November-
December
2000
volume 73
issue 3

The Agricultural EDUCATION MAGAZINE

Trends and Issues Affecting The Future of Agricultural Education

Will They Vote Agricultural Education Off the Island?

By Greg Thompson and George Copa

This summer on CBS, over 51 million people tuned in to watch the final episode of "Survivor" to find out who would win the $1,000,000. The series featured sixteen castaways marooned on a remote tropical island in the South China Sea. They must band together to find food, water and shelter, and build a world themselves. Yet, each week they vote to expel one person off the island. The final episode of "Survivor" was watched around the world, "Survivor" theme parties were the fad, and the program received the second highest rating in CBS history. A recent visit to an agriculture classroom revealed even students got into the show. Upon being called for the answer to solve a problem, a student quipped, " If I get the answer right, will I be granted immunity?" The teacher joked, "No, but you may get voted off the island if you get it wrong."

Agricultural education has been involved in its own version of "Survivor" throughout its history. We have survived challenging times in our educational system and responded with a defined purpose and focus on the future. As we address trends and issues in agricultural education, it is important to reflect on the foundations that have kept us on the island. We must rely on the experience of our "survivors" to help guide us into the future and remind us of the premise that has kept us a strong and viable entity in the American educational system. Our educational leaders will continue to provide us with the vision and educational philosophy for understanding past decisions, which will help us understand the reasons for educational trends and issues today and give us the immunity for making the same mistakes in the future. At the same time, we look to our beginning educators to bring to the profession new ideas and a broadened mission to meet the needs of emerging technologies in a dynamic industry and changing society.

In the show "Survivor" an alliance was formed with others on the island to stick together and work toward a common goal. In agricultural education, we have formed alliances that have kept us strong through past educational reforms. In fact, we have won many immunity challenges because our programs have collaborated with business and industry, as well as other educators, to make ours a unique delivery system. Business, industry, and government must continue to support us in our endeavor to educate students, as they won't be successful in the future unless we are successful in educating their future employees.

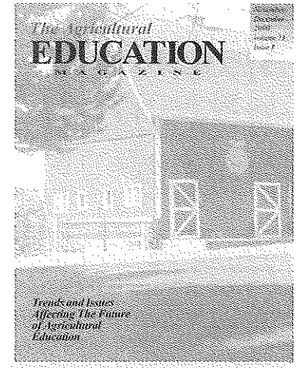
Team AgEd is an alliance that will help prevent agricultural education from getting voted off the island. The Team AgEd concept should be embraced not only on the national level, but the state level as well. If teacher education, state supervision, and teachers are truly engaged to helping students and bettering agricultural education, we must work as a team. States with a strong agricultural education program have teachers, teacher educators, and state supervisors working together to move agricultural education in a positive direction. The health of agricultural education relies on commitment of effective people in leadership. Team AgEd is a positive move toward unity and strength that will help us survive on the island and meet the challenges that lie ahead.

Teaching is very demanding. It is challenging to teach today and even think about the future. Nevertheless, this is exactly what we must do. We must adopt forward thinking attitudes and actions. We must study the types of skills and knowledge people will need to be successful in the twenty-first century. We must adopt a positive attitude toward professional development. If we have been in education very long, we are well aware of the criticism and challenges that education has faced on an on-going basis. These pressures are not "cry wolf" demands, but real and necessary calls to improve. They are not being issued because we are not doing our job. Rather we are being challenged because the world our students live in has changed.

Times have certainly changed in agricultural education. However, we can all agree there are many changes yet to come. Agricultural education will survive and thrive on the island because of our successful history and our commitment to the future. We have been successful in the immunity challenge because our programs have adapted to a changing society. "Survivor" producer Mark Burnett summed up the show "Survivor" in saying, "Each day brings an exciting

(continued on page 5)

Theme: Trends and Issues Affecting the Future of Agricultural Education



Editorial

Theme Articles

Joe Scatterscrew

Subscriptions
Subscription prices for *The Agricultural Education Magazine* are $10.00 per year. Foreign subscriptions are $20.00 (U.S. currency) per year for surface mail, and $40 (U.S. currency) foreign airmail (except Canada). Single copies and back issues less than 10 years old are available at $2 each ($3.00 foreign mail). All back issues are available on microfilm from UMI University Microfilms, 300 North Zeeb Road, Ann Arbor, MI 48106. UMI University Microfilms telephone number is (313) 761-4700. In submitting a subscription, designate new or renewal and provide mailing address including ZIP code. Send all subscriptions and requests for hard copy back issues to the Business Manager: Rosco Vaughn, Business Manager, National Council for Agricultural Education, 1410 King Street Suite 400, Alexandria, VA 22314, Phone 800-772-0939.

Article Submission
Articles and photographs should be submitted to the editor, regional editors or theme editors. Items to be considered for publication should be submitted at least 90 days prior to the date of issue intended for the article or photograph. All submissions will be acknowledged by the Editor. No items are returned unless accompanied by a written request. Articles should be typed double-spaced, and include information about the author(s). One hard copy and one electronic copy of articles should be submitted. A recent photograph should accompany the article unless one is on file with the editor. Articles in the magazine may be reproduced without permission.

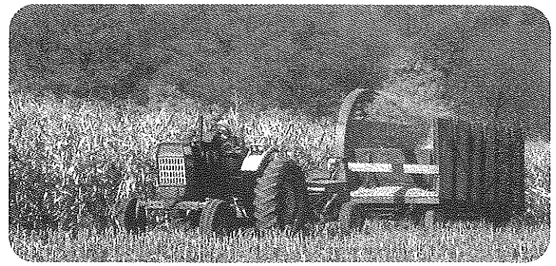
Editor
Gary E. Moore
Department of Agricultural and Extension Education, North Carolina State University, Box 7607, Raleigh, NC 27695-7607, Phone (919) 515-1756, FAX: (919) 515-9060.
E-mail: gary_moore@ncsu.edu
Design and Layout: Linda M. Judge

Publication Information
The Agricultural Education Magazine (ISSN 073224677) is the bi-monthly professional journal of agricultural education. The journal is published by the Agricultural Education Magazine, Inc. and is printed at M&D Printing, 616 Second Street, Henry, IL 61537.

Periodicals postage paid at Mechanicsville, VA 23116; additional entry at Henry, IL 61537.

POSTMASTERS: Send Form 3579 to Rosco Vaughn, Business Manager, 1410 King Street Suite 400, Alexandria, VA 22314, Phone (800)-772-0939.

Agriculture: *Trends and Issues*



By Dennis Avery

America's agricultural education will face its biggest-ever challenge in the next 50 years: helping farmers gear up to supply nearly three times as much.

Today, the world's farmers are feeding only 6 billion people, and only about 15 percent of them are eating high-quality diets. But high technology, freer trade, and spreading democracy are driving higher incomes in emerging countries. By 2050, the world will probably have a peak population of 8.5 or 9 billion people, nearly all of them demanding high-quality diets for their kids. Even Russia and Sub-Saharan Africa may be able to afford high-quality diets.

Americans now have 113 million companion cats and dogs. A rich, one-child China in 2050 is likely to have 500 million companion cats and dogs.

Viewed from a global perspective, American agriculture deserves to prosper in the 21st century as it never did in the 20th. America has the world's largest tracts of prime farmland. With its pioneering use of conservation tillage, integrated pest management, and biotechnology America also has the world's most sustainable farming.

Rural America must plan to have at least as many jobs in farm management, research, farm input supply and food processing in 2050 as we have currently. If the world liberalizes trade so American farm exports can help save the tropical forests in densely populated Asia, there should be even more agriculture-related U.S. jobs in 2050 than today.

Without a tripling of U.S. crop yields and a major increase in U.S. farm exports, the world will almost certainly lose a major part of its wildlands and wild species. Equally vital, researchers have found almost as many wildlife species in five square miles of tropical forest as we've discovered in the whole of the United States.

If the trend toward freer trade is extended to farm products, Europe will end its export dumping, and world market prices for farm products are likely to rise 25-50 percent. Sales to emerging Asian economies will soar. U.S. farm exports might very well double within a decade, from the current $50-60 billion per year. The extra billions in income are likely to be earned with the land, labor, and equipment already on our farms so net farm income would increase dramatically.

The current organic food fad is likely to fade. Organic officials in both the United States and Britain have recently admitted that their industry has no proof of any nutritional or safety benefits. Katherine DiMatteo of the Organic Trade Association admitted this on ABC-TV's "20/20" program on February 4, 2000. The British organic industry admitted it to a government hearing in 1999.

The Food and Drug Administration says we get less than 1 percent of the Acceptable Daily Intake of pesticide residue. Their standards take full account of children, with thousand-fold safety factors built in. The research of Bruce Ames, who just received the National Science Medal from President Clinton, says 99.99 percent of the pesticides we ingest are natural, growing in the plants to stave off bugs and bacteria. So much for organic food being pesticide-free.

Organic farmers' yields are only about half as high, which means a global organic mandate would destroy perhaps 10 million square miles of wildlands. Meanwhile, organic farmers fertilize food crops with animal manure, which contains virulent pathogens such as E. coli O157, which can kill even healthy people, and leaves many of its survivors with permanent damage to internal organs.

In 1997, Dr. Robert Tauxe, of the U.S. Centers for Disease Control, told the Journal of the American Medical Association that "Organic means your food was grown in animal manure." He said America needs to get animal manure out of its food production, especially because of the virulent new bacterial threats including E. coli O157 and Salmonella typhimurium.

Mainstream farmers prefer to use safer chemical N on the foodstuffs. (It's taken from the air, which is 78 percent N.) They put the manure on feed crops.

At this moment, thousands of Americans die every year from foodborne bacteria, but we are still looking for the first victim of pesticide residues.

Can we sustain the upward trend in world food production? The latest soil erosion data is highly encouraging. A recent "soil archeology" project in the highly-erodable Coon Creek watershed of Wisconsin found its farms suffering less than 6 percent as much erosion as in the Dust Bowl days of the 1930s. Thanks to conservation tillage (with herbicides) they are now building topsoil depth and organic content.

Even more encouraging, biotechnology is apparently the most powerful tool humanity has ever discovered for improving agriculture:

- The new "golden rice" is engineered to overcome the Vitamin A shortage that currently causes millions of kids to go blind or die each year in poor rice-eating cultures. We need a comparable Vitamin-A enriched corn for Africa and Latin America.
- A new rice that carries a corn gene for higher photosynthesis yields 35 percent more grain per acre. This is just one of many biotech avenues for increasing crop yields to save room for wildlife.
- Gene mapping has allowed Cornell researchers to select genes from wild relatives of the tomato that rise yields a whopping 50 percent.

America will need an even more dynamic, higher-tech agriculture to ensure we can feed our kids and our pets in the 21st century without sacrificing the environment. We won't be able to meet the challenge without agricultural education.

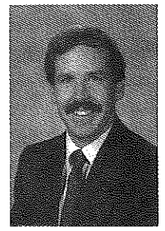
Dennis Avery is the Director of Center for Global Food Issues at Hudson Institute in Churchville, VA.

Will They Vote Agricultural Education Off the Island?...
(continued from page 2)

new chapter, as unexpected relationships develop and personal dramas unfold...There are no quitters among this courageous group of thrill-seekers." Agricultural educators have aspounded to continue to win the immunity challenges by preparing our students for the next millennium, building strong alliances with business and industry, and building a team approach to keep our programs current. It takes courage and leadership.

We hope you enjoy this issue of the Agricultural Education Magazine as authors representing agriculture and education challenge us to survive and thrive on the island. The framework this issue represents views from secondary and post-secondary institutions that house Agricultural Education programs. Authors representing different professional experience levels, geographical regions, as well as urban and rural perspectives across the U.S. have given their insights as to trends and issues that they face and their responses in carrying out their professional careers. Professionals representing the field of agriculture as well as education provide insights to agricultural education.

As educators, we must listen to what is happening in our institutions, community, state, as well as on the national level. Authors have given local, state, as well as national perspectives on trends and issues in agricultural education. Will agricultural education get voted off the island or will we adapt and survive to meet the new challenges that await us? The answer is in our hands.



Greg Thompson is an Assistant Professor of Agricultural Education at Oregon State University in Corvallis, OR.

George Copa is a Professor in the School of Education at Oregon State University in Corvallis, OR.

Community and Technical College: Trends & Issues

By Betty Duvall

New trends in community college teaching/learning call for faculty to significantly revise the primary activities in which they engage. Previously, the primary job of the teacher was to choose the material to be presented, to organize that material, and then to present it in an interesting way such that the learner was compelled to learn. Teaching/learning centered on the teacher.

Now, learners have become the center of the teaching/learning enterprise and the role of the teacher in the community college is to diagnose student learning needs and develop learning activities that will enable individual students to learn. Different students within a class may have different learning needs and require differing "prescriptions" for learning.

Often termed active learning, the job of the teacher becomes far more active as well. As coach, mentor, the teacher acknowledges student learning and develops activities that build on the learning already acquired. As part of this activity, students are often brought together as a community whereby they may share learning and learning activities. Such a learning community requires students to be teachers and allows teachers to be learners. The result of active learning, is the potential for longer retention of material learned.

New technology is an indisputable trend in learning. Whether used as learning support or as delivery system, the computer and the access it provides to the Internet, provides an unprecedented expansion of teaching/learning opportunities. Students and teachers have access to information beyond any one library or any one person's knowledge. Furthermore, adults are painfully aware that every child and young adult is adept at finding and using this new information delivery tool and expects to use this tool in their formal learning. At a minimum, the new technology provides an opportunity for ease in communication between student and teacher, student and student, and at its best use greatly enhances learning opportunities at the time learners are ready to learn. Students, with their teacher/coaches may more readily find learning opportunities to meet their prescribed learning needs. The role of the teacher here is far more than Internet traffic director. With the plethora of information available, students need to be taught how to evaluate and choose among available information sources and how those sources can fit with formal classroom learning.

The new technology also provides exciting learning support. Students may literally or virtually work in the field on actual problems, analyze data, test hypothesis, and apply new ideas and information. Teachers no longer have to hope students will see relationships between theory learned in the classroom and application in work. Motivation of learners is bound to increase as a result.

Moreover, faculty are caught up in expectations that they will make use of the new technology. Pressure to put courses on the Internet, to develop personal web pages is great. Questions regarding intellectual property rights – for faculty, students, and institutions – abound. Charges that institutions seek to use web courses (and the ownership of courses and software written for use in developing web courses) as a money making opportunity cloud the value of this teaching method.

With such new learning activities, an important role of the teacher is assessment of learning. To accurately assess learning achieved, the teacher must have developed the learning goals to be met, the outcomes desired, and to have conveyed those to students. More than a response to calls for accountability, more than the latest new fad, assessment becomes an integral part of the new learning process by assessing learning the student brings and new learning achieved.

Outcome measures require teachers to clearly state abilities students must attain at the end of the learning activity. Outcomes require teachers to think broadly about workforce needs and to think specifically about workplace skills. Often inherent in this are hidden remediation needs, basic skills that are only revealed in higher level learning.

As if the teacher were not already overwhelmed with new teaching methods and devices, the community college teacher must also prepare for an unprecedented diversity of students within a class. If students were once thought of as homogenous groups, that is no longer the case. Students come from a wide variety of cultural and racial backgrounds with a variety of learning needs and styles. Some students may be entering college and a profession (young); other students may be experienced workers who need to update skills or to retrain for new

(continued on page 9)

Improving Career/Technical Studies

By Gene Bottoms

The primary purpose of high school career/technical studies - as perceived by career/technical teachers - is to help students complete a program that prepares them for employment and further study. What changes do career/technical teachers need to make in what and how they teach to meet the demands of an economy that prefers workers with general, high-level academic and career/technical knowledge and skills rather than job-specific skills?

Someone with general, high-level knowledge and skills can upgrade to cope with changing workplace demands. Workers today need to know how to solve problems, communicate and work with others, be creative in dealing with customers, and use computer technology. In light of these requirements, here are 11 things career/technical teachers should stop and an equal number they should start doing in preparing students for the workplace and further study.

Start

- preparing students to advance in broad career/technical fields.
- making assignments that require students to do mathematics; read and interpret technical materials; research, analyze and organize information; solve problems; and apply academic and technical knowledge and skills in doing authentic workplace assignments.
- creating advisory committees composed of representatives of many different jobs within an industry and professors from two- and four-year colleges that prepare students to enter the field at a higher level.
- joining other career/technical teachers to set higher standards for students in career/technical courses.
- assigning open-ended problems.
- getting students to redo work until it meets standards.
- requiring students to use word processing, spreadsheet and presentation software; the Internet; and e-mail.
- having students pass a comprehensive exam that includes 1) a written portion on reading and interpreting technical materials, understanding major technical concepts, and applying mathematics to solve problems from broad career fields; 2) an oral report presented to a panel of experts who ask questions to find out if students know and can communicate the technical concepts and can deal with people in a variety of situations; and 3) a project in which students are evaluated on whether they used appropriate ways of thinking to complete the assignment.
- asking students to do open-ended projects, design and conduct research, read technical books and articles, and demonstrate understanding of what they have read.
- expanding student assessment to include comprehensive tests, portfolios, homework, and employers' exams.
- expanding assessment to get students to 1) write reports that explain what was done and why; 2) collect, synthesize and use information to complete a project; and 3) apply technical and related academic competencies to assignments.

Stop

- preparing students for only entry-level jobs.
- teaching only job skills.
- creating advisory committees representing only specific occupational fields.
- believing the only way to enroll students in your program is to have low expectations.
- doubting that career/technical students can solve complex problems.
- allowing students to do sloppy work.
- believing computer skills are unnecessary for your students.
- allowing students to pass a career/technical course without meeting standards on a comprehensive exam.
- making low-level assignments.
- limiting student assessment to attendance rates, shop observations, and shop-project evaluations.
- limiting classroom assessment to evaluating traits such as honesty and integrity, self-motivation, and the ability to work with others.

Gene Bottoms is with the Southern Regional Education Board in Atlanta, GA.
(no photo)

Trends in Australian Agricultural Education

By Petrina Quinn

Australian agriculture has many features in common with the United States of America. For example, the progressive intensification of agriculture, increased specialization of enterprises, aggregation of small farms and the reduction in owner operators, and overall fewer people employed in the agriculture and related sectors are similar. This article may be useful to readers in examining the same issues located in a different setting.

A global decline in interest in studying agriculture appears to reflect perceptions that agriculture is of declining importance in first world nations and offers fewer opportunities to individuals compared to high technology and high personal income careers. These trends may be associated with a bias in university entry towards urban students who are increasingly separated from food production and are thus relatively uninformed about agriculture and aspects of natural resource management.

A three-year investigation into Australia tertiary education has quantified enrolment reductions as high as 40% in some years for agricultural diplomas in contrast to steady enrollment levels in other subject areas. This has been linked to the decline in the agricultural work force as well as a general image of agriculture. Vocationally oriented courses are more directly tied to employment opportunities and thus can be a problem in areas of the economy, which are in decline.

Demand Profile for Graduates of Agricultural Education

The demand profile for graduates of Australian agricultural education has changed significantly in recent years. In the past, the researcher was a person described as being a good scientist, the technical specialist had a subsector description, and the extension officer was described as being a generalist. The agricultural universities or faculties of agriculture supplied the personnel for each of these layers. This is increasingly not the case with the scientific advances being applied in genetics, microbiology, and chemistry. Pure scientists are complementing agricultural scientists in agricultural research.

In the extension field the required mix of skills has also changed. Increasingly, business and marketing professionals and social workers complement the traditional extension officers. The treatment of farming as a business, the increasing sophistication of agribusiness, globalization and the rural urban demographic shift has resulted in a demand for skills of those trained outside of agriculture faculties. Environmental demands, such as natural resource management requirements, are also exerting pressures on agricultural education.

Those engaged in agricultural production for example, the owner-operators, are increasingly acquiring higher levels of knowledge than their previous counterparts. Similarly those supplying services through advice, sales, financial services, and general information in a changing agricultural environment too have higher levels of knowledge than their previous counterparts. At the same time, there is an increased responsibility to understand the implications of environmental impact and natural resource management, which require sound knowledge of the interrelationships of biological and social systems both in the present and longer term.

This leads to the debate about the disciplinary mix and the location within their discipline of those concerned with the teaching of agriculture. It is argued that those concerned with the teaching of agriculture should maintain close contact with the production aspects of their science. Professor Richard Bawden, Head of the School of Agriculture and Rural Development, University of Western Sydney, argues that whereas the earlier demand, from employers, was for graduates who could improve productivity, the demand now is for graduates who can manage rural practices which do not degrade biophysical or social cultural environments but enhance them.

Professional employment seems to be based around team assignments and task completion which are very different from memorizing information for representation in a two hour written examination used to assess students training for such positions. Given this, why could not a work-related approach be adopted for at least part of the education experience? The current model of agricultural science courses does appear to leave little scope for students to develop their analytical skills and incorporate their own life experience. The potential benefits of information technology and, in particular, multimedia as an adjunct to traditional teacher-based lecturer delivery, would seem to be worthwhile exploring.

Australian Faculties of Agriculture are broadening their curricula to reflect a more comprehensive and global vision of the food and agricultural system. Such broadening is important for the future of Faculties of Agriculture; although such a broadening and the diverse knowledge, thinking, and vocational skills required can generate tensions and concerns for those designing, delivering, and evaluating these courses. While teaching programs must remain relevant to general production issues facing producers, relatively few students will own or operate farms in the near future.

Challenges for Tertiary Agricultural Curriculum

The curriculum of faculties and schools of agriculture have been largely concerned with the dissemination of technical and scientific knowledge. It is difficult to be otherwise when technological and scientific knowledge is estimated to be expanding by approximately 40% annually (The National Academy of Sciences, 1992). With increasing diversity of student enrollment, along with the need for Australian agriculture to become more competitive in a global economy, curriculum revision should emphasis critical thinking within a broader, more complex framework.

One response is that curriculum review and revision should concentrate less on technical knowledge and more on problem solving, communication, international and interdisciplinary perspectives of agriculture, foreign languages, and concepts of lifelong learning. When these skills are carefully honed, students will have the capacity to better cope with the knowledge and technology explosion. The view is that any technical knowledge developed in a course is likely to be soon out of date.

This view is based on a belief that the development of able students themselves, as informed inquirers, will increase their capacity to cope with the knowledge explosion and the variety of contexts in which they may be called to work. Additionally, there is an expectation that these students will be able to successfully negotiate the range of opportunities made possible through new technologies.

Industry, faculty members, and current and prospective students may have differing perspectives on agricultural education. Faculty members tend to focus on the technical content of which they are experts. Prospective students have a different viewpoint. Curriculum development in universities is becoming a more complex issue as potential students have become better informed.

Courses must now:

- √ have an excellent employment record as an outcome;
- √ attract high calibre students;
- √ have a well-articulated and attractive conceptual framework;
- √ a range of satisfying and well-paid positions;
- √ be seen to be vocationally relevant;
- √ develop knowledge and skills which are widely applicable and not likely to date quickly;
- √ be seen to relate to an area of the economy that has a bright future.

On all the above counts, traditional courses in agriculture might not be expected to fare well in the eyes of prospective students. It is not surprising that many Australian University courses in the area have undergone extensive reviews and in some cases the responsible faculties have sought to reinvent themselves.

Petrina Quinn is a sessional academic in the School of Education, Charles Sturt University, Australia.

Community and Technical College Trends and Issues...

(continued from page 6)

careers (older). Both men and women have access to careers previously held for one gender. Students once thought of as disabled now enjoy new opportunities. Such rich diversity may provide challenges for the teacher, but it also provides rich learning opportunities for the new learning community.

Perhaps no other time has seen such variety in new trends in teaching and learning. If curriculum development and new teaching/learning methods incorporate these new trends, community college educational institutions will be revitalized and will point the direction for further new trends in education.

Betty Duvall is a Professor in the School of Education at Oregon State University in Corvallis, OR.

Que Sera Sera: What Ever Will Be Will Be ...Yea Right

By Rosemary Vernon and J. Scott Vernon

On the eve of the new millennium, not far from the edge of the world and in the middle of the new economy, agricultural education in California is "virtually" exploding. As we peek into the future we see a variety of revolutions and evolutions occurring in agricultural classrooms up and down the Golden State.

In a state where diversity in its people and in its fertile fields is common, agricultural education is changing to reflect the cornucopia of talent and tastes needed by the new economy of the cyber space world. According to Jim Aschwanden, the executive director of the California Agricultural Teachers' Association, "Agriculture is experiencing a technological revolution." He sees the dramatic impact technology (and not just computers) is having on the agricultural industry and notes that "policy makers and opinion leaders must understand the demands of our clientele." He says "students today must be taught how to think, how to learn, and how to use technology in a real world setting."

"We're living in a global economy that needs a global workforce," Aschwanden said. "This challenges us to rethink what we are teaching and why." He added "agricultural education is successful because we provide relevance to instruction and help students to make the connection to a dynamic world." He emphasized we "can't abandon our philosophy of applied learning."

With the tide rising on academic standards as the benchmark of student success, Aschwanden says "there is not enough Mark Twain and Huckleberry Finn in schools today." "Students need opportunities to explore different paths of learning outside the classroom to capitalize on their inquisitive minds—like Huckleberry Finn did," he said. "When we do this successfully, magic will happen."

Show Me the Scores

Educational reform movements have come and gone and have come again. According to Robert Heuvel, the California State Supervisor for Agricultural Education, this time a few key forces are here to stay. "Assessment and accountability are driving educational efforts in California," said Heuvel. "This trend will continue to affect what we do in the agricultural classroom. It will also have an impact on how we address the FFA and the SOE/SAE components of our instruction."

He indicates standardized test unfortunately cannot truly measure what a student has learned outside of the classroom. But he said, "we're being evaluated by the numbers generated on those tests and that drives the system." Yet Heuvel believes "the leadership and personal development experiences in the FFA are critical to a student's career success." "We have to help bureaucrats determine ways to evaluate the value and build support for leadership and career preparation that occurs beyond the walls of the classroom," said Heuvel.

A Few Good Men and Women

With the growth of high school agricultural programs up and down the "left coast," an ongoing shortage of qualified teachers exists in California. "The future for young people who want to teach agriculture is bright," said Heuvel.

Marc Coleman, the head of the agricultural department at Hilmar High School in Hilmar, California, echoes this need. "The academic standards in agricultural education today and in the future demand quality teachers. We need young teachers who have the energy and ideas to capture the imagination of our students."

He added, "I see a fundamental change in the core of our teaching profession. We're seeing less and less of the "good ol' boys" with years of practical experience. Teachers today, generally speaking, have less background in the FFA and the agricultural industry." Coleman says this is not all bad given their increased understanding and use of technology but it does provide a need for "more mentoring relationships in our profession."

"The teaching profession must wrestle with helping these young teachers develop strategies to extend their teaching careers beyond the first couple of years. We have some very talented young women teachers we can't afford to lose, but we have to adjust to help them balance the demands of a family and a career," he said. The Hilmar High School agriculture department was California's "Agriculture Program of the Year" for 2000.

It's the Curriculum

Everyone seems to agree that the future of agricultural education in California relies on the strength of the curriculum. Coleman said, "today's agriculture classroom in California is more rigorous and dynamic than ever before." "What I teach now is light years ahead of what I was teaching when I entered this profession 20 years ago."

Aschwanden says we must ask "is what we're teaching what's needed." If not then we must evaluate relevance of our instruction and make the necessary changes in our curriculum to remain viable. "The new world of e-commerce in modern agriculture has vastly different rules, not old rhetoric," he said. "The future requires that we prepare our students to apply abstract concepts to tangible problems."

That becomes increasingly difficult with the sweeping changes we're seeing in communities throughout California. Coleman said, "more of my students are coming from urban backgrounds." "Our programs must evolve to reflect the change in our communities. We can't keep teaching the same things," he said.

The Agricultural Divide

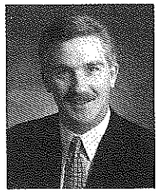
Just as computers and the cyber world have created a digital divide between those with access to technology, urbanization has created a divide between those who have experiences in agriculture and those who do not. With the rapid winds of change affecting our schools, Heuvel predicts a future that values, "collaboration that integrates agriculture across the curriculum." "Successful agricultural literacy efforts will have strategies to teach about agriculture in the social sciences, the life and physical sciences, the language arts, and mathematics," he said.

The Crystal Ball

While change is certain, the trends and issues affecting agricultural education in California are at the same time exciting and challenging. As Doris Day once said in a song, "the future's not ours to see, que sera sera." But given the collective wisdom of the leaders in our profession, quality assessment, ambitious curriculum standards, teacher quality and quantity, and agricultural literacy will capture our vision for some time.

Whatever the future, a high quality agricultural education program will continue to have a place here in the "land of fruits and nuts."

Rosemary Vernon is an Agricultural Sciences Teacher at San Luis Obispo High School in San Luis Obispo, CA.



J. Scott Vernon is an Associate Professor in the Department of Agricultural Education and Communications at California Polytechnic State University in San Luis Obispo, CA.

Coming Soon!

Learning Takes Center Stage for 2001

March - April 2001
Evaluating Learning in Technical Agriculture

Theme Editor:
Kathleen Kelsey
Dept. of Agricultural Education
448 Agricultural Hall
Oklahoma State University
Stillwater, OK 74078-0484

Agriculture Science and Technology Programs in Urban Markets: Adapt and Thrive, Stagnate and Die

By Lyman R. Hagen and Max J. Sherman

Most of us involved in the world of agriculture realize that modern agriculture is changing rapidly, and today's Agricultural Science and Technology programs must change to meet those needs. The urban market presents a whole new set of challenges. The majority of students and parents alike have no agriculture background and possess a low level of agricultural literacy. How can we educate the community and motivate young people to look at the exciting and challenging world of Agricultural Science and Technology?

Today's urban agri-science students are working with DNA strands, growing plants in test tubes, raising fish in greenhouses, and growing plants hydroponically. While working in laboratory settings the urban student is learning the same concept as the rural student, but perhaps with more focus on the latest technology. This approach helps to capture the student with a science concentration and/or a non-traditional agri-science student. Today's agri-science instructor learns alongside the students through inquiry rather than providing all the information, as well as all the answers.

The trends in the urban market are focusing more on the integration of science and agriculture and using new mediums to learn the same basic concepts related to livestock production and management. Courses are being redesigned to meet the interest and needs of today's students in the urban market. Animal and Plant Science classes are now more specific with names such as: Veterinary Science, Turf and Landscape Management, Equine Science, and Aquaculture, just to name a few.

Those involved in the agriculture industry, particularly production agriculture know the difficult economic situation facing today's farmers. The city folks must understand the plight of the American farmer and how critical he/she is to the welfare of the economy and political strength of the United States. At the same time, the city folks need to realize where their bread and butter comes from and what a bargain it is as compared to the rest of the world. They need to have a new appreciation for the agriculturists that fill their breadbaskets.

The 14-acre North Clackamas Agriculture Land Lab, situated in an urban setting, located ten miles south of Portland, Oregon is surrounded by expensive homes. The large red barns trimmed in white, white vinyl fences enclosing the lab, cattle, sheep, pigs, and John Deere tractors attract students. The program is attractive to the "city kid" because of the hands-on opportunities and relevance to the real world. The Land Lab is home to students from three high schools which make up the North Clackamas School District and also serves as a regional center for three additional high schools.

Students are bussed to the Land Lab every other day for a 2-hour block. During their class time, they receive instruction in the classroom and then get to apply that knowledge in real world applications on the Land Lab. The curriculum is changing from a traditional program to a more integrated science program working with biology and science teachers on joint projects. Through various grants over the last several years, the program has built 3 greenhouses, to give students the opportunity to work with horticulture, aquaculture, hydroponics, aquaponics, aeroponics, tissue culture, and biotechnology. More focus has been placed on agricultural sales and marketing, agriculture issues, agri-business management, and application of leadership skills through project-based learning and service learning.

Some of the key challenges for the agri-science instructor today are keeping current with all the new terminology, equipment, and the application of new technology. Grant seeking and writing has also become more important as school funding has changed drastically over the last several years. The titles of the course offerings have changed from the traditional Agriculture 1,2,3 and 4 to Introduction to Agricultural Science, Agricultural Science and Technology, Agri-Business Management, Animal and Plant Science, Equine Science, and Veterinary Science. Students and parents alike are more interested in courses that include the word science and have relevance.

A little south of Clackamas is Canby, Oregon also located in the north part of the Willamette Valley between Portland and Salem in a diverse agricultural area that has seen tremendous urban growth in the past 20 years. The row crop and nursery land is now becoming houses, streets, and parks, as Canby is serving as a bedroom community for the Portland Metropolitan area. The Agriculture program and FFA date back to 1929 and are valued as an important part of the comprehensive high school program offered to the students of Canby. Nearly 300 students are enrolled in Agriculture Science classes that encompass a traditional 4-year program with numerous semester classes that cater to the diverse needs and interest of the student population.

The technology greenhouse features hydroponics, aeroponics, tissue culture, and aquaculture.

During the 1980's the enrollment in the Agriculture Program and FFA started to decline, as the student population was becoming more urban. Through considerable input from the community, the Agriculture Advisory Committee and instructors instituted major changes. The traditional core was retained but was supplemented with numerous courses designed to meet individual needs. Course offerings in Floriculture, Tractor and Equipment Operation and Maintenance, Natural Resources, Landscaping, Equine Sciences, and Small Animals were the first of many changes. Instruction must be relevant, applicable, and challenging.

Recent changes in the program have focused around the integration of agriculture and biology through a student generated Project called AGBE, (Alternative Growing Biologic Environment). The past three years have seen a 300% increase in the number of students who are eager to have the chance to apply science principles in real life applications. Biotechnology applications in aquaculture, hydroponics, aquaponics, and the micropropagation of plants have provided opportunities for students to integrate science, math, communications, business, and English skills. The AGBE class is team taught with a biology instructor and an agri-science instructor working together. Students are encouraged to take an active role in their education and work side by side with the instructors who have become more of a facilitator than a teacher.

Program funding has been a challenge; however, with the addition of biotechnology to the Agri-Science Program, we have actively sought grants and industry support. Make education relevant and current and funding sources are available. Program success and exposure have led to continued support. Initial funding came from a $2000 grant aimed at integrating agriculture and science. To date, the AGBE project has attracted over $140,000 in grants and an additional $50,000 in donated equipment from industry. Students are active in marketing the project; tours are welcome with students making presentations and demonstrations. Much of the funding success has come from a mobile display, which was made possible by a Meyer Foundation Grant and a donated greenhouse that is mounted on a trailer. Workshops and demonstrations have been provided at other schools, inservices, the Oregon Museum of Science and Industry, farm shows, local open house events, and county and state fairs. Students and instructors have worked hard at making the project visible. We are looking forward to a new facility funded by a $3 million bond aimed at a complete remodel of the Professional Technical Facility at Canby High School. The Agri-Science Program is a model for other programs within the school as we constantly strive to infuse new technologies into the curriculum.

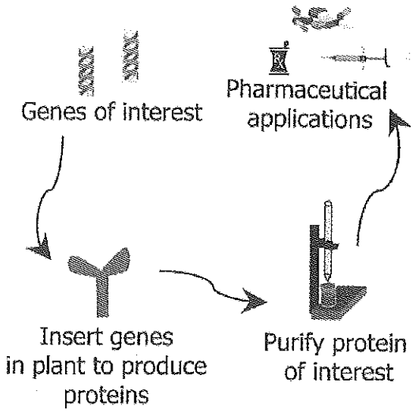
Constant evaluation of the curriculum and methods of instruction is necessary for the Agri-Science Program to change to meet the needs of today's rapidly changing student. The Agri-Science Programs at Canby High and North Clackamas takes full advantage of technology, integration, service learning, and business partnerships to provide today's urban students with the tools they need to succeed beyond high school regardless of their career path. Today's Agri-Science Program has seen dramatic change from the Vocational Agriculture Program that served the communities so well for 50 years. Changes in the future will come faster and more often; we look forward to the opportunities and challenges of tomorrow.

Lyman R. Hagen is an Agricultural Science and Technology Instructor at North Clackamas Land Lab in Canby, OR.

Max J. Sherman is an Agricultural Science and Technology Instructor at North Clackamas Land Lab in Canby, OR.

Teaching About Genetic Engineering

By Christine E. Beauprè and George W. Wardlow



The current world population is 6 billion and the United Nations estimates that by 2030 it will increase to 10 billion (1). Usable farmland will shrink while other land use demands will increase. Some estimates indicate that world food production will have to double on existing farmland over the next 30 years to keep pace with anticipated growth (1). Our food will need to be grown under non-optimal conditions, such as less water and poorer soil, yet it will need to have added nutrition to adequately feed the populace. The biggest question facing agriculture today is how do we provide an increasing population with sufficient quantities of nutritious food while limiting the environmental impact? For agriculture to be sustainable, our food and fiber crops will have to be selected and engineered for optimal efficiency. Genetic engineering is a primary means to accomplish that.

Why Teach About Genetic Engineering?

If you are just now wondering whether you should be teaching about genetic engineering in crop production, you are already too late. According to a recent issue of Science (2), one-half of the 72 million acres of soybeans planted in the U.S. in 1999 were genetically modified. The genie is out of the bottle; the molecular genetic green revolution is here.

So, why teach about genetic engineering of crops in agricultural education? The answer is: because our students represent not only American agriculture, but the American public. The public needs to understand the technology and the implications for the use of this technology in order to make educated decisions regarding these crops and their products. A recent U.S. Senate subcommittee report stated that the Administration, industry, and the scientific community have a joint "responsibility to educate the public and improve the availability of information on the long record of the safe use of agricultural biotechnology products and research activities" (3). The public, including those in agriculture and those who are consumers of agriculture, need to know that:

- genetic engineering of food and fiber crops is being done,
- plants are being used to produce important industrial and pharmaceutical proteins,
- specifically what it is that is being done, how its being done, and what the real concerns are, based on science and reason.

What is Genetic Engineering of Crops?

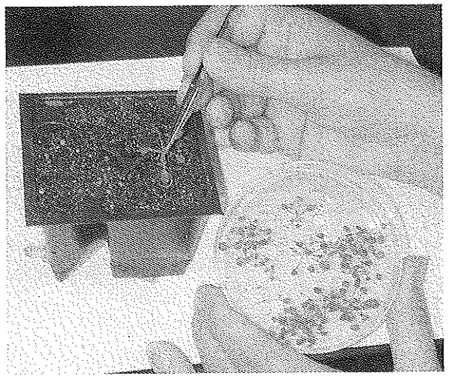
In conventional breeding, plants with desired characteristics are crossed and the characteristics are selected. This may take many generations over many growing seasons. Humans have conducted traditional plant breeding for thousands of years; and every crop available today is a product of this genetic manipulation. It is time-consuming and imprecise, and the breeder may have little control over the outcome. Plant biotechnology consists of techniques that allow scientists to identify, isolate, and transfer specific genes (DNA fragments) into plants to create desired traits or effects in the plant; it is a very precise genetic modification.

Biotechnologists follow specific steps to create a genetically modified (GM) or engineered plant (See above). The first step is to identify the trait, phenotype or characteristic to be manipulated. Examples include insect resistance or the ability to metabolize excess lead from the soil. Genes for these traits define which particular proteins are made and when, and the proteins cause the desired effect in the plant. Biotechnologists identify the gene that encodes for the desired protein from a source, then clone it (copy and purify it) as a DNA fragment. After the gene is cloned, it must be put into the plant for expression. While there are different ways to accomplish this, the common method of "transformation" of the recipient plant cells is to use a bacterium, Agrobacterium tumefaciens, to temporarily infect the plant. The bacteria delivers the gene into the plant genome.

Once the plant has gone through the transformation process, those plant cells, which do carry your gene of interest, must be selected. The biotechnologist can select for plants that successfully received the genetic material using antibiotic or herbicide resistance marker genes. Marker genes have been inserted into the plant with the gene of interest and any plant that can grow in the presence of antibiotics, for example, is also highly likely to carry the desired gene. After different lines of plants carrying the gene of interest have been generated, these primary transformants are grown for multiple generations to confirm stability and continued transmission of the modified trait.

What are the Benefits of Genetically Engineered Crops?

The potential for impact of GM plants is tremendous with benefits to farmers, consumers, and the environment. Crops with genetically engineered herbicide, disease and insect resistance, along with integrated pest management, have been shown to result in decreased herbicide and insecticide use and less crop loss (3). Carlson et al. (4) reported that GM Bt cotton required 72% fewer insecticide applications versus conventional cotton and had an increased yield of 11%. The increased yields permit the farmers to produce more per acre, conserving land (3). Resulting changes in farming practices include conservation tillage programs, improved pest control, and decreased soil erosion (3).



After selecting for genetically engineered plants on antibiotic media, survivors are moved to soil to set seed.

Various plants in tissue culture.

Genetic engineering can modify plant biochemistry for improved plant survivability under non-optimal conditions such as drought, high salinity, and heat/cold extremes, and to permit plants to absorb nutrients from poor soils. This can allow farmers to tailor plant choices to match specific environments for optimal productivity. Potential benefits for animal production from plant biotechnology include altering feed composition by altering the oil and protein content of corn, and by creating grains with low phytate amounts for decreased phosphate excretion into the environment.

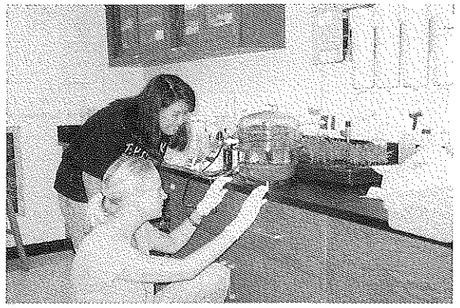
Genetically modified crops may be used to increase human health and nutrition. New plants with "nutraceutical" properties may help prevent disease with increased vitamin, mineral, protein, amino acid content, and decreased or altered fat content. Vaccines, both edible and injectable, along with pharmaceuticals that will be used as protein-based drugs are being produced in plants. The production of GM plants for medicine will provide value-added crops for farmers. Crop foods with enhanced attractiveness, better taste, and foods that are hypoallergenic are also being produced.

Plants will not be just sources of food, feed, and medicines, but also serve as factories for the production of industrial enzymes, alternative sources of plastics and fibers, and as aids in cleaning up the environment. Recently, plant proteins that can sequester or transform heavy metals into non-toxic forms have been identified. This allows researchers to modify plants to perform bioremediation of toxic metals such as mercury, copper, and cadmium (5).

Are There Risks of Genetically Altering Crops?

No unique risks from directly transferring genes from other organisms into plants, as is currently done in modern plant biotechnology, have been found. The potential for risks associated with GM plants are similar to those associated with plants modified with classical breeding. In fact, the new technology consists of more precise genetic manipulation than with conventional techniques, and that allows developers and producers to assess safety more easily (3,6). Genetically modified plants result from the specific introduction of a small DNA fragment into the plant genome. It has a precise, easily characterized, effect on the plant. Traditional breeding crosses thousands of genes whose functions are generally not known and the plants are introduced into the food supply with large genetic and phenotypic changes that are not characterized (3,6).

Should we be concerned with the movement of introduced genes to



Genetically engineering rape seed to produce anti-cancer proteins utilizing a vacuum method.

other plants through outcrossing, the transfer of antibiotic resistance to bacteria, or the potential additions of allergens to our food supply? The frequency of outcrossing will be no different between a crop produced by traditional methods and that produced through biotechnology. However, the outcomes of such crosses and the potential effects of possible movement of an engineered gene product to a non-target species need to be addressed with ecological research for each event.

There has been concern raised as to whether antibiotic resistance genes, used to help select for successfully transformed plants, will be passed to bacteria making them resistant to the antibiotic and causing human health threats. Several panels of experts have concluded that the chance of antibiotic-resistance genes getting into intestinal bacteria is exceedingly unlikely and of little concern because the same resistance genes are already present in many of the bacteria (7). Therefore, the risk of a health hazard due to antibiotic resistance genes has little medical significance (3).

Concern exists that GM foods may induce allergic reactions in humans. Many conventional foods already pose similar or higher risks, as plants produced by classical breeding methods may introduce many potential allergens into a product. Additionally, GM foods are tested more rigorously than conventional foods before marketing (3,7).

Should there be alterations to the regulatory process for these GM plants? Perhaps, if only to clarify governmental oversight. At this time, USDA, EPA, and FDA each have responsibilities regulating different aspects of the production and use of GM plants. Plant biotechnology products have been extensively researched and reviewed (more so than conventionally bred products) and there is rigorous governmental oversight of the technology (3).

Our students, as the next generation of agricultural producers, consumers, and scientists, will have to make the educated risk-benefit analyses in regard to transgenic versus conventional crops. While the bottom line for agriculture may be yield and cost, the world's concern is "can we feed the people and feed them safely with reduced environmental impact?" These are especially important questions in light of the likelihood that the world's population will double in the next 30 years or so. Thus, the future of plant genetic engineering is tightly linked to our own future.

References

1. Biotechnology Industry Organization. 2000. Guide to Biotechnology.

2. http://www.bio.org/aboutbio/guide2000/

3. P.H. Abelson and P.J. Hines. 1999. The plant revolution. Science 285:367-368.

4. N. Smith. 2000. Seeds of opportunity: an assessment of the benefits, safety, and oversight of plant genomics and agricultural biotechnology. A report for The One Hundred Sixth Congress of the United States, by the Subcommittee on Basic Research. Washington, D.C.

5. G.A. Carlson, M.C. Marra, and B.J. Hubbell. 1998. Yield, insecticide use, and profit changes from adoption of Bt cotton in the southeast. Proceedings of the National Cotton Council of America 2:973-974.

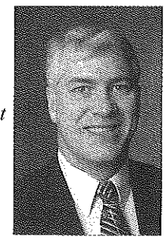
6. A.S. Moffat. 1999. Engineering plants to cope with metals. Science 285:369-370.

7. National Research Council. 1989. Field testing of generically modified organisms: framework for decisions. National Academy Press, Washington, D.C.

8. D. Ferber. 1999. GM crops in the cross hairs. Science 286:1662-1666.

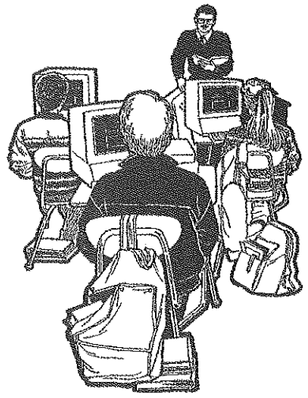
Christine E. Beaupre is a Research Assistant Professor of Biological Sciences in Agricultural and Extension Education at University of Arkansas in Fayetteville, AR.

George W. Wardlow is Professor of Agricultural and Extension Education at University of Arkansas in Fayetteville, AR.



Changing Technologies: Impact on Agricultural Education

By Michael K. Swan



Remaining informed about the impact of technology on public education, educators should take note of two contemporary authors with very powerful messages: Donald Tapscott and Jane Healy. In Growing Up Digital: The Rise of the Net Generation, Tapscott (1998) purports that the Net Generation ("N-Gen") is imposing its culture on all of us, changing the way individuals and society interact. In Failure to Connect: How Computers Affect Our Children's Minds—for Better and Worse, Jane Healy (1998) examines the potential misuses of technology in public schools. Informed agricultural educators will synthesize lessons learned from both authors and design instructional strategies that will meet the needs of a generation of interactive learners through the use and application of technology.

Today marks the first time in history that students are outpacing and overtaking adults on the technology fast track; parents, teachers, and other adults are looking to children for help with computers and computing. In Finland, for example, the government has chosen 5,000 N-Geners to teach the country's educators how to use technology! The N-Gen is transforming the new media from a cult enclave to a harmonious cauldron of millions. Through their massive demographic muscle and unconstrained minds, N-Geners are creating a new world. This world is one in which any idea, regardless of how threatening it may be to the contemporary social order, has voice and can spur radical views on such topics as business and the process of democratic governance.

N-Geners will soon want power in every domain and will take it. How will non-N-Geners fare in the future? Will they be able to share power? Will educators and others have the courage to accept the N-Gen and its culture and media? Every educator should delve into this issue as they examine what it would be like to grow up digital.

Some probing questions may include: Are computers being used in age-appropriate ways? Do program designers take into account the developmental needs of the student? Are future teachers receiving sufficient technology training? Is learning software really what it purports to be, or is it simply "edutainment" that reinforces impulsive point-and-click behavior in the pursuit of a trivial goal?

We all should agree that most public schools are ill positioned to embrace technology and use it properly, and that we need a significant redesign of instructional environments to make technology applications meaningful. N-Gen kids think, learn, work, play, communicate, shop, and create in fundamentally different ways than their baby boomer parents. Tapscot identified the following ten characteristics of N-Gen culture and advises all educators to take each into account as they rethink the teaching and learning environment:

Ten Characteristics of N-Gen Culture

- Fierce independence: a strong sense of autonomy derived from active roles as information seekers rather than passive information recipients;
- Emotional and intellectual openness: a priority for those with Web pages and chat rooms through which they explore and expose who they really are;
- Inclusion: evidenced in the way students from different cultures meet, collaborate, and accept each other as never before;
- Free expression and strong views: the result of access to a wide range of ideas, opinions, and arguments;
- Innovation: encouraged by constant exposure to ways of doing things differently and better;
- Preoccupation with maturity: the need to be taken seriously based on ideas and capability rather than age;
- Investigation: a strong ethos of curiosity and empowerment to change things;
- Immediacy: the expectation that things will happen quickly (because in the N-Gen world, they do);
- Sensitivity to corporate interest: the awareness and avoidance of controlling and exploitative businesses; and
- Authentication and trust: the continual questioning of the veracity of what is on the Web.

When you dig deeper into the characteristics of N-Geners, students look at computers the same way boomers look at TV. This shift from a broadcast medium (television) to an interactive medium (the Net) signals a 'generation lap' in which the N-Gen is lapping its parents on the 'info-track.' We don't marvel at the technology or wonder how television transfers video and audio through thin air, we simply watch the screen. TV is a fact of life. So it is with students and computers. What does this mean when educators consider the larger context of how we prepare students in school and what they need to learn to become contributing members of society?

It is believed that the current educational systems must undergo significant reform in order to serve the needs of N-Geners. Schools and educators need to move to a more interactive delivery model. The current delivery system is designed around the broadcast model, in which lecture, text, and homework assignments are centralized, delivered unilaterally, and based on pre-designed structures that work best for a mass audience. Most educators know that learning should be customized, student-centered, and non-linear, with teachers acting as motivators and facilitators of learning rather than transmitters of information. In such an interactive environment, construction and discovery replace traditional instruction and learning becomes a lifelong endeavor. This is a shift from broadcast learning to what is now being called Interactive Learning.

Today's children are growing up in a different world. Growing up is about learning. However, the economy and society these students are growing into is very different than that of the baby boomers. The destination is different and so is the route the students must take. As educators, we need to advocate technology and to rethink the teaching and learning process to take full advantage of all it has to offer. Hypermedia, simulations, and other empowering technology applications are a natural part of education, when learning is student-centered and when teachers act as facilitators.

Educators must consider the "why" of educational practices before jumping blindly onto the computer bandwagon. Technology should allow students to do what they could never before do in classrooms: design systems models, run simulations, research topics on the Internet, join in global communication, and manage information in non-linear ways. But technology for technology's sake should not be tolerated. Technology should not replace valuable hands-on experiences, particularly among young learners.

With the advent of new technological advances, teachers can become facilitators of learning in a resource-rich environment rather than disseminators of information. A problem-based, student-centered, non-linear approach to education—one that encourages students to take responsibility for learning—is in order. To make that pedagogical shift, educators must receive quality professional development. They need to know how to infuse technology into their everyday curriculum rather than how to use particular software programs. They also need ongoing support and mentoring from instructional leaders.

The thrill of using technology in the classroom is compelling. However, it must be tempered by concern for productive use and an awareness of the possible negative effects of computers on young students. Keeping students' physical well being in mind, educators must carefully arrange computers in the classroom (taking ergonomics into account) and set time limits for computer use. An informed, balanced approach to technology infusion is key. Educators willing to reengineer themselves for 21st-century education are what are needed today and tomorrow. Are we up to the task? Is Agricultural Education the correct vehicle? Or is it time to "Shoot the Dead Horse"?

Focus on areas of the external environment that could possibly have an impact on agricultural education and the educational industry in the future. Some key predications of strategic trends and some 'hot' issues are listed on the top of page 19.

Michael K. Swan is an Associate Professor of Biological Systems Engineering at Washington State University at Pullman, WA.
(no photo)

Strategic Trends and Hot Issues

- Jobs will increase in healthcare, service, and retail industries, but employee turnover will plague employers in these fields.
- Legislation will occur early in this decade with regard to genetic information about people that will address the questions: Who has the right to require a genetic inventory? Who has the right to ask if you have ever had one? Who has the right to ask to see it?
- America's population will grow 25% in the next 25 years. Four states California, Texas, Florida, and Washington will account for half of the total growth.
- Over 70% of graduating college students will find jobs in their chosen fields.
- By 2020 one in six Americans will be a senior citizen.
- Employers will find it even more difficult to find qualified employees. Signs everywhere will read "Help Wanted" and "Now Hiring." Unable to find enough people to staff their businesses, marginal employers will close their doors.
- Population will continue to migrate from metro to rural areas throughout the U.S.
- The number of people telecommuting from home will increase by about 60%.
- An increasing number of employers will hire telecommuters from outside their local area. Using the Internet and wide area networks, more people will commute interstate and international to work each day, without ever leaving their homes.
- Street-legal "golf cars" will become increasingly common in both urban and suburban residential neighborhoods.
- There will be a growing shortage of younger workers: for the next quarter century every state will grow 20-30% faster than the number of its younger workers.
- Early in this century the use of the word "computer" will rapidly fall out of use.
- Growth in the Pacific Rim for the next two decades will exceed that in the rest of the world.
- E-commerce will reduce paper mail volume 50 percent by 2015.
- Costly weather extremes linked to global warming will provoke stringent restrictions on greenhouse gas emissions worldwide before 2010.
- By 2005 women will own half of small businesses and 40% of all American companies.
- One-fourth of all retail shopping will be done by mail, phone, or Internet by 2010.
- Video-Conferencing on the Web will reduce inter-city business travel 20 percent by 2010.
- Computer advances will continue apace. Applications include real-time translation, image processing, real-time control of distant experiments, holographic imaging, decision modeling, and surgery at a distance.

Joe Writes Santa

By E.V. Walton

Dear Santy Clause,

It may seem a little strange to you, me, Joe Scatterscrew, writing to tell you what I need for Christmas but it helps a little for a man to get it off of his mind. For one thing, I sure would appreciate a new Area Supervisor. This one I got is mean. He's always a doggin a man to death to do a better job. I would like an old wore out one who is wise enough to let a man alone.

Another thing I want is for them fellers at A&M to quit sending out so much stuff. I only got a small waste paper basket and all them teaching plans and stuff like blueprints and so on, overloads my waste paper basket. Besides, it makes me feel like maybe I ought to be doing a better job.

I would also appreciate some disaster like a cyclone or a bad spell of lightening which would eliminate my superintendent and principal. They keep a hounding me about my housekeeping and not attending faculty meetings and keeping boys out late from classes and other unreasonable things like that.

Also I sure would appreciate it if you could see that PeeWee, Willie, Adolph, and 8-Ball would quit school. Them boys deal me misery.

I would like for the Jackson Motor Company to give me a new pickup without having to turn this one in. I'm pretty sure they ain't going to understand how its possible for a pickup to get so beat up in one year.

Santy Clause, I would be definitely in favor of Mister Bob Craig getting called back in the Army or transferred over to LSU or something like that so he would quit teaching these welding courses. Four or five teachers around me took them courses. Now they have adult classes going and that sort of stuff makes me show up bad in district meetings.

If possible I wish you would transfer Old Lewis Taylor off to some desolate place like Texas Tech or Muleshoe or maybe back to Shelby County. He's so close down there at Austin that the first thing you know hes going to be a wanting some of us to get busy on our own pay raise. Why can't he be satisfied to let it just take care of itself. Wouldn't cost us more than about two hunnert dollars apiece to ignore the whole business.

Give all us Ag teachers less work, more money, 3 months paid vacation, and retirement at the end of ten years.

An' so

MERRY CHRISTMAS TO ONE AND ALL

Joe Scatterscrew
Birdcraw, Texas

Making a Difference with Volunteers in Agricultural Education Programs

By Carlos Rosencrans and Brenda S. Seevers

Are you using volunteers in your Agricultural Education program? Have you thought about using volunteers to help you better serve your students and their many and varied agricultural interests? Do you feel comfortable enlisting the aid of volunteers to enhance your agricultural education program? Are other instructors utilizing volunteers, and if so, how are they using them?

Enlisting the aid of volunteers is nothing new to programs of many kinds, including education. Every year, millions of Americans volunteer their time and assistance to causes which they consider worthwhile (Katz, 1982). Volunteers in school settings provide widespread benefits to students. Shifflett (1994), states that academic achievement appears to increase when volunteers are utilized. Programs can be expanded to better meet the needs of students when volunteers and their expertise are employed. Volunteers contribute extra resources without adding additional costs to programs.

State and national statistics indicate that not only is enrollment in agricultural education programs growing but the availability of qualified teachers is shrinking. Involving community volunteers is essential to maximize resources and meet needs. Teachers must look to the community and actively engage them.

A recent study conducted in New Mexico (Rosencrans and Seevers, 2000) described the use of volunteers in New Mexico Agricultural Education programs.

Overall, Agricultural Educators in New Mexico had a positive attitude toward involvement of volunteers in their programs. There was agreement that volunteers are an important part of the agricultural education program, that use of volunteers provides many benefits, and involving qualified volunteers in various functions and activities frees the teacher to focus on other aspects of the program. Overall, it was believed that volunteer involvement in the program made the teacher's job easier. Of the 13% of teachers that did not use volunteers in their program, the majority indicated that it was because they were new to the program, the program was too small, or they did not have the time to properly supervise volunteers.

Not only did teachers believe that volunteers were essential to their programs, there was agreement that volunteers should be involved in educational aspects of the program as well as support efforts. Volunteers in New Mexico were active in support activities such as chaperoning, fundraising, and assisting with FFA activities, but they were also actively involved in educational activities such as laboratory and classroom instruction, serving as a guest speaker in class/lab, and coaching CDE events. The teachers also felt that volunteers not only add a wealth of knowledge and experience to programs, but they bring a variety of viewpoints to the educational arena as well. What are some effective strategies focusing on the successful involvement of volunteers in your program?

Identification and Selection

The volunteer experience will be most successful when the agricultural educator determines specifically what his/her needs are, matches the individual with the need, and provides clear and specific guidance about roles, responsibilities and needs. Individuals should be accepted as volunteers in your program not just based on their willingness to participate but also on the competence and capability they contribute. Teachers in New Mexico rated the helpfulness provided by volunteers in their programs as very high, clearly indicating that with proper planning and coordination, volunteers are an asset to their programs.

Orientation and Supervision

Clear communication about needs and expectations is essential to making the volunteer experience work. An orientation meeting with volunteers at the beginning of each school year or prior to an activity or event should be conducted to clearly communicate expectations. Teachers should be encouraged to develop and use a Volunteer Handbook that outlines policies, procedures, expectations, and guidelines for using volunteers in their program. The handbook not only ensures that consistency of information was provided to all volunteers involved in the program, but it can also serve as a valuable documentation tool in the event that an issue of liability occurs.

Successful utilization of volunteers does require some degree of supervision. A concern of teachers could be that this supervision could be too time consuming. The amount of responsibility delegated to a volunteer and consequently the degree of supervision required is dependent upon selection of the right person for the job, degree of competence of the individual, and their understanding of expectations, policies, procedures and guidelines related to your program. Regardless of how competent your volunteer is, however, some supervision is still necessary. Ultimately you are accountable for what happens within your program. The Buck Stops With You!

Administrative Support

Agricultural education teachers in New Mexico clearly indicated that administrative support is essential for successful utilization of volunteers in schools. Security and issues of safety have become prime concerns for almost every school district. Individuals on school grounds without approval or authorization cannot be allowed. Consequently, it is essential for administrators to not only understand the uniqueness of agricultural education programs but the vital role the community and its citizens have in contributing to the overall success of the program. Teachers need to discuss with administrators the roles and responsibility volunteers will be assuming. Whenever possible, a list of names and responsibilities of volunteers should be provided to the school office. Administrators should be encouraged to visit the agricultural education program facilities and meet and observe first hand volunteers involved.

Recognition

A volunteer can be defined as any person who gives freely of their time, expertise, or resources. Appropriate recognition (letters, plaques, banquets, etc.) need to be extended to all who participate.

Volunteers are an invaluable community resource and should be utilized whenever possible in agricultural education programs. Good communication, organization, and management of the volunteer program will establish a solid and beneficial relationship for all.

So are you utilizing volunteers in your agricultural education program? Are you making the most of this precious commodity, the volunteer?

References

Katz, D.S. (1982). Volunteers in vocational education. A handbook for program development. Washington, DC: Office of Vocational and Adult Education (ED). (ERIC Document Reproduction Service No. ED 220 656).

Rosencrans, C. and Seevers, B. S. (2000) Involvement of volunteers in agricultural education programs in New Mexico. Accepted for proceedings at the NAERC, San Diego, CA.

Shifflett, D. M. (1994). What effect do volunteers have on a rural primary school? (ERIC Document Reproduction Service No. ED 373 945).

Carlos Rosencrans is an Assistant Professor in Agricultural and Extension Education at New Mexico State University in Las Cruces, NM.

Brenda S. Seevers is an Associate Professor in Agricultural and Extension Education at New Mexico State University in Las Cruces, NM.

Swan Song...

(continued from page 27)

number of states, the tradition of state supervisors housed within a state department of education continues. However, the role and authority of these supervisors is severely limited in some states. In other states there is no single individual with these responsibilities or there may be one person who also wears several other hats. We need strong, visionary state level leaders and need to find new models for providing that leadership.

In a number of states various other models of providing state level leadership have been implemented. Some of these include having the state agricultural education officials located at the universities, state departments of agriculture, agricultural organizations, and private foundations. These models appear to be working. We need to look closer at these models and emulate them in other states.

6. Agricultural Education needs a strong national voice. While not everyone may always like everything the National Council for Agricultural Education does, the actions of the Council have benefited the profession. The Council needs our continued support. We need them to speak out for us and to continue to provide leadership at the national level.

Conclusions

During my tenure in agricultural education, and in my study of the history of agricultural education, there have been numerous times when agricultural education was perceived to be at some type of crossroads. Our leadership has wisely led us through these crossroads. The future indeed does look good for agricultural education. However, if we don't constantly change and grow, we may be contributing to the Swan Song of agricultural education.

Gary Moore is a Professor in Agricultural and Extension Education at North Carolina State University, Raleigh, NC.

Crystal Ball Predictions for Agricultural Education

By Leah Schwachtgen and Brian Albers

What makes the future? Who will decide what the trends of the future will be? Will these trends become reality? If so, how will they become reality? The answer to these questions of course lies in all of us – teachers of agriculture, students, administrators, fellow educators, community members, researchers, business leaders, politicians, etc. No one teacher is an island that is able to make decisions and impact the future without the influence of many others. So instead of trying to figure out a plan to "get our own way," it is imperative now and for the future, that we find any way possible to work together toward a common goal. What is the goal? What will the future bring for Agricultural Education? What do we hope the future to be in Agricultural Education? Obviously no one has a crystal ball and we don't intend to say, "this is how it is going to be." But, we can share our perspective of the future based on current trends and ideas for improving the delivery of agricultural education.

One trend that has begun and will continue to advance is agricultural education beyond the traditional 9-12 Agriculture Program. This begins in the elementary school. Right now, some teachers of the early grades incorporate lessons on agriculture into their curriculum. This is typically the choice of the individual teacher, providing varying levels of quality and quantity to the students. Although improving the students' literacy in and about agriculture is valuable, it is not enough to only hit some of the students some of the time. In the future, we must work together with all of the stakeholders to provide our young people with a background in the importance of agriculture in their world. Accomplishing this task begins with today's teachers of agricultural education. On the local level, we must provide the expertise to elementary teachers and assist them in accessing available resources.

Increasing agricultural literacy must continue throughout middle school and high school. What lies in the future and beyond for students at this level? Increased integration with other core subjects and with industry. First, we cannot be an island, even within the school system. Integration is already occurring in many schools across the United States. There are many examples of courses where teachers of agriculture are teamed up with teachers in science, math, English, business, and others. The future needs to bring us more integration for all students, not just those electing to take those courses. More integration will provide all students at the secondary level with an understanding of and appreciation for the role agriculture plays in the economy and in their everyday lives. This may mean some teachers of agriculture will need to step out of their role as a classroom teacher and become a resource for other teachers. As we find increased pressure to come up with new ways to deliver education to today's youth, it will become time to do away with Carnegie units and provide students with a more holistic educational system.

Life long learning will take on greater importance in this new era. The need for knowledgeable farm management instructors will only increase as the options for marketing agricultural product changes. The new age farmer will need to become a student of change, willing to adapt to new opportunities, production practices, and global demands. Financial institutions may place education standards into loan agreements guaranteeing that their clients remain abreast to the most recent marketing strategies. These standards will be met with the aid of qualified management instructors.

Montevideo High School students work along side elementary students planting a flower bed during an adopt-a-class session last spring.

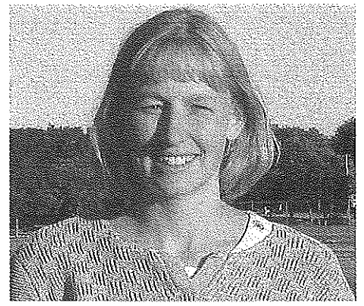
Integration will occur not only within the school system itself but also increasingly with industry as well. Increased interest in public education will lead to partnerships between high schools and business partners. For example, a cooperative effort between horticulture classes and neighboring garden centers could result in lowered operating costs, real-life learning opportunities for students, and better potential for small businesses to remain competitive. Major agricultural corporations will find it beneficial to link with local schools to create a pool of future workforce members, researchers, and product developers. Incentive programs will prompt increased cooperation between education and industry.

This scenario is not without its drawbacks. The harsh reality is that not all schools will benefit equally from this affiliation. Smaller schools and more remote districts face the reality of being excluded from this situation. The world of the Internet cannot even solve the difficulties distance presents for students to gain real-life experience in industry. However, schools that can draw from the expertise of industry will be able to enhance their curriculum well beyond what their own facilities can provide. Students will work side by side on a regular basis completing tasks and learning skills while completing high school graduation requirements.

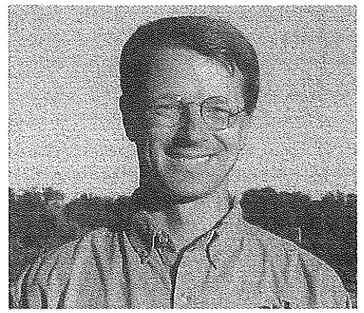
School funding will continue to be a point of concern across the nation. Traditional funding formulas will give way to incentive based funding based on a high school agricultural education department's ability to meet established program standards. Many states are already developing graduation standards: the time will come where Agriculture Departments will be held accountable to performance standards as well. The more standards a school is able to meet, the more funding they will receive. A baseline number of standards will need to be met for the program to receive financial support from the state or federal government.

Teacher licensure will meet with some controversial changes. Teachers of agriculture will be licensed based more on their knowledge and skills and less on their formal educational training. A continued shortage of qualified teachers will lead to a broadened view of what qualities make up an agricultural educator. Mentorships and first year supervision will prove key to guaranteeing that agriculture departments continue to be served by dedicated instructors. Perhaps we will see the resurgence of merit pay, job security based on students' success, and incentive pay for teaching state or national graduation standards and even periodic performance reviews for staff members. Whatever the outcome, we as educators are sure to face continued scrutiny by the general public.

So what makes the future? In part, we as educators do. So also will industry, financial institutions, politicians, and many other facets of society that we affect and that affect us. Which trends will become reality? That is difficult to say, but no matter which philosophy you hold as true, it can be agreed upon that the future is sure to be directed by change. It is our responsibility to develop these trends so that our audience receives the very best from us, and skills that will most greatly benefit to them no matter what their stage of this life long learning process we call agricultural education.



Leah Schwachtgen is an Agribusiness Teacher at Montevideo High School at Montevideo, MN.



Brian Albers is an Agribusiness Teacher at Montevideo High School at Montevideo, MN.

Performance-Based Assessment for High-School Students in a Natural Resource Management Program

By David Francis, Barbara Middleton, and Chris Call

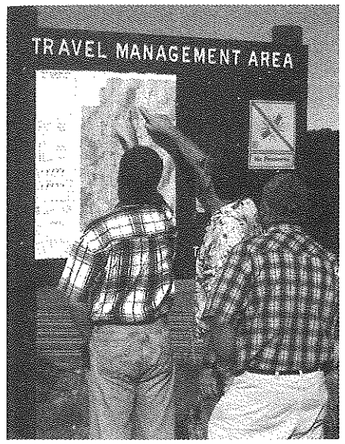
"Show me the money" was the memorable phrase screamed by Cuba Gooding Jr. in the 1997 film Jerry Maguire. Gooding's character, Rod Tidwell, used this phrase to show his advertising agent Jerry Maguire, played by Tom Cruise, how much advertising income Maguire had not generated for him. "Show me the money" was Tidwell's performance-based assessment of Maguire's work and efforts. Educators often ask their students to "show them the money" by demonstrating what they have or have not learned in the classroom.

Educators often rely on paper and pencil tests using true/false, multiple choice or short answer questions to measure students' abilities. However, these assessment strategies test the students' short-term memory or ability to memorize and regurgitate facts. The Performance-Based Skills Certification for Natural Resource Management in the Utah Agricultural Education Program uses authentic or alternative assessment to measure students' ability to complete a set of performance skills within a multitude of standards. Authentic assessment is based on nontraditional measurements of student performance; for example, a student's understanding of rangeland management is measured by having the student establish a rangeland transect, collect and interpret data, and report the results instead of administering a multiple choice test. Authentic assessment applies the FFA motto of "Learning by Doing" to the assessment of student performance.

A natural resources emphasis area was recently added to the Agricultural Education Program in Utah high schools. The Utah State Office of Education contracted with agricultural and natural resource educators at Utah State University (USU) to develop a performance-based skill certification assessment for this emphasis area. In 1996, an Agricultural Education-Natural Resource Management Committee was assembled to determine the objectives and competencies necessary to prepare students for careers in natural resources. Twenty-one competency standards were developed through curriculum review, combined with teacher and industry validation. Utah teachers and representatives from such groups as the U.S. Forest Service and Bureau of Land Management participated in a Q sort activity to identify and prioritize topics and skills that needed to be addressed in a natural resource emphasis area. Topics (standards) include areas such as: range, forestry, recreation, fisheries/wildlife, soil, and watershed management; ecological concepts; environmental ethics and conflict management; energy resources; waste disposal; land classification and planning; inventory and monitoring methods; business and economic principles; and career opportunities (refer to table 1 for a complete listing). Each standard is further supported by a series of objectives. The objectives become the assessment point in determining student learning. The committee also prepared a program planning and curriculum development guide to assist the secondary agricultural education and technology instructors in planning for their teaching of natural resource management.

In August of 1998, work began on refining and validating the standards and objectives. Soon after, an activity design format was developed. It is important to note that the objective of the program was not to develop complete instructional units but an assessment guide to test the understanding of material previously instructed. It does not replace the teacher or the teacher's expertise. However, because natural resources was a new and emerging area for Utah's secondary agricultural science and technology instructors, background information and some instructional units were included with each performance activity. The assessments can be adapted to a variety of locations, teaching materials, and student interests and backgrounds. For example, teachers in a more urban environment, have the option of establishing a rangeland transect in a school area or local park instead of traveling to an area that would be classified as rangeland.

The performance assessment activities allow students to hear from resource specialists, perform fieldwork, practice public speaking skills, develop teamwork skills, and investigate/analyze current natural resource topics. Wherever possible, the activities provide Utah specific examples. For example, an activity discussing population growth and urban planning uses Envision Utah, a public/private community partnership dedicated to studying the effects of long-term growth and development in



the state. Some assessment activities have been designed to help prepare students for FFA contest activities. Students can prepare for public speaking contests, sales presentations, and habitat judging events through completion of assessment activities.

The assessments for each standard follow a similar format. The following headings were designated for the Natural Resource Management assessment guide:

Standard- A 5000-series number is used for Natural Resource Management. This describes the subject addressed by the standard e.g. Standard 5011 Evaluate water resources, watersheds and management.

Objective- The specific areas of the standard that are to be met. Objectives were written at the highest practical learning level. These levels ranged from basic knowledge objectives to advanced levels of discovering a relationship, and ultimately the application learning level. There are 11 objectives for Standard 5011, including: Evaluate the water supply/demand principle, and calculate the potential water holding/runoff capacity of a watershed.

Concept- a statement designed to orient both the teacher and student to the general idea of the standard and objective. The concept statement for 5011 provides a brief description of water supply issues and their relationship with watershed management.

Background Information- not a complete teaching unit but provides a basic understanding of the topic. A more detailed description of water distribution worldwide, ownership and sources of Utah water supplies, issues surrounding watershed management, and federal and state regulations regarding water pollution.

Teacher Responsibilities- outlines what the teachers must do to prepare and conduct the assessment. For standard 5011 this included gathering materials (maps and background information about watersheds) and helping students find information regarding local water sources.

Materials/Resources- items needed to conduct the assessment as proposed, including colored pencils, topographic maps, and student information, and assessment sheets.

References- suggested texts, videos, and websites, where teachers can find more information or activities. References applicable to standard 5011 include Project Wet Curriculum and Activity Guide, Western Water Made Simple, and the Internet site www.enviroliteracy.org/water.html.

Activity/Procedure- a detailed, step-by-step list of instructions and procedures to allow for the successful completion of the assessment. Some activities address one objective while others may address several objectives. Watershed activities for standard 5011 begin with an investigation of water ownership in Utah followed by students identifying and calculating the area of a local watershed on a topographical map. The last activity provides students with a map of a watershed with identified land types such as agriculture or wetland. Students calculate holding capacity and runoff from different landscapes.

Performance Assessment- a detailed description of what is expected of the student. A scoring rubric is not provided, but could be developed with the criteria listed. For example, students' complete short answer questions that relate to the watershed activity, and turn in labeled maps and calculations for assessment.

The teachers involved in the Agricultural Education Program were introduced to the standards, objectives, and associated activities at a 3-day workshop in August 1999. Teachers toured a wildlife refuge, a National Forest, and a private ranch to gain more of an understanding of natural resources issues and management practices. They were also given suggestions on how to partner with resource specialists from industry and government land management agencies. While at these sites, they observed demonstrations of assessment activities. Teachers also practiced with software applications in a computer lab setting because many of the references and activities are computer-based. Workshop participants indicated that meeting natural resources specialists and being introduced to assessment activities were the most valuable parts of the 3-day workshop.

A website, http://www2.aste.usu.edu/nr/, was established to inform teachers of updates in the performance assessments as well as provide resources and links to other natural resource related websites. Teachers can also e-mail questions or comments about the Natural Resource Program to program developers. USU and State Office of Education specialists will

conduct a 2-year review of the project in 2001. Students involved in the natural resource program will also take a pencil/paper multiple choice test that reflects the standards and objectives to verify that student performance in authentic assessment activities parallels student understanding on a multiple choice exam.

Feedback from teachers involved in the natural resources program was collected in June 2000. Overall, teachers were happy with the assessment guide and found the activities to be relevant and useful in their classrooms. The guide also helped students prepare for the State Office of Education's pencil and paper multiple choice tests, reducing the need for teaching to the test. One teacher stated that he was initially concerned about the size of the assessment guide (400 + pages), but grew comfortable with it once it was used. Another teacher commented that she appreciated having the website addresses listed in the reference section. She was able to access related information on the Internet in a short period of time.

The Performance-Based Skills Certification for Natural Resource Management Guide is helping meet the needs for the assessment of program completer skills in numerous natural resource areas. This guide is a tool for Utah Agricultural Educators to ask their students to "Show me the learning."

Table 1 Natural Management Resource Standards

Standard 5001	Understand and demonstrate role of FFA in Agricultural Education
Standard 5002	Understand and demonstrate role of SAE in Agricultural Education
Standard 5003	Appraise career opportunities in natural resources science and management
Standard 5004	Demonstrate written and verbal communication skills
Standard 5005	Identify and determine appropriate uses of natural resources
Standard 5006	Examine the relationship between natural resources and society, including conflict management
Standard 5007	Analyze the basic concepts of ecology
Standard 5008	Compare and contrast the various energy resources and their uses and impacts
Standard 5009	Differentiate between the various biomes of the world
Standard 5010	Assess soil resources and management
Standard 5011	Demonstrate an understanding of water resources, water sheds, and management
Standard 5012	Demonstrate an understanding of air resources and management
Standard 5013	Demonstrate an understanding of fisheries/wildlife resources and management
Standard 5014	Demonstrate an understanding of forest resources and management
Standard 5015	Demonstrate an understanding of range resources and management
Standard 5016	Demonstrate an understanding of recreation and cultural resources and management
Standard 5017	Analyze waste generation, waste reduction, disposal and impacts
Standard 5018	Demonstrate understanding of land classification and planning
Standard 5019	Demonstrate understanding of inventory and monitoring methods
Standard 5020	Use computer technologies to solve environmental problems
Standard 5021	Demonstrate understanding of business and economic principles and procedures

David Francis is with the Department of Agricultural Systems Technology, Utah State University, Logan, UT.
(no photo)

Chris Call is with the Department of Rangeland Resources, Utah State University, Logan, UT.
(no photo)

Barbara Middleton is with the Department of Rangeland Resources, Utah State University, Logan, UT.
(no photo)

Swan Song...

(continued from back cover)

In the Southern region there has been a regional conference involving teacher educators and state supervisors for decades. Several years ago it was decided, by a majority vote, to change the time, location, and rotation of the conference so the conference could meet in conjunction with the Southern Association of Agricultural Scientists. This would enhance the image of agricultural education and build external bridges (see the next point). Unfortunately, the supervisors were not willing to accept the democratic decision and chose to become a splinter group meeting on their own.

Several times during the last few years the National Association of Agricultural Educators (NAAE) have chosen to hold their national convention "apart from" instead of as "a part of" the annual meeting of the Association for Career and Technical Education (ACTE, formerly the American Vocational Association) which other members of the profession attend. Philosophically, this doesn't promote harmony and unity within the profession and pragmatically, it makes it nearly impossible for a member to attend both meetings.

Our profession cannot advance like it should with these splinter actions. We must work together. The Eastern regional conference is an example of what all of us should be doing. The agriculture teachers, teacher educators, and state supervisors all meet together in a regional conference. Bravo!!

We must do what is best for the profession as a whole, not what our own professional group wants to do based upon tradition or what our personal ego dictates. This may be hard to accomplish given that the NAAE has six regions and the other two professional agricultural education groups (NASAE - National Association of Supervisors of Agricultural Education and AAAE - American Association for Agricultural Education) have four regions. Which group(s) should change to promote the building of bridges?

While I question the wisdom of continuing to have regions given modern transportation and communications, we need to get back to holding meetings with all the members of the profession in attendance. And even though we may not agree with everything the ACTE does, we need to continue to meet as part of this group. It is stupid to deliberately destroy bridges. We must rebuild internal bridges within the profession of agricultural education (and within vocational education).

3. Agricultural Educators must build external bridges. Agricultural education is a small profession when compared to other education groups. In order to survive and thrive, we must build as many bridges as we can with other groups. We can't make it alone and in isolation. We should consider becoming involved with other educational, agricultural, and scientific groups. We have a lot of expertise and ideas that can be shared with other groups. Agricultural education is the best-kept secret in the world. We need to let our light shine. We must build external bridges.

4. Agricultural Educators must embrace new models for preparing teachers. No matter how hard they try, universities just aren't producing enough agriculture teachers. They haven't been able to keep up with the demand for the past 20 years and there is no expectation they will in the future. One of the problems is that the teacher educators often don't embrace lateral entry or alternatively certified teachers. They prefer to work with the traditional 18-year-old freshman that comes to college with the goal of becoming an agriculture teacher. This is great, but there simply are not enough of these students. Teacher educators must aggressively embrace non-traditional methods of preparing agriculture teachers if we have any hope of filling vacant and new positions.

One such alternative model is the LEAP (Licensure in Education for Agricultural Professionals) program offered through North Carolina State University. This is an Internet based alternative certification program in agricultural education. Education and agricultural education faculty from the University of Arizona, the University of Missouri, the University of Delaware, Fort Valley State University and Wayne State University are involved in developing the courses in the LEAP program. Other universities are invited to become partners in this endeavor. For more information on the LEAP program, visit http://www.ncsu.edu/cals/agexed/leap

Recruitment of future agriculture teachers should be the job of the agriculture teacher, state supervisor, and university agricultural educator. We all must become involved in recruitment and we must be positive about agricultural education. It is hard to recruit agricultural students into agricultural education when all they hear from their agricultural teacher is how bad the job is. Teachers need to be more positive about teaching. Remember the NAAE creed, we are teachers of agriculture by choice.

5. Agricultural Educators must embrace new models for providing state level leadership. During the Smith-Hughes era, there was a legislative mandate for strong state leadership in agricultural education. However, the Smith-Hughes Act was replaced by the Vocational Education Act of 1963, which did not require strong state level leadership. In a

(continued on page 21)

Swan Song

By Gary Moore

This is the final issue of The Agricultural Education Magazine to be published during my reign as editor. Previous editors wrote editorials that appeared in each issue of The Magazine. These editorials were interesting and informative. However, during my tenure as editor I chose not to write editorials because I didn't want to use the "bully pulpit" to foist my ideas upon the profession. Also, I wanted to devote as much space as possible for articles from the profession. But since this is my last issue as editor, I have chosen to exercise my editorial prerogative and write an editorial.

The title of this editorial is Swan Song. According to the Merriam-Webster dictionary, a swan song is a "farewell appearance or final act or pronouncement." I don't plan on leaving the profession and will be making contributions to future issues of this publication, so this really isn't my swan song. The reason I chose this title is to acknowledge an 1826 book titled Swan Song that was written by Johann Pestalozzi.

Many education experts consider Johann Pestalozzi the father of vocational education. This Swiss educational reformer established an educational model in Switzerland in the late 1700s that gave rise to many of the educational ideas used in schools today. He advocated the teaching of agriculture (and home economics) in schools. He believed students should work with their hands and education should start with the familiar by studying the local community. He thought students should be taught in groups (as opposed to tutoring) and that teaching should be geared to the developmental level of the students. While these ideas and practices are commonplace today, they were not widely accepted when he proposed them.

In the latter part of Pestalozzi's career he was resentful and negative because his educational ideas were not widely accepted and his school had folded because of financial and administrative problems. He thought he was a failure and wrote the book Swan Song to defend his ideas and lament his situation. Pestalozzi's Swan Song was bitter and pessimistic.

My Swan Song is just the opposite of Pestallozzi's. I think agricultural education is in the strongest position it has been in years. Recently I heard an educator state that the 1960 era was the golden age of agricultural education. I disagree. If the 60s were the golden age, then we are in the platinum age today and the future looks even brighter. I feel more positive about the current status of agricultural education and its future than at any time since I started teaching in 1969.

However, there are several issues that must be addressed in order to insure the bright future. We cannot rest upon the accomplishments of the past and coast into the future. We are headed in the right direction but we must be visionary and continue to think outside the box (this may be hard because the recent StrengthFinder work by the Gallup group found agricultural educators to be the weakest in the Thinking area). Just as Pestalozzi envisioned how education needed to change at the dawning of the 19th century and penned these thoughts in the Swan Song, it is time that agricultural educators envision what needs to change in the 21st century. If I were to revise the Swan Song for agricultural education today, here are the key points I would make:

1. Agricultural Educators must continue to think globally, but teach locally. While it is commendable to teach about global agriculture and other "cutting age" topics, we can't forget to first meet the needs of the community in which our programs reside. An agriculture program that first teaches what is important in the local community and serves as a resource for the local community will thrive. Pestallozi emphasized that education should start in the community some 200 years ago. In the rush to standardize the curriculum in some states and teach high tech, global content we may have forgotten the importance of maintaining strong community ties.

2. Agricultural Educators must become more unified. When Pestallozi wrote Swan Song he was very sad. If there is one thing about agricultural education today that saddens me, it is the splintering within the profession. If our profession is to move forward, it must become more unified.

For years, teacher educators and state supervisors in the Central Region met for an annual conference. Because of budget problems and travel restrictions in the 1980s, the supervisors stopped attending the regional conference. After the budget crisis eased, they didn't come back. The Central Region conference today is merely a shell of what it once was.

(continued on page 27)