



## The Participants' View of Agricultural Education

*If former students were to draw a picture of their agricultural education experience, what would be in their picture?*



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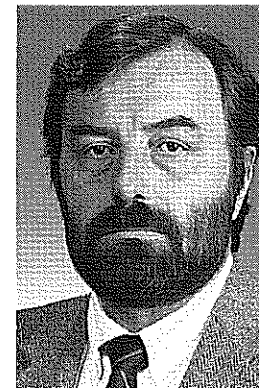
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**The Participants' View of  
 Agricultural Education**



BY LOU E. RIESENBERG  
 Dr. Riesenber is professor  
 and head of agricultural and  
 extension education at the  
 University of Idaho, Moscow

The theme of this issue of The Agricultural Education Magazine is "The Participants' View of Agricultural Education". Please read some interesting articles about what Agricultural Education has meant to various participants. All of the articles or stories in this issue are positive about participation in Agricultural Education at both the high school and university level. None of the views expressed are negative about Agricultural Education. Is it possible no negative views of participation in Agricultural Education exist? We, of course, did not solicit any articles from participants that were not extremely successful, both in Agricultural Education and other endeavors. Perhaps it is better to dwell on the positives of our profession rather than our warts. However, let us not delude ourselves into thinking all is positive.

The most prevalent positive view of participants in Agricultural Education is not about the academic or vocational subject matter of Agricultural Education, but about the impact or difference Agricultural Education has made in the affective domain, rather than the cognitive, of participants. Participants seldom highlight the subject matter of their Agricultural Education experience. Participants usually go into considerable detail about the impact Agricultural Education has made in how they act and react, not about how Agricultural Education has impacted their knowledge in agriculture. In praising their agriculture instructors, students do not allude to the instructor's methods of teaching animal science or agribusiness management or agriscience, instead, the accolades tend to praise the instructor's long-term affective interaction with students as having the most value. We, for a long time, have held the view that while the specific subject matter is important in agriculture programs, it is the long-term quality affective interaction with students where our greatest strength lies. The specific subject matter of an agriculture program can certainly enhance or detract from that quality affective interaction. However, if an agriculture instructor does not have quality affective interaction with students, the instructor's specific subject matter, be that 20 year old production agriculture or the latest in agriscience, will not carry the day.

By now, many are wondering "what is the point"?

In Agricultural Education, we are very well equipped to develop the agricultural subject matter competencies in future instructors, and even to enhance those competencies in current instructors, but, we are ill equipped to ensure the competencies required by agriculture instructors for long-term quality affective interaction with their students. Of all the problem programs we have worked with over the years, lack of subject matter competency by the instructor is seldom the issue. That is the point and the dilemma!

Furthermore, if Agricultural Education is as beneficial to participants as one would be lead to believe by the articles in this issue, why the constant struggle to maintain programs and enrollment in those programs? Why the constant struggle to convince administrators that our programs have significant value for students and that our programs should be enhanced rather than just allowed to exist? If Agricultural Education is as beneficial to participants as one would be lead to believe by the articles in this issue, why still are only certain high school students electing to enroll in our agriculture programs rather than just taking some of our classes and why are we constantly facing a shortage of quality agriculture instructors?

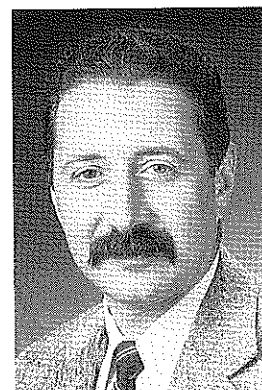
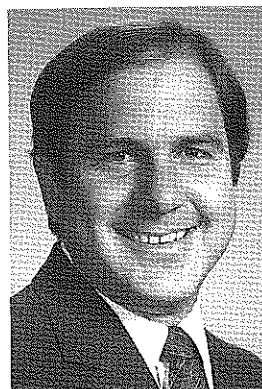
Agricultural Education has a tremendous impact on the lives of most of the students that participate. Evidence of this impact abounds. This issue has but a very small amount of that evidence. We appreciate the efforts of our theme editors to gather some of that evidence. We hope the display of that evidence is credible and will have value to the profession. ■

**About the Cover**

Perceptions, views, outlooks, visions, understandings, concepts, etc. translated into graphics could be called a picture.

(Photo courtesy of Linda Rist, West Central High School, Hartford, SD.)

## Participants' Perceptions: "The Customer Is Always Right!"



BY JOE G. HARPER  
AND PHIL BURIAK

*Dr. Harper is an associate professor of agricultural education at Clemson University, Clemson and Dr. Buriak is an associate professor of agricultural engineering at the University of Illinois, Urbana.*

Chances are that somewhere along the line, you have been asked, or you have asked someone, "do you perceive that your educational needs have been served?" As a society based upon the concept of free enterprise, we seem almost obsessed with the notion that in order to be successful we must meet the needs of those we serve. To what extent do you conduct educational programs based upon valid and reliable information from those who participate in your programs? How much value do you place upon participants' viewpoints? Furthermore, to what extent do you value non-participants' perceptions?

Based upon the more traditional ways of thinking, agricultural educators have placed a great deal of value in the perceptions of program participants. Most forms of needs assessment for effective program planning recommend the solicitation of participant viewpoints concerning program direction and perceived effectiveness. We advocate the systematic gathering of what we believe to be essential information for our programs in order for us to effectively plan, implement, and evaluate all kinds of instruction. The multitude of evaluation instruments seems overwhelming. We have forms from the briefest of open-ended questionnaires to exhaustive number crunching surveys which require considerable resources to design, distribute, and analyze. The first questions seem to be; what are we doing?, is it working?, and why? The second set of questions deals with whether we are collecting good information; third, are we asking the right folks?

### Participants

There seems to be little controversy and/or concerns about the need to gather and utilize the perceptions of Agricultural Education program participants. These folks have been, to a varying extent, participating in the programs and should have some valuable insights. They do possess knowledge relative to their own perceptions of whether the program meets their needs. They often times have considerable depth of insight about the relative effectiveness of educational programs. As teachers, we too are asked to provide feedback concerning in-service and other professional development activities. We readily question those programs in which we see little need or that are delivered ineffectively.

The primary concerns we have about participants' viewpoints stem from what we are asking, rather than how they respond. An example of this concern is when we ask program participants the relative value of a workshop or class they have been participating in after they have completed it. We seem to rejoice at the "somewhat satisfied" response and quickly share this with colleagues and administrators. Well, yes, unless they were there forcibly, and just invested their resources to participate throughout the program, one would assume that they were "somewhat satisfied" or else they would have decided to spend their respective resources elsewhere.

Similarly, one could easily argue the skewness of the participants' responses. The implication being that participants' responses, in general, do tend to lean toward the favorable side. Conceptually, those who were at the other end of the scale have, for whatever reasons, decided not to attend, and/or continue to participate. We seem to think we should always end with a bunch of happy campers regardless of those who were unable to make it to the end.

Participants can indeed tell us how we served their needs, the relative effectiveness of the educational experiences, and the chances of getting more folks like them to become involved. This is valuable information. However, by itself, without support and selective interpretation, it can easily be valueless.

### Non-Participants

Unlike participants, non-participants are not so easy to get a handle on. We may indeed know who dropped out of a program and would represent them as non-completers, not necessarily non-participants. Non-participants often times are never known. The list could be, and probably is, massive when it comes to non-participants in Agricultural Education programs. Some traditional folks would take the attitude that there is a problem with the non-participants and not the program. People are not attending because they fail to see the light. However, we probably are the ones who do not see the light.

It is difficult to imagine anyone who does not need at least some basic awareness of at least some form of Agricultural Education. Who does not need to know about the basics of

*(Continued on page 19)*

## Participating in Agricultural Education



BY DIANA LOSCHEN  
*Ms. Loschen is the agriculture instructor at Tri-Point High School, Cullom, Illinois.*

Agricultural Education has impacted nearly every phase of my life. I never dreamed just how important my decision to take agriculture classes as a high school freshman would be. I gained opportunities, a career, and a spouse, as well as a vast number of personal and professional friends due to my decision to participate in Agricultural Education. At the high school level, I entered high school as a quiet, shy, and insecure freshman. Most people who know me now refuse to believe this! This is a testament to what a caring agriculture instructor and the FFA organization can do for a person. I went on to serve as a chapter and section FFA officer as well as participate in numerous contests and awards. I am also convinced that my FFA involvement was a key factor in my receiving various scholarships and other monetary assistance for college.

During my undergraduate work at Illinois State University, I gained a certainty that I had made the correct career choice for me. Agricultural Education was something that I found enjoyable, meaningful and challenging. The people I encountered while there have become lifelong friends, and one became my husband! In addition to the teacher preparation aspect of my course work at Illinois State, I also found that the classes taught me valuable life skills and practical knowledge for me to be a more self-sufficient and contributing member of society.

After graduation from college, I worked for two years in soil and water conservation and local government. I still had the desire to teach, but the opportunity did not present itself at the time. I enjoyed my work in soil and water conservation, especially the education portion of the job, but I knew that I still wanted to teach. In 1988 I took the Agricultural Education teaching position at Tri-Point High School, which had previously been held by my husband. I have been in that position ever since.

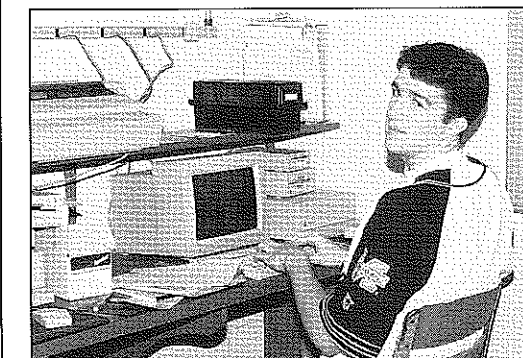
Teaching high school agriculture is unlike any other job I had held. A high school agriculture instructor has the opportunity to help young people with classroom knowledge as well as the opportunities in the FFA. With each day comes new course material, new challenges, and new activities with which to involve the students. It is never the same thing two days in a row! Boredom simply is not pos-

sible for the high school agriculture instructor! Actually, I have found that quite the opposite is true — the problem is selecting the most important and meaningful activities with which to spend the time which you do have. I have also worked in a factory, office, and numerous other miscellaneous jobs. None can compare with the challenges and rewards of teaching high school agriculture.

The students who become active in the FFA and work to set and obtain goals are another source of pleasure in the job of teaching high school agriculture. During the busy season of State Degree applications and American Degree selection, there are some students who eat more meals and spend more time at my home than they do at their own home. It is almost like having more kids of my own. As these students leave high school and become young adults, it is especially pleasurable to stay in contact with them. They provide valuable insight into which portions of high school were most important and how they have used the skills and knowledge gained while in high school. It can be very rewarding to see your former students working as productive and contributing members of society. I am especially interested to chat with those who have gone on to become a teacher themselves. They have learned how important it is to touch the life of a young person.

I must confess that there are times which can be frustrating — especially those times when there so many more things to do than time to do them. Sometimes, there are situations when the students need more motivation than I seem to have at the time. I have concluded, over the

*(Continued on page 21)*



*The opportunity to assist individual students to learn and improve and to be able to see the growth is a big part of the 'pay' for teaching. (Photo courtesy of Diana Loschen)*



## Agricultural Education: You don't have to be a Teacher



BY DIANNE BURNS  
Ms. Burns is a non-traditional student studying agricultural education with minors in technical writing and communications at Clemson University, Clemson.

"Experience is the name everyone gives to their mistakes."

— Oscar Wilde  
*Lady Windermere's Fan*

For fifteen years, I created graphics and wrote copy for newspapers, newsletters, and a multitude of other publications without benefit of a bachelor's degree. Suddenly, I became unemployed. I searched earnestly for a job writing and creating, but every personnel manager with whom I spoke told me the same thing. "I like your work, it is really good, but I just can not hire you without a bachelor's degree." I was devastated. What difference is that little piece of paper going to make? Unfortunately, I made a mistake when I was young — I never thought I would need that stupid piece of paper.

That stupid piece of paper is the reason I am a non-traditional student at Clemson University studying Agricultural Education with minors in technical writing and communications. Obviously, Agricultural Education was not my first choice of majors. English was my first choice until I discovered I did not have the stamina to do two years of a foreign language. I tried French and German resulting in two big fat Fs on my transcript. I probably should not mention I considered engineering, just long enough to realize I was in way over my head. The only engineering related bit of information on which I could draw was the Pythagorean Theorem. Then, while fumbling through the catalog, I noticed the Agricultural Education curriculum.

The variety of courses offered looked interesting, with one exception. Teaching was strictly out of the question. I talked with my English advisor, a trusted friend and confidant, about the Agricultural Education program. He explained in great detail why writing for newspapers was a form of teaching. He put me in touch with the Agricultural Education department head. After explaining my goals and misgivings to the Agricultural Education department head, I felt sure I could reach those goals through his program. The next day I changed my major to Agricultural Education.

I have been in the department for a year, and I am happy. The worst part, and best if I would just admit it, is I am about fifteen years older than my classmates. The only time age has

been a problem . . . actually being the "old woman" in the crowd is advantageous. When asked to do something I really would rather not, my standard reply is, "I'm too old to be doing stuff like that." I have to come up with a better excuse, my friends are beginning to doubt me.

I have really enjoyed the agriculture courses I have taken. My best course to this point has been "Farm Shop". My preconceived notions of this class proved false. "Farm Shop": was a great class. I was one of only three women in our section. Sara, Mary, and I had a blast, especially in the laboratory. I think we got away with a lot more than any of the men. For instance, one of our lab projects was to "lay-out" a rafter. We had no idea of even where to start. Mary and I fumbled with the thing for the longest time. The professor did his best to tell us what to do, but the translation got lost somewhere between his mouth and our ears. His instruction just did not make sense to us. After watching us struggle for more than two hours, the lab assistant "showed" us how to do the assignment. I think the only thing we did was hold the board so it did not move while he made all the marks we were to cut out. Cutting the thing out with a handsaw is another story in itself. Let me just say thank goodness, chivalry is not dead!

My two interests finally melded during that semester. Along with "Farm Shop", I took "Technical Writing". The combination afforded me the opportunity to bring together the two most important aspects — agriculture and writing — of my future career for the first time. I was the only agriculture student in the "Technical Writing" class. The other students were either future engineers, computer programmers, or English majors. When final projects were to be presented, the engineers and computer programmers did not let the class down. They built the most elaborate machines or computer programs any of us had ever seen. My project, of course, was unforgettable, not for the painstaking detail of the Oxyacetylene Welding Instruction Manual, but for the accompanying demonstration. Without question, I was the first female welder the technical writing students had ever seen. Now, I am being recruited by every feminist group on campus.

Agricultural Education is not what I expect-

(Continued on page 21)

## Maybe We Need a Wake-Up Call



BY DAVID MOUSER  
Mr. Mouser is a sophomore studying agricultural education at the University of Illinois, Urbana.

My favorite story about Agricultural Education comes from a very unlikely source. It comes from a grade school classroom in Chicago, Illinois. This class was part of the Adopt-A-Classroom program that was in contact with the past Illinois Committee for Agricultural Education Chairman Gordon Bidner and his wife. The family and the classroom had extensive communication through letter writing. The family wrote about the farm, and the students asked questions. One little girl asked a very interesting question in one of these letters. She asked if Gordon and his wife had a rooster to wake them up in the morning. With many questions like this turning up over and over again in letters, it became obvious that any knowledge about agriculture that these students had came from "Little Golden Books". This type of story can be found anywhere around the country, in the inner city and in rural America. Many people simply do not understand what agriculture is, nor do they understand what goes on in the industry. This is where Agricultural Education comes into play.

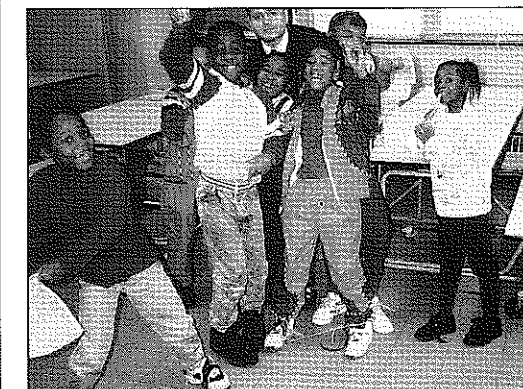
Agricultural Education is and has been ever changing. It is both difficult to define and to understand for many these days. This is why it is time that we in agriculture came up with answers to a few very important questions. When should Agricultural Education begin, and what should be taught? How can we in Agricultural Education competitively sell our programs to a student trying to meet the ever increasing college entrance requirements? How can we combat the image problem that we in agriculture have? It is time to show that agriculture has changed, and the significance of the rooster is not what it used to be.

My name is David Mouser, and I am a sophomore at the University of Illinois at Champaign/Urbana, Illinois, studying Agricultural Education. I grew up on a farm in Normal, Illinois, which lies in the center of Illinois, about 180 miles south of Chicago; but, that is not the reason that I chose to get involved in agriculture. I had a supportive father that helped (forced) me in that direction. My Agricultural Education program began at the high school level where I was amazed at all that the industry of agriculture encompassed. I proceeded to get involved in the FFA, especially in public speaking. I won both the state prepared and extemporaneous public speaking

contests in Illinois and went on to place second in the nation in 1992 in extemporaneous public speaking. In 1993, I served as the Illinois State FFA president and visited over 130 high schools. Now, I am back at school, speaking occasionally on motivation or education to students and education groups throughout Illinois. The following is a compilation of some of my experiences as well as some of my answers to the questions asked above.

### So Where Does It All Begin?

The first question that needs to be addressed is where Agricultural Education should begin and what should be taught. After hearing about the girl in Chicago from Gordon Bidner, I was apprehensive about my chance to visit a Chicago grade school. I had a wonderful experience in 1993 that opened my eyes to the above question when I visited a grade school on the Chicago's west side. I was asked by the Cook County Farm Bureau to provide a lesson on agriculture to Calhoun Grade School in the inner city. At first, I was hesitant, thinking that students from the west side of Chicago would have absolutely no interest in agriculture or in what I had to say, but I went anyway. I walked into a classroom of third graders that day that were not only well behaved, but eager to learn about anything that they had not been exposed to. That day, I taught a lesson on agriculture by providing examples of how crops were used for food so that the students could understand the source of the food they eat. When I asked if anyone wanted to touch or hold soybeans, I was mobbed by thirty kids staring in awe. They could actually see where their food came from. I ate lunch with the students that day and answered questions until I walked out of the →



Future Agriculturists. (Photo courtesy of David Mouser)

door. These students wanted to know if there were soybeans in meat loaf or in their Jell-O. I think back on that day and realize that it was a memorable and valuable experience for me. If Calhoun Grade School is any indication, new agricultural curriculum would be met with open arms to students everywhere. Agricultural Education can begin at any age if the curriculum is accessible. Today, it is finally possible as new, exciting curriculum is at any educator's finger tips. The new curriculum is out there waiting to be utilized, and young people are just waiting for the type of hands-on education that agriculture provides.

### Selling the Experience

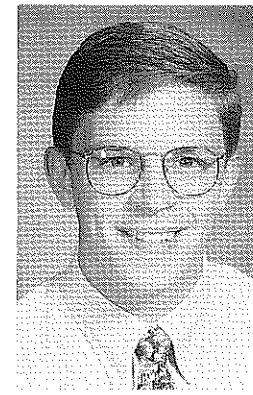
How can we sell Agricultural Education to a student that is trying to meet the ever increasing college entrance requirements? Throughout my time in the FFA, I noticed a very interesting trend. Those students that excelled in the FFA and agriculture often went on to the university level and did quite well. The FFA and the agricultural program, if properly used, promotes motivated, well-rounded students at every level. The FFA along with SAE programs teach time management as well as leadership abilities. Our job in Agricultural Education is to place these facts into the hands of teachers, students, administrators, and guidance counselors. An example of this idea in motion comes from my own experiences at Normal Community High School. The program was 40 students strong when I was a freshman. Now, 7 years later, there are over 200 students enrolled in agriculture. This is because the agricultural educators at Normal encouraged the students to put together our own public relations program. We talked to students to promote an idea of what agriculture was all about. We took administrators, guidance counselors, and teachers to the national FFA convention. True and viable support was gained for our cause, and today agriculture is not just a vocational education program, but a haven of diversity with opportunity for all involved. With the support of the administration came increased enrollments. College bound students saw the agriculture program as an attribute to their education. We incorporated the Biological Science Applications in Agriculture program (designed by the University of Illinois) to bring about a hands-on approach to agriculture by providing science credit to students. We reaped the benefits of increased enrollment and a new exciting curriculum for our administration to brag about. Agriculture, the FFA, and administrators are a valuable team in increasing enrollment and maintaining a successful agriculture program. During my travels, the programs that I saw dwindling throughout Illinois were those that only continued tradition with little change. These programs will pale in comparison and remain stagnant while denying students access to what truly creates success — opportunity.

### The Time for Change is Here

Few involved in agriculture would disagree with the fact that today, agriculture has an image problem. With an 11 percent shortage of college graduates qualified to fill agricultural positions, it becomes obvious that we can no longer talk about our image, but rather we must act upon the cause. We can no longer deny that we in agriculture are the root of our own problems. We have counted on a general positive public perception for years without acting to insure it. We have kept our story secret while the world around us changed. A serge in the late 1980s began to address some of these problems in Illinois. It became apparent to the Illinois Committee for Agricultural Education, after hiring a public relations firm to address other problems, that we had some very serious misconceptions on our hands. It was found that the generation of today was far enough removed from the farm that it had little knowledge about agriculture. Since that time, this committee has worked diligently to develop "cutting edge" curricula for Agricultural Education to promote new and exciting learning. So there is new curriculum, and groups are trying to update their images. The FFA has even changed its name, but this is not enough. Until everyone in agriculture plays their part by combating negative publicity, uniting to educate others, and acting in a manner that promotes a positive public perception about agriculture, little will be accomplished. We need to come to the realization that there are not enough "farm kids" to go around. We need to look for bright, motivated students everywhere to fill the ranks of our ever changing industry. The best way to get kids to take agriculture in schools is to use the best educators we have, our students. Peer pressure is not always a bad thing, especially when it can lead to success in agriculture. The best way to combat negative depictions of agriculture is to let those responsible know how we feel. Our image problem is in our hands, we just need to decide what to do with it.

When asked what my views about agriculture education are, I have nothing but positive things to say. This is because any failures we have had can be used as a catalyst for success. Agriculture has changed and so has the world around us. We in Agricultural Education all realize that our programs have much to offer any student. We also know that success in Agricultural Education can be attained. Deep down, we know that it is time to break new ground, try new things, and educate to meet our needs as well as the needs of our students. Students are ready to learn, but are we ready to provide? This question must be answered individually. The time has come to prosper, and the solution is within all of us. We just need to listen to the rooster and wake up. ■

## More than Plaques on the Wall



BY MIKE WHITE  
Mr. White is an agriculture instructor at PBL High School, Paxton, Illinois.

A quality program is one that meets the needs of the students. But how do we do that? Is it by excellent classroom instruction; is it the supervised agricultural experience programs; or, is it the FFA opportunities provided? The answer is not simple, but it is one that we, as educators, must find and practice. As a beginning agriculture instructor, I was able to find the proper blend needed for my program by identifying what was needed in each component.

The first component of a successful program is the classroom. This is the part that the students are in contact with daily. The classroom is where we are doing what we are paid to do — TEACH. Three things that I feel are important when planning the classroom portion of the Agricultural Education program are an innovative curriculum, varied instructional techniques, and showing a reason for learning.

As a beginning instructor, I struggle daily wondering if I am teaching the students what they need to know to be successful in the agricultural industry. When I was in high school, I never heard of global positioning systems or variable rate technology. Now, these technologies are commonplace in the agricultural industry. Does this mean I should be informing the students about this new technology? Yes! We must no longer rely on the same information in preparing our students. We must stay abreast of new developments in agriculture and reflect them in our curriculum. We, as educators, need to remember that the agricultural industry is changing daily. We should not be teaching what was happening 15 years ago; we should be focusing on the new developments and the future of agriculture. This may mean spending countless hours reading and attending seminars but, if that is what is required to keep up with advances, we must do it.

In Agricultural Education, we must remember that each student learns in a different way. To ensure each student's success, we must implement a variety of teaching technique. This does not mean that we should throw out lecturing as a teaching technique, but we should not use it as our primary tool. Instead, we should provide students with group discussions, independent studies, experiments, case studies, and other hands-on activities. A mixture of these methods will allow us to be most effective. One principle I often forget is that it may be necessary to present the same informa-

tion using two different techniques to ensure that the information is presented to the students in the way they learn best. Students also enjoy this variety, and it will help maintain their interest level in the subject taught.

Finally, we must show our students a need to learn. I believe that if our students are not going to be able to use the information and skills we are teaching them later in life then we are wasting their time. In my life, if I see no purpose for doing something, I usually resist doing it. Why then should we expect our students to study something that will be no use to them? For example, the number of people involved in production agriculture is decreasing. How many students then need to know the pH requirements of a plant? My answer is very few. But, if we can relate this to the consumer and environmental conditions in which all of our students are participants, we have taught them something useful. We must ensure that we do not waste our students' time.

The next component is supervised agricultural experience programs (SAE). Why are SAEs important? Primarily, they offer the students a chance to apply the knowledge and skills gained in the classroom to real life. Secondly, they offer the students control over their own education.

I think it is important to use the experiences and problems encountered in the students' SAEs as a springboard for the classroom. If a student is having problems identifying a certain weed, then we, as a class, should look at techniques used to identify weeds. This not only gives the students a sense of need for the instruction, but also gives them a sense of ownership in the problem areas covered in the classroom.

For some students, SAEs are used primarily for a way to make money. Unfortunately, if this approach is taken, the learning process is going to suffer. Then, the students are not concerned about what they can learn from the project; they are only concerned about how much money they will make.

Students must be given the opportunity to work with a program that interests them. Choosing something that is interesting not only makes the learning fun, but also encourages the students to learn more about the area.

The final component in a quality agricultural program is the FFA organization. For the →

FFA component to be successful, there are a few concepts to remember. The first and most important concept is that FFA is more than putting plaques on the wall and having the largest chapter. Although competition is a part of everyday life, it should not be the driving force behind the FFA chapter. The driving force of FFA is to prepare the leaders of tomorrow's agriculture.

What the FFA chapter does is usually the most visible component of the Agricultural Education program to the community. This is because of the public relations that occur in the FFA. Public relations is not only submitting articles to the newspaper, but maintaining a positive image in ourselves and our students. FFA is the vehicle used to ensure that the students we send out into the world of work will be successful. The students are prepared to meet the challenges they face by strengthening their self-esteem and confidence in themselves.

Maintaining an active chapter is sometimes a problem. How do we get students involved,

especially in small schools where the students seem to be in everything? The key is to make sure all FFA activities are enjoyable, and the students learn something without knowing they are. Yet, some years just the opposite problem arises. The students seem to want to do everything, and you seem to be run ragged. In situations like this, we must ask what activities are going to be most beneficial for our students. If we cannot find the need or purpose for the activity, then we probably should not do it.

The question remains: "What does it take to have a quality program?" The idea that a quality program is one that meets the needs of its students is absolutely true. We want our students to succeed. Success to our students is often just being given the chance to try. Having a successful Agricultural Education program is finding a way for every student to be involved and contributing. Curricula get old, students get bored, and plaques soon tarnish, but the pride and encouragement we instill in our students lasts a lifetime. ■

## The Remaining 1995 Themes

Issue: May, 1995  
Theme: *Using the Information Highway*  
Theme Editor: Dr. Micheal K. Swan  
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Issue: June, 1995  
Theme: *Business/Industry Partnerships*  
Theme Editor: Dr. Joe W. Kotrlik  
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Issue: July, 1995  
Theme: *The Changing Workplace*  
Theme Editor: Dr. Carl L. Reynolds  
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Issue: August, 1995  
Theme: *Promoting Integrity in Students and Instructors*  
Theme Editor: Dr. David C. Whaley  
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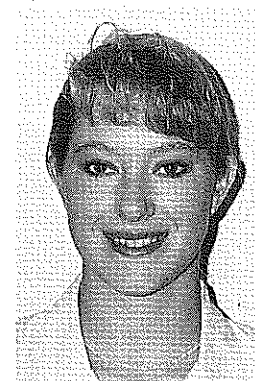
Issue: September, 1995  
Theme: *Innovations in Teaching*  
Theme Editor: Dr. John P. Mundt  
Agricultural and Extension Education  
University of Idaho - Boise Center  
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Issue: October, 1995  
Theme: *Rural Education*  
Theme Editor: Dr. W. Wade Miller  
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Issue: November, 1995  
Theme: *Collaboration in Agricultural Education*  
Theme Editor: Dr. Roland L. Peterson  
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Issue: December, 1995  
Theme: *Cognitive Levels of Teaching and Learning*  
Theme Editor: Dr. M. Susie Whittington  
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## My Initial Perception of Agricultural Education



BY ALLISON J. L. TOUCHSTONE

*Ms. Touchstone is in her professional semester in agricultural education at the University of Idaho, Moscow.*

As a high school freshman, I walked into a dimly lit, unorganized agricultural laboratory and a dull and uninteresting classroom. The instructor sat at the front of the room in a chair that was turned backward and he was chewing tobacco. Every day we entered the room, sat down, and tried not to fall asleep. That first semester was spent listening to hunting and fishing stories, and I "earned" an A for the effort spent walking to class each day. I had cattle and horses at home, but I hardly knew what an SAE was, and I certainly had no idea that the SAE should have been an integral part of my Agricultural Education. The only reason I returned the second semester was because of the fact that I would be able to miss school for a few days during the spring semester to attend State FFA Leadership Convention and to be able to work in the lab.

My initial perception of agricultural science and technology was greatly influenced by my first instructor, and that perception was a poor one to say the least. I was uninterested, unmotivated, and disillusioned about not only Agricultural Education and the FFA, but for the entire industry of agriculture. My opinion of agricultural professions, and especially Agricultural Education, as career choices was quickly deteriorating. Although I had never planned to enter production agriculture as a profession, the idea of being involved in the agricultural industry as a professional of any kind was becoming less and less appetizing.

As teachers, many of us never realize the profound impact that we can have on the students who enter our classrooms. My perceptions about agriculture over the past nine years have been molded and shaped by those individuals who chose to make Agricultural Education their profession. My personal perceptions have been changed, have grown, and have expanded over these nine years, and they continue to do so as I draw closer to completing my undergraduate work in Agricultural Education. Just as my first agriculture instructor nearly destroyed my image of and my interest in Agricultural Education, the instructor following him totally changed my view about agriculture and my ultimate career goals.

The first day of school my sophomore year in high school, I walked into the same laboratory, but it was bright, the floor and welding booths were clean, the tools were put away, the classroom was neat, there were new posters on

the bulletin boards, and the curriculum was much more than dirty jokes and the latest tall fish tale. Although I knew there was going to be a new agricultural educator, I had never guessed that she would be so different from the previous instructor.

Ms. Shannan Lierman taught at Filer High School for the final three years of my high school education. She helped me to change my perception of agriculture and Agricultural Education. From believing in my abilities to believing in our chapter, Miss Lierman became an inspiration and a role model to me over those three years, and she is still both today.

The perception of one individual is never the same as that of another, and that perception is never cast in stone. I grew from a future laboratory researcher to an agricultural educator thanks to the influence of one very important agricultural educator. There have been college professors and others who have influenced and helped me to define my perceptions and opinions about agriculture, but few have affected me as much as Miss Lierman.

The agricultural industry today is growing and changing more rapidly than most of us ever thought was possible. The students who will be in our classrooms now and in the future will be facing a wide variety of opportunities in production agriculture and related agricultural industries. It is important for the Agricultural Education profession to continue the effort that has been made over the past years to educate the public and the students about the bright future ahead of agriculture and its participants. As we continue to educate our students, they

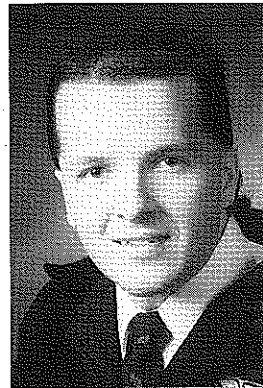
*(Continued on page 16)*



*Involving students in classroom improvement activities promotes student ownership and enthusiasm in the Agricultural Education program. (Photo courtesy of John P. Mundt)*



# Agricultural Education: Education about Agriculture



BY CODY REYNOLDS  
Mr. Reynolds is a junior in agricultural education at the University of Idaho, Moscow and had been a student at Kuna High School.

Every three years, in January, the Kuna FFA Chapter embarks on a project that will initiate and cultivate the minds of many youngsters who live in urban communities. As committees are formed and put to work, enthusiasm builds as the date grows near. In the week prior to this experience, the agriculture classroom and laboratory are cleaned and prepared for the Agricultural Exposition.

The Agricultural Exposition is a week devoted to teaching kindergarten, first, second and third grade students the importance and significance of agriculture in their lives. These youngsters are given the opportunity to learn about and hold piglets and lambs, have calves suck on their hands, pet chickens and turkeys, and in all learn about roughly thirty different kinds of animals an individual might encounter on a farm. They also go on a hay ride, discover what makes up a hamburger, eat ice cream and cheese, and watch movies about the agriculture industry.

Many hours, enormous effort, and many individuals are involved in making this Agricultural Exposition a success. In 1990, over 5,000 kindergarten, first, second, and third graders participated from the Boise, Meridian, Nampa, Caldwell, and Kuna schools. With the Agricultural Exposition, the goal of the Kuna FFA Chapter is to increase literacy in and about agriculture as defined by the Agricultural Education profession. This definition states: Agricultural literacy can be defined as possessing knowledge and understanding of our food and fiber system. An individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture. Basic agricultural information includes: the production of plant and animal products, the economic impact of agriculture, its societal significance, agriculture's important relationship with natural resources and the environment, the marketing of agricultural products, the processing of agricultural products, public agricultural policies, the global significance of agriculture, and the distribution of agricultural products.

As I began to research topics I wanted to address in this article, I kept coming back to the topic of agricultural literacy. After some preliminary research, I found that agricultural literacy is in worse shape than even I first thought.

Agricultural literacy has also been defined as

the goal of education about agriculture. An agriculturally literate person has a basic understanding of the food and fiber system, its history and current, social, and environmental significance to all of society. This definition encompasses knowledge of food and fiber production, processing and domestic and international marketing. Agricultural literacy also includes enough knowledge of nutrition to enable an individual to make informed personal choices about one's diet and health. Also ascribed to the goal(s) of agricultural literacy is that an agriculturally literate populace would tend to ensure that citizens would make intelligent decisions concerning policies that benefit not only agriculture; be all of society.

This start to define agricultural literacy and integrate it into society has been a big step for the Agricultural Education profession and the agricultural industry. A study in Oklahoma revealed some startling facts for a state in which agriculture is the second highest income generating industry. Students in fifth, eighth, and eleventh grades were given a multiple choice test concerning concepts of agriculture. The overall mean for correct scores was 32 percent. An example of a question that appeared on the eighth and eleventh grade tests was: "Which of the following products does not contain wheat?" The multiple choice answers included: Macaroni, hamburger buns, pizza crust, tortilla chips and the option to choose "I don't know." Less than one percent of the students, in both grades, chose "tortilla chips" as the correct response. The study also indicated, by the average scores of all grades combined, that the students knew the least about the concept that "Agriculture is historically significant to the development of our nation". →



Future Agriculturists. (Photo courtesy of Kuna FFA Chapter)



Future Agriculturists. (Photo courtesy of Kuna FFA Chapter)

The reason that I bring up this point is that agriculture is a very diverse industry. The often highly sensational media coverage of alar-type scares is seen in context by people with a basic knowledge of agriculture. Those without a basic understanding of agriculture react without reason; frightened for themselves and their families. The resulting damage to the industry is not easily repaired. In a country where farm residents are outnumbered by 40 to 1 in the general US population and the world is growing at a rate of 1.6 percent per year, the general lack of knowledge can be devastating to the agriculture industry.

I propose that the development of agricultural literacy become a requirement in the public school system. The Committee on Agricultural Education in Secondary Schools felt that agriculture was too important a topic to be taught to only a relatively small percentage of students considering careers in agriculture and pursuing vocational agriculture studies. A few years ago, the National Academy of Science, recommended that the subject matter of instruction in and about agriculture be broadened, and beginning in kindergarten and continuing through twelfth grade, all students receive some systematic instruction about agriculture. Furthermore, other agricultural educators have pointed out that the failure of our secondary schools and liberal arts colleges to teach even rudimentary courses on agriculture means that an enormous majority, even among the well-educated Americans, are totally ignorant of an area of knowledge basic to their daily style of life, to their family economics, and indeed to their survival.

Other agricultural educators reported, early in this decade, that states such as California, Colorado, Idaho, Indiana, Nebraska, Oregon, Washington, and Wyoming were not included as states that had Agricultural Education programs in place from kindergarten through twelfth grade. With all the concern of creating an agricultural literate society, only nine out of the fifty states had programs in place. One may conclude even though agriculture may be the top income producing industry, that it is still not

important enough to teach in schools. With the ever-increasing demands on the educational system to produce graduates who are computer-literate, second language-literate and also highly skilled in a specific area, does agricultural literacy matter? If America plans to continue feeding her own and millions in other countries, yes, it matters.

I have been taught American society invests in public education for two basic reasons. Individuals are important to our society, and therefore, as with health and safety, we provide some form of public education to each individual within our society. Education is food for the individual. The education of individuals of our society is also good for society as a whole. The publicly supplied education adds value both to the individual and also to society as a whole. American society has never wavered on this matter since public education was instituted. Agricultural literacy should be a part of the value-adding process.

The National FFA Organization has developed several programs to promote agricultural literacy. One of them is 'Food For America'. 'Food For America' is a program designed for elementary students in grades 1 through 6 and teaches young students about the business of the food and fiber system. 'Food Watch', a program coordinated by the ACA Education Foundation, publishes handouts about the food and fiber system. Several agricultural companies promote the agricultural industry through publications and workshops such as Monsanto, Merck/Ag Vet, Ford, and many more. Yet another way is Agricultural Expositions, such as the one the Kuna FFA Chapter sponsors.

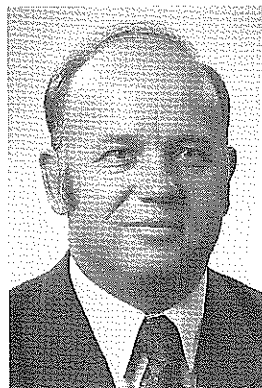
However, perhaps still the most productive way of promoting the agricultural industry is through the secondary Agricultural Science and Technology class room. Tomorrow's modern secondary agriculture program, through its comprehensive curriculum, will provide the student with a broad spectrum of experiences because agriculture will not pertain only to farming and ranching; it will also involve manufacturing, sales, service, management, marketing, communications, science, and technology. The

(Continued on page 19)



Future Agriculturists. (Photo courtesy of Kuna FFA Chapter)

## Agricultural Education/FFA: Extinction or Survival?



BY L. DEVERE BURTON  
Dr. Burton is state supervisor of agricultural education for the Idaho State Division of Vocational Education, Boise and Success Story Editor.

Sixty-five million years ago, dinosaurs roamed the earth, and the practice of agriculture was a way of life for earth's human inhabitants. Today, through the miracles of DNA research and genetic engineering, teacher Linda Rist and her agriculture students at West Central High School in Hartford, South Dakota have entered the era of Jurassic Park and Agriscience. Ms. Rist has taught secondary agriculture since 1984, and she is also a certified biology teacher. Since 1990, her agriculture program has evolved from a traditional production base to a new science based problem solving curriculum. An exploratory agriscience course has been developed for seventh grade students, and the high school courses include Natural Resources, Aquaculture, Animal Science, Horticulture, Landscaping, and Biotechnology. The Biotechnology course has been approved by the South Dakota Board of Regents for college admission science credit.

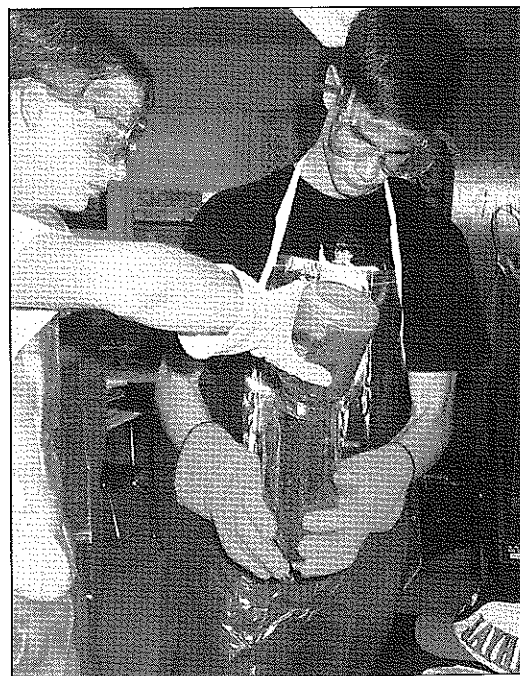
The motivation for changing the curriculum has been derived from the contagious enthusiasm of the instructor for learning new things, and from her desire to empathize with "how students feel" about the things they are learning. She is constantly asking herself, "what would I enjoy learning about, and how would I most enjoy learning it?" Revamping the curriculum to address the latest advances in technology in agriscience takes a lot of time! Ms. Rist looks for workshops and classes where she can get the kind of hands-on activities that create enthusiasm for living and learning. The best of these activities has been the Biotechnology workshop sponsored by the National Science Foundation at the University of Wisconsin-River Falls.

Curriculum focuses on the problem solving approach to learning. Her philosophy in teaching is to help students to become "thinkers" rather than people who need to be "spoon fed". Students need skills that enable them to ask questions and to apply a systematic method to the solution of their own problems. Ms. Rist's students are involved in research projects of varying length and complexity. All students utilize the scientific method of discovery in their daily lab activities and reports. Agriscience course work is composed of 40% hands-on laboratory activities. Laboratory equipment to make this possible was purchased through a grant for \$39,000.00 which the

department received in 1993 to start the Biotechnology course. This grant was made available through the State Office of Vocational Education.

Integration with the academic curriculum has been accomplished through a solid working relationship between the biology and agriscience departments. They worked together to match competencies that were included in both areas. They also addressed the national standards for science and for mathematics. All courses are offered for equivalency credit, and the Biotechnology course is accepted for college admission. The widest variety of scientific competencies fall into this course. Areas of study include DNA, electrophoresis, restriction enzyme and DNA fingerprinting, microorganism studies, genetic engineering, cloning, use of monoclonal antibodies as well as culture of plant and animal tissue.

Involvement with Tech Prep has led to serving on the consortium steering committee for the southeastern region of South Dakota. Integration of the Applied Biology Chemistry (ABC) curriculum materials has been a large component of the Tech Prep movement in→



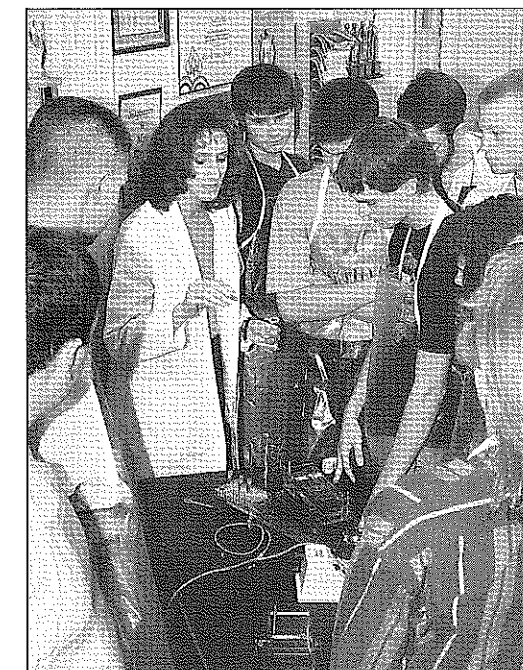
Including the study of microorganisms in the soil with the traditional study of soils and soil judging provides students with a glimpse of a world they may never otherwise see or understand. (Photo courtesy of Linda Rist, West Central High School, Hartford, SD.)



The study of bacteria in a high school agriculture program would seem to be more practical than in a science course; especially if one considers the impact bacteria has on agriculture. (Photo courtesy of Linda Rist, West Central High School, Hartford, SD.)

South Dakota. At West Central High School, the ABC curriculum was piloted during the 1993-94 school year, and has since been infused into all agriscience classes. Other Tech Prep involvement includes an articulation agreement with South East Technical Institute where horticulture students earn the right to waive three classes in the post-secondary horticulture program. The instructor is also working on a similar agreement for the biotechnology program offered at Lake Area Tech.

The West Central FFA Chapter has enjoyed a great deal of success. For the past four years, it



Experiments in the high school classroom provide an excellent alternative learning environment for students. (Photo courtesy of Linda Rist, West Central High School, Hartford, SD.)

has been named the number one chapter in South Dakota. West Central has been the state BOAC winner in 1992 and 1994, and was one of the top ten chapters in the National BOAC Award program in 1992. Including community involvement and service in the program of activities has done a lot to foster support for the FFA and the agriscience program. Public relations skills are used to publicize the successes of agriscience program participants, FFA members, and the FFA chapter. Administration, faculty and school board members have been very supportive of the program, and have seldom discouraged teacher requests to provide new opportunities for students. Ms. Rist fills the role of Vocational Education Department Head, and she makes a concerted effort to keep key people informed about what is happening in agriscience.

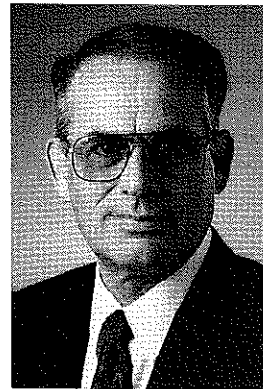
Strong students have been attracted to this agriscience program. Members of the senior class this year included the high school valedictorian and seven of the top fifteen graduating seniors. Attracting this type of student says a lot for the integrity and educational value of the courses that are offered. Student "word of mouth" recruitment has been one of the best sales and marketing tools for the agriscience program.

Agriscience and FFA programs must continue to evolve and change to meet the needs of our communities and students. Should we fail to evolve, we may find agriculture programs going the way of the dinosaur, being selected for extinction and replaced by other programs that choose to provide the services that are demanded by our consumers. ■



## The Earth and Agriscience.

Crunkilton, John R., Osborne, Susan L., Newman, Michael E., Osborne, Edward W., and Lee, Jasper S. (1995). Danville, IL. Interstate Publishers, Inc.



REVIEWED BY  
MAURICE E. JOHNSON  
*Dr. Johnson is Extension Professor Emeritus at the University of Idaho, Moscow.*

Their goal was to author an attractive, introductory book about agriculture for the middle school grades. John R. Crunkelton and associates have accomplished this goal and more.

The beautifully illustrated 374 page text covers five major topics; earth's resources, our food and fiber, using agriscience, protecting the earth, and a major section on careers. A truly modern and exciting approach to the study of agriculture.

Throughout the chapters, the authors have provided short sketches concerning the many career opportunities relating to agriculture. Following each chapter are the objectives to be addressed, and a highlighted list of agriscience vocabulary. The text includes an extensive glossary as well.

Each of the 27 chapters includes a summary of the main ideas discussed and questions to be answered. This is followed by an evaluation section including a chapter self-check and ideas for future exploring of topics from the chapter.

This text is appropriately written for the middle school age. It is strikingly illustrated with color illustrations and pictures on nearly every page. The organization of this book provides a good balance of science, conservation, personal growth and career exploration.

The Earth and Agriscience is an excellent resource book even if not adopted as a text. The hardcover list price is \$36.95, or \$29.56 for ten or more copies. A teacher manual is available. ■

## My Initial Perception Of...

(Continued from page 11)

will, in turn, educate the school and community around them.



The integration of science into the agriculture classroom enhances the perceptions of Agricultural Education for both students and the community. (Photo courtesy of John P. Mundt)

As I made my way through a high school agriculture program, the agriculture students, and especially the FFA members, seemed to not only continue their education, but also to enhance the knowledge of the community

about Agricultural Education. This education of the community about a high school program that was rapidly improving from its recent history continued to improve the opinion of the students, the administration, the school board, and the community. By continued efforts on the part of the agricultural educator, the positive opinions of the program garnered support from all aspects of the city and school communities.

The influence we have on students and the communities in which we teach as agricultural educators is not something to be taken lightly. As educators, we have an influence and a responsibility to the students in our classrooms. We also have a responsibility to our communities to educate their children as best we can in the industry of agriculture.

The agricultural educators I have had from Miss Lierman on have all had an influence on my perceptions of our chosen field. I hope that I can have the same positive influence on a student one day and encourage continued quality agricultural educators whose perceptions and beliefs have been shaped by the leaders in Agricultural Education. ■

## SAE: "E" is for the Experience!



BY DAVID DWYER  
*Mr. Dwyer is the agriculture instructor at East Magnet High School, Kansas City, MO.*

Agricultural Education students have conducted Supervised Agricultural Experiences (SAE) for as long as formal Agricultural Education has existed at the secondary level. The value and learning experience gained from an individual student's SAE has been immeasurable as far as long term benefits can be attributed. Former Agricultural Education students often remark on the intrinsic and extrinsic value received from their SAE. The matching of individual student's needs, resources and interests to an appropriate and acceptable SAE is undoubtedly the responsibility of the teacher(s) and a crucial factor in the student's success level.

The traditional SAE's of ownership and placement (production and agribusiness) have and continue to serve Agricultural Education students well (author included). Countless Agricultural Education departments are receiving new enrollees which are non-traditional, yet can be and will become valuable additions to the agricultural workforce. The importance of some relevant types of student SAE's should not be overlooked by the instructor. The dismissal of the need for and value of a student's SAE is often a poor excuse, rather than a valid reason, in these situations.

Agricultural educators with proper preparation and background have been successful in transmitting the concept and practices involved in an SAE. According to Experiencing Agriculture: A Handbook on Supervised Agricultural Experience, the direct intent of an SAE is to allow the student to link their career goals and interests in agriculture, agribusiness, etc. to the real world of an employer-employee relationship while developing their skills as a competent and productive citizen. Accurate record keeping and constant supervision and instruction are also necessary.

The importance and validity of the traditional SAE should never be dismissed or discarded!! Numerous Agricultural Education graduates have achieved throughout their lives due in part to their traditional SAE. The thrust of this article is to provide a realistic approach to "non-traditional" or "alternative" SAE opportunities for all students enrolled in Agricultural Education.

### SAE Opportunities

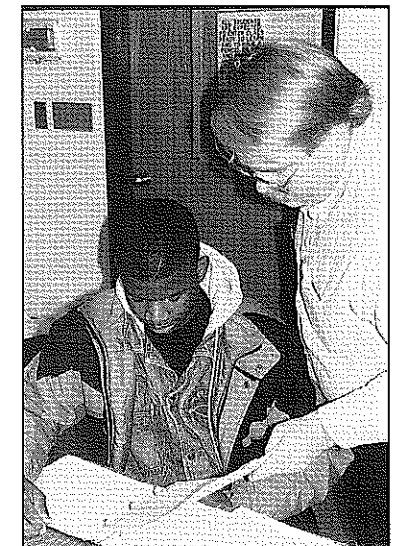
Those of us in Agricultural Education who have successfully completed an SAE know all

too well the need for and value of a relevant SAE! Arrington and Hoover (1994) reported that agricultural educators who had conducted an SAE as a secondary student tended to be much stronger in utilizing SAE as an instructor than those who lack that first-hand experience. To accommodate any non-traditional students in your agriculture program, alternatives (to the traditional) must be devised and implemented. How are non-traditional SAE's selected? How does an agriculture instructor assist a student in the development of such an SAE and then provide the on-going supervision?

Once a student selects and begins to implement an SAE, it becomes necessary for each student to readily identify his or her claim to an SAE. The need for and relevance of an SAE, even for non-traditional students, can not be over-emphasized. And the emphasis needs to be on the actualization of an acceptable and practical SAE.

### Guidelines for a Non-Traditional SAE

In order for an alternative SAE to be acceptable, both the student and the instructor need to be cognizant of the SAE and its actuality. This initial contact and selection may be classified as the first official SAE visitation (at school or on-site). The visitation must include a time-frame of what is expected from all parties (training agreement). The initial visit →



"Non-traditional students that receive timely and accurate instruction in SAE can develop and retain their eligibility for FFA awards, degrees and scholarships."

should occur during the first semester of the school year. The time between the first visit and the second visit, during the second semester, should include identification and supervision of the student's progress on their individual SAE. This can be accomplished by monthly checks on the student's record book. As an aside, the unwillingness of an instructor to be proficient in and utilize the standard record book can be and is damaging to student's SAE and FFA success level. Most states have state sanctioned record books for the more traditional SAE and agriculture programs. The type of SAE opportunities available to the students in an agriculture program will often determine the recordkeeping system used. However, accurate recordkeeping and systematic checking of students' record books are an absolute necessity regardless whether the agriculture program and associated SAE's are traditional or non-traditional in nature. Even in a non-traditional agriculture program, the traditional SAE and record books still have a valuable place. The key is to ensure that the student's interests and skills are effectively utilized and the records reflect as much. These general guidelines may vary from state to state and program to program, however, they provide the basis for each student to begin his or her SAE. Additionally, these guidelines are not radically different from those utilized in a rural, traditional agriculture program. The difference between the two is derived primarily from the technique and framework by which they are used.

### SAE Selection and Implementation

With the above general guidelines as a basis, SAE opportunities become active, on-going programs. The non-school environment of students often dictates the external parameters of an SAE. The following is an option to ensure SAE's continue to contribute and support the Agricultural Education program regardless of students' agricultural awareness level.

The National FFA Organization currently recognizes three types of SAE's: placement, entrepreneurship and exploratory. All three have intrinsic merit. Regardless of your agriculture program's nature (traditional or non-traditional), reality indicates the program must constantly deal with new, non-traditional, or late arrival students (regardless of grade level). Depending on the employment laws in your area, a student might consider an SAE such as an exploratory, job shadowing or directed laboratory SAE. For these SAE's to be valid, the SAE must incorporate recordkeeping, research skills, creativity and the students' own personal interests. After the student completes the initial "decision-making" about an SAE, the concept of the SAE needs to be solidified in some manner. An avenue worth considering is to guide the student by having him or her gather, sort, assemble and display their SAE materials and/or activities on

a project display board. Hands-on instruction can be combined with a project display of their SAE activities. Many sizes, colors and styles of display boards are available. This process enables students to display their work and readily identify their SAE activities and components. A noted vendor for display boards is:

Showboard, Inc.  
P.O. Box 10656  
Tampa, Florida 33679-0656  
Phone: 1-800-323-9189  
Fax: 1-813-876-8046

These display boards work well for illustrating and summarizing a variety of SAE-type activities, such as:

1. charting growth rates of poinsettias in the school greenhouse.
2. calculate and measure the water quality, oxygen levels, etc. for aquaculture production.
3. photograph or draw the rate of decomposition of worm bed materials.
4. illustrate the steps involved in home curing of hams, shoulders, etc.
5. contrast and compare the amount of exercise given to market lambs and their success in the show ring.
6. describe and explain a "day's work" during a job shadowing experience.
7. plan and conduct a brand name preference trial or taste test on a common food product.

The display board concept enables the students in your charge to devise and carry out an alternative type of SAE project that hopefully will contribute to the entire program. This hopefully will prompt the student to seek employment and ownership of their topic(s) of interest. The board concept is valuable in helping to establish the basic buy-in or ownership concept commonly found in the more traditional placement and entrepreneurship SAE's which involve financial investments and earnings.

It allows a combination of alternative SAE characteristics to surface for consideration and review. A student pursuing a wool processing topic of interest may seek employment in the sheep industry. A student describing the steps involved in curing/smoking hams might be placed in a slaughterhouse or grocery store. It served to provide a link from the non-traditional to the traditional. Non-traditional students offered the opportunity to devise and implement an SAE program (of this type) are able to receive and better retain the true intent of an SAE: practical linkage of the classroom/laboratory to the real world while earning and learning.

Many other possibilities exist; these are just a few suggestions. However, remember, where there is student interest, there is a way to turn that interest into an SAE (with instructor →

guidance and support).

Depending on state requirements, students following the more non-traditional means of conducting an SAE may encounter difficulties when applying for the State FFA Degree, proficiency awards, scholarships and the like. However, it is important to note that without any type of SAE, all opportunities for any FFA achievement is eliminated! With the onset of the new FFA Awards Program, more opportunities may become available for the non-traditional SAE.

Lastly, students should have the opportunity to explain their SAE project. This might be done as a class presentation or in a local "SAE Fair." The particulars of such a "fair", the parameters of each SAE project to be included in the "fair" and the scoring and ranking criteria are so subjective and would be the responsibility of the individual instructor to develop.

### Conclusions

Whether the agriculture program is traditional or non-traditional in nature, students should experience the true value of an SAE since the concept continues to be a primary instructional tool in Agricultural Education. The key in a non-traditional agriculture program is to successfully match the resources with student interests and skills.

If each and every student cannot, upon request, identify their SAE and explain their record book, possibly then an SAE has not been established. An immediate goal of any SAE should be that each student involved can identify his or her SAE, explain its characteristics and the results sought and/or obtained.

The components that have been outlined and suggested in this article are not new or earth-shattering in Agricultural Education. What is earth-shattering is that with proper preparation and planning, real and acceptable SAE's for non-traditional students can become a reality rather than be dismissed as not being feasible. The actual experiences gained by students conducting an SAE (type of SAE is not important) often have more long-term benefits than are readily acknowledged.

Whether students become motivated by the income potential, FFA degrees and awards, personal achievement or some other factor, the "E" in SAE is for the Experience!

### References

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### Participants Perceptions

(Continued from page 4)

food safety? What child should not be instructed in the basics of proper food selection? So many times, we seem concerned about children knowing where milk comes from, when the awareness may need to be what milk is and how the consumer should handle it. Deciding whether someone is a participant or not is more a problem related to the relative degree of participation, rather than a dichotomous categorization. We seem to rule out participants because they are not here today. We are probably depriving ourselves of valuable information concerning the need for, and delivery of, our education programs. Many more folks would be participating in our programs if either they knew what we were doing or we knew what they needed to know how to do. It is a two-way road, with many turns and changes in the view depending on which way you are traveling.

### Summary

In summary, our educational program participants have much to offer us relative to their perceptions. However, we should also respect the opinions of those who chose not to participate. We need to balance the responses of both in order to get a clearer perspective of ourselves and what we are trying to achieve. The customer is always right, even when they have been shopping somewhere else. The quality of the information you get is directly related to the effort you exert to get it. ■

### Education about Agriculture

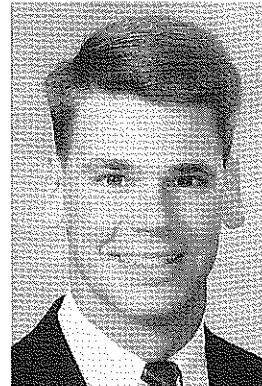
(Continued from page 13)

secondary agriculture student will develop competencies useful in many occupations other than in agriculture.

As society moves into the 21st century, the agricultural industry will prove its importance. However, only a few individuals like ourselves will know enough to recognize that importance. Unless, we as a society, fully implement the programs we have or design a program to meet the needs, we will figuratively starve to death because of lack of knowledge by the general public.

As an undergraduate studying Agricultural Education, I believe a great misconception about the agricultural industry exists and it is going to be my responsibility to do what I can to change that misconception. Will I be able to impact the misconceptions by just teaching the few student in my school who will enroll in my agriculture classes and maybe already have more agricultural literacy than I will be able to provide or will I have to reach out and teach students and others that do not normally enroll in high school agriculture classes, and like the rest of society, do not have even a rudimentary understanding of agriculture? ■

# Agriscience: Leading Agriculture into the 21st Century



By MATTHEW J. LOHR  
Mr. Lohr is a senior in agricultural education at Virginia Tech, Blacksburg and won first place in the 1994 ATA Essay Contest.

Over the past 300 years, American agriculture has been under continuous change. New insights and innovations constantly lead the industry into uncharted territory. The cotton gin of 1793 and the steel moldboard plow in 1837 greatly increased production while reducing human labor (Lee & Turner, 1994). In the early 1990s, scientific research in genetics and hybrid corn again revolutionized agriculture. Today, gene cloning, gene splicing, genetic engineering, and transgenetics are a few ways agriculture is reaching unseen heights. In a world where populations continue to expand and farm land continues to decline, agriculturists must rely on agriscience as we prepare for the 21st century.

Agriscience education is defined as the application of scientific principles in the teaching of agricultural practices. Although many people regard combining agriculture and science as a relatively new concept, it actually has been in existence for over 100 years. The 1887 Hatch Act which established experiment stations states, "... to promote scientific investigation and experiment respecting the principles and applications of agricultural science ..." (Kerr, 1987, p.208). This combination of science and agriculture served as the basis for education in early American schools (Sutphin, 1992).

The separation of the two entities occurred with the adoption of the Smith-Hughes Act of 1917. This act clearly labeled Agricultural Education as a vocational subject and funding was generated accordingly. The scientific principles were shifted to the academic science classroom and the distinction between vocational and academic was created.

When the National Research Council published the so-called green book, "Understanding Agriculture: New Directions for Education" in 1988, however, this founding philosophy was challenged. After years of interviews and research, experts concluded that scientific applications must return to Agricultural Education in order to keep up with the changing demands of the food and fiber industry.

The green book states, "Teaching science through agriculture would incorporate more agriculture into curricula, while more effectively teaching science" (NRC, 1988, p.11). The Council also recommended that science and Agricultural Education teachers work together

to teach jointly and conduct research. This would maximize both resources and subject matter for the students.

Six years have passed since the release of that historic document. Although there was much opposition and resistance to change at first, reality is gradually sinking in to those involved in Agricultural Education. The number of farms in the United States over the past seven years has declined nine percent. The number of acreage in production also declined five percent during the same period (Krebs & Newsman, 1994). With an increasing population worldwide and decreasing numbers of farm land, changes must be incorporated on every educational level to continue feeding the world.

Agriscience is slowly becoming integrated into elementary programs. "In elementary schools, the most realistic way to infuse science and agriculture is to introduce hands-on modules, or units of instruction, that supplement and eventually replace existing curriculum and textbooks" (NRC 1988, p.13). Cary Trexler, coordinator of the ABC in science program in Michigan, stresses that schools should agree upon core subjects, select themes, align these themes with science subjects, write hands-on activities, and then run field tests (Trexler, 1994). Since the youth are indeed the future, education of science in agriculture must begin at the earliest of ages.

Middle school and high school programs are incorporating new scientific ideas into the classroom and laboratory everyday as well. Instead of teaching traditional livestock identification, students are learning about gastrointestinal tracts of beef cows, nutrition, digestion, and reproduction. By working with both science teachers and community businesses, students can get a first hand look at science and agriculture working together (Hook, 1992). These are the necessary additions to the classroom that must be incorporated.

Despite the fact that less than 1.5 percent of our population is engaged in production agriculture, over 20 percent remain involved in other aspects of the industry. Careers range from marketing and processing to research and education. Agriculture is becoming highly technical and scientific skills are a necessity for survival. Since the landmark 1988 study by the National Research Council, efforts are being made on all levels to incorporate agriscience →

into our schools and curriculum. These efforts are vital to feed and clothe the world in uncertain times. Agriscience along with education will be the vehicle to lead agriculture successfully into the next millennium.

## References

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## Ag.Ed. You don't have to be a Teacher

(Continued from page 6)

ed. I expected to be bored out of my mind in the traditional education classes, however, thus far that has not been the case. In "Educational Psychology", for instance, I learned many useful theories about conveying information in a manner acceptable to the immediate audience. After 35 years, I finally understand brainstorming thanks to my "Ed Psych" professor. By the end of the class, I realized all the techniques for learning we discussed in class can be easily adapted and applied to any piece I write.

While I have for the most part enjoyed the traditional education classes, the required week of observation did reinforced my reasons for not wanting to be a high school teacher. I admire those with the intestinal fortitude to be confined in a classroom with teenagers who think they know everything. Frankly, I simply do not have what it takes to be a teacher of

## Participating In Ag. Ed.

(Continued from page 5)

years, that a teacher needs to do the best he or she can, and there are some things which will not get done. Becoming as organized as possible helps a lot! If something is not going to get done, it had better be the lower-priority items, not a critical one! Practicing this philosophy will help a person to sleep much better at night.



Success cycles into motivation, motivation cycles into success. A whole story in the picture. (Photo courtesy of Diana Loschen)

Danville, IL. Interstate Publishers, Inc.

Lee and Turner. (1994). *AgriScience and Technology*. Danville, IL. Interstate Publishers, Inc.

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Trexler, Cary. (1994). Building capacity for an innovative elementary agriscience curriculum. *The Agricultural Education Magazine*, 67 (1), 17. ■

youth. I think I could be an effective teacher in a class of adults, but my impatience with teenagers would preclude my effectiveness with them.

All things considered, if the next year and a semester are as interesting, enlightening, dissatisfying, distracting, unusual, and generally fun as the last year has been; I may stay here a while longer and work on a master's degree in Agricultural Education. The Agricultural Education faculty and staff here at Clemson have done more to shape the direction of my future than any other people in my life except for my mother. She gave me the desire to be a writer many, many years ago and for that I am eternally grateful. Therefore, to accomplish my ultimate goal of being a published author, I chose Agricultural Education as a degree. I understand now that Agricultural Education is not just about education in the traditional sense, but about communicating in general. ■

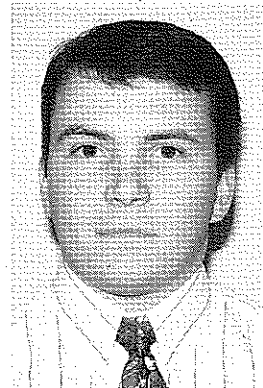
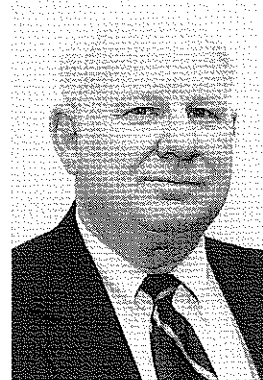
There are several commercial planning systems available. They can be an invaluable help in managing the challenges encountered.

Over the years of my involvement in Agricultural Education, I have seen several changes in the focus of classroom instruction. We are moving to realize that few students will ever go on to be farmers, and we form our curriculum around the needs of the students. This has brought about an increase in the sciences and a decrease in such things as shop work, etc. I, personally, feel that our students still need to know the basic of "production agriculture" since they may be involved in a sales, service, or other facet of the agricultural industry. I find it difficult to imagine a person being a successful salesperson if he/she doesn't know the production background behind the product being sold.

My personal experiences in Agricultural Education have taken me down a very interesting, enjoyable, and challenging path in my life thus far. It is my hope that thus far I have made a positive impact in my students' lives. I look forward to where the Agricultural Education path leads in the future. ■



# A Model Prony Brake Dynamometer for Teaching Rotary Horsepower Concepts



BY DONALD M. JOHNSON, CLIFTON R. BRAKER AND VANCE W. KEATON

Dr. Johnson is an associate professor of, Dr. Braker is a professor of and Mr. Keaton is a senior in agricultural and extension education at the University of Arkansas, Fayetteville.

As agricultural educators move to a more science-based curriculum, it is essential that we retain our commitment to providing students with active learning experiences. Recent research (Korwin and Jones, 1990) indicates that both learning and retention of technical concepts are enhanced when hands-on activities are used to supplement classroom instruction.

This article describes an easily built, inexpensive prony brake dynamometer that can be used to actively involve students in studying rotary horsepower concepts and calculations. Hopefully, this article will stimulate teachers to develop and share ideas about teaching materials and activities that promote hands-on learning of science concepts important in agriculture.

## Horsepower

In the United States, the horsepower unit is the commonly used measure of the power output of internal combustion engines and electric motors. One horsepower is the ability to do 33,000 foot-pounds (ft-lbs) of work in one minute (or 550 ft-lbs of work in one second). The basic horsepower formula is presented below as Equation 1.

### Equation 1.

$$HP = \frac{F \times D}{T \times 33,000}$$

where,

HP = Horsepower  
F = Force (lbs.)  
D = Distance (ft.)  
T = Time (minutes)  
33,000 = A constant

Equation 1 is appropriate for use in calculating horsepower when the force moves in a linear (straight-line) fashion. [Johnson (1993) described an activity for teaching linear horsepower calculations.] However, since electric motors and internal combustion engines produce a rotary output force, Equation 2 (which is mathematically derived from Equation 1) is commonly used to calculate motor and engine horsepower.

As shown in Equation 2, rotary horsepower can be calculated if values for two variables (torque and rpm) are known. The prony brake

### Equation 2.

$$HP = \frac{T_o \times N}{5252}$$

where,

T<sub>o</sub> = Torque (lb-ft)  
N = Revolutions per minute (rpm)  
5252 = A constant

dynamometer described in this article allows students to determine these values and calculate rotary horsepower output in a classroom setting. The prony brake dynamometer is shown in Figure 1.

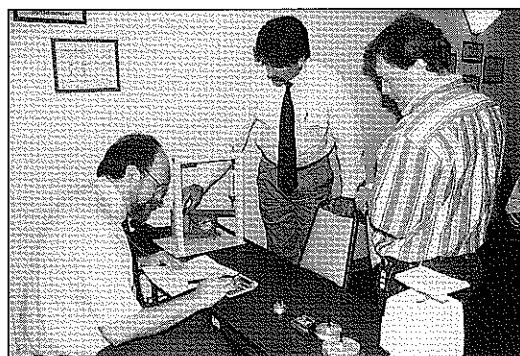


Figure 1. Arkansas in-service workshop participants use the prony brake dynamometer to complete rotary horsepower activities. (Photo courtesy of Jasper Lee)

## Dynamometer Construction

The prony brake dynamometer is designed for use in determining the horsepower output of rechargeable electric screwdrivers. Using an electric screwdriver as the power unit has two advantages. First, since most electric screwdrivers produce limited output force, student safety is enhanced. Second, because electric screwdrivers turn at slow speeds, rpm can be determined visually, without a tachometer.

The primary components of the prony brake dynamometer are the: (a) output pulley, (b) load unit, (c) lever arm, (d) scale, (e) frame and base, and (f) support blocks. (Note: A drawing of the prony brake dynamometer appears on the back cover of this issue.) The frame is made of tube steel, and the base is made of 1/8-inch steel plate. The support blocks and load unit are made of scrap lumber. The materials cost for the dynamometer is less than five dollars (excluding the electric screwdriver). →

The size of the dynamometer can be varied as desired in order to use available materials; however, calculations are simplified if the lever arm (horizontal distance from center of output pulley to scale attachment point) is exactly 6-in. (.5-ft) long. Also, the usefulness of the dynamometer is enhanced if it is constructed so that the screwdriver's recharging unit can be attached while the screwdriver is mounted in the support blocks.

## Dynamometer Operation

To operate the dynamometer, secure the electric screwdriver in the support blocks. Attach the output pulley to the screwdriver by slipping the pulley over the screwdriver shank and tightening the pulley set screw. Set the screwdriver to rotate in the direction that will cause the lever arm to pull against the spring scale. Adjust the set screws on the load unit so that a moderate amount of slip occurs between the output pulley and the load unit as the screwdriver rotates. Switch the screwdriver 'on' and count the number of pulley revolutions for a one minute period. (A mark placed on the pulley will help assure an accurate count.) Also, note the force reading from the scale.

The torque produced by the screwdriver can be calculated by multiplying the reading from the scale (lbs) by the length of the lever arm (ft). Once torque has been determined, students can calculate the power output of the electric screwdriver by inserting known values into Equation 2 and solving for horsepower.

## Example Learning Activities

The prony brake dynamometer is an excellent way to provide hands-on experience with rotary horsepower calculations. Imaginative teachers can develop several other interesting activities that teach and/or reinforce basic science concepts using the model dynamometer. Two example activities are described below.

### Student Screwdriver Contest

The study of rotary horsepower can be made more interesting by holding a student screwdriver competition. In the competition, students bring rechargeable electric screwdrivers from home and compete to determine which screwdriver is capable of delivering the highest output horsepower. Depending on how far the teacher wants to go with this activity, students could compete in power classes based on the manufacturer's rated output for the screwdriver.

### Relationship between Speed and Torque

The model dynamometer can be used to illustrate the inverse relationship between speed (rpm) and torque for a fixed horsepower motor. Simply operate the screwdriver under two test conditions. In the first test, loosen the load unit set screws so that a high degree of slip occurs between the output pulley and the load unit. Record the necessary values and calculate the screwdriver's horsepower output. In the second

test, tighten the load unit set screws so that little slip occurs between the output pulley and the load unit. Again, record the necessary values and calculate the screwdriver's horsepower output.

The first test should produce a high speed value and a low torque value. The second test should produce a high torque value and a low speed value. Since the numerator of the rotary horsepower equation (Equation 2) is the product of speed and torque, for a fixed horsepower motor an increase in speed must be accompanied by a proportional decrease in torque. Similarly, an increase in torque must be accompanied by a proportional decrease in speed.

## Summary

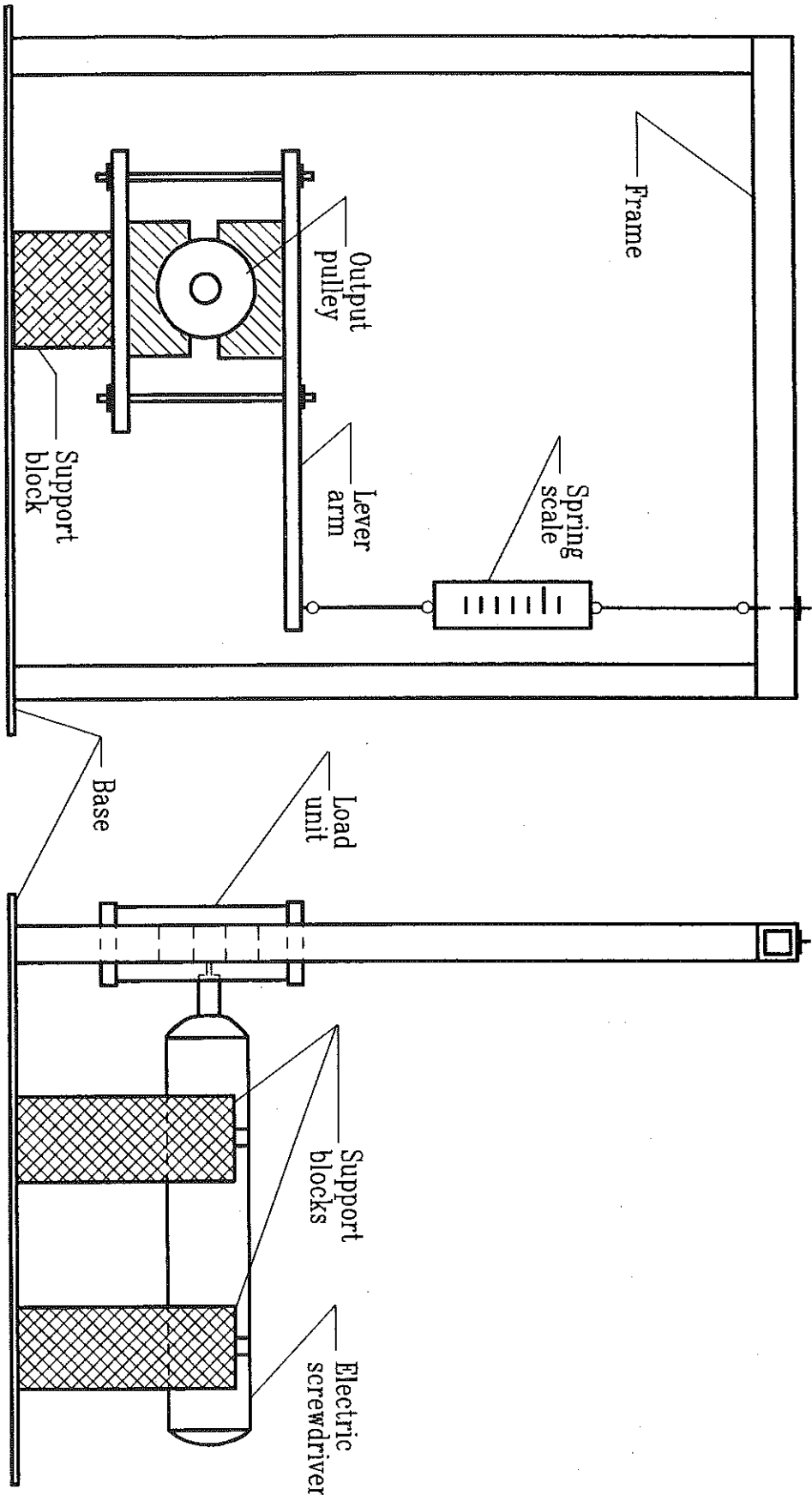
The prony brake dynamometer described in this article was constructed to allow students to gain hands-on experience with rotary horsepower concepts and calculations. As agricultural educators move to a more science-based curriculum, it is essential that we not abandon our commitment to providing students with active learning experiences. Teachers are strongly encouraged to share teaching materials and activities which they have found to be successful.

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Editor's Note: A drawing of the Prony Brake Dynamometer is located on the back cover of this issue for ease of copying.



University of Arkansas

PRONY BRAKE DYNAMOMETER

Drawn by: Donald M. Johnson

Scale: None January 24, 1995