Placement Opportunities for Agricultural Education Graduates

**Public Schools**
- agriculture or agriculture/science teacher
- junior high school
- high school
- adult instructor
- agriculture specialist for elementary schools

**Agribusiness**
- adult educator
- public relations specialist
- sales/service representative
- association representative
- trainer/educator

**Governmental Agencies**
- educator with:
  - Cooperative Extension Service
  - Soil Conservation Service
  - other USDA agencies

**Community Agencies**
- adult educator
- youth educator
- youth counselor
Marketing University Ag Ed Programs - A Delicate Balance

This issue of *The Agricultural Education Magazine* is somewhat unique in that it focuses on university agricultural education programs. Behind a seemingly straightforward theme lies a number of major concerns that need immediate attention. In the last 10 years the number of university agriculture teacher certification graduates has declined by nearly 50%. Many universities have attempted to counter this loss in student enrollments with new programs/options in extension education. But student numbers in extension education programs have been small, and the outlook for growth in this area is marginal, given the economic troubles that continue to confront the Cooperative Extension Service in most states.

With a few notable exceptions, university agricultural education programs are small in terms of students and faculty when compared to their academic counterparts. Unfortunately, the adage “bigger is better” was never more true than it is in today’s university climate. While some agricultural education departments have responded aggressively to growth opportunities in the last 10 years, most have been unable to mobilize their resources and successfully move into significant growth areas. Why? Because faculty in these departments have remained almost exclusively focused on teacher education initiatives. And now that the need and opportunity to be broader than teacher education has become so painfully clear, the timing of program growth initiatives could not be worse. Expanding a program requires expanding resources - not impossible, but highly improbable on most college campuses today. Reallocation of existing resources to higher priority areas is another option, and some departments have already moved in this direction.

On most, but not all college campuses, agricultural education is viewed as synonymous with teacher education in agriculture. This is true even though diverse graduate programs in agricultural education exist on many campuses. And while we tell each other that we are much broader than teacher education, most of our undergraduate programs suggest just the opposite. Our actions and others’ perceptions about our programs reinforce a narrow view of agricultural education.

We have a huge program marketing challenge ahead of us. But we must be careful. In many states the demand for certified graduates for teaching agriculture far exceeds the annual supply. If university agricultural education programs are expanded, will enrollments in teacher education options decline even further? What is the best balance between certification and non-certification options in terms of enrollments, staffing, courses offered, and overall resource commitment? We can no longer afford to direct nearly all of our human and financial resources available for undergraduate education toward teacher education programs and activities. Programs and courses that prepare students for educational positions in non-school settings must be given status and resource commitment at least equal to that provided to teacher education programs. Non-school emphasis must include, but not be limited to, extension education. A significant number of university faculty in agricultural education must become specialists in agricultural education programs in non-school settings, especially agribusiness and public agencies. These new initiatives will have tremendous implications for instruction, research, and service activities.

An expanded undergraduate program is critical to effective positioning of agricultural education in today’s university climate. Historically, a large percentage of B. S. graduates in agricultural education have accepted a variety of positions in non-school settings. Yet, faculty have typically glossed over these placements and allowed their programs to be evaluated almost exclusively on the number of graduates placed into teaching. Marketing efforts must inform both internal and external audiences, as well as potential students, of the diverse opportunities for agricultural educators in schools, extension, agribusiness, and community and governmental agencies. Like in teacher education, instructional activities and research programs in training and leadership options must be interconnected. University faculty must reduce their overall involvement in service activities; this traditionally heavy service load has stifled the ability of faculty to engage in program expansion efforts, new course development, and programmatic research. Growth opportunities were passed by in good economic times because of a preoccupation with teacher education and an unusually high percentage of faculty time devoted to service, especially for (continued on page 15)
Agricultural Educators in Non-School Settings

By Alfred J. Manderbach

Dr. Manderbach is professor of education in the Department of Educational Leadership at the University of Connecticut, Storrs.

Agricultural educators are found in a variety of settings. Although they are thought primarily of secondary, post-secondary, or adult educators employed in local public school systems, a recent review will show that many agricultural educators fill vital educational roles and positions in non-school settings. Supply and demand of agriculture teacher-students show that over the last ten years, less than half of the agricultural education graduates prepared to teach actually enter teaching in public schools. In addition, there is an annual agriculture teacher turnover rate of approximately 10 percent. Where do these agricultural education graduates and former teachers go? What do they do? Is their education wasted, or are the able to apply their knowledge and skills in other areas?

A careful review suggests that they are employed or self-employed as trainers or human resource development specialists in businesses and industry, or that they work in parks and recreation areas, or that they are in museums and arboretums, extension agents on farms and in cities, or college program developers in international settings, administrators in governmental agencies, public relations personnel for breed associations, representatives of agricultural firms, and managers of agricultural businesses. They are entrepreneurs and hold a host of other job titles in a variety of work environments.

As graduates of agricultural education programs, and many times teacher preparation programs, most agricultural educators feel well prepared to teach agriculture in local school systems throughout the nation. Their agricultural experience, coupled with the college preparation in general education, technical agriculture courses, professional education courses, and a supervised student teaching or practical experience, provide excellent preparation as teachers of agriculture. Add to this preparation a few years of success in teaching agriculture, and find a person well prepared for employment of entrepreneurship in many of the roles or positions listed above. Because of the value-added aspects of agricultural education, teachers are not only prepared to teach in public school agriculture programs, they are also prepared to compete for positions and contribute to educational endeavors in a variety of non-school settings.

What are the dimensions of quality or the value-added components of preparation of agricultural educators? What factors contribute to success in teaching or other areas? Several factors come to mind.

First, many agricultural education students have a farm or agricultural background, and they have learned desirable work habits and competencies. In many settings, a farm or agricultural background is perceived as a valuable asset.

Because of the value-added aspects of agricultural education, teachers are not only prepared to teach in public school agriculture programs, they are also prepared to compete for positions and contribute to educational endeavors in a variety of non-school settings.

Second, many agricultural education students tend to be graduates of secondary or postsecondary agriculture programs. This prior association with the program has helped develop a broad and in-depth technical background in agriculture, hands-on laboratory experience, leadership skills through the FFA, ownership or employment experience through the supervised agricultural experience program, and knowledge, skills, and attitudes needed for success in a variety of settings.

A third factor leading to success is the program of preparation in agricultural education. The breadth of general education and the in-depth study provided by a technical subject matter major in agriculture are important components which add to the versatility of agricultural education graduates. By adding the professional dimension to the general and technical education requirements in agricultural education, individuals are developing an important philosophical, psychological, and sociological background. In addition, they develop managerial and human relations skills, as well as program planning, development, implementation, supervision, and evaluation skills.

A fourth factor of success is the experience (continued on page 22).

Agricultural Education: A Degree with Options

By John P. Mundy and Rick Watten

Dr. Mundy (top) is associate professor of agricultural and extension education at the University of Idaho. Boise. Dr. Ms. Watten (bottom) is president of Washtoot Associates, Meridian, ID.

I have long been accepted that individuals with a degree in agricultural education are unique in their knowledge and are prepared for a variety of careers. Most of us can quickly reflect and identify former agriculture teachers who hold positions of leadership and management to a variety of different fields - everything from representatives of business and industry to leaders in education. As an example, in Idaho, former high school agriculture teachers have recently held the presidencies of two of the major universities in the state, Boise State University and University of Idaho.

What is it that makes a degree in agricultural education different? Is it different? If a degree in agricultural education makes a person holding such a degree more marketable in a diversity of career options, why is it so? It is because we in agricultural education do such an outstanding job with the professional course work that leads to a degree in agricultural education? Or, on the other hand, is it because the degree, coupled with the experience of teaching high school agriculture, is a mutually beneficial relationship that creates an opportunity for professional growth that really builds a stepping stone to other career opportunities?

Teacher-Leader-Manager

At all levels, whether in business, elected public service, or community service, there is a desperate need for effective leadership. The words teacher, leader, and manager are different, yet the basic characteristics of their functions indicates a great deal of similarity.

Successful agricultural teachers have been, perhaps because of the nature of their occupation, forced to engage themselves in activities which build recognized competence in the areas of leadership, teaching, and management. Teachers of agriculture are faced with the challenges of organizing and managing, and generating creative programs, activities, and ideas that result in recognized and successful educational programs. Ultimately, their individual growth is tremendous. Professional growth and experiences are what adds to their marketability in a variety of career options.

Competence of the Successful Agriculture Teacher

The skills and competencies of the agricultural teacher are generally well known. These skills and competencies are practiced in a regular basis and they include:

1. Presenting in front of a group,
2. Demonstrating leadership in practice,
3. Demonstrating organization and management skills,
4. Solving problems and making decisions,
5. Working with others,
6. Motivating others,
7. Demonstrating initiative,
8. Demonstrating a vision for future planning,
9. Establishing goals and objectives,
10. Creating the opportunity for the success of others as well as self,
11. Sharing the credit for a job well done, and
12. Demonstrating integrity and consistency in interactions with others.

The list, although not totally inclusive, highlights skills and activities which successful agriculture teachers must practice on a frequent basis. The key word here is "successful." Those...
Teachers of Agriculture—They're Everywhere!

By Christine D. Townsend
Dr. Townsend is associate professor of agricultural education at Texas A&M University, College Station.

For the year was 1993 and it was thought many people in the United States did not know where their food came from or how agricultural products were produced. At that point, a popular film was released—a love story set against the backdrop of the movie screen, the audience saw the story unfold and, unbeknownst to them, learned about agriculture! In “Sommerlyness,” learners on tobacco seed costs, seed germination, fertilization, insect damage, harvest, and selling practices were visibly depicted in the film. The audience gasped for breath when they viewed the intensive labor required for tobacco production. It was an amazing experience for them to see just how an agricultural product was grown. This film was a dramatic example of how education about agriculture occurs in unlikely places, and unlikely audiences gain an appreciation for agricultural techniques.

The screening of this popular movie makes one think about the unusual places where agricultural education might occur. Someone was a very effective agricultural advisor for the film; this advisor was an agriculture teacher with the entertaining medium as the classroom. What other non-traditional places host agricultural education?

Assignment: Locate Agricultural Education
Suppose you have been tapped as the new environmental photographer for the local newspaper. Your first assignment is to illustrate the question, “Why do people learn about agriculture?” You may expect the people you interview to say, “Hey, I had a great ‘ag’ teacher in high school. He was a picture of my teacher!” Others might indicate that as 4-H’ers, their county agent was their agricultural information source. But looking deeper into agricultural education, you find there are numerous people trained in agricultural education—certified to teach high school agriculture who do not teach in the classroom but continue instruction about agriculture in very different areas.

Snapshot: PH, D. Teaches Agriculture To An Unsuspecting Audience
As a teacher educator, Dr. Bill Weeks teaches agriculture to rather unique clients at Oklahoma State University. Along with the traditional agricultural education majors, he teaches agriculture to a critical audience. Indirectly, Bill incorporates agricultural education into his reports, course offerings, and discussions with attendees. In these sessions, he emphasizes the importance of agricultural industries in the social structure. Because agricultural industries are unfamiliar to so many people, it is important to make contacts with those who are not agriculturalists.

Educators like Bill Weeks are faced with a very important challenge. People who are not directly involved with agriculture learn from Dr. Weeks about the community, economy, and diversity of the industry. Bill uses his skills in teaching methods, leadership, and group communication techniques to build understanding of the importance and components of agriculture. Agricultural education is being taught to a wide audience; people who never thought about agriculture and where agricultural products are produced are now learning it!

Snapshot: Agriculture Found In A Children’s Home
The agricultural teachings of Sara Hobbs has spanned a wide arena. After teaching in a traditional agricultural science program, Sara initiated an agriculture program at a children’s home in the panhandle of Texas. In this situation, today, she is teaching plenty of agriculture in her job as production and marketing coordinator for a company specializing in production and export of Chinese vegetables.

Sara was not a teacher in the classroom. She found herself building a farm and planning production schedules. Sara was also a house parent; she lived with 18 girls in one of the cottages at the children’s home. Sara did not teach agriculture with conventional methods. She was not a classroom teacher and did not have a chalkboard. Sara had 18 girls in her cottage who went to off-site school; Sara was not a PPA Advisor. But Sara’s training in agricultural education did not go dormant at this time. Rather, Sara used her experience as an agriculture teacher to
Leadership and Youth

The one claim to fame that all youth organizations seem to share is that we are already developing leaders. What kind of leaders are we developing? Are we developing leaders who will work with others in obtaining mutual goals? Or are we developing leaders who will work only with those who are a part of a elite group? When I think of organizations that claim to be developers of leaders, the first two organizations that come to mind are 4-H and FFA. Both are advocates of leadership development, but are they practicing what they preach? An important value of youth organizations is the opportunity that they afford for their members to participate in projects and activities of sufficient quality and importance to win favorable recognition in the school and community. Participation in contests gives youth the opportunity to develop citizenship skills, but what about leadership characteristics?

All young people and many adults have a role model—someone they strive to become like. Are our leaders displaying characteristics that we want our children to possess in the future? Over the last few years we have seen many of America’s leaders being closely scrutinized and their actions questioned. Are these the kind of leaders we want in the future? Are we setting good examples for America’s youth? Can we continue being a strong nation if we have weak leaders? What kind of images are we projecting for our youth?

The enthusiasm shown as this young lady accepts a first place trophy for a visual presentation in the 4-H Health and Personal Development project.

Teaching leadership skills is not an easy task and is made more difficult today. Today’s youth are tomorrow’s leaders. America’s success is directly related to her leaders. Youth should and must be given guidance, direction, and the opportunity to learn and develop citizenship and leadership skills, if they are to be successful leaders in the future. Why are citizenship and leadership skills important in leadership development? Because one is first a follower, then a leader. Social skills, getting along with others, being competitive, and gracefully accepting losses are a vital part of being a good citizen, as well as a good leader.

Have you ever stopped to wonder why America is plagued with teenage pregnancy, substance abuse, suicide, run-aways, teenage prostitution, and all the other evils facing our young people? Is it because everyone has loose morals? Are they a weaker generation, or is it simply because they are in a limbo period? Participation in youth organizations will not solve all the problems of today’s youth, but it will give them the chance to learn, to grow, and to develop socially. Let’s not handicap our youth by denying them the opportunity to experience and explore the many avenues that can be afforded to them through participation in youth organizations. Let’s help youth to learn to be good decision-makers, followers, and leaders.

By Ruby D. Rankin
Mrs. Rankin is a graduate student in agricultural and extension education at Mississippi State University and an area 4-H extension agent, Starkville, MS.

Coming in July...

Theme:
• Strengthening Programs
• Teaching Agriscience
Plus 1994 Themes

Winning isn't everything but these 4-H ers are sure happy that they won the first place trophy for shorting skills at an Area Rifle meet.

From a child’s home to a utility company, in fields and movie theaters, and in kindergarten classes and university offices, agricultural education is taking place. Teachers trained for traditional educational settings are carrying the message of agriculture to locations far removed from a classroom with walls.

School agriculture/horticulture teacher, Novella uses her knowledge of plants and teaching methods to make her pre-kindergarten class come alive. The young students learn to plant seeds and identify what is produced from that seed. They use hands-on approaches in teaching and give the children opportunities of planting and harvesting!

Novella’s agriculture teaching spreads beyond the pre-kindergarten classroom. As the children took the plants home, mom and dads learned a little about agriculture too. Although not in the physical agriculture classroom, this teacher is making agriculture available to all the community.

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Agricultural Literacy in Michigan: A Success Story

In the early 1970s, an attempt was made at the national level to integrate into public school curricula more information about American industries, including the agricultural, natural resource, and food enterprises. The popular wave at that time was "career education." Although some school districts were successful in teaching children more about various American industries, this effort fell short of achieving its goals. The lack of knowledge regarding the U.S. food system concerned former Secretary of Agriculture John Block and former Secretary of Education Terrell H. Bell in the early 1980s. In light of this concern, in 1983 these two cabinet officials asked state governors to add their signatures to those of all living former Secretaries of Agriculture, endorsing the Agriculture in the Classroom Declaration of Principle. The Declaration of Principle stated:

Agriculture is the foundation of human life. The production and distribution of food and fiber have shaped the development of mankind since the beginning of time.

American agriculture affects all of us as consumers, workers, and citizens. As consumers, 20 percent of our personal expenditures are for food. The farming sector provides employment for one out of every five workers in our labor force. And nowhere in this Nation was once a rough-hewn rural society in which more than 98 percent of the population farmed, America's heartland, evolved into a prosperous urban society in which less than 2 percent of the population produces the food and fiber for the other 98 percent, plus tens of millions of people throughout the world.

The issues confronting modern American agricultural production are complex and far-reaching...Well thought-out policies covering...issues particularly affecting agricultural development. And the foundation for that knowledge can best be started in the Nation's schools. It is essential that our elementary and high school students, as part of their basic instruction, learn about...fundamental issues. Only then will they be prepared as adults to help make responsible decisions in this critical area.

Thirty governors, including Michigan's governor, signed the Declaration of Principle along with the living former Secretaries of Agriculture. The purpose of the Declaration of Principle was to provide state action groups with a tool they could use to call school officials' attention to the significance of the Agriculture in the Classroom effort. The initiative by Bell and Block came at a good time, because the agriculture and food industry was confronted with a number of challenges, including a major shortage of personnel. Coulter and others (1986) projected the annual employment opportunities for college graduates through 1990 to be as follows:

- Marketing, merchandising, and sales representatives: 32%
- Scientists, engineers, and related specialists: 29%
- Managers and financial specialists: 14%
- Social service professionals: 11%
- Agricultural production specialists: 8%
- Education, communication, and information specialists: 6%

A key strategy in Michigan's Agriculture in the Classroom program thrust has been to encourage various groups to give agricultural literacy a higher priority in their overall operations in order to assure its success.

Today, Agriculture in the Classroom is present in 50 states, as well as in Micronesia, Oaxac, the Virgin Islands, and Puerto Rico. The National Academy of Sciences established the Committee on Agriculture Education for Secondary Schools, and this committee (1988) reported that Agriculture in the Classroom is a model program which could be used to improve education about contemporary agriculture.

The Michigan Experience

As a result of the workshop entitled, "The Crisis in Agricultural Education," held during the 1983 Governor's Conference on the Future of Michigan Agriculture, key education and agricultural leaders identified the need to formulate a statewide plan to restore vitality to agricultural education at all levels. The workshop participants requested a leadership council to study ways of strengthening agricultural education programs in the state. The governor responded by establishing the Task Force on the Revitalization of Agriculture Through Research and Education. In examining agricultural education programs in the state, the Task Force (1988) asked, "What can be done to ensure that Michigan's food and agriculture industry meets the educational and employment challenges of the next century?" Based on their analysis of agricultural education, the Task Force stated:

Dynamic, futuristic agricultural education and research programs must be offered to give K-12 and college students the knowledge and career awareness necessary to keep pace with the demand for well-qualified professionals.

At a time when taxpayers are overburdened and economic resources are scarce, new partnerships must be formed to revitalize Michigan's second largest industry.

Education, government, and private-sector partnerships are needed to make students aware of and prepared for jobs in the food and agriculture industry. Special efforts should be made to identify the best and brightest students, both urban and rural, and to put their talents to work in Michigan when they complete their education.

Having noted the preceding statements, the Task Force (1988) focused its attention on what was needed for the future. They stated:

Michigan needs a broad, innovative agricultural education program that can be incorporated into the K-12 curriculum in school systems throughout the state. Such a program would not only help funnel young people into agricultural careers but also expand the state's economy, but also would create more informed consumers and responsible citizens. Education about the food and agriculture system can incorporate important wellness, environmental, civic responsibility, international trade, and foreign cultures.

Summer Institutes for Educators

Even though the task force made a number of other recommendations with funding implications, the Department of Agricultural and Extension Education at Michigan State University decided to address this particular recommendation, but on a limited basis in light of low financial support.

During the summer of 1990, the department provided the leadership for offering a summer institute for educators entitled, "Understanding Agriculture: New Directions for Education." The summer institute was designed to explore creative ways for teaching K-12 students science, math, social studies, and other subjects with the use of resources from the agricultural, natural resources, and food industries. The institute was jointly sponsored by the Department of Agricultural and Extension Education at Michigan State University, Michigan Farm Bureau, Michigan Economic Education Council, Michigan 4-H Youth Programs, and the Michigan Association of Agriculture Educators. The institute was so successful that the department decided to provide the leadership for offering another institute during the summer of 1991. The enrollment in the 1991 institute was twice the enrollment of the 1990 institute. The department offered two institutes during the summer of 1992, with an enrollment twice that in 1991. With a 300% increase in enrollment in three years, it is believed that agricultural literacy can benefit the state in a number of areas.

Views of General Educators

The operational definition for Agriculture in the Classroom in Michigan has been defined by Moore (1988) as follows:

- the use of agricultural and natural resource concepts and materials to enhance student learning. Ideally, these concepts and materials could be utilized in all academic disciplines (science, math, social studies, language, art, etc.) at all grade levels.

Following are some of the views of general educators regarding the value of their participation in the institutes.

I found as a science teacher that there are many agriculture misconceptions that should be easily incorporated into our middle school science curriculum. The ideas of incorporating more agriculture into our curricula into our science curriculum led me to write a grant. (From the) Department of Education funding my proposal, "Cultural Experiences for the Middle School Student in the Life Science Classroom."...I hope to build upon the knowledge and renewed enthusiasm that more students will become agriculturally literate, thus becoming aware of the impact of agriculture on the American way of life.

Department Chairman and Science Teacher
Kinzua Middle School
Okemos, Michigan
The Urban Student Challenge

In the world of urban agriculture programs, size and yields are not as important as the results and successes of the individual. Urban students do not have the resources or the capabilities to support a large SAE project or the capacity of producing great amounts of a product, when compared to students from rural areas.

There are seven major obstacles that exist for urban agriculture students:

**PROBLEM ONE:** Square Feet vs. Acres
When individuals consider SAE projects they realize the space restrictions that will be imposed on them, such as:
- Greenhouse space availability
- Land Lab area availability (4' x 6' per student)
- Container plant growing (apartment living)
- Number of livestock allowed per student (usually one head per student)

**PROBLEM TWO:** Lack of General Agriculture Knowledge
In the traditional setting most students have grown up on a farm or have been associated with some kind of agricultural life. But in an urban setting there are individuals with very little understanding of agriculture and its industries. Most students who become involved with the agriculture program have done so because of the advice or encouragement of a friend, teacher, other students, or a counselor. Another factor is a love for animals, and they are not able to have them at home so they enroll in an animal science class.

This is why agriculture classes in the urban setting must teach agricultural literacy. The knowledge rural students take for granted urban students must continually learn while in class.

**PROBLEM THREE:** Lack of Home Support
Just like the students in urban America, parents, family, and friends have either a misconception of agriculture or they lack knowledge and experience that rural parents have. It is very hard for them to support something they do not understand or lack the time to learn about. In many cases they feel agriculture classes are only for those who want to become farmers. They have no idea of the many different areas of employment in the agricultural industry.

**PROBLEM FOUR:** Lack of Resources to Secure Loans
Unlike the rural student, the urban student lacks the stability of a long-term relationship of doing business with the family banker or leading institution that understands the agriculture program. Families in the urban area deal with banks that treat them as a file number, and they never build a relationship with the manager or the loan officer for several reasons:
- Good loan officers are moved upward into the banking system or find better opportunities at another institution.
- Each student has assigned space on the school land lab for SAE projects.
- Families have a larger market to shop for a loan or bank service. Few have all of their loans or services at one bank.
- Banks are unwilling to make small loans.
- The student or parent has little or no collateral for a loan.

**PROBLEM FIVE:** Non-Traditional Agriculture Employment Opportunities
Finding a pure agricultural placement for a student in an urban setting is a very difficult task. No longer do farmers cooperate, and feed mills hold the exclusive rights for self-

The Challenge for educators who are most interested in improving the learning of basic subjects, as well as those who are interested in agricultural literacy, will be the extent to which the profession is able to bring these groups closer together in the interest of students.

Farming Bureau and Agricultural Commodity Involvement

The involvement of the Michigan Farm Bureau and other agricultural commodity groups in Michigan's agricultural literacy program has been exceptional. During the 1991 annual meeting of Michigan Farm Bureau, the organization identified agricultural literacy as a major priority in the state. The president has personally promoted the initiative and served as a key resource person for the last three years.

The Michigan Farm Bureau Promotion and Education Committee has continued to give agricultural literacy a priority program thrust. Local Farm Bureau members have promoted the initiative and provided scholarships for local educators. Additionally, many local Farm Bureau members have given lectures in the schools on a variety of topics and offered their businesses as sites to enhance the learning of students. For the last several years, one Michigan family who owns and operates an 800 acre farm has provided tours of their farm, with an annual attendance rate of over 100 fourth graders. A variety of agricultural commodity groups have served as resource persons and provided scholarships to assist educators in reaching the initiative.

Agriscience, FFA, and 4-H Involvement

Since 1975, the National FFA Organization has offered a national program titled, "Food for America." This program seeks to communicate to elementary students the fundamentals, yet broad, understanding of the American agricultural industry. Michigan's agriculture teachers have promoted and used these materials in a variety of ways throughout the state. Some agriscience teachers have supplemented local Food For America program thrusts by using projects from the internationally known Convicts Poultry program, which is being conducted under the direction of Dr. Sum Varghese, Professor of Animal Science at Michigan State University. Staff from the Cooperative Extension Service have continued to work with educators on a number of agricultural literacy program thrusts. Educators have been particularly pleased with the quality and content of the agricultural literacy materials. During the 1991-92 academic year, 4-H staff offered a number of workshops throughout the state for school administrators. These workshops facilitated ongoing agricultural literacy program activities in the schools.

The Michigan Department Of Education, W. W. Kellogg Foundation, And Other Educational Agencies

Personnel in the Michigan Department of (continued on page 21)
Supervised Agricultural Experimentation

Agriculture has a rich and fascinating his-
tory, but one seems to ignore it. There
have been many significant histori-
cal events in the evolution and develop-
ment of agricultural knowledge, but none more significant than Thomas Jefferson. There is little doubt that Jefferson, often recognized as the father of agricultural experiment, would have been fascinated with the development and imple-
mentation of agricultural research in the United States today.

Some 200 years after Jefferson’s life, it is
time to get serious about agriculture. Over the past several years a great deal of
time and effort have been devoted to developing the concept of
incorporating agricultural science into educational curricula. 
If this rapidly evolving concept is to become reality, it must be applied to a broad range of instructional activities. 
All facets of agricultural education, including PAA and 4-H, as well as the super-
vised experiences programs and adult education programs, need to broaden in scope to encom-
pass this concept for the research activities.

Agriculture programs must become actively involved in research in order to be considered viable agriculture programs. Agriculture with-
out research is not science. Furthermore, sci-
cence instruction must go beyond classroom and laboratory settings. Science is of little value unless it is applied. Students must be afforded opportunities to not only learn science concepts in agriculture classrooms and laboratories, but they must also be able to apply scientific principles and concepts in agriculture and environmental settings.

James Kasson provided an excellent presen-
tation on the November 1992 issue of The Agricultural Education Magazine with research on horticultural instruction on alfalfa, resulting in the adoption of the technology by students and adults in the community.

Applied Agricultural Science

Agriscience instruction must go beyond the classroom and the laboratory. The processes of technology transfer involves not only the research and development of new technologies, but also the adoption, diffusion, and improvement of technologies. In today’s agricultural, business, and industrial environments it is not enough to merely expect students to be able to learn science without putting into practice the applied components of science and technology.

Recent advances in scientific inquiry and technology transfer have expanded the tradi-
tional approaches of conducting research to
actually conducting research on farms and
ranches. These innovative techniques of scien-
tific inquiry have been described as applied
"on-farm research." On-farm research can be
classified into three basic types:

1. Producer-initiated research: This type of on-farm research is designed, conduct-
ed, and evaluated by the agricultural pro-
ducer. Professional researchers, either from
industry and/or scientific communities,
are not involved in conducting this type of
research.

2. Researcher-initiated research: These research activities are conducted by pro-
fessionals, with the cooperation of agricultural producers, on actual farm and produc-
tion facilities. The professional researcher,
either from industry or the scientific community, design, conduct, and evaluate the research activities. However, agricultural producers provide very little assistance for the research activities.

3. Participatory agricultural research: These research activities are conducted with cooperation of all those interested in agricultural producers and agricultural produc-
ers. Agricultural producers are actively involved with the design, development, evaluation, and dissemination of research projects. This type of research appears to be the most appropriate for implementa-
tion in and application by secondary agri-
culture programs.

These approaches for conducting on-site agricultural research are ideal for integrated
research programs. Students should not only have opportu-
nity to facilitate the incorporation of agricultural
research into agricultural education super-
vised experience programs. These strategies are based upon the concept of agricultural programs being actively involved in participatory agricul-
ture research activities in the local communi-

First, we must incorporate research techni-
quies and activities in agriculture education. Of particular importance is the integration of applied agricultural research activities as com-
ponents of supervised experience programs. This could be described as Supervised Agricul-
tural Experimentation. Agriculture students will actively conduct applied research projects under the supervision of agri-
culture teachers. These strategies call for different approaches for thinking about supervised experience based upon scientific inquiry. 

Students need to be taught the basic principles of conducting quality research. This proposed strategy is very consistent with the ideals of Total Quality Management. The fundamental plan would be:

1. Teach the basics of conducting research in the classroom;

2. Conduct experiments utilizing school

facilities, such as agricultural mechanics laboratories, greenhouses, and school

3. Develop supervised agricultural experi-

ments where students apply research

methods in real settings.

Just a few examples of supervised agricultur-
al experimentation projects would include:

- Developing and evaluating new varieties of crops;
- Measuring and monitoring wildlife populations;
- Assessing water qualities, conducting marketing research, and conducting trials on preservation of plants.

Each of these projects would require funda-
mental applications of scientific principles and research methodologies. Teachers would assist in research design, collection of data, analysis of information, interpretation of findings, reporting of findings, and follow-up strategies. 

Assuming students with these types of research activities will require considerable "teaching" of agriculture teachers and programs, which leads us to the second strategy.

Second, we need to significantly increase teacher knowledge about research methods. We

need to develop more teacher preservice and
ter-in-service activities to scientific inquiry, if we are to get serious about teaching agriscience. Every agriculture teacher and student will need to have a foundation of knowledge and skills in statistics, basic science research methods, and have applied experiences in scientific research projects.

Third, and most important, we must change our attitudes toward research. We can no longer view research as something that we do not understand, are incapable of doing, and thus little value in secondary agricultural education. The present trends in education are based upon critical thinking, preparation for technologies, technology transfer, systems approaches, and applied sciences. The number of agriculture programs will continue to decline if we contin-
u to ignore these trends.

In conclusion, agricultural education is fac-
ing a challenging future. Agricultural producers are becoming more aware of the need for developing, conducting, evaluating, and dis-
seminating research programs. Agricultural education must develop the ability to con-
duct supervised agricultural experimentation. Thomas Jefferson believed in agricultural experimenta-
tion, and agricultural education must also. Agricultural education without agricultural experimentation is not education in or about agriculture for the year 2000.

References


International models. 1991 Winter Meeting of the

American Society of Agricultural Engineers, Chicago, IL.


Marketing Univ. Agr Ed...

(Reprinted from page 3)

public school agriculture programs and teach-

ers.

There is a certain irony in the present sce-
nario whereby university faculty have been so focused on assessing program improvement in high school agriculture programs that they have jeopardized the status and strength of their own programs. Especially for those agriculture education programs located in Colleges of Agriculture, establishing closer ties to the agri-
cultural industry, parallel with redirected instructional and research programs, will rep-
atriate agriculture education as a secure and respected field of study. At the same time, agri-
cultural education is the best link between Colleges of Agriculture and public schools. The time for humility has passed; we must be aggressive in telling all aspects of our universi-

ty programs to campus colleagues, prospective students, and the public at large, develop-
ment and marketing efforts at the undergrad-
ate level must be more balanced between teacher education and training and leadership
options in order to better meet industry needs and to ensure viable university agriculture education programs in the future.
Food Science

Adding Instructional Units and Experience in Food Science

By STACEY MILLER
Mr. Miller is an agriculture teacher at Central Valley High School, Rt. 3, Robesonia, PA 19551.

One of most difficult decisions agriculture teachers have to make is what to teach in each unit and how much time to spend on each unit once it is selected. Everything done in a cultural production and agriculture is geared toward producing food that will ultimately be purchased by the public. Take a close look at your students. Are most of them going to be food producers or are most of them interested in becoming better informed about how our food items are produced, processed, preserved, marketed, and researched? I bet some of them are also interested in animal and human health care, elementary and secondary education, and the environment sciences.

A unit in food science at each grade level can be used to help your students investigate each of these areas. Food Science is definitely a multidisciplinary subject. How can you best add food science to your existing curriculum? Should you do separate food science units or add sections of this huge area to existing units of instruction? Using both strategies can be effective.

A new, brief introductory unit for ninth graders which highlights career opportunities and educational requirements for job entry in the food industry is a good start. Where do you get reliable and current information about these career opportunities? Go right to your university food science department. They will give you some statistics showing where their graduates are being placed. I’m sure you’ll be surprised at their placement percentage. They can also provide you with occupations that are available to students who want an associate degree, and even positions available to the high school graduate. Many food companies have a good record of recruiting excellent candidates each year and have proven records of success. They’ll probably suggest using some materials available from the Institute of Food Technologists (IFT - address and phone listed later). There is a free videotape available and some usable curriculum materials that are very inexpensive.

The food science departments at the university level were created because the food processing industry needed skilled professionals that had more than just a “general” degree in chemistry, biology, dairy science, or plant and animal husbandry. Industry representatives meet and formulated a standardized curriculum for the B.S. degree in Food Science that would guarantee them an employee that could be productive. Then they hired those students upon graduation. Food science departments responded to an industry request and their placement and salary opportunities for students are still excellent. Your students need to know about these opportunities. Many university food science majors do not find their way into the major until they are juniors or seniors. They do this because they didn’t know about food science majors.

Food science departments will welcome your talented agriculture students with open arms and, very often, with scholarship opportunities. Many of you may be saying, “That only applies to a few of my students, what about the rest of them?” Be careful that this question doesn’t get you headed in the wrong direction. Is a student who declares veterinary medicine as a career goal “too good” a student to be in your department’s classes? I hope the answer is a resounding, “No!” That same be true for talented students throughout your school population who want “science with career potential.”

A good introductory ninth grade unit will get some of your students thinking about a career in food science. It can also set the stage for all of your students to think seriously about the positive impact agriculture and food have on our nation’s economy. Other units in science can be added to existing curriculum areas like dairy, beef, sheep, swine, poultry, and fruits. These “add-on” sections can be used to build a science curriculum in your agriculture classes.

I am really suggesting a three- or four-year period to phase-in this very large area of instruction. Some teachers will prefer to keep a food-related area tied to the animal or plant production instruction. This can be effective if your students can see the food item develop from research (idea) to the supermarket (product). Other teachers will prefer to separate the food science units and offer them at the appropriate grade level. I believe both strategies can work. The important thing to do is sit down with a good food science introductory text and a few trade journals. It won’t be long until you’ll have plenty of ideas about how you can best incorporate activities, reading, and career information in food science. You can use these units to help them bring chemistry, biology, and the “finishing” components of agriculture to life for your students.

In the article that appeared in the March issue of The Magazine, I mentioned the need to contact your food science professor, work with agricultural education staff, and your Department of Education to establish inservice classes, and do the planning and reading on your own. The following is a listing of materials and ideas that can be helpful.

Textbooks

1. Food Science, Norman N. Potter, VNR, P025 Empire Drive, Florence, KY 41042-6088, (513) 652-6600

This text is used in the level university introductory courses for food science majors. It can be used as a teacher reference and as a student text. We still use it in our program as a student text. There are many others. Contact your food science department for the one they use.

2. Food Science and You, Kay Melas and Sharon Rodger, Glencoe Division: McGraw-Hill, 809 West Detwiler Drive, Peoria, IL 61615-2190

Food Science and You: Teachers Resource Guide, Melas and Rodger

These were written for use in a high school home economics curriculum. It has good organization of chapters and nice laboratory ideas. Look at the college level texts and this one and decide which one could best suit your program.

Journals

1. Agriculture Research, U.S.D.A., ARS, Rm. 318, B-005, BARC-West, 10300 Baltimore Ave., Beltsville, MD 20705-2300

Every agriculture department in the nation should be getting one of these each month. If you are not, contact assistant editor Linda McEathrell at (301) 504-6280. Make use of this one! Photocopy it and have your students contact scientists by phone or mail.

We’ve never had a student disappointed by an ARS scientist. They’ll send information, samples, and more reading materials and laboratory protocols that you can use in improving your teaching.

Ask one of the scientists to send you last year’s copy of the ARS Directory. Then your students will be able to get in touch with any ARS station in the country. We get plenty of mileage out of this resource.


This trade journal is $80.00 per year. It wouldn’t convince the company to give us a free subscription, but a food company can get a $39 per year subscription at this trade journal and mail your copies free. The articles are excellent for current food technology and food engineering technology. It is full of advertisements with company names and phone numbers. We’ve contacted several of them and had product samples sent to us with specifications for laboratory experiments. It is full of ideas and contact people that are worth the effort to get on your journal rack.


This journal is $10 per year - 4 issues, $35 per year (foreign orders). CAST’s publications on a monthly basis. Well worth the money.

Agriculture journals are an important resource for us. Ninth and tenth grade student have bi-weekly graded assignments that send them to the journal rack. Juniors and seniors go there on their own after two years of gentle “forced” exposure. Photocopied articles are a regular part of the reading in all units of instruction. Our agriculture students have made over 200 phone or mail contacts with scientists or professors from these journals this year.

Agriculture topics are used as a basis for their English, chemistry, biology and physics term papers/projects, as well as for their written papers for agricultural science classes.

Laboratory Ideas

1. Carolina Biological Supply Company (800) 547-1733 for states of Texas, 800-623-1231 for Texas and east

Every agriculture department should have a copy of this catalog. Some of the “package” labs for starters. They have you tie and set up. After you do them once, you all have to order is the ingredients or active chemicals.

2. Kemco, 9899 Crescent Park Drive, Westfield, OH 45069, 513-777-3535

Ask for Dr. Harry Stone. They have a
catalog of "packaged lab ideas." This company makes many of the lab packages that are sold by large distributors like Corvallis Biological and Fisher Scientific.

3. Student Research Projects in Food Science, Food Technologies, and Nutrition. Edited by Edward D. Darrow, College of Agriculture, The Ohio State Univ., 2120 Pyffe Road, Columbus, OH 43210, (614)292-1734

This booklet includes numerous laboratory exercises with a complete description of materials needed. We use several of these labs.

4. Experiments in Food Science (and Teacher's Guide). Institute of Food Technology, 221 North LaSalle St., Chicago, IL 60601, (312)782-8423

This inexpensive lab manual and guide has eight laboratories and a teacher's guide to help you prepare the exercises.

5. Videotapes

1. An IFT- produced video to inform students about career opportunities in food science. It is available free from IFT.

2. How To Create A Junk Food. This tape is produced by Coremat Films and is expensive. You can obtain a copy from the Food Science department. It is an excellent broad-based film about a complex industry. It takes the viewer from the idea to a complete product. It showcases advanced technology and many career areas in action.

3. Video: Modern, and other free loan videocassettes. They all have several good food science tapes that can be used to enhance several of your units.

6. Your State University Phone Book. Get last year's copy before it hits the trash heap. Ask a professor or secretary. It will have all of the professors and extension specialists phone numbers and addresses listed in their area of expertise. Make sure your students can use this one too.

7. Guest Speaker.

Through their own contacts or from a food science professor's recommendation, contact a scientist to come in and speak to your classes. We use at least two each year. This led to an invitation for us to visit the Hershey Foods Tech Center, not usually available to high school classes.

8. Field Trips

This is a natural for agriculture departments. Don't forget your summer schedules. Students will be surprised at the number of students that will attend a field trip to a food company that showcases careers from research through processing and engineering.

9. Summer Sessions

Offer a three- or four-day class in food science. We do this for as many students and the teacher in gaining in a special area. The class runs from 8:30 a.m. to 3:00 p.m. There is plenty of time for laboratory activities, field trips or guest speaker. These look good on students' resumes. Administrators like the full use of facilities in the summer months, not to mention the number of students that you're serving as opposed to individual visits.

It is important to select challenging and interesting reading material for each grade level and use laboratory exercises to help apply the reading and make the learning practical. There is something else agriculture teachers should seriously consider. Your students attend classes other than their regular school during the summer. This puts your subject in quite unique. It is broad-based and multidisciplinary. While many of us categorize agricultural education as an applied science, let's not forget agriculture's impact on history, math, economics, sociology, health & nutrition, and English (written and oral communications). The way we present our instructional units in agricultural education can enhance the success our students can have in their other subjects.

It is important for agriculture teachers to examine the textbooks used in biology, chemistry, physics, social studies, and math. This affords the chance to make relevant examples/applications about the importance of your subject area. Agricultural topics are woven into almost all of the "other" subjects, but students are rarely given a chance to see this. I've also obtained several good ideas from their cross over and additions to my units of instruction by taking a look at the textbooks my students use in other classes.

I believe our classes can add a new insight to high school studies for our students. Many of our agriculture students can see how studies from all of their subjects combine into a successful career in agriculture. In addition, those high school agriculture students who decide to pursue careers in non-agricultural occupations will be among the agriculturally illiterate. In fact, they will be allies of the agricultural sector.

The final food science article will deal with specific content areas we use and a few laboratory activities that we use in our program.

Summary

1. Get your hands on food science reading materials

2. Contact food science professors for advice on laboratory protocols, procedures, or lab (continued on page 21)
The frameworks don't specifically recommend broad, year-round themes like agriculture. But by correlating the different strands from key frameworks such as the History/Social Science, English Language Arts, and Science Frameworks with an agricultural theme, I was able to validate my belief that studying about agriculture is clearly one of the best ways to integrate subject areas at all grade levels. Following is a sample from the complete document.

Correlating Curriculum Strands and Themes

<table>
<thead>
<tr>
<th>HISTORICAL-SCIENCE</th>
<th>SOCIAL-SCIENCE</th>
<th>STUDYING THE ENVIRONMENT AS A GLOBAL ISSUE</th>
<th>AGRICULTURAL THEMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal of knowledge and cultural understanding</td>
<td>Society and the environment</td>
<td>Scale and structure</td>
<td>Scientific inquiry</td>
</tr>
<tr>
<td>Cultured literacy and understanding the complex given culture</td>
<td>Technology, nature and society</td>
<td>Data and information</td>
<td>Human activities</td>
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<tr>
<td>Understanding human movement</td>
<td>Physical and chemical properties</td>
<td>Patterns of change</td>
<td>Science and technology</td>
</tr>
<tr>
<td>National Identity</td>
<td>Science and technology</td>
<td>Scale and structure</td>
<td>Economics and business</td>
</tr>
<tr>
<td>English Language</td>
<td>Human activities</td>
<td>Human activities</td>
<td>Societies and cultures</td>
</tr>
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</table>

For the past two years, I have been teaching third/fourth grade modified-bilingual classes. My agricultural and literature-based language arts program, combined with the study of California history, from its hunter-gatherer beginnings to the top-ranking producer in the U.S., is once again a great motivator for student learning. With many of my current students being recent immigrants, I have found that they are more aware of agriculture in their native homelands that we are here.

There we were—city and country, producer and consumer, present and future. Those 40 city kids had traveled to the most fertile agricultural land in California for two funfilled days of learning about agriculture. Leaving behind the "them and us", we were all ready to celebrate our interdependence!

Last year, during our unit on Charlotte’s Web, we borrowed a 10-week-old Blue Buff from a university agriculture program and kept it in our classroom for five days. While all of us fell in love with our own "Wilbur", we talked openly about his inevitable auctioning for food. A few of the students were able to share how, in their native countries, their fathers, uncles, and grandfathers would kill and roast a hog for special family meals. This kind of participation by students reinforces that education about agriculture is a learning context that all cultures can share.

Wanted: A Few Good, Creative Teachers

I have often been asked how I would interest other teachers in teaching about agriculture. First, I would define all that agriculture is, since this is an area that most urban dwellers know very little about. I would challenge teachers to do a critical analysis of the history of agriculture from the global to the local perspectives. There would be no doubt as to the importance agriculture played in the evolution of civilization, but this discussion would also generate an unbiased aspect of agriculture's impact on the peoples and the lands of the earth.

To this I would add a scientific challenge to the misinformation that exists about agriculture and encourage teachers and students to search for honest representations. At the heart of all good teachers is a desire to engage their students in provocative discussion and thinking from multiple perspectives for objectivity and for future relevance. Agriculture can capture the interest of teachers by offering a strong, rigorous, content-based curriculum. Agriculture must support teacher training and curriculum development about agriculture as part of its vision for the future.

Finally, and most importantly, I would impress upon farmers and ranchers, agriculture professors and graduate students, farm bureau and commodity organizations, and FFA chapters and 4-H Clubs, the need for all of them to share their work with teachers and students in the classroom. I know that I cannot stand next to my farm family without being appreciative of the careful stewardship they give to their land or being envious of the closeness in which they live and work with nature, or being filled with pride that we are friends and a family... and everyone hugs all the time!

Closing Comments From The Executive Director of CFATC

Lois’ teaching method of integrating agricultural instruction into all areas of the curriculum effectively demonstrates the Foundation’s philosophy. The success of ATIC is directly related to the partnership between education and agriculture working together to implement information about agriculture through existing state frameworks of study.

As the 1992 SAI Graduate of the Year, Lois has been an outstanding "Ambassador" for agriculture. She has presented her methods of teaching at the USDA National ATIC Conference and throughout California at a variety of teacher inservice programs and conferences. Lois is an excellent representative of the many educators we utilize for curriculum development and implementation and is always eager to share new ideas and resources with her students and colleagues. Her dedication to

The Urban Challenge...

The problems that have been discussed are what separate the urban agriculture student from the rural agriculture student. These challenges will continue to exist for the urban student. Because of these obstacles we must look to develop programs that will not only support the urban student, but also the rural student as well. We must make sure that both urban and rural agriculture students receive the credit that they so rightly deserve for their work and achievement in the agriculture program.

Food Science...

First, obtaining a list of videotapes and integrating them into your units.

2. Bring in at least one guest speaker that has a food science degree and works in the private sector.

3. Plan at least one field trip to a company that does research in a food science area.

4. Keep reading, making contacts, and thinking about what parts of this large agricultural area can best suit your student’s education.

5. Devote a little time in your summer schedule to organizing and “running” at least four new laboratory exercises for use in next year’s classes. Then conduct a top-notch summer session or seminar when you are ready.

Ag Ed in Elementary Schools

(proceeding from page 39)

Note to Teachers:

The September through December issues of the magazine will focus on the nature of teaching, effective teaching, teaching agriculture, and teaching special populations. We need articles written by teachers! Check the back cover of the July 1992 issue for the name and address of theme editors, or call the CFATC office at (916) 333-3260. September articles are due by the theme editor by June 1, October articles are due July 1, and so on. Take some time this summer to share your ideas and strategies.
Agricultural Educators in . . .

(continued from page 4)

gained as student teachers, and more important-
ly as teachers of agriculture. As experienced teachers, agricultural educators are recognized as unique professionals who, at one time or another, have fulfilled one or more of the following roles:

1. Teachers, who have developed presentation skills, program planning and curriculum development abilities, and individual and program evaluation skills to help students prepare for careers in agriculture.

2. Artisans, who have a broad background of technical knowledge and skill, have various areas of agricultural expertise, and know the language and customs of agriculture and of educators.

3. Advisors, who assist and motivate stu-

dents in developing leadership abilities and employability, employment, and entrepreneurship skills.

4. Counselors, who have experience in help-
ing others with academic, vocational, personal, and social problems and opportunities.

5. Administrators or managers, who arrange schedules, submit FFA and state reports, pro-
cure materials, and oversee the agriculture pro-
grams.

6. Planners, organizers, and developers, who identify and plan curricula, organize agricul-
tural groups and adult classes, and develop super-
vised agricultural experiences for students.

7. Supervisors, who review career goals of students and supervise experience programs in agriculture.

8. Evaluators, who are proficient in measur-
ing and reporting pupil progress and who mea-
sure and evaluate program success.

9. Researchers, who search continually to improve personally, technically, and profes-
sionally.

10. Public relations specialists, who recruit students, preserve agriculture’s history and her-
itage, promote its image, and educate about its importance as a modern, productive, competi-
tive, and progressive food and fiber system.

The roles above are played by teachers of agriculture and are readily transferable to other non-school agricultural education settings. Perhaps that is why there are always opportunities for persons prepared as teachers of agriculture; their background, experience, and pro-

of the armed forces. It can be argued that it is not. At least these individuals have served the profes-
sion that period of time, and it speaks well for the profession of teaching agriculture. A degree in agricultural education, coupled with several years of successful teaching, creates numerous career options.

Agricultural Lit in Mich. . . .

(continued from page 2)

Education has been very supportive of Michigan agricultural literacy efforts during the last several years. Members of the State Board of Education have served as key resource per-
sons at the Summer Institutes for Educators. One of the Department of Education’s most important contributions to Michigan agricultural literacy efforts has been its support of teacher mini-grants in the amount of over $6,000.

A number of school districts in Michigan have viewed the agricultural literacy (trust as viable means for enhancing students’ learning of basic academic subjects. In light of the posi-
tive views several school districts in the state have covered the costs for selected personnel to attend the Summer Institutes. The greatest sup-
port for personnel to attend the Institutes has come from the Detroit Public Schools. Building administers in the district allocated more than $1,500 in 1992 to help their teachers attend the 1992 Summer Institute for Educators.

In recent years, the W. K. Kellogg Foundation has been most interested in helping Michigan improve science education at the ele-
mentary level. This interest has prompted the Foundation to fund a number of elementary school science projects to explore more cre-
ative ways of improving students’ science scores. In 1992, the Foundation funded two major elementary education science projects in Michigan, which will focus on using food sys-
tems concepts and materials as a means of improving elementary students’ science test scores. Nearly a million dollars will be spent in a three-year period to determine whether using food systems resources is likely to improve ele-
mentary students’ science test scores.

As a result of the progress that has been made in Michigan with regard to agricultural literacy, the W. K. Kellogg Foundation has announced a new program, called “Food for Thought.” In announcing this program, the Foundation’s program officer stated:

The Kellogg Innovative Education Program initiative seeks to foster cre-
tive approaches to teaching that will increase understanding among young people about food issues. This initiative will support comprehensive projects which will recognize the full spectrum of challenges facing American children, parents, and educators — including the need for nutrition and health competen-
cies for kids.

The W. K. Kellogg Foundation will fund up to five projects in Michigan during the first year of this initiative and later expand to 20 projects nationwide.

References


Future Challenges

Educational researchers and educators have proven over and over again that students are more interested in learning, if given the opportu-
nity to use their hands in the learning process. This finding has also been most prevalent in classrooms whereby teachers have used agricul-
tural and natural resources to teach basic academic subjects. The challenge for edu-
cators who are most interested in improving the learning of basic subjects, as well as those who are interested in agricultural literacy, will be the extent to which the profession is able to bring those groups closer together in the inter-
est of students. We have been successful in this effort in Michigan due to the commitment and dedication of many groups. Moreover, Michigan has been successful because we have encouraged more groups to give agricultural literacy a priority within their own operations. Considering that the profession elected to recognize a fourth grade teacher and her stu-
dents for their agricultural literacy projects and activities at the 1992 State FFA Convention, we are making good progress on developing additional agricultural literacy program partnerships in the state.
Producing Vegetable Crops


According to the authors, Producing Vegetable Crops was designed to be a comprehensive text for the study of vegetable production (olericulture) and to provide a vast array of information about all aspects of the vegetable industry. The authors are to be commended for their work on this text. It would be useful for anyone interested in vegetable production.

The authors divided the text into four general areas. Chapters 1 through 11 present basic information and fundamental principles associated with vegetable production in general. These chapters discuss many scientific principles and their applications to the vegetable industry.

Chapters 12 through 28 present detailed information about the production of over 60 specific vegetable crops. Some chapters discuss only one vegetable, while other chapters contain information about several similar vegetables. However, the authors utilize the same sequence for each of the chapters, which was very helpful while reading the book and when looking up specific information about vegetables in my garden.

Chapter 29 provides a very thorough discussion of producing vegetables in controlled environments, such as greenhouses, hydroponic greenhouses, and plant factories. Chapter 30 is devoted to home vegetable gardening and is designed to inform the reader of the main principles, practices, and considerations of home gardening.

The appendices provide information about careers in vegetable production, sources of additional information, nutrient content of vegetables, sources of seeds, and conversion tables. The authors also include a glossary of terms used in the text. There is a separate glossary of terms at the end of the chapter devoted to the role of biotechnology in the vegetable industry. The text was written at a 9th or 10th grade level.

My overall impression of this text is very positive. My main concern is that no objectives are provided at the beginning of the chapters and no questions and/or activities are provided at the end of the chapter. This concern was alleviated, however, when I read the teacher's manual for the text. The teacher's manual contains instructional objectives and review questions for each chapter, in addition to a chapter overview; instructional strategies to reinforce, extend, and enrich the learning experience; and other useful information.

This would be an excellent text for teaching a course or unit in olericulture. Instructors who do not teach a separate course or unit in vegetable production would find this text very useful as a reference book. In either case, it would be very beneficial to obtain a copy of the teacher's manual if you purchase this text.

Managing Our Natural Resources


REVIEWED BY:
E. F. Cowan
Mr. Cowan is an agriculture teacher at Mitchell Baker High School, Camilla, GA.

The title is descriptive of the overall content of this book and is appropriate to the education of our young people today. The book is well planned and organized from the preface to the index. It is divided into eight sections, including Introduction, Soil and Land Resources, Water Resources, Forest Resources, Fish and Wildlife Resources, Outdoor Recreation Resources, Energy, Mineral and Metal Resources, and Advanced Concepts. Each section is further divided into several chapters. The chapters begin with the objectives of that particular area of discussion. Terms that will be found in the chapter are pointed out and highlighted. A chapter summary is provided and discussion questions are presented that are relevant to the subject area. Some activities are suggested that will give students experience in the area of discussion. Each chapter is fairly well covered and should be of interest to high school students. The criticism of this book, if any, would be that it tries to cover too much. Personally, I think, it should possibly be made into more than one book and cover some of the areas in greater detail. The glossary is well thought out and organized. It gives simple, understandable definitions for high school students.

I plan to use this book as a resource book in a Forestry/Wildlife class that I teach. It would be desirable to use as a student text if funds were available.