must be of interest to the students and stimulate thinking. To really translate into knowledge, meaningful use of the material was necessary and a new ability or skill would be acquired.

Similarly, the use of economic principles makes business management more efficient. More than one exposure may be required for students to learn everything needed for making farm business and personal decisions to the best economic advantage! Many years of teaching in this area prompt the observation that a good start toward acquiring these abilities in secondary education is important. Students who have made progress in learning and using economic principles seem to do better in their post high school years than those who have not had such instruction.

What Principles are Essential to Understanding Economics

Students should have the ability to apply economic principles in analyzing the farm business and making farm management decisions. The following seem to be most critical:

A. Diminishing Returns

By J.H. HERBST

Editor's Note: Dr. Herbst is Professor of Farm Management at the University of Illinois, Urbana, Illinois 61801



- B. Opportunity Cost
- C. Cost Analysis (fixed, variable)
- D. Input Combinations
- E. Enterprise Selection
- F. Supply and Demand
- G. Risk and Uncertainty

Diminishing Returns. This principle applies when all resources are fixed except one, and amounts of that resource vary in the production of a product. As more of the resource is added, the marginal (or additional) output declines either immediately or after an initial stage of increasing marginal output.

Unless prices of the resources (or input) and the product are considered, this principle is said not to be "economic." The reason for the statement is that the indicated changes occur in biology or engineering, without reference to economics. However, by attaching dollars and cents to the

resource and product, managers have an important basis for making decisions. The point of highest profit or least loss is where the added return just covers the added cost of the extra unit of input.

Opportunity Cost. Many times we may not know the worth of a resource being used in production. The principle of opportunity cost tells us that the cost of a resource used in one way is the return it would bring in its most profitable alternative use. If you use land to grow oats, you cannot grow corn or soybeans at the same time. The opportunity cost of using the land for oats is the net return that corn would bring. Also, the cost of using your labor or time in one way is the net return it would bring in its most profitable alternative use.

An agribusiness person can think of the opportunity cost of handling certain products. For example, if he or she is limited in the number of products, the opportunity cost of selling and servicing one product is the net return that would be obtained from selling and servicing the most profitable alternative. The knowledge, therefore, aids in the decision of how to put your resources to best use.

"Equimarginal returns" is a closely related principle that also applies when you consider how to invest a single, limited resource. You allocate the resource among its various uses in such a way that the marginal returns are equal among these uses. With limited funds for nitrogen fertilizer for corn, you get highest net income by allocating the fertilizer in such a way that the marginal returns from the fertilizer are equal for all the fields, and for all acres, for that matter.

Cost Analysis. Fixed costs, sometimes called overhead costs, do not change when production changes. They go just the same whether you produce anything or not. Depreciation, interest, and taxes are examples.

Variable or operating costs, on the other hand, do change with production. Examples are fertilizer, fuel, seed, and feed. The total variable costs increase in production. If more and more units are produced with the same fixed facilities, variable costs tend to increase at a faster rate at higher production levels, in line with the principle of diminishing returns.

When considering fixed and variable costs, farmers will tend to operate in the short run as long as they can cover variable costs and have no better alternative. However, in the long run they must cover all costs, or they will not invest in new "plant" and equipment.

Likewise, an agribusiness manager uses cost analysis in the feed manufacturing business. The business tends to operate in the short run as long as all variable costs are covered. However, in the long run fixed costs must also be covered; for example, the plant may need to be modernized with new equipment or the facilities expanded. With certain costs fixed, operating near plant capacity means lower costs per unit than with less output.

Input Combinations. The principle of resource substitution provides a guide for choosing amounts of inputs or resources to use. It relates to deciding how much of each of two variable resources to use in producing a constant amount of product, or which resource to use when one substitutes entirely for another.

Some examples are: substitution of one feed for another, capital for labor, or chemical weed control for cultivation. A given amount of product is assumed in each case, with all other resources fixed, except the ones involved in the decision. By "fencing out" other considerations, the use of this and other economic principles gives you "control" as you might have by keeping extraneous materials out of a chemistry experiment.

Assuming a constant amount of product, it pays to substitute one resource or input for another as long as the value of the resource replaced is greater than the value (price times amount) of the resource added, for we are trying to reduce costs. Tables have been set up to show such savings for changes in the corn-to-supplement ratio for finishing hogs and hay-grain combinations in feeding cattle or producing milk. The author remembers farmers using this principle, especially when the price of one feed changed substantially in relation to another.

Enterprise Selection. The principle of product substitution is an important one to use in making decisions on enterprise selection. The relationships among enterprises can be complementary, supplementary, or competitive.

At least some resources are assumed to be fixed in product substitution. If all three relationships occur when a second product is added, the complementary relationship occurs first. It occurs wither due to a by-product aiding production or a product making use of otherwise unused resources. For example, over time the growing of legumes may increase grain production on some soils. Thus, hay and grain production both increase. When one product

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Knowledge of supplies helps students gain economic skills. (Photograph courtesy of Richard M. Hylton, Pomona, California)

The Foundation of Economic Understanding

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(grain) stays constant and the other (hay) increases, the relationship is supplementary; if one product decreases while the other increases, the relationship is competitive. Allocating resources among the two enterprises to result in a competitive relationship means that the production of both products has been expanded to a more favorable point. Just where to operate in the competitive area depends upon the price relationship (or income above direct costs) for the products.

The proportion of corn and soybeans to grow on a farm is another example related to this principle. Besides helping in the decision of which crops to grow, it can also help in making a choice among livestock enterprises or among crops and livestock.

The principle of comparative advantage tells us that a business or region produces whatever it has the greatest advantage for producing and trades these products for those best produced by other businesses or regions. Many factors, both on the resource side and the demand side, tend to influence which products are most favorable. The net income for each product is probably the best indication.

Supply and Demand. It is the interaction of all demand and supply factors that results in price formulation or change. Price is determined where supply and demand meet. Over a period of time if there is a change in population, income, or tastes, etc., demand is increased. The demand curve "shifts" to the right, and consumers will compete more for the existing supply and bid up prices. Producers consider these higher prices as the opportunity for more profit and increase production. The opposite situation would result from a decrease in consumer incomes and a "shift" of demand to the left. With decreased demand, prices would be lower. Of course, the impetus for change may come from the supply side. For example, an increase in the quantity offered for sale would cause a "shift" to the right of the supply curve and lower prices would be necessary in order to sell all of the product available.

Besides price determination effects, percentages of change are also important. For example, "elasticity of demand with respect to price" refers to percentage changes in quantity purchased in relation to percentage changes in price. Thus, the demand for certain products is said to be "elastic" or "inelastic." Of course, the concept of elasticity may also relate to other factors, such as elasticity of production.

Risk and Uncertainty. Risk occurs when the odds of a hazard or unfavorable outcome can be predicted for a large group. The use of insurance is an example of a defense against risk because the odds of death occurring among 40 year old men can be predicted for a given year or the number of farm buildings that will be damaged by fire in a group of 10,000. Even crop failure is among the hazards for which insurance is available.

In an uncertain situation, the odds cannot be predicted

accurately. Defenses against uncertainty include such items as maintaining flexibility, producing under contract, using the futures market, or practicing diversification. You probably wouldn't use all these practices at once, and they must be weighed against others that do not decrease uncertainty. For example, the advantages of diversification need to be weighed against those of specialization.

With diversification, the addition of a second enterprise will tend to reduce variability by one-half and a third enterprise by another one-third. Beyond that, adding enterprises has a lesser effect. On the other hand, specialization permits you to produce the products for which you have the greatest advantage. Furthermore, by specializing in one or just a few larger enterprises, you can spread fixed costs over more units of product.

High school students need to make at least a start in learning and applying the principles discussed in this section. They are essential toward making sound decisions in farming and other agricultural businesses.

Economic Principle/Decision Making The Tie That Binds

Fertilizer for Corn. According to the FFA ritual, corn is grown in every state in the Union. So what better example of diminishing returns than nitrogen used on corn? It is very important for a manager or operator to know the relation between fertilizer and yield. (If corn is not important in your state, it should be simple to come up with another example.)

The principle tells us to apply such amounts that the marginal cost of fertilizer is just equal to the value of the additional corn. We know the difficulties in predicting the outcome for a specific season, but the manager or operator who can apply the principle has a much better chance to come close to the most profitable point than one who cannot.

There are many times farmers can apply this principle. If they are short on labor, equipment to save labor is suggested, but remember that it comes at a cost. Is enough labor saved to warrant buying the equipment? If enough labor is available and operations are not to be expanded, farmers may decide to forego the equipment. Some comparison must be made of the annual cost of the added equipment and the value of the labor saved. This principle has application in all businesses, including those concerned with feed, seed, and fertilizer. For example, just how much money can be spent on equipment to save on labor in the plant or store?

Which Crop To Grow? By the principle of opportunity cost, we know that the cost of using land in one way is the return we would get from its most profitable alternative use. The wheat is profitable, but the principle of opportunity cost is designed to tell whether it is most profitable.

The principles serve as short-cuts and, in so doing, help tell us which information to gather and provide a means of analyzing alternatives. Principles are thus very important in making the right decisions which result in increased income.

Making Principles Come Alive Through Agriculture Instruction

The key to teaching principles is to use a generous amount of relevant examples. Be sure to know fully how to draw all the curves yourself! Class preparation may be even more important here than in some other areas. Many times a table is useful where students have to find the "best" point. Perhaps a multiple choice question (with only one correct answer) can be used.

Students can choose sides and work as teams. A "debate" type of instruction may fit certain situations. The question as to whether a certain principle is relevant to a situation can be debated. Here again, the instructor needs to be well grounded and know all the assumptions inherent in the principle; for example, diminishing returns assumes that one resource or input is variable and all other inputs are fixed. With student knowledge incomplete, they may feel that some other inputs are varying and that the principle is not working as it should.

Teachers can teach the principle of supply and demand by having students bid on small items and then discussing why each person was willing to bid that amount. You, as a teacher, can work out innovative ways to make principles instruction viable.

The establishment of state and national contests has provided a great stimulus toward teaching principles in secondary schools. The preparation for those contests has resulted in many local and sectional or district contests. It is true that teaching of principles is very important in its own right, but contests can aid in this kind of instruction, just as the teaching of livestock and dairy selection is aided by livestock and dairy judging contests.

Records from students' home farms or farming programs furnish good material for teaching principles. A type of question might be: "According to the principle of

diminishing returns, should you use more fertilizer on your corn crop?"

Other sample questions are: "With a limited amount of corn available, should you have fed your hogs to heavier weights and your cattle to lighter weights?" That question would illustrate the use of equimarginal returns or opportunity cost. "Should I have fed more grain and less hay to my steers?" or "Should I feed more low priced grain and less supplement to my finishing hogs?" The latter two questions illustrate resource substitution.

"I have continuous corn but no soybeans. Should I grow both corn and soybeans and perhaps gain some benefits? illustrates the principle of product substitution.

With the rapid development of microcomputers and programs related to agriculture, more programs will undoubtedly be developed to serve directly as a means of teaching economic principles. Many other programs have the use of principles implied or imbedded in their results.

The benefits of visiting successful businesses can be used to illustrate economic principles in use by farmers and agribusiness managers.

With problems of increased travel cost and time limiting the number of field trips, teachers may want to use an amplified telephone and visual projection equipment (or video tapes, for that matter) so that the person can be interviewed without the necessity of a field trip. Teachers need to plan the program thoroughly with the farmer or manager ahead of the telephone "visit." By the use of this method, a class can effectively learn principles application by "visiting" a farm or other agribusiness many miles away.

Many opportunities exist for teaching economic principles to secondary and postsecondary students. The effective teacher who understands their importance will find them an essential basis for instruction.

THEME

Keeping Score: Emphasizing Farm Business Management Education

On behalf of the National FFA Farm Business Management Contest Committee, we appreciate the opportunity to present in this article a relevant facet of the vocational agriculture curriculum: farm business management education. We are committed to emphasizing farm business management education in all vocational agriculture programs across this nation. We believe in vocational education in agriculture! We have strong convictions of what it should be! We believe we must teach students agriculture vocationally! We must serve the educational and occupational needs of our students.

What Are We About?

May we review briefly with you "what we are about." As with all vocational education programs, vocational

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agriculture has characteristics which distinguish it from general education. First, it is a program, not just a class. Typically, the instructional program includes technical agriculture, agricultural mechanics, leadership development (FFA) and supervised occupational experience.

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Keeping Score: Emphasizing Farm Business Management Education

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Each of the components of a total program has a necessary and recognized purpose in preparing students for entry-level employment in agriculture. It is our opinion that vocational agriculture must employ a balanced program concept with each part complimenting and supplementing the other parts. If any part is lacking, the program lacks balance and loses some of its effectiveness. The same holds true for the curriculum. There must be balance. Quality farm business management instruction strengthens the total program concept.

Vocational agriculture is unique in the fact that special educational methods are used to make the educational process more effective and more meaningful in preparing students for occupations in agriculture. All four components become teaching tools in the hands of a skilled teacher to help students achieve the major program objectives of vocational agriculture.

The major program objectives of vocational education in agriculture are:

1. To develop agricultural competencies (knowledge, skills, attitudes) needed by individuals engaged in or preparing to engage in production agriculture and agribusiness occupations.
2. To develop an awareness of career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations.
3. To develop those abilities in human relations which are essential in agricultural occupations.
4. To develop the abilities needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.

Few of us would disagree with these program objectives. Vocational agriculture is an integral part of public school education. We profess to be a part of, not a part from, general education. We strongly support the development of basic skills in our students; however, we believe just as strongly in the development of economic skills. Those skills which help students:

- Make money
- Secure a job
- Seek economic independence
- Obtain job satisfaction

This, we believe, is what we are all about!

How Well Are We Accomplishing Our Task?

In order for us to evaluate our efforts in the light of the kind of instructional program we are charged to deliver, we must consider:

- What our critics are saying about our programs
- What competencies are required for success in the industry
- What societal needs must be met
- What our graduates are saying about the program

Our Critics. Nationally, we are hearing vocational

education critics condemn us for preparing students for jobs which are constantly in short supply. (There is plenty of work, but a persistent shortage of jobs.) Feldman (1981) has suggested we should prepare students in vocational education programs for entrepreneurship rather than for salaried jobs. He contends students should be prepared to work for themselves rather than for someone else. We in vocational agriculture have historically followed this approach when we were preparing students to return to the farm as owner-operators.

As we expanded our instructional base to provide specialized programs in nonproduction agriculture, have we changed our emphasis? Are we now training students for jobs in mechanics, horticulture, sales, and service? Why shouldn't we be training for entrepreneurship in these areas? It is far more profitable to own your own landscaping business than to work for a landscaper. Furthermore, by preparing students for ownership opportunities, we are making a contribution to solving the chronic unemployment problem in this country. Instead of preparing students to compete for the too few jobs, we will be preparing them for the opportunity to create new jobs.

Agricultural Competencies. Another way of evaluating our progress is to review the needs of the agricultural industry. Studies have shown that management competencies are highly ranked by employees and employers in agriculture. These opinions are expressed in a variety of ways. Several of our largest producers in the United States have long advised vocational agriculture students to go to college in business. Their rationale being that to be successful in agricultural production, an individual needs training in business management, marketing, and accounting. Why can't we provide training in farm business management in our vocational agriculture programs? We can and we are in some programs.

Another indication of the need for developing business management competencies is evidenced by such things as some farm organizations purchasing microcomputers to provide continuous on-line market quotations for their members. In addition, they are sponsoring management seminars. We must recognize the increased sophistication associated with present day agriculture. We fear that unless we make a concerted effort to provide such experiences to our students, we are going to be as outdated and irrelevant as the teacher who is still teaching harness making."

Societal Needs. Our capitalistic society dictates we provide sound business training for our students. All students are motivated by the "dollar." This phase of our instructional program could easily be stereotyped. An "indepth" understanding of economic principles applicable to agriculture would be highly beneficial to any student whether an entrepreneur of a farm/firm business or employed in a related agricultural occupation. This kind of training is paramount for success in any business venture for profit. This is especially true in our present economic times. The success or failure of farm/ranch businesses is due, to a great extent, to the business management practices of the operators. There is no better vehicle to teach these concepts to our students than through farm business management education.

After reading the financial pages of any newspaper or

agricultural magazine, it becomes obvious more curriculum emphasis must be placed upon "decision making" as it relates to profit and loss. In the past, we have done an excellent job of teaching new approved production practices and technology; but too often we have failed to teach our students the point of diminishing economic returns. We have placed major emphasis, in too many instances, upon physical production and neglected to develop an appreciation for and an understanding of economic production.

Every completer of a vocational agriculture program should be competent in the areas of record keeping and analysis, partial budgeting and linear programming, and computerized business analysis. As vocational agriculture teachers, we are committing a cardinal sin if our students complete four years of vocational agriculture without a thorough understanding of sound business management tools. Every graduate should be able to refer to a computer print-out and identify the strengths and weaknesses of a farm-firm business, as a minimum.

Needless to say, focusing in on instruction addressing the economics of production agriculture is an age old challenge. We must start now to strengthen the curriculum content in farm business management if we are to meet the needs for our students to have competence in this area.

Over the years, hundreds of follow-up studies have been conducted to ferret out what graduates of vocational agriculture programs suggest or recommend for improving instructional programs. What have and do these studies reveal?

Graduates tell us they want:

1. more farm management instruction
2. more emphasis upon record keeping
3. more instruction on business analysis
4. more competence in using sound business management tools, including budgeting, financing and timely marketing skills

These suggestions are not at or near the bottom of the list of their recommendations, but at or near the top of the list of instructional content which should have been emphasized more in their vocational agriculture curriculum.

We fully realize the difficulty in motivating high school students to be enthusiastic about record keeping. Is this the crux of the problem? Have we too often taught our students how to keep records (which most of us hate to do) and failed to teach them how to use records! Have we failed to show them the value which can be derived from complete, accurate records? In essence, we have taught the "facts of record keeping" but failed to teach them the "principles of record keeping."

In strengthening the curriculum content in farm business management, let's keep in mind the "built-in" program features we have going for us in vocational agriculture:

1. The total program concept is built upon sound educational principles. Inherent within this concept are two of the most effective teaching tools ever conceived — FFA and SOE programs.

2. Vocational emphasis stresses "learning by doing." Our instruction has utility. It helps students overcome those shortcomings inhibiting employment.

3. Community-based instruction focuses upon real life agricultural situations.

4. Problem-solving teaching stresses mental skill development. It assists students in developing the ability to think, reason, and make decisions. Teaching students how to apply this decision-making process can be most easily and effectively achieved through the use of real farm management situations and problems.

5. Valuable and useful resources and reference materials are designed to help teachers plan and deliver relevant farm business management programs.

Emphasis: Where Emphasis Is Needed

It is obvious why we must place increased emphasis upon farm business management education in secondary vocational agriculture programs. Today's agriculture dictates quality instruction in this area because of the economic times we are experiencing.

1. Higher interest costs necessitate the application of sound money-management practices.
2. Inflated capitalization costs for all production inputs require the use of opportunity cost principles.
3. Increased inflation reduces the profit margin.

Examples could be cited which reflect the importance of farm business management education for our students. Each and every one of us must be fully committed to do something about the situation. What is needed is a solid commitment on the part of all of us for a renewed emphasis on this vital area of instruction if we are to prepare future farmers and agribusiness persons for a future in American agriculture. One of the most important skills agricultural educators can pass to our students today is farm business management competencies in order for them to survive in their future endeavors. If we are really serious, we should include some dimension of farm business management in all the other FFA contests.

The "bottom line" for all of us is to plan and deliver programs of excellence best suited to meet the occupational and education needs of our students — emphasizing farm business management education would be a good start!

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A Man Ought To Know . . .

The importance of a knowledge of economics to the well being of agriculturists is not a new idea. About 350 years before the birth of Christ, Aristotle wrote:¹

The useful parts of wealth getting are, first, the knowledge of livestock; — which are most profitable, and when, and how — As, for example, what sort of horses or oxen or any other animals are most likely to give a return. A man ought to know which of these pay better than others, and which pay best in particular places, for some do better in one place and some in another.

Modern farmers still ascribe to the idea that "A man ought to know . . .", even though these expressions may take a different form. When a large sample of adult farm management program enrollees was asked why they joined the education program, they responded:²

"To keep a better set of records from which to analyze my operation and to find places where improvement may be of benefit to me."

"To keep me informed and up-to-date with this rapid changing business and to help me do a better job."

"So I can have a sounder basis for making decisions and to plan out my operation to become more efficient."

"Bank insisted on the kind of record this program provides. Needed help in planning and operating the farm. Realized I was going nowhere fast!"

"We hope to become better farmers, make more profit and work our children into the farm program."

"To get a better hold or control over what the business was really doing, what enterprises were more profitable, where the money was coming from and where it was going."

"Needed an accurate record system and analysis program which in turn added more incentive to my career as a farmer."

"To find out if I was making money or just swapping dollars."

"As a young farmer just starting a business I felt a need for enterprise and whole operation assistance and analysis."

"To get help in setting up a good bookkeeping system and to obtain a source of technical information that is proven."

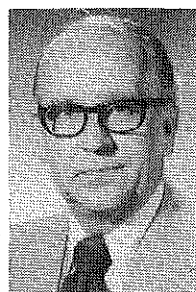
"In farming today, how can we manage without some professional help. By professional help we can't mean the vet or feed, weed and seed salesmen."

The responses are on the general theme "A man ought to know."

There can be no doubt that understanding economics is becoming increasingly important to farm survival. Rural print shops have had a booming business in printing sale bills for farmers who could no longer cope with the realities of today's economy. Certainly not all farmers who have seen their farm go over the auction block were the victims of their own failure to understand economics. The

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vagaries of luck or misfortune and the toll of age or ill health have been substantial contributors. Some understood economics all too well, and used the principles of minimizing losses, recognizing that the economic times did not contribute to maximizing profit. But for many, the reasons were clearly attributable to a failure to understand the operation and impact of economic law.

The importance of understanding economic laws, principles and concepts is best described in the consequences of the failure to understand. The consequences are real and dramatic. At best the results are a failure to make planned progress; at worst complete business failure. In between lies the shattered plans, the unfulfilled dreams and the constant stress associated with unsatisfactory performance.

Building Economic Understanding

Unfortunately, there is no "quick fix" to creating a producer force that has a good grasp of economic principles and concepts. Because the job is not easy is no reason to shirk it. Vocational agriculture teachers have an excellent opportunity to build the next generation of producers who understand the economic factors of production as well as the technical aspects of their job. Where programs for adults and young farmers permit, the task can be expanded to those generations already "in the furrow."

Economic literacy needs to start in the classroom with a sound marriage between technical practice and economic consequences. An idea and practice introduced is incomplete until the student has considered the economic impact — both short and long term — of the adoption of the practice in the farm operation.

It may be a good idea to develop skill in selecting a dairy cow that conforms closely to the ideal type. It is even a better idea to understand the economic consequences of making the right selection. When knowledge of selection is transferred to the bidder's circle at the local auction, understanding the economic principles that dictate how much one can afford to pay to gain a few points on the dairy cow scoreboard can contribute to a successful decision.

Failure to marry the technical skill of selection to the economic consequences of the application of the skill can only lead to haphazard decision making — and haphazard

decisions lead inevitably again to the auction block, as seller, not buyer.

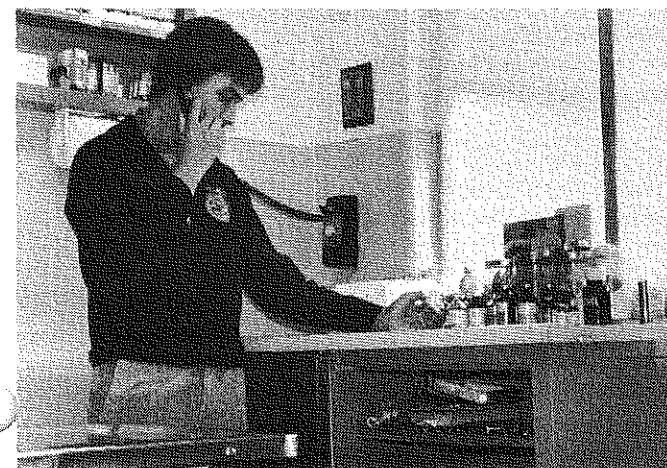
One must not be lulled into the idea that teaching a unit on recordkeeping is adequate attention to economic literacy. While such a unit may develop reasonable skills in accounting, the record itself is only one of the tools in the decision process. It is the use made of the record and the interpretation of the summary or analysis of the record that is a true mark of economic understanding. Understanding the economic principles, gaining skills in economic planning and honing skills in evaluating decisions are all important to success.

It is fortunate that vo-ag programs offer so many opportunities to demonstrate the acquisition of economic skills. The most recent addition is the national farm management contest where students can demonstrate their grasp of the planning and evaluating functions of management. The award structure of the FFA with the progressive degrees of membership and the proficiency award system offer excellent vehicles for students to demonstrate that they do in fact understand the basic concepts of keeping track and reporting their economic progress and accomplishment. Many fail the test of economic understanding. Even simple numeric tasks like balancing the income report on a SOE program against personal spending and gain in net worth are inaccurate or incomplete.

How will these future farmers and agribusiness operators survive when the future task is not with small enterprises but is instead with major businesses representing several hundred thousand in cash flow? A venture into the economic world of entrepreneurship on or off the farm is not recommended for the timid nor the faint of heart. Such a venture should not even be considered an alternative for the economic illiterate.

Keeping Clients Up To Date

It would be foolhardy to assume that economic understandings once learned are forever remembered. People forget. Given the best of economic preparation, the time span between learning and application may prompt forgetting. The lack of opportunity to practice, changing economic conditions and the development of new economic concepts suggest that practicing farmers, both



On-the-job experience helps develop economic literacy. (Photograph courtesy of Richard M. Hylton, Pomona, California)

young and old, will have a continued need to expand upon their economic knowledge. The young farmer and adult farmer programs provide an excellent vehicle for instruction. But we must exercise the same caution with this group of practicing entrepreneurs as we exercise in the secondary and postsecondary classroom; introduction of technology without economic understanding will lead to haphazard decision making.

Many states have instituted excellent programs of young and adult farmer instruction. Those programs which base their effort on solving the economic decisions of farmers through concentrated management instruction heavily laced with attention to economics and economic decision making will make the grade. Programs which concentrate only on technology transfer shortchange their clients and fail to capitalize on the ability of well-trained vo-ag professionals to build a clientele literate in economic applications.

Some farmers and business operators still view each decision as if it were an isolated event. They fail to study and evaluate the effect of the "decision" on the other economic events that will occur as a result of the decision. Some teachers still teach that way; introducing a practice or technology without regard to its ultimate consequence. There is however, no such thing as an isolated decision. Each decision has a multitude of economic consequences that must be carefully considered.

Take, for example, the decision to upgrade a combine from a 4 row corn head to one that will handle a 6 row head. That seems like a simple decision. It has well-defined economic consequences centered around the ability to finance the purchase and make the arrangements for debt retirement and the improved productivity of the worker. But here is a sample of the other questions that must be answered, each with some economic consequence:

Is the new combine compatible with the planting equipment?

Will the new combine fit in the assigned storage space?

Are field roads, gates, bridges, etc., of adequate size to accommodate the machine?

Are field sizes and shapes appropriate for good field efficiency with the larger machine?

Is equipment for grain handling, drying and storage adequate to meet the expanded field capacity of the new machine?

Will the savings due to timeliness offset the increased fixed costs of ownership?

If harvest time can be shortened, what productive use can be made of the time that is saved?

The list is not complete, but serves to illustrate that a simple decision to make a machine purchase is far from an isolated decision.

Using the New Tools for Management

If you read the advertisements and listen to predictions, you no doubt believe that 10 years from now the majority of farmers will have their own personal computer. You may be right. If you believe that such an event will measurably improve economic literacy you will probably

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A Man Ought to Know . . .

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be wrong. While the new tools for management have the potential for improving the understanding of economics, the task must be approached with caution. In fact, computer use has the potential of decreasing economic understandings. It is no longer necessary to understand the concepts to arrive at a solution. Given raw data which the farmer may have available, the software program translates it into a solution, without any intervention on the part of the user.

Teachers must exercise great caution that they do not skip the crucial step of developing economic understanding. If computer use is to enhance the economic literacy of users, then we must use care that we do not substitute solutions for economic knowledge. When used in the classroom for drill and practice, simulations and problem solving the computer is an excellent tool. But you may

have to ask yourself, "Could your clients still arrive at a sound solution if the computer was not there?" If we have trained only button pushers, chances are great that we have done little to build a better base of economic understanding.

Certainly "A man ought to know . . .". But how do we build his competence to know? We have all of the tools: organized instruction, an award system built on economic results, contact with young farmers and adults who want to know, and the modern electronic tools that can make the job easier. Our task is to rethink our approach to instruction so that the knowledge of economic consequence has at least equal priority with the knowledge of technology and practice. We don't necessarily have to teach different things; we need to teach things differently.

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THEME

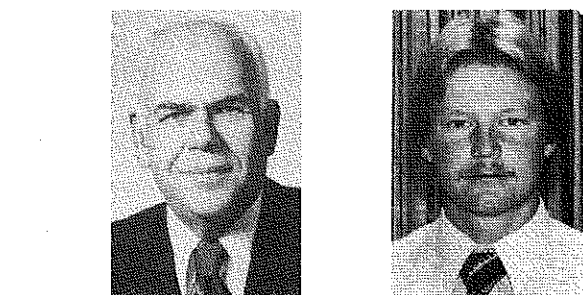
Why Vo-Ag Must Build An Understanding of Economics

Farming has become big business. Producers control more and more assets. Farmers, like their business urban counterparts, must be concerned with interest rates, cash flow, foreign competition and earning a return on investment. An understanding of economics is as important to farmers as is an understanding of agriculture production. Economic understanding helps play a vital role in determining what to produce and how to market the production. Let us look at some of the economics involved in grain marketing.

The grain industry — which involves the moving of grain off the farm, through various stages of processing, and ultimately into the hands of the consumer — is handling an ever-increasing volume. It wasn't long ago when grain farming was considered a subsistence way of life, and grain seldom left the boundaries of the farm where it was grown. Today, grain grown in the United States goes to all parts of the world where it is fed to livestock or processed into consumer goods to meet an ever-increasing demand.

As the demand for agricultural commodities continues to grow, more must be produced and marketed. Also, the need for more education in economic understanding and marketing becomes more important. An increased educational effort is not only necessary at the farm level, but throughout the entire marketing chain. It is an opportunity for vo-ag instructors to expand their educational efforts as both rural and urban youth are prospective employees in the chain of producing and marketing agriculture commodities.

Historically, most of the educational efforts of vo-ag



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have been production oriented. The agricultural research and education system has turned the American farmer into the largest and most efficient producer in the world. In the past this production emphasis may have been justified, since marketing had little effect on farm profits because prices were relatively stable, volumes were small and credit needs were modest. In today's arena of world-wide markets, fluctuating prices and high interest rates, marketing decisions probably have a much larger effect on farm income than many production decisions. The need for marketing strategies and techniques is already great and the need will continue in the future. Agriculture education must be directed to meet this need and fill the "marketing gap" not considered in earlier years.

It would be an injustice to the vo-ag student if this increased marketing instruction were limited to the various "how-to-sell" alternatives and did not include an attempt to explain some of the facets of the industry itself. Developing a background and including insight on some of the basic economic principles can be very valuable when making intelligent marketing decisions. Combining off-farm awareness and on-farm alternatives gives the marketing educator a very difficult job.

Marketing: Complex, But Necessary

As mentioned earlier, the grain marketing system is complex. Consider the path that a bushel of wheat can take before it reaches the consumer: It goes from the farm, to the country elevator, to the commission firm, to the commercial grain company, to the miller, to the baker and, finally, it is in the form of an edible product. Or it can be fed to livestock and marketed as meat or be exported to anywhere in the world. All of these processes are combined with an intricate transportation system that moves the products at the different stages of production to all the domestic and world markets. It is a highly competitive marketing chain.

Competition eliminates any excessive steps when more efficient methods of handling and processing are developed. Each step is necessary and serves the purpose of either transforming the raw product into its final form or having the product in the right place at the right time for the consumer. Some feel it is a costly process, but, when one thinks of the job accomplished, the cost is not the outstanding factor. Rather it is amazing that such a complex task is accomplished at any cost.

Many people look upon those who are engaged in the many marketing jobs, such as grading, transporting, storing, arranging for the transfer of title, and advancing and collecting credit, as being parasitic on those who really produce the goods. Farmers often decry the "profits of middlemen" because they feel that farmers alone produce the materials from which the consumer's food is made. However, a bushel of wheat or corn on the farm has little economic value until it moves from the farm and is processed. The farmer who produces a bushel of wheat in North Dakota has not produced a croissant for the businessman in New York City. Many things must be done to the wheat before it is bread in New York. The services that middlemen provide are productive, and marketing education must convey the idea that marketing services help sell what the farmer produces.

Marketing: Why So Important?

The reason marketing and economic understanding have become so vital to the existence of today's grain farmer can be summarized as "price variability." If grain prices were not fluctuating widely, it would not make much difference when the grain was sold. But we do have wide price fluctuations, and marketing becomes all important. For example, the Minneapolis 1982 May wheat futures had a spread of \$1.00 per bushel during the life of the contract. Why are prices fluctuating now so much more than in the past? The answer lies in the ever-expanding nature of the industry.

Prices reflect the balance of supply and demand, and today supply and demand factors come from all over the

world. There are more variables influencing supply and demand now than there have been in the past. Weather, population growth, changing diets, political events, government production and sales programs and many other factors all influence prices, not only in our own country but in all other countries as well.

For example, if there is a drought in Brazil and soybean production falls, the value of U.S. soybeans increases and prices will rise. If Brazil has a bumper crop, U.S. soybean prices may fall if there is no increase in demand. Brazil's crop influences U.S. soybean prices because Brazil and the U.S. compete in the world demand for soybeans.

The more factors influencing prices, the greater the opportunity for wide variations in prices. These market factors are probably not going to change, and wide price variations will continue to be the norm. Marketing educators must equip their students with the ability to analyze and interpret the information that is available so that they can make intelligent marketing decisions. The understanding of economics will aid vo-ag students as they face many complex questions.

Some typical questions that students might confront are:

1. What might be the effect on grain prices if there is a drought in Asia?
2. What might be the effect on soybean and sunflower prices if there is a larger than normal crop of palm nuts produced?
3. What might be the effect on the demand for grain if the United States devalues its currency?
4. What might be the effect on the demand for grain if African countries had a higher level of economic prosperity?

All the above could affect marketing decisions.

Marketing: Alternatives

A good understanding of the available marketing alternatives is necessary for successfully marketing grain. The better the farmer understands these alternatives, the better chance he or she has for a profitable farm income. Vo-ag education must provide instruction on how to use the various alternatives along with the advantages and disadvantages of each strategy.

The grain farmer has only a limited number of alternatives when it comes time to price grain. Many times a combination of these alternatives can be used. For example, there is no reason why the futures market cannot be used in conjunction with a cash sale at harvest. However, each strategy will be addressed separately.

Sell for cash at harvest. Although this is a very simple strategy, it can be very valuable in certain years and has advantages over some of the other alternatives. The most important advantage of this technique is that no storage expense is incurred. Whether the storage is available on-farm or must be rented off-farm, storage costs can mount, and this strategy avoids that expense. Additionally, there are no worries about quality maintenance when the grain is not stored, and also the post harvest income is often helpful for repayment of production loans.

On the negative side of this strategy, the price received

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at harvest is often below the yearly average. Congestion at the local elevator can also be a problem during the busy harvest season, and the flexibility of adjusting income to the next year for tax reasons is forfeited when this strategy is used.

Store and speculate on a rise in the cash market. It is a form of speculation, however, because storing grain that is not priced gives no guarantee of a profitable return. There is the risk that prices will not rise enough to cover the cost of interest, storage and insurance.

There are advantages to this strategy because prices have tended to increase after harvest. Also, if on-farm storage is available, the harvest time congestion at the country elevator is avoided.

The disadvantages of storing unpriced grain at harvest include the problems associated with maintaining the quality of the grain, especially with on-farm storage. Additionally, storing grain can get expensive, and prices may not rise enough to cover the expense. The largest cost of storing grain is the interest lost had the grain been sold and the money invested. Many times farmers will calculate this cost into storing grain, and with high interest rates it would not be uncommon to have total storage costs approach 10 cents per bushel per month. At that cost, prices have to increase substantially over a storage period to make storing grain profitable. Finally, when grain is stored at harvest, outstanding loans continue to accrue interest adding to the expense of storage.

Use government loan or reserve program. The various farm programs can be a viable alternative in certain years and should not be overlooked. Most of the time these programs are very straightforward and can be easily implemented. The programs have been instituted to put a floor under prices and to attempt to control the supply of U.S. grains. Farmers are required to meet certain obligations, such as acreage reductions, and then are eligible for price supports, loans or storage payments.

The biggest advantage of using this strategy is that a price is guaranteed to those who comply with the programs. The biggest disadvantages are that oftentimes it is possible to receive higher prices using other alternatives and that storage facilities are tied up for extended periods.

Contract for delivery at a later date. There are three general types of cash contracts: the fixed price agreement, the delayed pricing agreement and the pooled sales agreement. The fixed price agreement is the most common. In this type of contract the seller agrees to deliver a specified quantity of grain to the buyer at a specified time and place at a predetermined price.

The delayed pricing agreement also specifies quantity, place of delivery and other obligations similar to the fixed type of agreement except that the exact price is not set. Instead, the price spread between the futures price and the cash price is set; then the exact price is set at a later date.

The pooled sales agreement is most often used by cooperatives and specialty crops marketing groups. In this contract each producer delivers the grain to the pool and,

as sales are made, each producer receives payments according to his contribution.

The advantages of cash contracts include locking in a price, especially if that price is profitable, and guaranteeing a place for the delivery of grain. Also, the quantities that can be contracted are very flexible, since the contract is made between two parties. The disadvantages of the contracts arise from the fact that grain must be delivered at the contract price, regardless of the market price at the time of delivery. There also may be occasions when cash contracts are not available at a time when the seller wants to contract his grain. Finally, bankruptcies, strikes and similar catastrophes could cause buyers to default or postpone acceptance of deliveries.

Use commodity futures. More information on how to use the commodity futures market is probably the area in which producers are making the greatest demand on agriculture educators.

The commodity futures market can be used to "lock in" a price in advance of a cash sale. The concept is really quite simple. A position is taken to the futures market opposite to that taken in the cash market. Most of the time a producer is "long" or has an inventory in the cash market. Therefore, to properly hedge his or her position, he or she should "short" or sell the future market. By taking an equal position in each market (cash and futures) he or she is protected from fluctuating prices. Since both markets move in a similar fashion, because of the element of delivery in futures contracts, any price variation will result in a profit in one position and a loss in the other.

The biggest advantage to using a futures contract over a cash contract is the increased flexibility in getting in and out of the contract. Futures contracts may be sold or bought at any time during the specified trading hours throughout the entire year. Other advantages are similar to cash contracts in that prices can be guaranteed in advance. One disadvantage of the futures market is that the quantity increments are quite rigid, since most grain contracts are sold and bought in 5,000 bushel lots. Margins also have to be deposited to insure the integrity of the futures contract.

Futures markets cannot be discussed without talking about the speculator. Briefly, the speculator provides a very necessary function to the market. The speculator is willing to accept the risk that a hedger wishes to transfer in the hope of making a profit. He or she also provides liquidity to the marketplace, and, without this liquidity, the price protection sought by the hedger would be too expensive.

Feed to livestock. This final alternative may or may not be feasible. Some grains are not suitable to be used as feed, and others are. However, processing grain through livestock is a viable marketing alternative for many farmers, and this strategy should be discussed.

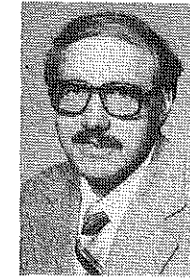
Market Orientation Needed

In conclusion, vo-ag education needs to be more market oriented than in the past. A background of the industry, along with the various marketing alternatives, need to be presented to equip the student with the necessary skills. Marketing will continue to be important in the years ahead.

ARTICLE

Teaching Profit and Loss

BY MAX AMBERSON
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Americans in growing numbers voice their dismay over a decline in knowledge of the country's basic economic principles and its governmental system.

Along with that, people note an apathy toward involvement in the system and a lack of commitment to society. Frequently they put a large measure of blame on the nation's schools.¹ A recent survey among 21,000 high school students showed that less than half believed there is a need for profit or that the U.S. economy is based on the free enterprise system.²

Students enrolled in vocational agriculture are fortunate and have a unique opportunity "to learn" about America's free enterprise economic system through all four parts of the program of vocational agriculture. Economic literacy is built into vocational agriculture by developing both an understanding of the principles and an application of these principles. As vocational educators we have always believed in the basic philosophy that, "We have learned only when we are able to see the principle in practice." In vocational agriculture, students learn not only the economic principles and their application, but how these principles impact on real life situations.

It's one thing to plan a steer or lamb feeding budget, but quite a different experience to borrow the money at high interest rates to purchase a lamb or calf, purchase the feed and other services, only to determine at the end of the project that due to death, disease, poor management, or poor markets the anticipated return turns into a loss. The "investment" made by a student through a supervised occupational experience (SOE) program provides teachers with a valuable teaching opportunity.

Profit Persuader

Profits are a particularly important incentive in a market economy. Profit is what remains after the costs of production have been deducted from the revenue derived from the sale of goods.

It is the desire for profit that persuades entrepreneurs to establish new businesses and later to change the pattern of production (e.g., from big pickups to small ones). It is the profit motive which stimulates farmers/ranchers and agribusiness managers to make businesses more efficient, to introduce new cost-cutting technologies in production, and to compete more vigorously with other businesses for the consumers' dollars. Realized profits provide an important source of funds for new investment and thereby stimulate future growth. Thus, in a competitive market economy, profit spurs both efficiency and growth.³

Producers seek to maximize their profit and are pushed by the profit motive to combine productive resources in the most efficient ways to produce the goods and services consumers want to buy. Workers seek to sell their labor where the return in money and working conditions is highest, just as savers search out high interest rates in capital markets; both are motivated by self-interest. By comparison the profit picture for most of agriculture is low.

However, as many farmers/ranchers have come to realize they find themselves sacrificing "profit" for "lifestyle" or "way of life". Students who choose agriculture as their life career must consciously also make this very hard decision. Both "making a profit" and "having a pleasing way of life" are attainable. This is the ideal towards which our teaching should strive. The history of vocational agriculture is replete with stories of these successes, we have them in every part of our community and in every type of business

and industry in America. These stories make excellent teaching examples and are the basis for soliciting support from our communities.

Similarly, losses (negative profits) are a signal to move resources elsewhere. Losing money, a judging contest, or a race for office can be a meaningful learning experience. Determining why losses occur creates the situations from which teaching might focus.

Problem Solving

In order to effectively utilize the problem solving approach, the problem must be concisely identified, the various kinds of facts and detailed information appropriate to the solution of the problem must be identified and gathered, and the facts and details must be put into a problem solving format appropriate to the type of problem under consideration. The students should then make a decision based on the information gathered and be able to justify their decision. Problems and decisions should be discussed openly in class.

Problem solving will both promote and test the thinking of students. Its emphasis on real life problems, and the solution of those problems will bring application to teaching.⁴

Though losing can be traumatic, it can and often is a valuable learning experience for those involved. American agriculture, business, and industry are built on making a profit, yet one must understand the implications and consequences of loss.

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Minnesota Sets Celebration

The Department of Vocational and Technical Education, University of Minnesota, is calling attention to a very significant celebration scheduled for October 8, 1982. The celebration is the dedication of a new building housing the Department.

The significance of the event is even more far-reaching than the acquisition of more space. The building is the first of its kind to be constructed at a Land-Grant University. Housing all units and facets of vocational-technical education, the building and its emerging programs are identified with the most contemporary interpretation of

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the ideal expressed in the Land-Grant legislation, namely, "to provide instruction at all levels to the sons and daughters of farmers and mechanics."

A special feature of the dedication will be the awarding of an honorary doctorate, the sixty-first to be awarded in the University's 131-year history and the first in the College of Education's 76-year history, to a towering leader in the state, national, and international level of vocational education, Mr. John A. Butler, former director of Dunwoody Institute in Minneapolis.

Friends of the Department, the University, and the field of vocational and technical education are invited to attend the ceremonies which begin at 2:30 p.m. on October 8, 1982.

Publicizing a Year-Round Program

Last week a typical vocational agriculture instructor probably spent 50-60 hours training future agriculturalists. Hard work and dedication enabled the livestock judging team to win first place; helped students better select vegetable varieties for the home garden; and allowed a student to successfully clip the needle teeth and administer iron shots to a litter of newborn pigs. Also during the week, time was devoted to help FFA members prepare for the upcoming annual FFA banquet, to meet with the young farmers organization, the FFA Alumni chapter, and the agriculture program advisory committee; and the list goes on and on.

The image you have of yourself and the vo-ag program is excellent. You feel good about all that was achieved last week. But what image do others in the community have of you? Of your vo-ag program? Are you (and perhaps your spouse) the only one who knows how diligently you work, what the vo-ag program offers, what skills students acquire, and how the FFA benefits the local community? Perhaps some of your time should be directed toward building the image of the vo-ag pro-



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gram. A good public relations (PR) plan can help build or change an image.

The Past Image

Hereford Jr./Sr. High School is a comprehensive school (grades 7-12) located 25 miles north of Baltimore, Maryland. The school was originally small with approximately 500 students and most of the students in the school

district were from farms or had a farm background.

The image of the vocational agriculture program was like many others in the United States: one instructor with responsibility of training boys to become successful farmers. The vo-ag instructor knew most of the families in the school district and good public relations was largely a matter of talking with parents during home supervision of the student's "project." Participation of the vo-ag instructor in different farm organizations and personal involvement in other farm-related activities helped develop the image of both the instructor and the vo-ag program.

The Present Image

With the trend of people leaving the city for a more relaxed "country-style" of life came a need for the vo-ag program to change and meet the demands of a new clientele — students, both male and female, with little or no farm background, but with an interest in many areas of agriculture. Because of this movement, Hereford Jr./Sr. High School tripled in size to approximately 1500 students. Five instructors are cur-

rently employed to teach in the agribusiness department. In addition to basic courses in production agriculture, the department now offers courses in small animal care, veterinary science, wildlife management, forestry, horse husbandry and horticulture.

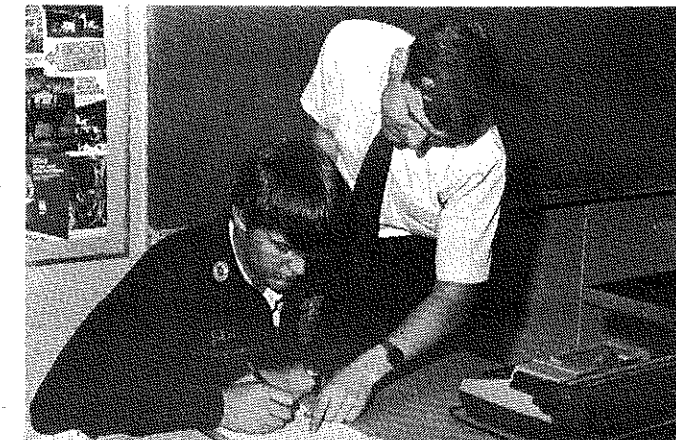
It became important not only to teach students skills needed to become employable in the different agricultural disciplines, but also to educate many of the students, their parents, and the general public about agriculture.

"PR" Efforts

Supervision of student occupational experience programs is an excellent way to inform parents about the vo-ag program at the school. Because of limited land resources or nature of the course, many students are unable to conduct "hands-on" SOE programs at home. Many students use the school facilities, such as the school farm or small animal laboratory, to receive needed "hands-on" experience. As a result, additional ways must be used to inform parents of these students and others in the community about the vo-ag program and build a desirable public image.

Safety Program — FFA members help local farmers identify safety hazards on their farms

Farm Fair — allows youth in the community an opportunity to show farm and small animals, exhibit agricultural and horticultural products, view agricultural displays, and meet farm people



FFA advisor helps chapter reporter write articles for local newspaper to inform public of FFA activities. Fred Doepkens assists chapter reporter John Nicholson write a newspaper article at Hereford Jr./Sr. High School. (Photograph courtesy of John Nicholson, FFA Chapter Reporter).

Kiddie Farm — allows elementary children from surrounding schools an opportunity to view animals on the school farm and in the small animal laboratory, tour greenhouse and agricultural mechanics facilities, and view displays that illustrate human foods produced from raw agricultural products

Open house — the public is invited to view agribusiness department facilities and note student accomplishments in FFA contests, ag. mechanics projects, etc.

Ag Week — held each year in a local shopping center mall, department personnel construct and exhibit an agricultural display

Farm-City Day — persons from Baltimore and surrounding area visit school farm and agribusiness department

National FFA Week — FFA members conduct various agricultural activities at school and in community

Lawn Mower and Tractor Clinic — informs local residents of safety precautions in using lawnmowers and tractors

Parliamentary Procedure Workshop — FFA officers conduct a parliamentary procedure workshop for local 4-H club officers

Faculty Breakfast — department sponsors a breakfast for members of school faculty

PTSA Newsletter — vo-ag instructors and the FFA Reporter write articles to inform members of the Parent/Teacher/Student Association of happenings and the accomplishments of students who are enrolled in vo-ag

Local Newspaper Articles — instructors and the FFA Reporter write articles for local newspaper to inform both farm and nonfarm residents in the surrounding community about the vo-ag program and the accomplishments of FFA members

Department Brochure — contains a brief history of the agribusiness department, identifies different areas of agriculture, explains SOE/classroom instruction/FFA approach to agricultural education, describes course offerings, and suggests program of study for different agricultural areas

FFA Banquet — allows FFA members, their parents, and friends of the FFA an opportunity to share accomplishments of the FFA chapter, and reward individuals in the community who have contributed to the FFA Chapter and total vo-ag program

Agricultural Organizations — vo-ag instructors represent the department at various agriculture meetings and banquets in community and surrounding area

BOAC Project — FFA members plan and conduct an annual BOAC project with goals to develop citizenship qualities in FFA members while improving the local community.

The Pay-Off

The writers of this article believe the majority of vocational agriculture instructors are hard workers, dedicated to teaching their students modern agricultural skills and leadership qualities. "PR" efforts have paid off at Hereford Junior/Senior High School, in both student numbers and teaching facilities.



Elementary school children learn about agriculture and farm life in the Kiddie Farm program conducted at Hereford Jr./Sr. High School in Parkton, Md. Above, children travel by wagon to the school farm. (Photograph courtesy of John Nicholson, FFA Chapter Reporter).

Report on Part One of the National Opinionnaire on Vocational-Technical Agricultural Education

The first national opinion poll of vocational-technical agricultural education was conducted through the May, 1982, issue of THE AGRICULTURAL EDUCATION MAGAZINE. Copies of THE MAGAZINE were mailed to 13,000 vocational-technical agricultural educators. This included both subscribers and programs in which nonsubscribers taught. (The assistance of the Agriculture Program Specialist of the U.S. Department of Education is gratefully acknowledged for supplying a listing of all programs.)

Responses were received from 251 individuals. This is a return rate of about 2 percent — far less than that expected by most agricultural education professionals who assisted in the design of the poll, instrumentation, and data analysis. Due to the low percent of return, only limited statistical treatment was made. Further, some respondents chose not to answer all questions.

The findings on background information and Part I: Program Administration are presented here.

Age	N	%
30 years and younger	83	33.7
31-40 years	85	34.5
41-50 years	49	19.9
51-60 years	23	9.4
61 and older	6	2.5
Total =	246	100.0

Sex	N	%
Female	14	5.6
Male	234	94.4
Total =	248	100.0

States Represented

Responses were identified as being received from the following states, with the number in parentheses being the number received:
Alabama (2), Alaska (1), Arizona

BY JASPER S. LEE

The National Opinion Poll was compiled by the Editor under direction of the Editing-Managing Board of the Agricultural Education Magazine.

(3), Arkansas (2), California (8), Colorado (1), Delaware (1), Florida (6), Georgia (5), Idaho (3), Illinois (16), Indiana (12), Iowa (16), Kansas (6), Kentucky (4), Maine (1), Maryland (5), Michigan (4), Minnesota (11), Mississippi (6), Missouri (16), Montana (4), Nebraska (8), New Jersey (1), New Mexico (1), New York (7), North Carolina (5), North Dakota (6), Ohio (15), Oklahoma (9), Oregon (2), Pennsylvania (8), Rhode Island (1), South Dakota (4), Tennessee (4), Texas (11), Vermont (1), Virginia (9), Washington (3), West Virginia (3), Wisconsin (4), and Wyoming (3).

Experience as a Vocational-Technical Agricultural Educator (All Positions)	N	%
5 years or less	62	28.5
6-10 years	49	22.5
11-15 years	38	17.4
16-20 years	29	13.3
21-25 years	18	8.3
26-30 years	12	5.5
31-35 years	7	3.2
36 years or more	3	1.3
Total =	218	100.00

Position Titles	N	%
Secondary teacher	165	67.4
Postsecondary teacher	9	3.6
Local supervisor	2	0.8
State supervisor	17	6.9
Teacher educator	42	17.3
Other:		
Curriculum specialist	2	0.8
Graduate student	2	0.8
School administrator	2	0.8
Adult instructor	2	0.8
Industry training specialist	1	0.4
Association executive	1	0.4
Total =	245	100.0

Highest Level of Education	N	%
Less than a baccalaureate degree	0	0
Baccalaureate degree	75	30.1
Masters degree	109	44.0
Educational specialist or certificate of advanced graduate study	21	8.5
Doctoral degree	43	17.4
Total =	248	100.0

Primary Mission of Vocational-Technical Agricultural Education at the High School Level	N	%
Preparation for:		
Employment in farming and ranching	8	3.1
Employment in agribusiness	9	3.6
Advanced study of agriculture at postsecondary level	6	2.4
Advanced study of agriculture at baccalaureate level	0	0
Employment in farming and ranching or agribusiness	54	21.5
Employment in farming and ranching or agribusiness or advanced study of agriculture at postsecondary level	43	17.2
Employment in farming and ranching or agribusiness or advanced study of agriculture at postsecondary or baccalaureate level	120	47.8
Other combinations	11	4.4
Total =	251	100.0

Primary Mission of Vocational-Technical Agricultural Education at the Postsecondary Level	N	%
Preparation for:		
Employment in farming and ranching	6	2.5
Employment in agribusiness	12	5.0
Advanced study of agriculture at the baccalaureate level	11	4.6
Employment in farming and ranching or agribusiness	93	38.6
Employment in farming and ranching or agribusiness or advanced study of agriculture at the baccalaureate level	115	47.7

Employment in agribusiness or advanced study of agriculture at the baccalaureate level	N	%
	4	1.6
Total =	241	100.0

Individuals to be Served by Vocational-Technical Agricultural Education	N	%
Students in grades K-12, post-secondary students, and adult students	27	10.7
Students in grades 7-12, post-secondary students, and adult students	49	19.5
Students in grades 9-12 and adult students	36	14.3
Students in grades 9-12, post-secondary students, and adult students	73	29.0
Students in grades 7-12 and adult students	12	4.8
Students in grades 9-12	13	5.2
Students in grades 9-12 and postsecondary students	13	5.2
Students in grades 7-12	7	2.8
Other combinations of students	21	8.5
Total =	251	100.0

Department Location of Vocational-Technical Agricultural Education at the Federal Level	N	%
U.S. Department of Agriculture	93	38.7
U.S. Department of Education	141	58.2
U.S. Department of Labor	3	1.1
Other	5	2.0
Total =	242	100.0

Effectiveness of Leadership at the Federal Government Level for Vocational-Technical Education in Agriculture	N	%
Very effective	5	2.1
Effective	114	46.7
Ineffective	94	38.5
Very ineffective	31	12.7
Total =	244	100.0

Grade for the Success of Vocational-Technical Agricultural Education	N	%
A	43	17.1
B	161	64.2
C	46	18.3
D	1	.4
F	0	0
Total =	251	100.0

Effectiveness of State-Level Supervision of Vocational-Technical Agricultural Education Programs	N	%
Very effective	38	15.2
Effective	138	55.2
Ineffective	59	23.6
Very ineffective	15	6.0
Total =	250	100.0

Adequacy of Preparation Provided by Teacher Education	N	%
Very adequate	21	8.4
Adequate	176	70.1
Inadequate	48	19.1
Very inadequate	6	2.4
Total =	251	100.0

Adequacy of Teacher Certification Regulations	N	%
Very adequate	25	10.0
Adequate	175	69.7
Inadequate	43	17.1
Very inadequate	8	3.2
Total =	251	100.0

Best Location for Secondary Vocational-Technical Agriculture Programs	N	%
In comprehensive high schools	199	81.9
In area vocational centers	34	14.0
Both	10	4.1
Total =	243	100.0

Best Location for Agricultural Teacher Education Programs	N	%
Colleges of Education	36	14.9
Colleges of Agriculture	206	85.1
Other	6	0
Total =	242	100.00

Major Problems Currently Facing Vocational-Technical Agricultural Education (Note: Respondents could indicate as many problems as they wished and write in others.)

Problem	N	Rank
Funding for local programs	196	1
Excessive job demands on teachers	162	2
Providing supervised occupational experience	115	3
Lack of school administrator support	105	4
Shortage of teachers	98	5
Lack of student interest	67	6
Student discipline	47	7
Others:		
Teacher training	3	8
Attack on 12-month programs	2	9
Lack state staff support	1	10
Poor Federal support	1	10

BOOK REVIEW

FARM BROADCASTING: THE FIRST SIXTY YEARS, by John C. Baker, Ames, Iowa: The Iowa State University Press, 1980, 342 pp., \$17.95.

This is a fascinating book that describes the history of farm broadcasting from 1920-1980. It begins with a simple history of the developments that made radio and later television broadcasting possible. It describes some of the first radio stations and the personalities who operated them for such purposes as relaying grain and livestock market information and USDA weather reports. In the early years, many stations were on the air for only short periods of time, several times each day. After 1928, stations were required to broadcast continuous-

ly each day and this extra time spurred the development of more farm programs.

Besides chapters on these early developments, the author includes a separate chapter describing the stations in the 48 states that have, or have had, farm programs. These chapters provide detailed information on dates, and names of persons instrumental in establishing farm broadcasting in localized areas. Anyone who has ever listened to farm programs as a source of information will find these recollections of interest. Mr. Baker began his broadcasting career in 1931 and has known virtually all of his radio and television compatriots. He has been a member of the National Association of

Farm Broadcasters under its various names since its first national convention in 1945.

The book closes with chapters on sponsors, a history of the National Association of Farm Broadcasters, and information on preparing for a career in farm broadcasting. The book is written so that high school students can read it, although, older persons who have listened to farm broadcasts for years will probably find it more interesting. It would certainly be an excellent book for any students who are considering a farm broadcasting career.

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