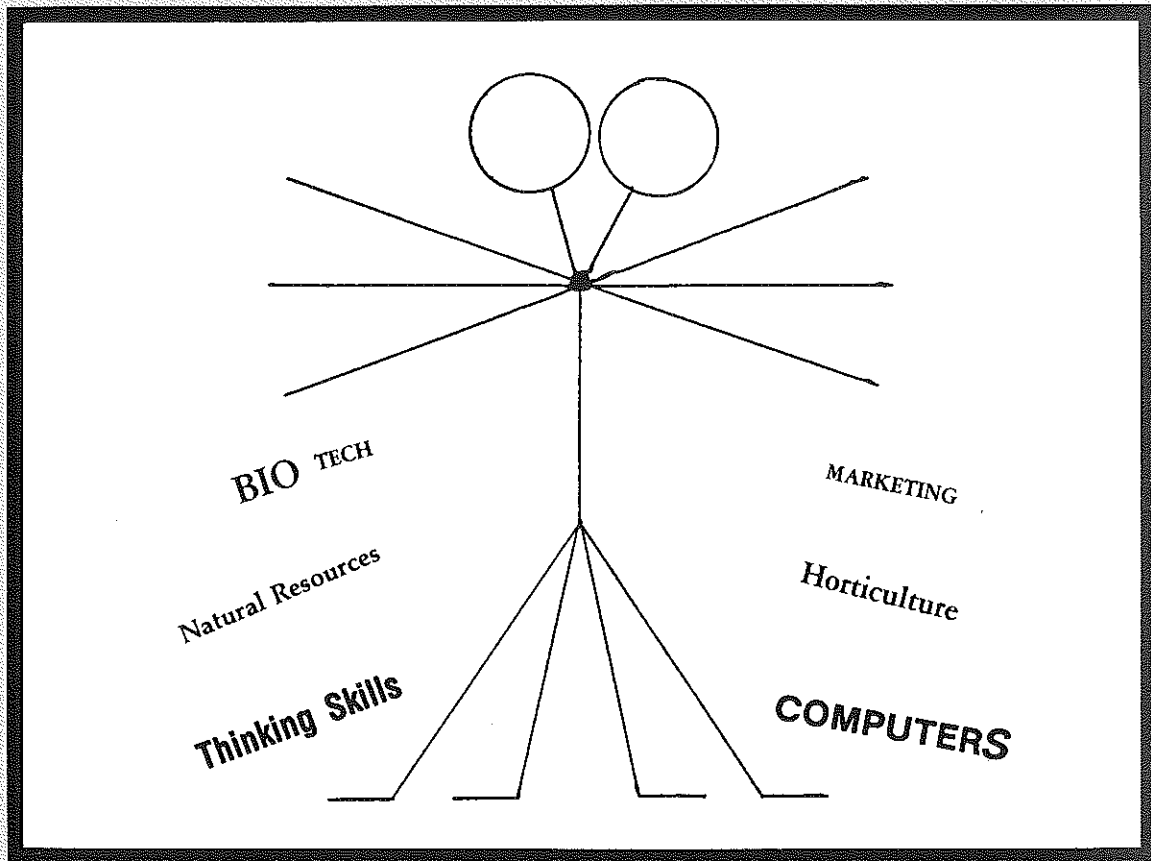


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THEME: Tomorrow's Teachers

THE AGRICULTURAL EDUCATION MAGAZINE

January, 1988

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Articles and photographs should be submitted to the Editor, Regional Editors, or Special Editors. Items to be considered for publication should be submitted at least 90 days prior to the date of issue intended for the article or photograph. All submissions will be acknowledged by the Editor. No items are returned unless accompanied by a written request. Articles should be typed, double-spaced, and include information about the author(s). Two copies of articles should be submitted. A recent photograph should accompany an article unless one is on file with the Editor.

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Experts, YUPPIES, DINKS, and Tomorrow's Teachers

Few topics have surpassed education in garnering public scrutiny and debate during the 1980s. Report after report chastized America's system of education for producing illiterate high school graduates. Less publicized reports pointed fingers at teacher education programs for graduating what many call a generation of illiterate teachers. Today's reports indicate that college students are being educated too narrowly. Thus, they receive excess technical preparation at the expense of general, liberal, and international education. "Vocationalism" is the buzz word for today's narrow collegiate curricula.

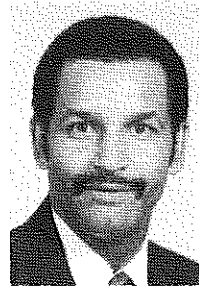
With the EDUCATIONAL REFORM decade coming to a close, it is interesting to examine outcomes that can be attributed to the reports. Perhaps the most notable outcome is that anyone who wishes can become an expert on education. Interestingly, many of the so-called experts have never had a course in education, taught a class, or graded students. Even fewer experts have been blasted by an irate parent whose incorrigible brat might be better served by the state penitentiary rather than a high school.

While justifiably castigating teachers and schools, experts fail to consider the crucial role that the home and society play in educating children. Tragically, most experts grossly undervalue parents' responsibilities for educating their children. Numerous studies document that quality home environments instill positive attitudes about school and reinforce education provided via formal schools. Unfortunately, making students wards of the state by divorcing parents from the process is futile.

The YUPPIE and DINK Mentality

Worst yet, many experts can't lower themselves to become a teacher. Their ACT, SAT, GRE, CPA, and Bar examination scores say they are too "academically" talented to teach. Besides, teaching is common sense and doesn't require their "academic" talent. Or is it that YUPPIE and DINK (Double Income, No Kids) lifestyles cannot be maintained with today's \$26,704 average national teacher salary (Stateside, *NEA Today*, June, 1987, p. 7)?

This snobbish behavior means that America's teachers are drawn from a pool most don't like to discuss. Although education programs, including agricultural education, recruit as heavily as other disciplines, they often lose talented students to engineering, mathematics, business, and other areas most responsible for today's narrowly educated populace. This trend shows in the Scholastic Aptitude Test (SAT) averages for freshmen entering college Autumn, 1987. Even though last year's crop of education majors had the highest ever SAT scores (845 out of a possible 1,600), that average was far below the national average of 906. Averages for major subject areas are shown in Table 1.



BY BLANNIE E. BOWEN, EDITOR

(Dr. Bowen is an Associate Professor in the Department of Agricultural Education at The Ohio State University.)

Table 1

Scholastic Aptitude Test Scores for 1987 Freshmen Students

Physical Sciences	- 1,083
English	- 1,055
Engineering	- 1,010
Social Studies	- 948
Computer Science	- 879
Agriculture	- 860
Education	- 845
Home Economics	783

Source: *USA Today*, September 23, 1987, p. 1A.

Tomorrow's Teachers

Teaching must project itself as a respected and satisfying career option. Although monetary incentives bring status, once a person receives what is perceived as adequate compensation, satisfaction is not enhanced. Herzberg et al. (1957) say satisfaction comes from the work itself and the level of achievement, advancement, recognition, and responsibility a position offers. Herzberg et al. also say dissatisfaction results from poor — salary, interpersonal relations, administrative policies, supervision, and working conditions.

If you subscribe to Herzberg's theory, then your hands and those of professional organizations are not as tied as you perceive. Rather than focusing so much on the dissatisfier factors (especially poor salaries), capitalize on job satisfiers. Why not promote the in loco parentis responsibilities of teaching, the pride that comes when students learn complicated tasks, teaching's stability, and the rewards of being an agricultural educator? Why not develop and promote career ladders to provide advancement opportunities for teachers?

Moreover, even if salaries continue to rise, it will be the nature of teaching and intrinsic factors that attract Americans to teaching. Those who can and love it — should teach. Those who are talented enough to teach — but don't

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Experts, YUPPIES, DINKS, And Tomorrow's Teachers

(Continued from page 3)

love it — shouldn't be encouraged beyond the trial stage. Minds are too brittle to be entrusted to brilliant scholars whose love for teaching is not intrinsically motivated.

Congratulations to Julia Gamon, this issue's theme editor, for securing authors to expertly discuss tomorrow's teachers.

REFERENCE

Herzberg, F. et al. (1957). *JOB ATTITUDES: REVIEW OF RESEARCH AND OPINION*. Pittsburgh: Psychological Service of Pittsburgh.

THEME

A Look Into The Future

Filmmakers presented a picture of people from outer space in the form of lovable little "E.T." The contributors to this issue are painting a picture of tomorrow's agriculture teachers. What will they look like? Where will they come from? What will they teach?

If present trends continue, tomorrow's teachers are likely to be better educated and more experienced. There will be more women and more people from non-farm backgrounds. The typical teacher may be a part-time agriculture teacher who is also teaching other subjects, coaching sports, operating a business, or farming. Tomorrow's agriculture teacher will definitely be exploring new topic areas to expand his/her curriculum beyond production agriculture.

Some of the new topic areas may be horrifying to the old guard: robotics? petunias? thinking skills? values? Reassurance that the old is still good is the emphasis in this issue on problem solving, high quality classroom instruction, and concern for individual students.

Needed: Encouragement

The articles in this issue are written from a variety of viewpoints. Several articles are by new, young teachers — those who will be the experienced teachers of tomorrow. The encouragement and stimulation they and their counterparts receive now will make a difference in what kind of teachers they become. Their articles provide some insight into the hopes and fears of those who will become tomorrow's teachers. Everyone appreciates words of encouragement. Such attention may be especially important for those who do not fit the traditional mold.

Words of encouragement are also important to those who may be considering the profession as a career. Every state has a few wonderful examples of teachers who encourage others to follow in their footsteps. More needs to be done

The Cover

What will tomorrow's teacher look like? What subjects will he/she teach? Expectations seem to be more than one person can accomplish. It will take a super-person with an extra head and double set of arms and legs to do everything that is being suggested. (Artwork courtesy of Harold and Julia Gamon).



BY JULIA GAMON, THEME EDITOR

(Dr. Gamon is an Assistant Professor in the Department of Agricultural Education at Iowa State University, Ames, Iowa 50011.)

in the recruitment of potential agriculture teachers if there are to be enough teachers tomorrow.

Hot Issues

Some of the ideas advanced in this issue have been and will be vigorously debated. Questions raised include the following:

Should certification requirements include four years of agriculture plus a year of teacher education? How much student teaching is necessary?

In preparing and selecting potential teachers, what should be the balance between technical competency and people skills?

What is the answer to part-time agriculture departments? Can a person do justice to an agricultural program and also teach another subject or coach?

Should science credit be given for agriculture classes? Should all agriculture classes be on a semester basis?

What is expected of agriculture teachers? How can they balance activities and classroom instruction?

How can the supply and demand of agriculture teachers be kept in balance?

Different, Yet Similar

Just as the outerspace character E.T. was different yet similar to earthmen, so will tomorrow's teachers be different yet similar to today's. Tomorrow's agriculture teachers will be different in their backgrounds, preparation, and topics they teach. Hopefully, they will have the same strengths as the agriculture teachers of today. They will continue to be concerned about their students, knowledgeable about their subject, and expert at gaining community support.

Tomorrow's Teacher of Vocational Agriculture

Effective teachers are those who deliver a relevant curriculum in a form which is palatable to students and which causes them to generalize "learning to living." For vocational agriculture to remain as a viable curricular offering in the nation's secondary schools, teachers must address the "effectiveness issue," and demonstrate positive advances toward a relevant, palatable agricultural curriculum. We must cull the "sacred cows" from our present programs and install curricular offerings which address the problems of today's farm economy.

Future teachers must reverse the trend of recent years which has tended to match classroom learning to activities. Relevant learning activities are important, but they must be chosen carefully to complement classroom instruction. Too often, teachers have allowed the activity portion of the vocational agriculture and FFA programs to assume a dominant role in which activities have been allowed to supplant or displace the classroom portion of instruction.

Tomorrow's teacher must be a persuasive innovator who cultivates an awareness for new ideas and is willing to try them. Many administrators are uncomfortable with changes in traditional programs and require a vigorous promotional effort before they will allow new programs to replace old ones. This is reasonable, but the teacher who really wants to change an existing program must be persistent and persuasive.

Case Study 1

The Raft River Vocational Agriculture Department located at Malta, Idaho, is located in a strong livestock area and was a traditional production agriculture program for nearly 30 years. When the instructor retired, a recent graduate of the University of Idaho, Marc Beitia, was employed. In an attempt to demonstrate animal nutrition principles and to stimulate student interest, he successfully introduced gerbils into the classroom, and is now adding horticulture to the curricular offering. Some of the older citizens in this community grew up listening to stories about range wars fought between their cattleman fathers and the sheepman. Can you imagine gerbils and petunias in cattle country?

Tomorrow's teacher will need to be skilled in the use of computers, both in the classroom and in management of budgets, inventories, grades, recordkeeping, and a variety of other uses. A high level of proficiency in adapting new technologies to educational uses will be a real asset to the future teacher.

Tomorrow's teachers must be a good scholar who demonstrates high competency levels in reading, writing,



By L. DeVERE BURTON

(Dr. Burton is an Area Vocational Coordinator for the Idaho State Division of Vocational Education, Campus Box 8081, Pocatello, Idaho 83209-0009.)

Case Study 2

Evaluation of record books consumes large amounts of teacher time. Darrell Empey, whose Department is located at the base of the Teton mountain range, decided to computerize the process. He developed a computer program which asks a series of questions about record book entries, calculates a record keeping score, and prints an evaluation form for each student with suggestions for improvement. By using the same computer program, a student can evaluate his/her records before handing them in for a grade.

and mathematics. Teachers will be expected to emphasize basic education to a greater degree and technical skills to a lesser degree. Loye Miller, spokesman for U.S. Secretary of Education, William Bennett, recently stated:

The complaint we get from top business people is that we may turn out a kid who can run a lathe, but if he can't read well enough to follow instructions, or can't do basic math, then he might not be much use to business.

The technology is changing so fast that the average worker may have to be retrained a half-dozen times in his lifetime, so it makes more sense to provide less specialized training and more general basic skills.

Teachers of vocational agriculture will be expected to reinforce, in a practical setting, those basic education concepts which have been taught in an academic setting. Teachers of tomorrow may even be called upon to coordinate their curricula with academic curricula and/or to team up with instructors of academic subjects to bring more relevance or "application to living" to the basic education component.

I am not suggesting that vocational agriculture teachers need to become teachers of English, math, and science, but I am suggesting that a greater spirit of cooperation is needed between educators who teach "vocational" and "basic education" subjects.

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Tomorrow's Teacher of Vocational Agriculture

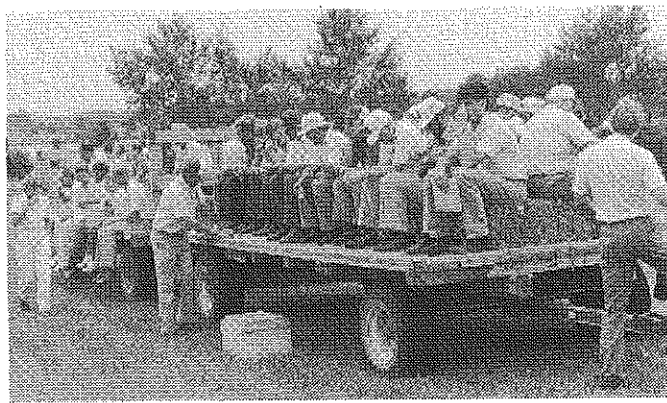
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Case Study 3

The Idaho Basic Skills project is an attempt to promote a high level of teacher cooperation in focusing upon basic skills in selected Idaho schools. One effective activity was the "triple threat" term paper. In at least one school, a major term paper was assigned jointly by the biology or social studies department, English department, and the business department. The student researched a topic from biology or social studies (an agricultural topic would be appropriate), and was graded on content by the biology or social studies teacher. The English teacher graded the paper for organization and grammar, and the business teacher scored the paper on format and typing skill. All three teachers gave credit in their respective classes for a major term paper. Students expressed greater personal satisfaction in completing the "triple threat" paper than from other writing assignments.

Tomorrow's teacher may need an endorsement for an academic subject in addition to the usual secondary vocational agriculture endorsement. With declining enrollments in many schools, dual certification gives administrators an alternative to discontinuing low enrollment programs. The science endorsement is also desirable in that it lends credibility to agriculture as a science, and it allows students in some states to receive science credit following completion of agricultural science courses.

Tomorrow's teacher must be adaptable to rapid changes, both in agricultural industry itself, and in the educational



Informal moments at inservice education days can provide opportunities for experienced agriculture instructors to encourage those who are new to the profession. (Photo courtesy of Julia Gamon).

Case Study 4

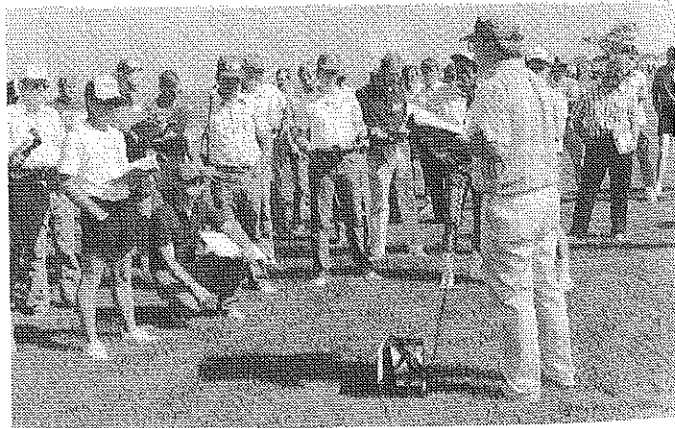
When the impact of increased science requirements for high school graduation was felt at Shelley High School, the school was unprepared to handle the additional enrollment. Zebbie Miller, the vocational agriculture teacher, invited the science faculty to evaluate his animal, plant, and soil science curricula to determine whether some science credit could be granted for these courses. As a result, vocational agriculture students at Shelley may use these courses to satisfy a portion of the science requirement for graduation.

setting in which he/she teaches. The information age is upon us, and it is requisite that teachers of vocational agriculture establish strong linkages with sources of relevant information. Most teachers will continue to rely heavily upon land grant universities for technical agriculture information, but teachers need to avail themselves of information about "state of the art" teaching. Several key educational research centers have been established in recent years, and the information which has been compiled is relevant to virtually all teaching/learning situations.

The teacher of tomorrow must become more aware of those teaching skills which have been research validated as contributing factors to effective teaching. Integrating such skills into one's teaching habits requires deliberate and consistent teacher effort, but the product of such effort is greater learning by students and greater intrinsic rewards for teachers.

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Miller, Loye (1987). Ed will fund voc. ed. in 1989 budget but more sought for basic skills. VOCATIONAL TRAINING NEWS 18(25):1, 9.



Vocational and technical agriculture instructors in Iowa participated in a joint inservice day with Extension staff. Tomorrow's teachers will need to continually update their skills through inservice education. (Photo courtesy of Julia Gamon).

Coming in February . . .

Marketing Agricultural Education

Student Teaching - The Beginning Of An Exciting Career

"You're going to college to be a teacher? But, teachers don't make any money! Are you going to be an elementary teacher? You're going to be a what? Where are you going to teach that? I didn't know they taught agriculture in high school. That's interesting."

During my four years of college, I had similar conversations with many people. They did not know that agriculture courses existed in the high school. Some people could not understand why I wanted to be a teacher. They wanted to pursue a career in medicine or other similar profession so they could make a lot of money. The money didn't bother me, because I knew what I wanted to do. I wanted to be an agriculture teacher! Today, I am an agriculture teacher.

I grew up on a 190 acre farm in Frederick County, Maryland. After four active years in the Agriculture Program and Future Farmers of America at Linganore High School, I enrolled at the University of Maryland, College Park, to major in Agricultural and Extension Education. During the fall of my senior year at the University, I returned to Frederick County to student teach at Walkersville High School under the direction of Charles Cramer and Vernon Marshall. After graduating from the University of Maryland in May 1987, I returned home to Frederick County, again, to accept a teaching position at Brunswick High School.

Typical or Not?

I do not feel I am typical of tomorrow's agriculture teachers. Many will be from an urban or nonrural background. There are fewer people living on farms today, and the number will apparently continue to decrease. Just as the number of farms decreases, so will the number of agriculture students. Walkersville High School is no exception as it faces the problems of declining enrollment. Walkersville is located in rural Frederick County, but the developments and townhouse complexes that surround Walkersville High School are becoming typical of Frederick County. Despite the decreasing number of farms in the school district, the Walkersville Agriculture Department has experienced only a small decrease in enrollment when compared to other programs in the county and state. Many of the students in the program do not live on farms, but have an interest in horticulture, agribusiness, or small animal production. They care for plants at nurseries, assist customers at agricultural supply stores, or raise small animals in their back yards. Agriculture is changing, so the agriculture programs must also change in order to keep up enrollment.

Rewards and Problems

Teaching can be a reward within itself. While going to college many people said that teaching can be psychologically rewarding. I found that you have to experience it in order to understand that. After my student teaching I realized that



BY TERESA V. RICE

(Ms. Rice is a first year agriculture teacher at Brunswick High school, 101 Cummings Drive, Brunswick, Maryland 21716.)

I had experienced some of those rewards. I had a student who would talk constantly and refuse to take notes, but I learned that she enjoyed hands-on activities. I realized that I needed to combine the instruction with hands-on experience each day. It was a great feeling to have that student come to class and want to participate in class activities. She learned that if she took notes, completed a worksheet, or whatever was required, she would understand and be able to carry out the activity. By the end of my student teaching, that student had gone from a negative attitude to a more positive one. These psychological rewards can be more important than any other, including monetary.

Many teachers say they do not make enough money. Other people say teachers make too much money. Who is right? Although I'm surely not going to become rich being a teacher, the monetary and other rewards are sufficient to keep me in teaching. Even though there are other college graduates making more money, I have to stop and wonder if they are satisfied with their career or if they are merely putting in their time. As a teacher of agriculture, I will be involved in what makes me happy, not what will make me rich. Some people will disagree with my philosophy, but I want to get more out of a job than just money. And the best part is . . . I am!

The rewards I gained from student teaching cannot all be described on paper. I looked forward to my student teaching experience so much that I couldn't wait until school started. Eight weeks of classes, and then I would be student teaching. I was excited and anxious, but after the first couple of weeks I didn't feel I was getting out of it what I had hoped. It wasn't until the end of my student teaching experience that I realized what a great experience it had been. I was too busy with lesson plans, visual aids, and all the other work to see that I was getting something out of it. As I look back, I realize my student teaching experience at Walkersville has been a great asset toward my first year of teaching.

The most enjoyable aspect of my student teaching was watching the students gain knowledge and perform new tasks. The first unit I taught was Landscape Design as a part of the Horticulture II and III class. Some of the students were excited about the unit while others asked, "Do we have to

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Student Teaching - The Beginning Of An Exciting Career

(Continued from page 7)

draw those funny shapes?" Nonetheless, the students learned to recognize and draw the landscape design symbols very quickly. The class advanced to designing the landscape of an imaginary house that first had to be drawn to scale. Several students said, "I can't do it" and "I'm not creative," but everyone gave it a try. The plans were excellent, and they were all different. Next, they presented and explained their plans to the class. It's gratifying to see the learning taking place every day by what students do and by the questions they ask.

It may be a great experience, but student teaching does not come without problems. By the time you become familiar with the program and students, it is time to leave. In the middle of student teaching, you feel the end will never come, but after it's over, you wonder where the time went. You are faced with a problem on your first day of teaching. The students have already adjusted to the regular teacher and so they must learn to adjust, again. Discipline can be a major problem for student teachers if they are not aware of administrative policies. I didn't have any major discipline problems, just minor ones such as students constantly talking, lateness to class, and students not getting along well with their peers. Sometimes, it was frustrating because of not knowing how to handle the situation, but I began to realize that learning to deal with discipline comes with time.

Recommendations

A student teaching experience can never be perfect. I feel I would have been better prepared if there were courses in the agricultural education curriculum on specific skills. I would have benefited from extra training in agricultural mechanics. At first, I wasn't comfortable with the Advanced Ag Mechanics class because I didn't feel satisfied with my own knowledge in this area. I found that I needed to develop my own ideas about which I was better informed than I had thought. My cooperating teachers, Mr Cramer, helped me to slowly move into teaching agricultural mechanics. I began to feel more comfortable with the class and realized that sometimes you have to learn along with the students, as no one can know everything.



Hands-on activities need to be incorporated into each lesson. This keeps the students interested and emphasizes what was presented in the classroom. (Photo courtesy of Charles Cramer and Vernon Marshall, vocational agriculture instructors, Walkersville High School, Walkersville, MD.)

A longer student teaching experience might help build skills as well as confidence in areas of weakness. For some, the extra time could be very beneficial, but for others it may be a nightmare if the student teacher discovers this field is not for him or her. I would recommend a longer student teacher experience because it would be more like the "real world." It would give the person a chance to feel more comfortable in the school setting. This person would have additional time to interact with other teachers, administrators, and parents. If the student teacher experience is longer and more technical courses are involved, how can students graduate in four years? They can't!

There is a group of university educators who are proposing an undergraduate program that would involve five years of education. The "Holmes Group" is suggesting four years of technical education and one year of instructional education. In some ways I am in favor of the five year program. My concern is whether prospective agriculture teachers will be interested in a five year program. Why spend five years in the agricultural education program when they can become a science teacher in four years? They may also decide to enter another phase of agriculture that would take only four years. A five year program would be very worthwhile, but I fear some qualified people would be lost. I feel there should be some changes in the student teacher experience, but the changes need to be within reason to help college programs grow rather than die.

Summary

Student teaching — what an experience!! It is wonderful to see students reaching for and working toward goals. But, as usual, there are students who don't want to do anything. This presents a student teacher with yet another challenge, that is to encourage these students and try to work with them. This can be a big problem for a student teacher. This person must be willing to change and adapt preconceived ideas and lessons to try and gain the interest of everyone in the class. The student teaching experience needs to advance in technology as agriculture becomes more technical. Student teaching can be a very rewarding experience, but it is up to the student teacher to make it a rewarding experience. I'm glad I did!!



After student teaching, the author coached the Walkersville Future Farmers of America Nursery/Landscape Team, and they placed first in the state contest. They will have traveled to Kansas City in November to represent Maryland and compete in the National Contest. (Photo courtesy of Frederick News Post, Frederick, MD.)

The Agriculture Teacher For The 1990s

If you were to take the time to walk into a Midwest high school and ask to see the school's vocational agriculture program or to visit with the vocational agriculture teacher, you might very likely be greeted with the comment, "We no longer have an ag program; we just didn't have the enrollment to justify a program."

I dread the day when this might happen in my school, and I propose that it will never happen as long as I can recruit and keep quality vocational agriculture teachers.

What kind of expertise will this teacher of the future need? What kind of a teacher will it take to develop and maintain a good, viable vocational agriculture program? In the opinion of this administrator, we are really looking at the ability of agriculture teachers to be able to do the following:

1. Advocate the agriculture program to the students, the public, and school officials.
2. Retain students in the program through a progressive and up-to-date curriculum presented with solid instructional techniques.

Today's State of Affairs

First of all, let us be realistic. At the current time, the agriculture community perceives itself as economically depressed. In many of our Midwestern communities, economic depression is real and very evident. Even in those communities where this economic depression is not so evident, it is at least perceived as so. Because of this current state of economic affairs, the public school patrons are willing to support an educational program only if it is a basic area of instruction (math, science, etc.), a community standard or expectation (athletics, music, etc.), or a significant and productive program for students. Unless you are fortunate enough to have in your community an agriculture program that is considered a basic or a favorite program, you had better look at making your program significant and productive to students. If you do not, you may be looking at a failing program that is always under the knife of program cuts and reductions.

How can this regression of vocational agriculture programs be turned around? In the view of this principal, it depends on one and only one thing, the agriculture teacher. Without exceptional teachers in the field, it is doomed. What is it that this teacher will need to possess to build and maintain a successful program? The key to success can be found in one familiar word. That word is "diversify."

Anyone involved in agriculture today understands the principle of diversification in the economics of agriculture. The teacher of tomorrow will also need to be diversified in every aspect of teaching and be able to assure that his or her program reflects this diversification movement.

Educational Training and Background

Tomorrow's teacher will have not only the traditional



BY DENNIS L. POOL

(Mr. Pool is Principal at Norris High School, Rural Route 1, Firth, Nebraska 68358.)

farm background, but will have an education that is varied in scope from agribusiness to public relations. His or her training will need to be on the job internships in varied agricultural fields and in related science and business. Agriculture teachers have traditionally had extensive training in the science areas. This training should be continued and enhanced. The teacher who has a dual science endorsement will certainly have an employment advantage over one who does not. Teachers who have multiple endorsements, for example agriculture and science or agriculture and business, will be on the leading edge of what will shape the future of agricultural education in secondary schools. Better and more extensively trained teachers will also help change the face of tomorrow's agricultural programs. A master's degree in agriculture with multiple endorsements will make any agriculture teacher more productive as a teacher and attractive in the education marketplace.

Technology Use and Instruction

It does not take too much inspection of the current trends in today's agriculture and agricultural related businesses to see that the current and projected use of technology is on the upswing and will continue so into the future. Today's farm management and agri-business management have adopted the use of microcomputers and satellite video communications to better glean information available to make the best market and management decisions. The vocational agriculture teachers who are not knowledgeable and current on these technological advances will soon find themselves in the dust of obsolescence.

Curriculum and Instruction

The teachers who provide instruction in production agriculture only in today's classroom are lost and have surely signed the death warrant for their programs. Today's instruction must reflect what is coming in the future, not what has been in the past. Look at the students in our programs and find out how many are actually living on a production farm. I suggest that if the only students you have in your program are those interested in production agriculture, you have already lost sight of where you need to be. The curriculum of tomorrow's program must be inviting to those students who are interested in all fields of agriculture, in-

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The Agriculture Teacher For The 1990s

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cluding agricultural related business. Examples of these fields would be the market researcher, the biological scientist, the chemical sales person, the landscape artist, and the greenhouse operator, to name a few.

Course Work Credit

Some promoters of secondary agriculture programs suggest that science credits be offered for agriculture classes because of the close relationship of these two programs, especially in biological, physical, and geological sciences. When the situation exists that the majority of instruction or at least a significant amount of agriculture instruction is science, a cooperative effort to grant science credit might be made. To be effective in this undertaking, it should be recognized that it must be done to meet the needs of the students and not the instructional staffs' employment security. A successful effort will reflect a cooperative endeavor between the agriculture department, the science department, and the school administration.

Preceding the adoption of any policy, extensive research should be done to compare the instructional objectives of the two curricula to verify those objectives that are common to each program. Evaluation of this research will then permit the instructional teams to make the decision to grant or not grant credits for the science instruction received in agriculture courses. Once a decision is made to grant science course credit, it must be determined how this is to be done. Credit may be given on a proportional basis (for example, part agriculture/part science, 60/40) or alternate science or agriculture (for example, biology or animal science). It appears that offering science credit for agriculture classes may work best when the agriculture classes are structured on a semester format, and when the topic of instruction focuses on a particular aspect of a science related field. Examples might be animal science tied to biology, agronomy tied to chemistry or geology, horticulture tied to botany, etc. Various school districts will find that different formats may work better for them. Each district's needs are different, and therefore, require different alternatives. Because of this uniqueness from school to school, statewide mandates for agriculture science credit policies will not work. Each school must always come back to answer the question, "What is the best for our students?" Along with the previous thought goes a word of caution. If the objective of granting science credit for agriculture class work is to save our agriculture programs, it is the wrong way. Yes, science and agriculture go hand-in-hand and if the programs are developed to complement one another and enhance student learning, then the credit overlap may have some merit. However, I assure you that simply granting science credit for agriculture course work will not save anyone's agriculture program or teaching job.

Commitment To A Successful Program

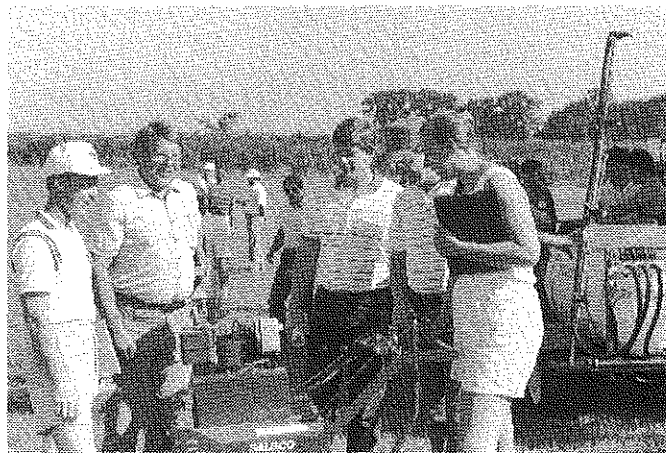
As with any problem, finding the faults and pointing the finger at what we see as our weaknesses and who's to blame is easy. Finding out what will make successful agriculture programs is why we are currently spending our time and dollars. Research results and innovators have suggested many things that will certainly help our agriculture pro-

grams. If those who work with the students on a daily basis will just take time to look realistically at this research and apply it to their programs, to listen to others and keep an open mind about criticism and reflect a positive attitude about the future, they will have a good chance to become or remain successful agriculture teachers. Such things are tough in agriculture and agricultural education, but remember that this is not the first time the agricultural community has faced difficulties and persevered.

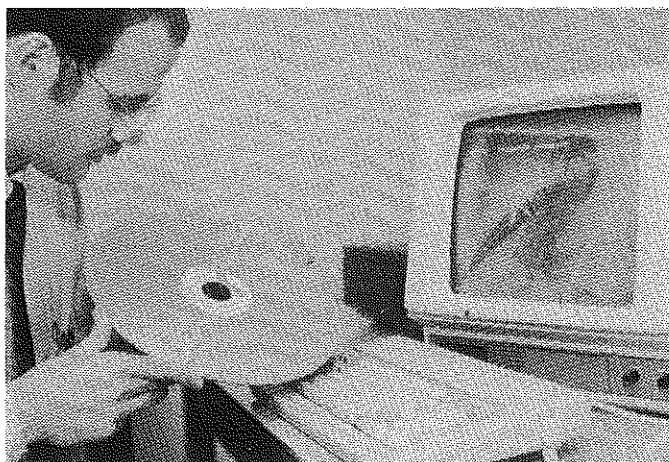
All of the above factors, along with a positive caring attitude, will go a long way toward building a good program. Nothing can replace hard work, effort, a sincere caring attitude about people, and a willingness to put in the hours necessary to get the job done. The 1990's will not be any different.

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Diversified agriculture may include sod production and marketing. These teachers are inspecting some specialized machinery which was demonstrated at an Iowa State University inservice program (Photo courtesy of Julia Gamon).



Interactive videodisc will give future instructors instant access to vast quantities of pictures and descriptions of agricultural subject matter. (Photograph courtesy of Jon Gresham, Texas A&M University.)

Twenty-Two Year Trends in the Supply and Demand of Vocational Agriculture Teachers

Vocational agricultural education has had a shortage of teachers for many years. However, the teacher shortage nationally declined to zero in 1985 and in 1986. This means that, generally, throughout the U.S. there were enough agricultural education graduates and reentry teachers (supply) to fill the vocational agriculture position vacancies in schools (demand). The good news is that the job market in teaching vocational agriculture is balanced between the supply and demand. The bad news is the rapidly declining enrollments and commitments to teach by men and women enrolled in agricultural education teacher preparation programs.

Agricultural educators have always been concerned about preparing enough qualified teachers for the many vocational-agricultural positions at the local level. The problem of matching teacher supply with school position demand has several facets. Four of these include 1) state and national recruitment efforts have been inconsistent in enrolling sufficient agricultural education students; 2) the competition continues from other agricultural fields when employing agricultural education graduates; 3) part of the shortage problem is caused by graduates who do not want to leave home to teach in another area of the state or another state; and 4) the decreasing number of graduates who choose to teach vocational agriculture.

Trends in the supply and demand of vocational agriculture teachers have been gleaned from 22 years of study nationally. The data on teacher supply and demand were secured each year by mailed questionnaires from all institutions preparing teachers of vocational agriculture as well as from offices of head supervisors/specialists in agricultural education. Follow-up letters and telephone calls were made which resulted in a very high or 100 percent returns each year. The data sources for this study were Woodin (1967, 1971), Craig (1981), and Camp (1987).

Number of Teaching Positions

During each of the first 15 years of this study, there was a steady increase in the number of secondary vocational agriculture positions (see Table 1). Since 1980 there has been a steady decrease of almost 1,500 positions across the U.S. The turnover rate among teachers has been very stable throughout this study at from almost nine to 12 percent. The number of teachers needed when schools began the year varied from 162 to more than 200 for 15 years. This number now totals only 20. The number of teachers with temporary or emergency certificates reached a peak of over five percent in 1975 but decreased to less than one percent in 1986.



By DAVID G. CRAIG

(Dr. Craig is a Professor in the College of Education at the University of Tennessee, Knoxville, Tennessee 37996-3400.)

TABLE 1
Secondary Teaching Positions in the U.S.
During Selected Years

Item	Year and Number				
	1966	1970	1975	1980	1986
Total positions as of June 30	10,325	10,520	12,107	12,510	11,042
New positions (net total)	265	183	394	10	-645
Teachers needed but unavailable on Sept.1	162	171	211	117	20
Teachers with temporary or emergency cert.	252	338	607	454	94

Placement of Graduates

The number of agricultural education graduates ranged from a low of 1,038 in 1965 to a high of 1791 in 1978 (see Table 2). Since that high point, there has been a rapid eight-year decline to a new low of 964 graduates in 1986. The number of graduates placed in vocational agriculture teaching ranged from a low in 1986 of 397 (41.2 percent) to a high of 1,063 (60.8 percent) in 1977. Therefore, the large decreases are parallel between agricultural education graduates and the number placed in teaching vocational agriculture.

It is further evident from Table 2 that there has been increased placement of agricultural education graduates in other occupations. During the past 16 years, there has been a rapid increase in the number placed in agricultural businesses. Graduate study and other work (including the Agricultural Extension Service) has attracted many graduates. Farming occupations continue to employ almost 10 percent of the graduates. Placement in the Armed Forces has been the least attractive to graduates throughout the study.

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Twenty-Two Year Trends In The Supply and Demand of Vocational Agriculture Teachers

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TABLE 2
Percentages of Agricultural Education Graduates Entering Various Occupations

Occupation	Twenty Years		1986
	Range	Average	
Total Number Graduates	1,038-1,791	1,522	964
Total Number Placed in Secondary Vo-Ag	565-1,063	844	397
Teaching Secondary Vo-Ag	45.2-64.6	55.7	41.2
Other Work	4.7-13.8	9.7	13.0
Graduate Work	6.3-12.4	9.2	13.5
Ag Business	2.0-14.9	8.1	16.3
Farming	2.6-9.5	6.8	9.6
Unemployed*	2.5-6.0	4.9	6.3
Other Teaching	1.8-11.4	4.6	4.1
Extension Service	(included in Other Work)		2.4
Armed Forces	0.9-12.7	4.3	1.2

*No data 1965-1978

Types of Teaching Positions

During the length of this study, there has been a slight trend of decreased single teacher departments and a corresponding increase in multiple teacher programs. The percentage of teachers in each group has been stable for the last 10 years with approximately 55 percent in single and 45 percent in multiple teacher departments. During the first 10 years of the study, there was a decreasing number of teachers in full-time production agriculture and increases in teachers of specialized classes. Recently the numbers have stabilized with about 40 percent of the teachers in full-time production agriculture, almost 20 percent in full-time specialized positions, and 30 percent in a combination of these.

Information about post-secondary vocational agriculture programs is not reported in detail here because of the numerous difficulties in securing accurate data. There were 782 post-secondary teachers identified in 1970, almost 2,000 in 1982, and the number appeared to level off at about 1,500 during the middle 1980s. Using the limited data recorded since 1981, the following describes the teaching positions at the post-secondary level: 1. Regarding employment time, 70 percent teach full time and 30 percent are part time; 2. A majority of the teachers are located in community colleges; 3. According to size of staff, 90 percent of the posi-

tions are in the multiple teacher departments; 4. As to curricula, more than 33 percent teach production agriculture, about 15 percent ornamental horticulture, over 20 percent offer specialized agricultural subjects, and the balance of the teachers are in combinations of these classes.

Conclusions and Suggestions

The following conclusions are drawn from this 22 year study of the supply and demand of vocational agriculture teachers in the United States:

1. The shortage of vocational agriculture teachers that prevailed from 1965 to 1979 has declined steadily since 1980 and does not exist in 1986;

2. The major reasons for the teacher shortage were the rapid growth in numbers of teaching positions, a steady nine to 12 percent turnover rate, and a less than 60 percent placement rate of available graduates;

3. Given the rapid decrease in agricultural education graduates in recent years (20 percent from 1985 to 1986) and the continued low placement rate in vocational agriculture teaching (41 percent), a new teacher shortage could occur in two or three years. The demand factors to watch are: the teacher turnover rate, the number of teaching positions that are open, the relative location of the open positions, and others. The supply factors are: the number of qualified graduates, the number of graduates who choose to teach vocational agriculture, the various career alternatives, and others.

4. During recent years, there has been increased competition for agricultural education graduates from other occupational areas such as agricultural business, graduate work, other work, and farming.

National, statewide, and local recruitment efforts need to be revitalized. Available scholarships, vocational agriculture teacher needs, and teacher preparation curricula must be well publicized. Each vocational agriculture teacher should have as his/her goal to have at least one of his/her students graduate in agricultural education every five years.

The National Study of the Supply and Demand for Teachers of Vocational Agriculture should be continued. The data are reliable and the best source of teacher information anywhere in the nation. The professional organizations in agricultural education should authorize, guide, and fund continuance of this important study.

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Coming in March

The Electronic Classroom

Encouraging Students To Become Agriculture Teachers

The applause ended from the announcement of the Mississippi Vocational Agriculture Teacher Rookie-of-the-Year. It was then noted that the state winner and one of the district winners had both been students under the same vocational agriculture teacher. Other former students who were currently teaching were asked to stand and I recognized at least two other Rookie-of-the-Year winners in the group.

When asked what he did to encourage his students in careers in teaching agriculture, Rodney Childress, now retired, said, "I never really pushed. I stressed the options that were available to them. I enjoyed my work and that might have shown. The vo-ag department had a great deal of community respect which might have made them think they'd like to do this, too." In 40 years of teaching, Childress had at least 12 former students major in agricultural education. Most went on to teach. He also served as a cooperating teacher for more than 20 student teachers.

According to one former student, "Mr. Childress is the sole reason I am teaching today. I respected him so much for his knowledge and his teaching ability. He was always professional; he wore a tie to class, took it off and put a lab coat on in the shop. He never said anything negative about the system or the administration. You knew he didn't always agree but you never heard it from him.

"He (Childress) was so happy with what he did, it made me think I could combine something I liked, agriculture, with a satisfying adult job." This statement was from another former student currently teaching. The teacher went on to say, "The smart thing he did was encourage and set a good example."

Teacher of Teachers Recognized

This teacher is not unique. You can look around any state in the union and identify vocational agriculture teachers who have students who go on to teach. The National Vocational Agriculture Teachers' Association recognizes these individuals with the "Teacher of Teachers Award." Bronze, silver, and gold awards recognize teachers with former students going on to teach.

I'll never forget the night that my high school vocational agriculture teacher received his award at the end of my first year teaching. Daniel Dunham had left teaching but made a special trip to receive his certificate. That demonstration of interest in my career had been consistent and his example had been one I wanted to follow.

The thing I remember about my vocational agriculture teacher, and I find other agriculture teachers remember about their teacher mentors, is that they took the first line of the Vocational Agriculture Teacher's Creed to heart. They were "teachers of vocational agriculture by choice not by chance." Those individuals who have inspired others to



BY JACQUELYN P. DEEDS

(Dr. Deeds is an Assistant Professor in the Department of Agricultural and Extension Education at Mississippi State University, Mississippi State, Mississippi 39762.)

follow in their footsteps have enjoyed their jobs and been proud of them. Most importantly, they let their students know it.

Teacher Influence on Students

Research has shown us that the vocational agriculture teacher is a significant factor in the achievement of students in the Future Farmers of America and in their Supervised Occupational Experience Programs (Lasap, 1977; Kim, 1979; Coffey, 1978). Teacher influence has also been reported to be a factor in career choice (Hillison, Camp and Burke, 1986).

What kind of an influence are you on your students as they consider a career in teaching vocational agriculture? Do you tell them how much you enjoy it? Do you let them know you are excited about their accomplishments? Do you introduce them to the teacher education faculty and get them placed on the recruitment list? One of Childress' former students said, "I owe it to Mr. Childress to encourage my students to consider teaching vocational agriculture."

Are you a positive influence? Do you emphasize the extended contract income? Do you explain that the time it takes for a livestock judging team is in actuality the most rewarding "hobby time" you have? Do you tell them how much your spouse enjoys his or her involvement in the program?

Be a Positive Role Model

Today's vocational agriculture teachers play an important role in the development of tomorrow's teachers. Encouraging their own students to consider teaching as a career is an important role. An additional role would be that of cooperating teacher for students doing field experience and student teaching. Being a cooperating teacher takes extra time and effort with few immediate rewards. But how great the reward to see one of those students you have worked with receive recognition and come back to say thank you.

Most vocational agriculture teachers require their greenhands to memorize the FFA creed. How many teachers can find their copy, much less recite the vocational

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Encouraging Students To Become Agriculture Teachers

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agriculture teacher's creed? If we knew the creed better and lived it in front of our students, we might insure a supply of enthusiastic teachers for tomorrow.

My Creed

I am a teacher of vocational agriculture by choice and not by chance.
I believe in America; I dedicate my life to its development and the advancement of its people.
I will strive to set before my students by my deeds and actions the highest standards of citizenship for the community, state and nation.
I will endeavor to develop professionally through study, travel, and exploration.
I will not knowingly wrong my fellow teacher. I will defend him as far as honesty will permit.
I will work for the advancement of vocational agriculture and I will defend it in my community, state and nation.
I realize that I am a part of the public school system. I will work in harmony with school authorities and other teachers of the school.
My love for people will spur me on to impart something from my life that will help make for each of my students a full and happy future.

NATIONAL VOCATIONAL AGRICULTURE
TEACHERS' ASSOCIATION, INC.

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Rodney Childress surrounded by former students currently teaching vocational agriculture in Mississippi. Clockwise from left: Gary Jackson, Michael Newman (1987 Rookie Ag Teacher of the Year), Jack Treloar, Larry Carr, and Childress.



Childress, now retired, frequently attends vocational agriculture teacher and FFA functions. Childress takes time to visit with former student teachers that are currently teaching. (Photos courtesy of the author).

RESOURCES

Industry-specific training, or customized training, involves the design of training programs especially for a particular industry or company. Rapid technological changes, increased foreign competition, and geographic relocation of industries require fast, intensive, specific training to develop the workers that industry needs.

INDUSTRY-SPECIFIC TRAINING PROGRAMS: AN OVERVIEW addresses the need for such programs. This new publication by Walter R. Howard also outlines the

factors that training providers should consider in developing a marketing plan, discusses potential conflicts between the points of view of education and industry, focuses on elements of good program design, and summarizes characteristics of effective programs.

At the time of publication Howard was the director of Economic Development, Georgia State Board of Postsecondary Vocational Education.

Order **INDUSTRY-SPECIFIC TRAINING PROGRAMS: AN OVERVIEW** (IN 314-\$4.75), 31 pp., 1986, from the National Center for Research in Vocational Education, The Ohio State University, Publications Office, Box N, 1960 Kenny Road, Columbus, Ohio 43210-1090; or call toll free 1-800-848-4815 or 614-486-3655 inside Ohio and outside the continental United States.

This publication was sponsored by the Office of Education Research and Improvement, U.S. Dept. of Education.

My First Year of Teaching

"The first year of teaching is the hardest." "You may not enjoy much of the first year of teaching." These are two quotes I've heard many times from teacher educators and teaching peers. Most of us entering the teaching profession are prepared for the worst. Some have encountered exactly that while others have found that first year to be more likeable. I recently completed my first year of teaching vocational agriculture. I'm even back at the same school this year.

I've been reflecting over the past year a lot lately. Part of the reason is to think through changes I'd like to make over the next year. Another part is to share my experiences with the new crop of first-year teachers. While the experiences I've had have not been unlike those you or others have had, it helps to share them. Maybe someone can learn something from our mistakes or at least know that we understand the pressures he/she is feeling.

Background

By graduation I'd found my first teaching job. The school (Southeast Warren Community School) is a medium-sized Iowa district with a total enrollment of approximately 640. This district is different from many rural areas in Iowa. About half of the adults earn at least part of their income from nearby Des Moines. The other half own and operate family farms; most of which are profitable even in tough agricultural times. There's a lot of pride in the school and its curriculum.

The program I was hired for was facing the proverbial "ax." The primary reason: enrollment was down to such a point that it was hard to justify a full-time teacher. I turned down an offer in another state and signed a contract at Southeast Warren realizing time was short to turn the program around and rebuild it. This was a scary thought for a young person wanting to settle down!

The situation wasn't so bad. As I came into the district and began to get acquainted, my future students one-by-one told me that they were anxious to rebuild the vocational agriculture program. Parents and members of the community expressed their desire to see us succeed.

Everyone felt the agriculture program was an important part of the community.

Rewards Of The First Year

There are many ways to achieve satisfaction from the efforts you, the teacher, give to the students. Those moments are important to the first-year teacher; they're the basic reason most teachers choose to continue in education. The rewards I received came at times I least expected. One example occurred when an urban student came back from a weekend on a classmate's farm. He had recently started taking vocational agriculture and as the first period class started, he came bouncing into the classroom all excited. He'd just driven a tractor and disk for the first time. Even though the experience came outside the classroom, it sparked his interest in agriculture. It even boosted the morale of



By MIKE ORMAN

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his classmates. Now after helping with other farm duties, he's very interested in starting his own livestock project. He has also asked me to help him find other farmers for whom he can work. When was the last time you worked with a person like this?

Another example of teaching rewards came through a freshman girl. She went out of her way to recite the FFA Creed early in her freshman year. Of all my students, she had done, by far, the best at understanding and memorizing the Creed. She decided to compete in the FFA Creed contest at the Sub-District level. It was at this point that she really excelled. This young lady made arrangements with the speech instructor and with me to practice reciting the Creed several times a week. She won first place at Sub-District, but the real joy of the situation was seeing the remarkable daily improvement as she prepared for the contest. Her success has provided a catalyst for putting extra effort into everything she does now.

The greatest reward I have received over the past year has been to watch the vocational agriculture program grow. The students now feel this course is worthwhile to them and they've encouraged others to enroll. Even the students that were the most troublesome in the beginning are now showing their leadership abilities in the classroom.

Problems Encountered The First Year

Many things can seem to go wrong the first year. In fact, it seemed to me that I wasn't being successful a large part of the time. A major problem I had was the feeling that I was a thorn in the side of administrators. It seemed as though every day I had some kind of problem. Maybe it was the purchase of tools and equipment, getting permission to attend some activity, or settling a discipline problem. At first, it was the worst feeling in the world to walk into the administration office and ask for something. Surely they could see me coming a mile away! It took a while to get used to the fact that this is necessary because vocational agriculture is an active program. It is important to get to know your administrators well and follow the formats they like to use.

Discipline was hard for me to handle properly, although at first there were no major problems. My students seemed to be glad to have me as their teacher. After the newness

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My First Year of Teaching

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wore off, problem situations started coming in right and left. Students seemed to feel they should be able to get away with more because vocational agriculture followed a slightly different style. Also, I felt I'd been hard on them in most situations but by the end of the year the students let me know I should have been more strict with them.

Communication is extremely important to teaching. Letting the students know what is expected of them is crucial. When communication with my students failed I found a telephone to call home to visit with mom or dad had positive results.

Is It Worthwhile?

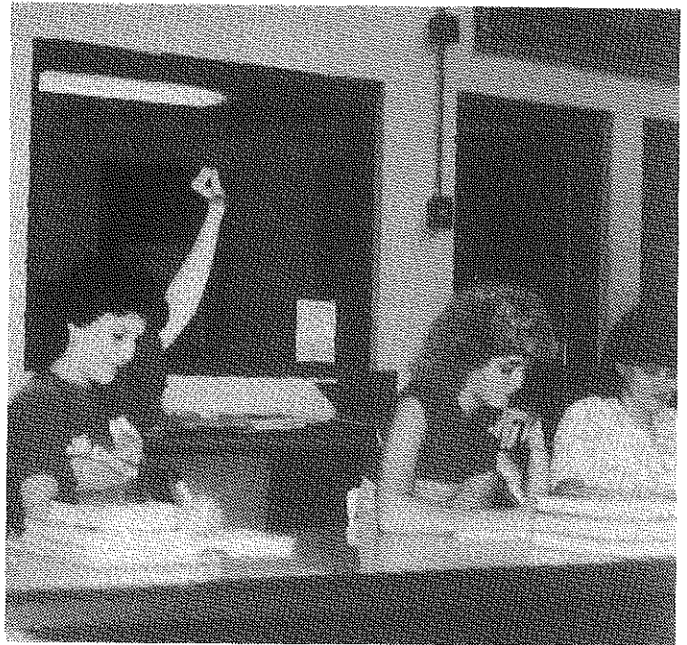
Yes! I surprisingly enjoyed my first year in the real world of teaching. The rewards weighed much more than the disappointments and downfalls. The students and I have a firmer foundation on which to build a quality program. I learned a lot the day one student told me I was stupid! Yet the



Experiences outside the classroom can spark interest in students (Photo courtesy of Mike Orman.)

students and the community expressed their appreciation for my efforts with a standing ovation at our spring FFA banquet.

As a first year teacher it was necessary to become established in the school district as soon as possible. Numerous hours were spent meeting and greeting students, parents, and other community members. It was a challenge to work and build respect and rapport with my students as well as support from parents and the community. Decisions had to be made; I wanted to do it all, but chose to do a few things right instead of over-extending myself. Finally, I utilized other vocational agriculture instructors as resources and as friends for support. I now feel the second year will go even better. The important thing is that I did enjoy my first year.



Enthusiastic responses from students are one of the rewards for teachers. (Photo courtesy of the author.)

RESOURCES

ADULT LITERACY: SKILLS FOR THE AMERICAN WORK FORCE examines the nature and extent of adult literacy needs in the workplace. Assemblyline employees are being displaced by the introduction of technologically advanced equipment requiring higher order functioning skills to operate it. More and more responsibility for quality control of products is being placed in the hands of individual equipment operators. Many employees either must upgrade their skills or risk losing their jobs during times of economic recession.

This new publication now available from the National Center for Research

in Vocational Education can be useful to training managers in business and industry; it can serve to apprise executives of the value of investing in employees. Educators can benefit from reading this publication. It suggests literacy skills needed to meet industry's productivity needs. The information should also be useful to teachers and administrators of basic literacy programs wherever they are located. Policymakers and public officials can take advantage of the identification of common skills needed to advance productivity in this country and keep American industries competitive with those abroad.

Order **ADULT LITERACY: SKILLS FOR THE AMERICAN WORK FORCE** (RD 265B—\$7.00), 61 pp., 1987, from the National Center for Research in Vocational Education, The Ohio State University, Publications Office, Box N, 1960 Kenny Road, Columbus, Ohio 43210-1090; or call toll free 1-800-848-4815 or 614-486-3655 inside Ohio and outside the continental United States.

The development of this publication was sponsored by the Office of Vocational and Adult Education, U.S. Department of Education.

What Goes Around Comes Around

The expectations for teachers of vocational agriculture have been a source of controversy for a number of years. It is commonly heard among teachers that more and more is given but nothing is ever taken away. Teachers are expected to be excellent in the classroom and just as capable in the laboratory. In addition, they are expected to supervise the occupational experience programs of the students and be a great advisor of the FFA chapter. They should meet regularly with an advisory council and conduct adult education programs. If the teacher is really on the ball and doing the job, then a successful FFA Alumni will also be present. The expectation that the teacher will participate in the state and national vocational agriculture teachers' association is commonly viewed as important, perhaps even essential. Add to these expectations the pressure a local administrator may place upon a teacher to participate in the regular activities of the school such as hall duty and taking tickets at an athletic event, and one can begin to appreciate the frustration many teachers feel when, one more time, someone decides to make the teaching of vocational agriculture "better."

The purpose of this article is not to add anything new to the job of a teacher of vocational agriculture as we look to the future. Rather, the purpose is to offer an old frame of reference for teachers to use as they prioritize what and how they will teach their students in the future. As one reviews the literature on what and how teachers should be expected to teach, it becomes clear that attention must be given to the broader expectations of schools in general. That is, the general expectations of schools will have to be considered by teachers as they decide what and how they will teach if they are to be successful in the future.

Four Reasons for Schools

There are many expectations for schools of the future in general terms and a massive literature base has developed over the years related to those expectations. However, when one pushes those many expectations into the background and tries to determine the major reasons that schools exist, a clearer view of what and how teachers ought to teach can be obtained. It would appear that the following four items represent at least the basic reasons we have schools. Based upon these reasons, teachers should have some clues as to what and how they ought to teach in the future.

Teach students how to solve problems: The ultimate use of nearly everything we learn is to help us solve the problems we face in our life. The problems we must solve range from the very simple, to which we react almost without thinking, to the very complex which can often require our best thinking and may demand extended periods of time and effort. The great lessons students may learn in a vocational agriculture program about the technical field fade into insignificance when compared to the problem solving skills that they may learn if taught through the problem solving approach. The movement of education to place emphasis upon the information is, the ultimate ability of students to



By JAMES A. KNIGHT

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use what they learn is clearly the bottom line in education. By using the problem solving approach to teaching, vocational agriculture teachers will not only be providing appropriate information but will be helping students learn a way to deal with the problems they will face in life. Goodlad (1984), Sizer (1984) and Boyer (1983) all concluded from their research that such things as critical thinking and problem solving skills are desperately needed in the schools. Teachers of vocational agriculture have generally been taught to use the problem solving approach to teaching. However, it appears that many teachers have abandoned this approach in favor of informational approaches. In the future, teachers of vocational agriculture will need to be more capable than ever in using problem solving.

Teach students how to learn. Learning is a life long process and we live in a world where technology is changing so rapidly that it is difficult for schools to keep up with those kinds of changes. In addition, as people leave school they must be able to teach themselves. That is, they need to learn how to learn. If schools are concerned about their students and their future, they should put them in a position where they know how to inquire into and search for answers. Simply spoon feeding information to students provides the information but the process to obtain that information is often left as a mystery. Tomorrow's teachers must require students to think if they expect them to master the learning process in any significant way. However, just getting them to think will not be enough. They will need to help students learn how to put their thinking into action. Using problem solving, critical thinking, coaching, and cooperative work groups will add immeasurably to that process. In the future, people will be more personally responsible for what they learn than ever before. As a result, they must learn how to learn.

Teach students how to transfer learning: The information students learn today will be useful to the extent that it is transferable. With the rapid changes that are occurring in technology, many of the skills and even the information related to those skills will likely become obsolete. Thus, it becomes evident that teachers at all levels will have to be very aware of the principles that underlie any particular information or skill being taught and will need to insure that students have a grasp of those principles. To the extent that one understands the fundamental principles upon which

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What Goes Around Comes Around

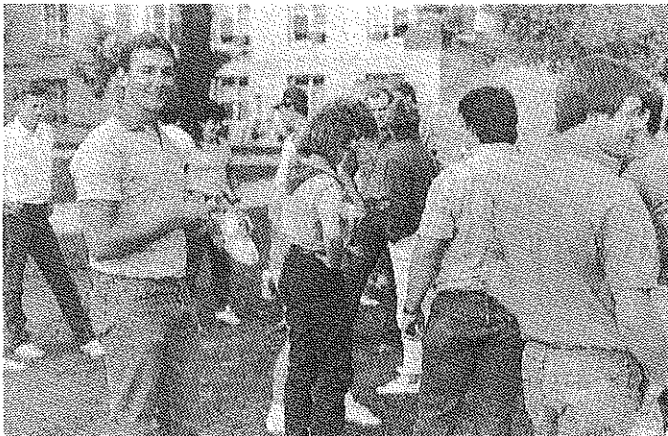
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something is based, to that extent the information will be transferable. The vocational agriculture teachers of tomorrow will necessarily need to have a grasp of the principles which are in operation for any given instruction they will provide and they must give as much attention in the teaching process to those principles as to anything else they might do.

Teach students to become self-disciplined. Discipline has ranked as the number one or two concern of the public about schools for 17 consecutive years (Gallup 1986). Because of these intense feelings of so many people about school discipline, numerous approaches have been developed to assist schools and teachers with this concern. It appears that the major problem with most of the developed approaches is that they tend to focus upon symptoms rather than causes. Further, punishment, which is a highly external form of influence, is almost always an integral part of such approaches. The problem with this is that students are all ultimately responsible for their own behavior in and out of school. Therefore, those discipline codes that focus heavily upon punishment are generally less effective. If tomorrow's teachers are to truly teach skills that students need, they must help students learn to become more self-disciplined. That will require an environment that enhances the opportunity for students to learn to take charge of their own lives in a constructive way.

Conclusions

With all the pressures a teacher of vocational agriculture is placed under, it is important to develop some method of determining priorities on how to deal with all those expectations. The vocational agriculture teachers of tomorrow will continue to be expected to participate in many of the



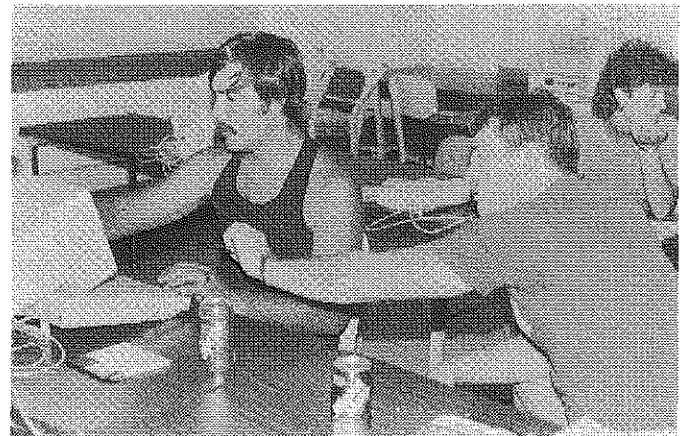
Friendships gained in campus Agricultural Education clubs will benefit students as they go out into teaching jobs. These AgEd students are enjoying a beginning of school party at Iowa State University.

activities which are currently part of the program. The reason for such expectations lies primarily in the success such activities have generated.

The early thinkers and writers in agricultural education were educators first and agriculturists second. They saw the need to teach students skills related to agriculture but were committed to the fundamentals of the learning process and saw the practical way in which such skills could make those principles come to life. They valued good instruction and saw problem solving, supervised practice, and the FFA as important tools to assist teachers in providing that instruction. It appears that what the early founders of vocational agriculture programs were seeking still has merit. The ability to solve problems, to learn how to learn, to transfer learning, and to become self-disciplined are not new ideas but rather grow out of what the early philosophers and writers saw as important. As we look to the future, it is clear that they had a vision worthy of keeping. The teachers of tomorrow will still need to have that same insight if they are to be truly successful. As is often the case in education, good ideas are not necessarily new but are based upon a fundamental philosophy that has proven out over time. Thus, that is why this article has been entitled "What Goes Around Comes Around."

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Computer skills will be a necessity for the teacher of the future. Computer workshops can help teachers gain the computer competence they need. (Photos courtesy of Julia Gamon.)

Book Reviews Wanted

Please contact Joy Cantrell, Book Review Editor, if you wish to review a book. Reviewers receive free copies of books they review. See page 2 for Cantrell's address.

Back To The Future

The worth of vocational agriculture programs in secondary schools has come under careful scrutiny recently. With the current emphasis on "back to basics" the main objective of education now is to teach students how to read, write, reason, and compute. Vocational programs are faced with the challenge of verifying that they can provide these basic skills or can modify existing programs to accomplish this objective.

This challenge is crucial for vocational agriculture programs in particular. While agriculture and agriculturally-related jobs remain an important part of the U.S. economy, the numbers of person directly involved in production agriculture and these topics are still emphasized in today's program. It appears that this production emphasis in the vocational agriculture program will need to be modified to fit the requirements for training secondary students in basic skills.

A Historical View

Interestingly enough, the first formal high school agricultural training was in the science of agriculture. Secondary agriculture students in the late 1800s and early 1900s took courses such as agronomy, agricultural zoology, agricultural botany, agricultural chemistry, and agricultural physics. Often, the agriculture teacher in a small school taught general chemistry, botany, and zoology courses as well. It was not until the 1920s, and later that the vocational agriculture program began to evolve into its present form. This science emphasis in early agricultural education may serve as a useful model for agricultural education in the future.

Vocational Agriculture Today

Many people will argue, with good reason, that current vocational agriculture programs teach science, mathematics, and problem solving. Studies done in several states have identified science and mathematics concepts taught in vocational agriculture. For example, it was found in Texas that 92 percent of the topics listed in the state's core curriculum contained essential elements of science and/or mathematics. Similar findings in other states have shown that vocational agriculture generally includes numerous math and science concepts.

These findings seem to have been interpreted two different ways by those persons involved in vocational agriculture. Some seem to feel that the vocational agriculture program will continue as it has for the past 10 years if it can be made to look desirable to the "back to basics" advocates. The reports of the studies mentioned would certainly be useful in accomplishing this.

There are other persons in vocational agriculture, however, who feel that a change in the program is necessary. They suggest that the research cited should be used to identify the strong and weak points of instruction in vocational agriculture. This would facilitate the determination of what changes might be necessary.

BY CHARLES MILLER

(Mr. Miller, formerly a vocational agriculture teacher in Acadia Parish, Louisiana, is a graduate research associate in the Department of Agricultural Education at The Ohio State University, Columbus, Ohio 43210-1099.)

Why A Change?

Why change a program that has been successful for decades and has literally stood the test of time? There are three primary reasons for considering changes in the current vocational agriculture program:

- 1) The continued decline in the number of students enrolling in vocational agriculture, particularly those students whose main interest is production agriculture.
- 2) The trend toward academic or college preparatory training in secondary schools.
- 3) The rapid scientific and technological changes occurring in agriculture.

These factors have caused certain aspects of the vocational agriculture program to become obsolete. Continued emphasis on production agriculture is no longer justified in most cases because there has been a steady decline in the numbers of students going into farming or animal husbandry as their principal vocation. The renewed emphasis on academics has brought many to view the vocational agriculture program as being guilty of teaching too much "how" and not enough "why." Finally, new developments in agricultural science and technology are seldom included in typical vocational agriculture instruction.

What About The Future?

Considering the three above factors, what should tomorrow's vocational agriculture program include? The State of Texas is developing a proposed curriculum that includes many things that we might expect to see in agricultural education in the future. Here is a look at some of the changes that may occur.

First, a name change reflecting the new nature of the secondary agricultural program will be appropriate. Agricultural science will be a better course descriptor than vocational agriculture. Agricultural science courses will teach why something works in addition to how it works. There will be as much, if not more, emphasis on theory than on practice. Students will learn the theory in order to apply it to situations that they will face in the working world, much as they do with other "academic" courses. The practice, or "doing to learn", will not be eliminated, however. It simply will not be emphasized as much. It would be unreasonable to suggest that practices be eliminated completely because students are more likely to understand and apply what they can actually see. This has been one of the

(Continued on page 20)

Back to the Future (Continued from page 19)

strongest points of the current vocational agriculture program.

The topics covered in basic agricultural science might include global agriculture (history, production, economy, politics, etc.), review of research and developments in agriculture, career development, communications, personal finance, leadership, and supervised occupational experience programs. This course would serve as a sound basis for the first one or two years of an agriculture program for two reasons. First, the information and applications presented in this course would be relevant and useful to all students rather than the dwindling numbers who are in agriculture strictly for vocational training. Second, this course would allow for a good balance between business theory and practice.

Advanced agricultural science and business courses will be available to third and fourth year agriculture students. Examples of some advanced courses that might be offered include animal science, food science, and agribusiness management. These courses will be selected and developed to serve the needs of the individual school, a school district, an area, or a state.

Note that two principal aspects of the current vocational agriculture program have been retained in the revised curriculum. These are leadership training (the FFA) and SOEPs. Leadership skills, and their development through the FFA, have been proven invaluable to all types of students involved in the vocational agriculture program. Similarly, SOEPs have given countless students the opportunity to apply what they have learned which consequently made their learning more effective. These are two additional strong points of the current program that should be included in a revised agricultural education curriculum.

The Next Step

The vocational agriculture program, as it exists today, will have a difficult time surviving the current thinking in educational circles. It appears that a concerted effort by all of those involved in the program is necessary to make certain that agriculture instruction will continue in secondary schools.

Putting emphasis back on science and technology, much as in the early days of agricultural education, will better suit the program to teaching the basic skills of reading, writing, reasoning, and computation. This will be a much more reasonable argument for keeping agriculture in secondary schools than we are able to make today.

Placing emphasis upon the scientific and technological aspects of agriculture will take the effort and contributions of many groups and individuals. The main burden will lie with vocational agriculture teachers, other secondary teachers, administrators, university agricultural education faculty, and agricultural business and industry representatives. These groups will be responsible for seeing that secondary agricultural education programs meet the challenge of getting back to basics and "back to the future."

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There is no substitute for hands-on experience with a horticultural specialist when the program is identifying causes of plant stress. (Photo courtesy of Julia Gamon.)

RESOURCES

Approximately 26 million American adults are functionally illiterate. A substantial number of them want vocational training but are unable to participate successfully in programs due to deficiencies in reading, math, and language arts skills. Vocational educators and adult basic skills educators are continuously seeking strategies and instructional materials to strengthen the link between basic skills training and vocational training.

ADULT LITERACY: PROGRAMS AND PRACTICES, a new publication by the Na-

tional Center for Research in Vocational Education, will assist vocational educators, adult basic education coordinators, and adult vocational training administrators in strengthening this link.

It provides numerous strategies and methods for helping adults with vocationally related basic skills organized by the three key phases of remediation: the identification of prerequisite basic skills for vocational training, the assessment of basic skills, and instruction of basic skills.

Order **ADULT LITERACY: PROGRAMS AND PRACTICES** (RD 265A—\$8.75), 94 pp., 1987, from the National Center for Research in Vocational Education, The Ohio State University, Publications Office, Box N, 1960 Kenny Road, Columbus, Ohio 43210-1090; or call toll free 1-800-848-4815 or 614-486-3655 inside Ohio and outside the continental United States.

The development of this publication was sponsored by the Office of Vocational and Adult Education, U.S. Department of Education.

How To Get Started Teaching IPM

Historically, instruction in solving problems associated with crop production has been one of the most neglected areas in agricultural education. Agriculture teachers, whether on the high school or post-secondary level, who attempted to teach courses in Integrated Pest Management found themselves spending countless hours searching for materials that were nearly nonexistent. Faced with crowded schedules, the time and effort involved to set up a good program often seemed hard to justify. These materials are available from INNOVATIONS/Agronomy for the Future, at Waseca, Minnesota. It is now possible to strengthen the crop management curriculum at your institution with the availability of a selection of references and crop specimens for four major crops: corn, soybeans, small grains, and alfalfa. Diagnostic materials for most of the major crops being grown in the continental United States are now available.

A Basic Organizational Plan

The first step in designing a problem-solving curriculum is to determine the required skills and the knowledge students will need for competence in their careers. You, the faculty member, will want to make a comprehensive list of the crop problems the students can anticipate in the location where they will develop their careers. In outline form, or by following the format in *Crop Pest Management - A Trouble Shooting Guide (CPM)*, determine the direction you want the course to proceed. Within that framework, it will be necessary to plan the information to be presented and the most effective references for both the students and yourself. For maximum effectiveness, attempt to provide the students with as much "hands on" experience as possible. As you design the course, remember that the ideal class will involve the students in actual field experiences where they can observe the conditions which cause reduced crop quality and yield.

The development of a quality curriculum oriented toward problem-solving may first seem to be overwhelming and could take several years if you are starting with limited resources and attempt to do it without assistance. It is complicated by the fact that it is not always possible to schedule classes when field problems occur which is usually the summer months. An additional issue is the fact that most crop problems are sporadic in both time and location and are difficult to find. The author of this paper has spent many years teaching agriculture classes both at the high school and college level and has experienced all of these difficulties himself.

Reference Materials For IPM

Finding a suitable text and reference materials is one of the most basic steps in starting an effective program. The author has provided such a reference in his compilation, (CPM) which is suitable for upper level high school or lower college level classes. This reference provides a diagnostic tool for identifying the causes of field problems. There are five sections in this reference: corn, soybeans, small grains, alfalfa, and stored grain products. Through the use of

By M.L. GUTHRIE

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photographs and descriptions, each section details dozens of plant problems. This includes insects, plant diseases, herbicide injury, mechanical injury, nutrition, and weather-related damage. There are over 40 pages of color picture sheets showing characteristics of hundreds of disease and insect species. This reference of over 440 pages is available in a three-ring notebook which allows the addition of important local or new information. Students and professionals alike will find this guide to be an excellent reference for problem solving.

INTEGRATED PEST MANAGEMENT, a 260-page course outline, follows the format of Louis Pyenson's text: *FUNDAMENTALS OF ENTOMOLOGY AND PLANT PATHOLOGY*. This outline provides a well-organized resource as you plan your teaching outline. It is adapted for advanced high school or early post-secondary education. Its best use is made when faculty place their own experiences and local examples in the outline, thus, gearing the information for a specific audience. The outline has 26 lecture presentations on fundamentals of IPM, insects, plant diseases, physiological problems, and techniques of control. Examples are chosen from both horticultural and agronomic disciplines, which gives the information wider appeal. Three sample multiple-choice examinations are included with the outline.

Laboratory Organization

An important first step is deciding what practical information will be presented in the laboratory. A suggested format is to follow the CPM trouble-shooting guide for 10 or more sessions. This would be divided as follows: (1) Crop scouting procedures and techniques; (2) Corn insects; (3) Corn diseases; (4) Corn physiological, mechanical and chemical damage; (5) Soybean and beneficial insects; (6) Soybean diseases and physiological problems; (7) Alfalfa insects and diseases; (8) Small grain insects and diseases; (9) Stored grain insects and diseases; (10) Other important crops such as sunflowers, peanuts, cotton, dry beans, grain sorghum or vegetable specialties.

A format used to develop a pest identification laboratory in horticulture would be as follows: (1) Greenhouse and home horticulture; (2) Turf grass problems; (3) Annual flowers; (4) Perennial flowers; (5) Garden vegetables; (6) Tree and bramble nuts and fruits; (7) Deciduous shrubs; (8) Deciduous tree insects; (9) Deciduous tree diseases; and (10) Conifers. A more elaborate example would divide all of the above by insects diseases, and physiological problems. In areas of intensive horticultural programs, it would be ad-

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How To Get Started Teaching IPM

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visible to divide the vegetable or fruit production laboratory into separate sessions for each species such as potatoes, carrots, and apples.

Laboratory Specimens

An excellent selection of crop insect specimens as well as laminated mounts of crop damage symptoms are presently available to assist you in effectively teaching crop production labs and diagnosing crop problems. A list of available specimens and references, which will help you teach more successfully, is available from INNOVATIONS, 800 10th Avenue N.W., Waseca, Minnesota 56093. Most of the specimens listed follow the format of the CROP PEST MANAGEMENT - A TROUBLE-SHOOTING GUIDE. In development are crop specimens showing herbicide, disease, genetic, physiological, and mechanical injury, and weed kits.

Acquisition of materials can be enhanced by using student collections as a course requirement. This is especially helpful if the students can be informed of the requirement during the spring and the collections made during the summer months. Each student should be given a vial of fixing solution to preserve the insects (formula in CPM) and also be given instruction in properly drying plant specimens. While the quality of some student preparations doesn't equal those you will prepare yourselves, this method will greatly enhance the number and variety of specimens available for study. By planning wisely each spring, you can multiply your efforts several times over while the students' learning is enhanced by actual field experience.

Long term planning at this time will pay off in efficient use of time and budgets. For the most effective instruction, plan over a period of years to have three complete specimen collections. The first collection will be in the laboratory for use by the students during scheduled class time. The second collection is placed in the library or independent study area where students have access to the materials while other

students are using the classroom or laboratory. A third collection is the faculty member's test specimen file. These specimens are not labeled but are coded for use as practical quiz or examination questions. This will save time in removing and replacing of labels on the laboratory specimens.

Specimen Preparation

A listing of materials required for crop scouting and the collecting of specimens is provided at the back of the corn section of the CROP PEST MANAGEMENT reference. Several houses are listed in that section.

Specimen Storage

The laboratory specimens for insects and plant diseases are best stored in 12"x15"x10" commercially manufactured record storage boxes. The Banker's Box by R-Kive and the Oxford letter/legal storage file will help keep specimens organized. Laminated mounts showing crop damage symptoms are best sized at 8.5"x11" which are easily stored in these boxes or in file cabinets. Insect specimens stored in vials can be conveniently stored in smaller containers. On limited budgets, a temporary system can be established using cardboard boxes with covers which are used to ship duplicating paper. A larger box size, 12"x10.25"x24", will work best for the storage of large weed specimens used for identification. These boxes are available from office supply companies and can be ordered from a catalog in administrative offices.

The Last Word

Today's young people who are exploring careers in agriculture face a greater challenge than ever before. As tomorrow's crop producers and professionals, they will be looking at production on a larger scale with a small profit per unit. There will also be a high degree of specialization with little margin for error. A more profitable future belongs to those who have the knowledge to anticipate, prevent, and combat the myriad of problems they will encounter. Plan today to give your students the knowledge they will need to be successful crop producers or advisors.

RESOURCES

More and more American companies are beginning to offer remedial literacy training to their employees. The need arises from the pressures of foreign competition, advanced technological equipment and processes, job tasks that require higher levels of competition, and the cost-effectiveness of retraining existing employees instead of replacing them.

As companies contemplate these literacy training needs, they look for information concerning effective ways to plan such training efforts. ADULT LITERACY: INDUSTRY-BASED TRAINING

PROGRAMS, a new publication now available from the National Center for Research in Vocational Education, examines how each of seven industry-based literacy training programs approaches its company's need to boost the basic skills of its workers. The findings should be helpful to business and industry training managers, planners and policymakers, union officials, employees involved in participatory management, and administrators and instructors in the public education sector who contemplate a collaborative role with industry in delivering literacy training for employees.

Order ADULT LITERACY: INDUSTRY-BASED TRAINING PROGRAMS (RD 265C—\$5.25), 43 pp., 1987, from the National Center for Research in Vocational Education, The Ohio State University, Publications Office, Box N, 1960 Kenny Road, Columbus, Ohio 43210-1090; or call toll free 1-800-848-4815 or 614-486-3655 inside Ohio and outside the continental United States.

The development of this publication was sponsored by the Office of Vocational and Adult Education, U.S. Department of Education.

Agriculture Adapts To Life In The City's Shadow

What part of the country has more than one-quarter of all farms, about one-fifth of harvested cropland and almost one-third of the total value of all agricultural production?

If the answer "metropolitan areas" surprises you, you're probably not alone. But some of the nation's most vibrant and valuable agriculture occurs in the city's shadow, according to agricultural economist, Ralph E. Heimlich.

In an article in the 1987 *Yearbook of Agriculture*, "Our American Land," Heimlich, with the U.S. Department of Agriculture's Economic Research Service, says agriculture is still an important land use in metropolitan areas. Only about 10 percent of metropolitan land use is actually urban; the remaining 90 percent is substantially farm and forest. Urbanization creates problems for farmers in getting along with their new neighbors, getting along without key support services such as feed, seed, and supply dealers, and putting up with higher property values. But agriculture in metropolitan areas has adapted to urbanization, Heimlich says in the chapter "Agriculture and Urban Areas in Perspective," resulting in smaller, more intensive operations growing high value crops and livestock. About three-fourths of nursery and greenhouse products, more than two-thirds of vegetables, fruits, and nuts, and almost three-fifths of roadside stands and farmers markets occur in metropolitan areas.

Urban farmers more often farm as a sideline or supplement farm income with work opportunities in nearby communities. Many urban farmers have converted proximity to urban centers from a liability to an asset by focusing on consumer demands for fresher, high-quality produce grown locally using organic or reduced chemical techniques. Such crops often command premium prices.

Farming in the city's shadow is an unusually healthy part of our agricultural economy, Heimlich says. Threatened losses of rural land to urban uses, with resulting impacts on open space, water quality, and rural lifestyles, have prompted many states and localities to pass farmland retention legislation. Combined with competitive adaptation, this has allowed farming to continue in metropolitan areas and will ensure that agriculture continues as an important part of our metropolitan landscape.

Not Everyone Agrees

Ralph Grossi, president of the American Farmland Trust, thinks the Nation should designate a long-term "production

reserve" for its best urban fringe farmland. In another Yearbook article, "New Challenges of Farmland Conservation," Grossi says rapid growth in metropolitan areas poses a continuing threat of displacement to these farms which are responsible for one-third of all U.S. farm production.

Grossi says a "production reserve" composed of the best urban fringe farmland similar to the conservation reserve established for the worst erodible land would keep this fertile agricultural land in farm production and assure that growth is accommodated on less productive land. "The sod-buster provision denies federal farm payments to producers who break new highly erodible ground," Grossi says. "The same principle applied to keep our primary urban fringe farmland in agriculture would result in closer scrutiny of government subsidies in the development of this land."

A good place to start, Gross says, would be to strengthen the Farmland Protection Policy Act. Federal and state governments should compel agencies to find alternatives to government-sponsored or -funded construction projects that consume our best farmland. Local governments should take a close look at the comparative costs of sprawl and compact development and adjust property taxes accordingly. "Then," he says, "if we really want to tackle subsidies, phasing out federal income tax deductions for mortgage interest paid on new houses built on primary farmland in the 'production reserve' might be considered."

Eliminating subsidies to indiscriminate development would help take the pressure off critical urban fringe farmland, but would not by itself create a "production" reserve, Grossi says. For that, positive incentives, compensation for lost urban development opportunity, are needed. The incentive systems should be fair to landowners and affordable to the public. Every landowner who would have a realistic chance of selling farmland to a development should have a shot at selling 'development rights' to the public instead. Finally, the public investment in the "production reserve" should be protected by appropriate local regulations, designed to prevent conflicts between agricultural and nonfarm land uses by keeping residential density low within the reserve.

The ultimate challenge, Grossi concludes, is to make agriculture more profitable to the farmer. "The more farmers can earn from cultivating the land, the more they will be able to resist subdividing it," he says. "Our production reserve," the best land next to the biggest markets, will offer them the opportunity to do that."

EDITOR'S NOTE: Copies of the 1987 *Yearbook of Agriculture* may be purchased through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 at \$9.50 a copy. Ask for GPO number 001-000-04494-0 and make checks payable to "Superintendent of Documents." GPO telephone orders to (202) 783-3238 may be charged on VISA, MasterCard or Choice.

Stories in Pictures

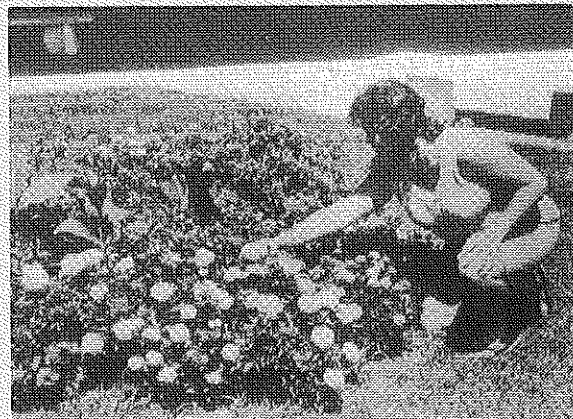
Tomorrow's Teachers



Offering science credit for agriculture classes will work best when the classes are structured on a semester format and when the topic of instruction focuses on a particular aspect. For example, agronomy must be tied to chemistry or geology and horticulture tied to botany.



Community support of agricultural education is going to be increasingly important in the future.



The curriculum of tomorrow's program must be inviting to those students who are interested in all fields of agriculture, including the landscape artist and the greenhouse operator.



Tomorrow's teacher will have not only the traditional farm background, but will have an education that is varied in scope from agribusiness to public relations.

(Photos courtesy of Dennis Pool, Principal of Norris High School, Firth, Nebraska.)