FFA ADVISORS
Making a Difference
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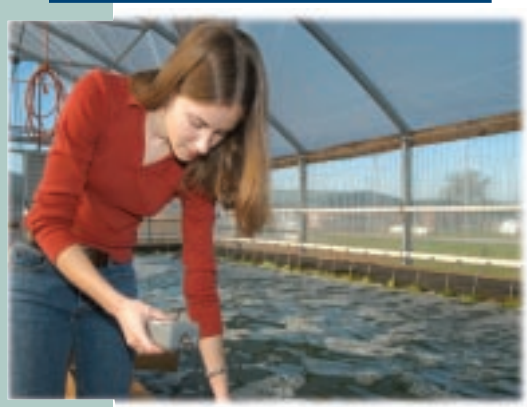
Emerging Technology in Agriculture



Technology Adoption and Agriculture

The agriculture industry in the United States has embraced technology since this country was founded. Farmers have rapidly adopted everything from John Deere's revolutionary plow to mechanization to hybrid seeds. Today's producers are no different and they are adopting technologies at a much more rapid pace than ever before. If we, as educators, are going to serve this dynamic industry, we must keep pace.

To tackle this task, we must first understand how society adopts or rejects new technologies. Consider how society approaches "young" technologies:

- in the early 1900s, controversy raged over the introduction of pasteurization
- when Pioneer first began marketing hybrid seeds, some felt that it was immoral and accused the company of interfering with nature

According to the book, "Guns, Germs and Steel," there are four factors that influence technology acceptability. They are:

- relative economic advantage over the existing technology
- social value and prestige
- compatibility with vested interests
- visibility of direct advantages

Let's examine biotechnology as an example. This particular new field of knowledge is arriving during a period of global change. The world is experiencing an information revolution and true globalization on many fronts (think service sector jobs and outsourcing). Biotechnology involves profound changes in the ways we do things and extends beyond society's norms.

> "First **we invent** technologies and then our technologies **reinvent us**—as individuals, as communities and ultimately, as **entire societies**."
> *Paul Saffo, Institute for the Future*

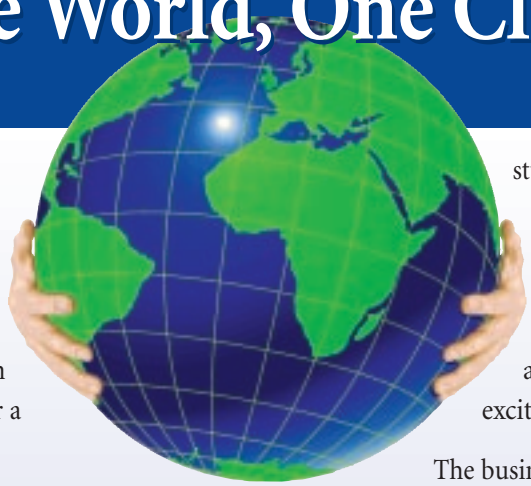
If biotechnology in agriculture–or in any area for that matter–is to succeed in the long run, it must meet the four factors of acceptability. There are numerous examples of societies abandoning technologies. For example, did you know that your keyboard is arranged the way it is so that the keys of 1873 typewriters wouldn't jam? Science has proven there are much more efficient keyboard layouts, but changing the standard keyboard layout isn't compatible with vested interests, so it remains unchanged.

Societies accept or reject technology along a fairly predictable path. First, scientific research leads to new technology. Next, the technology is introduced to the public, which adapts, adopts or rejects. When accepted, the technology transforms communities and societies. During this path to adoption or rejection, it is important to remember that ethics and norms follow science and technology. They do not lead.

With all of the technology that is being developed in agriculture, today's students must be able to understand the benefits and the potential for harm that each technology brings. They will be the leaders who decide what technology will be adopted and what will be rejected.

This issue of *FFA Advisors Making a Difference* focuses on emerging technologies in agriculture and how you can incorporate them into your classroom. It is time to encourage the future you want, rather than trying to prevent the future you fear.

Changing the World, One Class at a Time



Every agriscience teacher is constantly addressing the changing face of agriculture. Bill Kittinger, agriculture instructor at Eldorado High School in Eldorado, Ill., has found a unique way to heighten excitement about agriculture and foster a little business sense in his students.

Kittinger has harnessed a hands-on approach to engage students in one of the most innovative greenhouses in Illinois. For this reason and others, he was named Syngenta's Advocate for Agricultural Education in 2004, a national award to recognize outstanding agriculture teachers.

Kittinger's horticulture students have transformed a simple greenhouse into a powerhouse of knowledge. Raising nearly 500 pounds of hydroponic tomatoes and cucumbers each winter, FFA members are running a business, implementing new technologies, forming partnerships with community members and learning the biology of plant development.

Craig Smith, a student at Eldorado High School, works in the school's greenhouse.

Each year, students form a cooperative with a board of directors that is responsible for making decisions regarding the day-to-day activities of the greenhouse. From fertilizer to insect control, and pollination to everyday business decisions, students are in charge of the operation. The results of their efforts supply tomatoes and cucumbers to cafeterias in the local school district. Students are incorporating chemistry, math, biology and entrepreneurial experience into an exciting agriculture program.

The business started approximately five years ago as a school-to-work program. Cooperating with a local business, the FFA program was able to acquire nearly $2,000 worth of supplies and equipment to get started. The ensuing relationship provided a wealth of knowledge and expertise that encouraged students to get excited about hydroponics. Now, the horticulture program is entirely self-sufficient, and the hydroponics greenhouse has become the highlight not only of the program, but also of the school. Students have a lot to be proud of, as the greenhouse has been spotlighted on local television stations and become the focal point of groups touring the school.

The Syngenta Advocate for Agricultural Education is one element of a special program coordinated through the National FFA Organization designed to recruit, retain and reward agriculture teachers. In addition to the award itself, the program also supports public awareness of the importance of agriculture teachers, and the production and distribution of training materials and workshops.

The success of agricultural education is dependent on engaging students in unique activities that generate new ideas and talented individuals. Programs like Kittinger's reinforce that agriculture isn't just farming any more. Educators who believe in "doing to learn" are seizing opportunities to develop the next generation of agricultural innovators. Today, it's hydroponic tomatoes. Tomorrow, what's next?

syngenta

Making a Difference

FFA Advisors Making a Difference is published eight times a year to assist FFA advisors in making a positive difference in the lives of students.

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The FFA Mission

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

The Agricultural Education Mission

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

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Watch for the LPS Logo

The logo shows how this issue of *FFA Advisors Making a Difference* relates to Local Program Success, a national initiative to strengthen agricultural education programs. You'll see this icon on all FFA materials. The shaded apples show which areas the materials address.

Perspectives

Thinking Outside the Box

By Carl Aakre, Agriscience Teacher
Agriculture and Food Science Academy
Little Canada, Minn.

As agriculture educators, we have to be very diverse in our programs to meet the changing needs of the agricultural industry and our student population. We have more students coming into our classrooms that may have never been on or seen a farm.

Due to the declining population of traditional agriculture students, these are the young people on which we need to focus more of our energy. These non-traditional students struggle at times to be involved in FFA and to develop SAE programs that will fit their interests. This is a challenge we will continually face.

Being from a program that is located in a metropolitan area, I have found that controversial issues such as biotechnology are attracting non-traditional students to my program that an agriculture classroom would not normally see. Once that student sets foot in my classroom, he or she needs to become interested in agriculture. I like to look at the one commonality between all of my students that they cannot avoid–they are all consumers of agricultural products. They will be making the decisions on the production, safety and regulation of our food supply. It is our responsibility to be sure that our students are willing and able to make educated decisions when it comes to agricultural policy.

By using biotechnology as a major topic in my program, students begin to see how agriculture will affect them as a consumer. I address the issues of genetically modified organisms and how to perform scientific research in agriculture. This means more than extracting DNA from plant or animal tissue. We discuss how that DNA is used and what environmental effect it may have on them and the future of agriculture. This ranges from an experiment that changes bacteria from white to glowing green to a debate on how the same process we used for the bacteria was used to produce the food they eat. Once my students have begun the process of becoming literate in agriculture, SAE and FFA opportunities can be introduced.

The FFA has taken great strides by providing programs to meet the needs of these new students entering our programs. Now, teachers need to take advantage of these new programs. The agriscience fair is an excellent way to provide all of our students with a quality SAE experience.

We have all had experiments in our classrooms that may not have worked the way we would have liked. By making the situation a problem-solving activity, an agriscience project could become an SAE. The agricultural communications, food science and agricultural issues CDEs were created to inform and educate our students about new technologies and careers in agriculture, yet I see few students participating in these events in our state. I encourage all of you to look outside of the traditional box and connect with the non-traditional student by providing science-based SAE opportunities and introducing them to an FFA activity that meets their educational needs.

Professional Growth

Trends, Forces and Issues in Agriculture

With all that is happening in agriculture, it can be challenging to determine what information to include in your courses and what to leave out. The national agricultural education organizations that serve teachers and students are also challenged by the question of where to invest their time and efforts.

> "I'm all for **progress**, it's change I can't stand."
>
> *Mark Twain*

To this end, Gil Meyer, director of issues and program management for DuPont Agriculture and Nutrition, was asked to speak about the trends and issues affecting agriculture at several recent national meetings. Meyer didn't offer a crystal ball or a one-size-fits all answer. Rather, he provided solid, in-depth thinking on the topic of change and challenged leaders to return to their communities and reconsider their programs when viewed from various perspectives.

Don't Oppose Forces, Use Them

Meyer asks teachers to consider the trends and forces at work in agriculture in their communities, then apply a thought from famed architect Buckminster Fuller, creator of the geodesic dome. Fuller's philosophy was, "don't oppose forces, use them."

What forces are working on your agriculture program? How can you use them to your advantage? For example, has your school increased the number of science or math credits needed for graduation? If so, do your students receive any science or math credits for their agriculture courses? If not, is there a way to revamp your curriculum so that they do?

Watch the Indicators

Another bit of advice Meyer offered is to watch for indicators in your community. According to Meyer, two critical indictors are Wal-Mart and livestock operations.

Wal-Mart has become the largest food retailer in the United States. When Wal-Mart comes into a community, they often impact other businesses, including many mom-and-pop operations that typically are strong supporters of local programs and activities.

When Wal-Mart opens a store in a community, they are generally seizing on a growth trend. Many rural areas are experiencing significant population growth either from urban encroachment, or sometimes from people who are searching for the idyllic life of television's Mayberry.

"In many cases, people move into rural areas seeking good schools, fresh air and open spaces," Meyer says. "These same people are often seeking an idyllic lifestyle that never was. When they realize the community into which they've just moved isn't exactly what they envisioned, they begin to try and 'fix' it, and they often have the votes to do so."

Meyer continues, "If livestock operators are being forced out because of air or water concerns, you need to realize that the production of feed grains that support them could follow. We are seeing some of these operations move from the United States to Brazil and Argentina."

In other rural areas, growth isn't the problem, aging populations are. "There is a cooperative in Western Iowa that has more members older than 100 than members who are younger than 30," Meyer says. "What we're seeing in many rural areas is a combination of an aging population with a brain drain because the young people move away for jobs or to continue their education and don't return. Over time, there aren't enough people to support the local hospital or schools."

Meyer addresses teachers at the NAAE conference last December.

Focal Points

Based on these trends, Meyer encourages teachers to consider including the following areas in their courses:

- community relations
- public policy
- educational farming and agri-tourism
- community supported agriculture

"Look for opportunities to help young people find niches," Meyer says. He references a "pizza farm" near an urban area in California. "This farmer used a small field to grow everything you need to make a pizza–tomatoes, peppers, onions, wheat, a pig and a dairy cow. Instead of dumping off-grade produce, he sells it to visitors and they feed it to the livestock."

As you rethink what you teach in your classroom, consider Meyer's parting words. "Change is necessary, but difficult. Rear Admiral Grace Hopper said, 'The most dangerous phrase in the English language is we've always done it that way.'"

Professional Growth

Building a Science-Based Program

Canal Winchester High School serves a population of 480 suburban students, most of whom have lived in the area less than five years. This rapidly growing city has become a bedroom community for Columbus, Ohio. The growth has fed right into the plans of Rich and Cyndi Brill, who teach 187 agriculture students at Canal Winchester.

"Before I started teaching here, I worked with The Ohio State University to develop a new agriculture curriculum that basically married science and agriculture," Rich says. "We teach Agriculture I & II here, but those titles belie the course content. In Agriculture I, we mix in a lot of physical science–topics like electricity and energy transfer. Almost all science concepts can be taught using agriculture examples."

The Agriculture II course at Canal Winchester is based in biology and uses agriculture examples. The course covers plants, animals and environmental management units. When students have completed the first two courses, they move into Agriculture Business I and II.

Creating Career Paths

"Once our students reach the junior level, we begin to focus more on the business side and careers," Rich explains. "Each student selects an area he or she is interested in and develops a business plan that analyzes all aspects of that career path. We cover a lot of applied math."

Rich continues, "We help our students understand the range of careers in any given subject area, then help them determine where they might fit. As an example, we recently had three brothers in the program, all of whom were interested in turf grass, but in different career paths. The first brother was more interested in the agronomy portion and focused on that area. He is managing a golf course in Florida. The second brother was more mechanically inclined. He mowed grass as an SAE and is now managing the equipment and personnel that maintain a golf course. The third brother was more interested in the business aspects of turf grass. He is managing a clubhouse, tracking inventory, managing staff and marketing the course."

Brill works with a small group of students during a lab activity.

Credentials and Credits

Since Rich started teaching at Canal Winchester 15 years ago, the program has grown and added two additional teachers, Cyndi Brill and Julie Aldrich. Rich stresses one reason for the growth is the science credits students receive for their agriculture courses. In Agriculture I and II, each student that completes each course receives a full science credit. In Agriculture Business I and II, students receive a full business credit.

Rich has focused significant effort on becoming certified not only in agriculture, but also in biology, AP biology and general science. "I knew I needed those credentials to gain credibility with my administration and other members of the faculty. If I didn't have my credentials, it is likely my students wouldn't be receiving science credits."

Keeping it Fresh

Overall, Rich is pleased with the program's track record of serving students. However, that doesn't mean he's complacent with the curriculum. "Our market is changing faster than the data coming out," he says. "If we as teachers aren't willing to adjust our courses, how will our students be able to compete? I feel that teachers who continue teaching the same material year after year are doing a disservice to their students."

To keep his program fresh, Rich frequently surveys program graduates who are completing their post-secondary training. "I ask them what we did at the high school level that they found helpful. I also ask them what we could do better and adjust from there. The bottom line is that if you have a program built with strong math and science components, your students will be competitive regardless what career they choose. If you don't, they won't."

Rich continues, "About 90 percent of the agriculture jobs in our area require a 2- or 4-year degree. When students leave our program, they need to be ready for post-secondary training."

Professional Growth

Bioenergy Offers Opportunities

As fuel prices rise across the country and around the globe, more attention is being focused on the potential of bioenergy. The potential goes far beyond ethanol and biodiesel, and agriculture is playing an important role in that discussion. Energy production could be a major income stream for agriculture producers in the near future.

The U.S. Department of Energy is working with other federal agencies and the private sector on research and demonstration projects producing alternative energy from agriculture, including methane from livestock operations and the production and use of biomass crops. Achieving the federal government's goal of tripling U.S. use of bio-based products and bioenergy by 2010 could create $15 to $20 billion in new income for farmers and rural America and reduce fossil fuel emissions by up to 100 million metric tons of carbon.

In addition to energy generated by methane and other biomass, many rural communities are taking a hard look at wind energy potential. Wind energy projects encompass many turbine sizes and project applications, ranging from off-grid stock watering to utility bill reduction for home and farm to coop-owned utility scale to large-scale bulk generation.

Wind Energy

The number of installed megawatts of wind energy for utility applications is growing rapidly around the world and in the United States. The 2003 year-end wind power capacity in the Unites States was 6,447 megawatts, which is enough energy to constantly power two million typical U.S. homes. Utility-scale wind energy projects are located in rural and agricultural areas and the economic development impacts for these areas are substantial.

Jim Nichols, a farmer and former Minnesota commissioner of agriculture, is an enthusiastic proponent of wind energy and the positive effects it can provide for agriculture. Nichols refers to the wind turbines on his property as his "combines in the sky," that operate 24/7 and don't require a driver. Since 1994, more than 500 large wind turbines have been built in rural Minnesota. These turbines have resulted in an investment of almost $500 million in rural Minnesota.

Jay Clapper, an agriculture teacher in Northeastern Colorado, has been intrigued by the concept and is advocating wind energy in his small town of Wray. "About two years ago, our school system was undergoing dramatic budget cuts," Clapper explains. "The superintendent asked the faculty to find creative ways to help solve the budget challenges. I made a few phone calls and suggested we consider researching wind energy."

That initial impulse has created a firestorm of activity and has made Wray a hot spot for wind energy generation. "I applied for and received a $10,000 Perkins grant to conduct the initial feasibility study and try to determine the revenue generation potential," Clapper says. "To me, it is all about creating a new income stream and trapping those dollars in our small town. This can have a significant rural economic development impact. This project has the potential to save our school district $50,000 – $100,000 annually, and that is just with one 660 kilowatt turbine. We have the potential for 100–300 turbines in Yuma County. That equates to an increase of $300 million in our tax base, plus jobs, plus the income that would be generated."

For more information on wind energy, visit [www.windpoweringamerica.gov], [www.windustry.org] and [www.acga.org].

Biomass Power

Across the state in Walden, Phil Anderson and his students at North Park High School have experimented with a different source of bioenergy. Walden is situated at an altitude of 8,099 feet and is surrounded by high mountain forests. Anderson was seeking approval from his school board to build a greenhouse when ideas and opportunities began to unfold.

"The school board approved the greenhouse with the stipulation that we explore efforts to heat it with alternative energy sources," Anderson says. "We were considering using a wood-fired stove when one of the county commissioners dropped by with a grant application from the U.S. Department of Energy and asked me to fill it out."

Anderson submitted the grant application and was pleasantly surprised a few weeks later when he received word that his program had been selected to receive a substantial grant involving testing a modular biogeneration system. The system is powered by slash, the small diameter branches and other residue created by forest thinning operations that are in plentiful supply around Walden, in the Route Medicine Bow National Forest.

North Park FFA members pose with the modular biogeneration system.

"With this grant, we didn't receive any money, but we did receive equipment, training and the opportunity to be involved with some real, cutting-edge research," Anderson says. "It has been a significant learning opportunity for our students and community, myself included."

Community Power Corporation's BioMax 15 modular power system was installed in September 2003, and is operated primarily by Anderson's students. The unit consumes about three pounds of slash to produce each kilowatt hour (kWh) of electricity, and carries a daily load of 40–80 kWh. The unit requires about two hours of maintenance a week. It reduces the school's costs for electricity and propane for heat while providing students with a hands-on learning experience about renewable energy and biopower.

The project is a joint effort between the U.S. Department of Energy, the National Renewable Energy Laboratory, Shell Oil, the U.S. Forest Service and Community Power Corporation. Initially, the school received a semi-load of wood chips (40 ton) from Morgan Forest Products in Waverly, Colo., to power the equipment.

In the future, Anderson plans to create his own fuel supply. He applied for and received a $25,000 grant with which to purchase a wood chipper. The Colorado State Forest and State Parks has agreed to house and maintain the chipper in return for Anderson's disposing of slash. All parties involved feel slash will be in heavy supply for the foreseeable future as the new forest management plan is implemented and timber in the surrounding area is thinned to decrease wildfire danger, and manage the forest for Mountain Pine Beetle damage.

The project has not been without its challenges. "This is an experimental piece of equipment," Anderson explains. "We are working with the scientists and technicians to refine the equipment so that it can be made available to the public. It has consumed quite a bit of time from me and my students."

Anderson feels the time investment will pay dividends. "My students have gotten to see cutting-edge technology at work and be a part of the research process," he says. "We've incorporated some of the concepts in my classes and the students have done some spreadsheet work with the data we're generating from the project. I have one student, April Friday, who spends about 3.5 hours a day monitoring the machinery and collecting data. It has been a tremendous experience for her."

One of the lessons the students have learned revolves around heat transfer and energy efficiency. "This biogenerator is about 85 percent energy efficient," Anderson says. "When you compare that to other power generation models, that is significant."

Now that he and his students have crossed the installation and initial learning curve hurdles, Anderson is looking forward to adding more units to his curriculum. "I want my students to consider how we can use biofuels to power small businesses in remote areas, for example," Anderson says. "Being able to generate power in remote areas using biofuels could make a tremendous impact in our community."

For more information on biomass resources and technologies, point your browser to [www.nrel.gov/biomass/], [www.bioproducts-bioenergy.gov], [www.eren.doe.gov/biopower] and [www.ott.doe.gov/biofuels].

Instruction

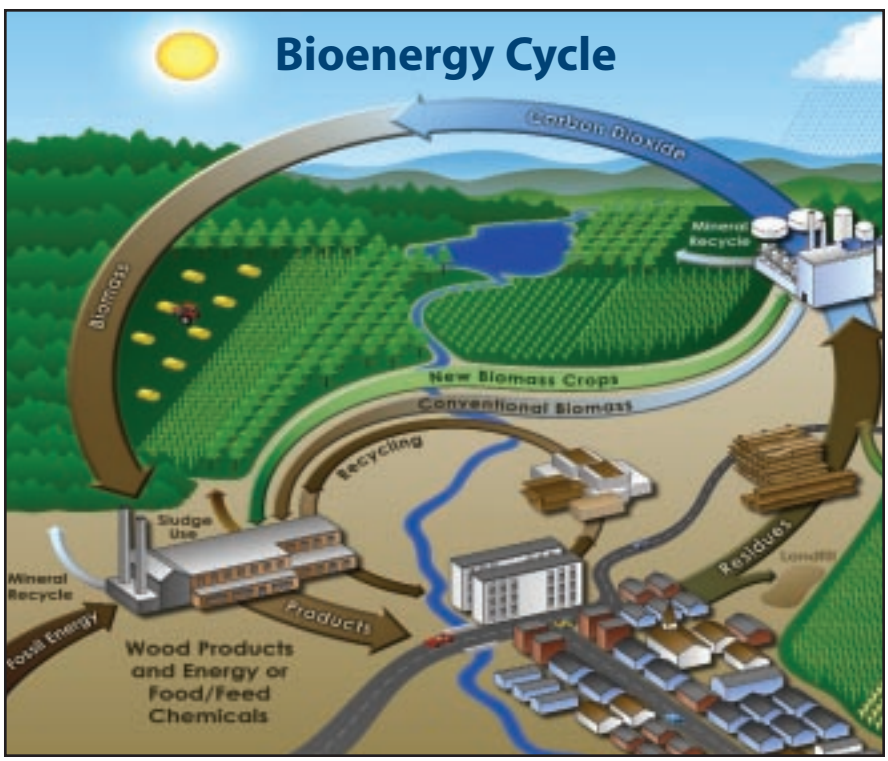

Illustration courtesy of ORNL

Challenging Students with Biotechnology

Amy Kidd pilot-tested the National Council for Agricultural Education's *Biotechnology for Plants, Animals and the Environment* instructional materials in the spring of 1999 and hasn't looked back since. Kidd is one of three agriscience teachers at Eastern Randolph High School in Ramseur, N.C. There are more than 1,400 students in the high school, with 424 (unduplicated) in the agricultural education program.

The Eastern Randolph program offers a broad variety of courses, ranging from the entry-level agriscience applications course to the following cluster areas:

- agricultural engineering/mechanics
- environmental and natural resources
- horticulture
- animal science
- biotechnology

> "He who moves **not forward,** goes backward."
>
> ***Johann Wolfgang von Goethe***

Attracting Upper Level Students

"The biotechnology course attracts students into the agriculture program who are planning science-based careers," Kidd says. "Some of these students we might not have seen since the introductory agriscience applications course, others take it as a natural progression in their agriculture course work."

Regardless, Kidd says the course is intentionally challenging. "It is a very good preparatory course for college," Kidd explains. "We do a little bit of microbiology and a little bit of biochemistry, including covering the chemical structure of DNA. It's a very hands-on course that really pushes the students to apply scientific principles. The course answers a lot of the 'what if' and 'how come' questions."

Kidd is still using the biotechnology instructional materials she pioneered for The Council. "I follow the materials pretty closely," she says. "They are very comprehensive with labs and activities for all the concepts we're trying to teach."

Ethics of Biotechnology

Kidd's course begins with introductory information and different views on the topic. "We discuss the ethics of biotechnology, the European viewpoint in contrast to the American viewpoint and how those views affect us," Kidd says. "The students take sides and debate the issues in class, thereby learning both sides of the issues involved."

After the introductory information, Kidd introduces basic cellular chemistry and how cells reproduce. "We cover the basics of understanding cells and how they work," Kidd explains. "We go into mitosis and meiosis, gamete production, transcription and transformation. We extract DNA from wheat germ in one of our labs. It is fairly simple and uses common materials–Palmolive liquid, meat tenderizer and a 95% ethanol solution. The students really enjoy it."

Kidd's students also participate in a gel electrophoresis lab as part of a unit on DNA. "We use a lab activity called "DNA Restriction Analysis," from Carolina Biological and you can see the bands very clearly," Kidd says. "This lab really helps the students understand the concepts presented in the lesson."

Kidd observes as her students work through the oil spill lab activity.

Plant and Animal Applications

The course moves on into animal applications, including reproduction, cloning, semen sexing and the rationale behind these practices. From there, Kidd covers plant applications, including tissue culture and the rapid growth of trait introduction in hybrid seeds.

Toward the end of the semester, Kidd teaches a unit on the environment. "We do a really good lab called 'Cleaning up Oil Spills with Oil-Hungry Bacteria,' from Carolina Biological" Kidd says. "This one really hits home with the students. It is one of the last labs we do, and it is very effective."

For more information on the *Biotechnology for Plants, Animals and the Environment* instructional materials, click on http://www.ffaunlimited.org/ffaunlimited/ed-resources-instructional-materials.html and refer to item "Biotechnology for Plants, Animals and the Environment-CDROM." For more information on the gel electrophoresis and oil-eating bacteria lab materials, go to [www.Carolina.com].

Instruction

Opportunity Abounds in Agriscience

Owen Thomason teaches agriculture at Franklin County High School in Carnesville, Ga. Like many rural communities, Franklin County has been impacted by growth. Located 85 miles north of Atlanta on I–85, the school has seen an increase in the number of urban–oriented students.

"Our community is changing from one dominated by traditional production agriculture farms to hobby farms and urban flight," Thomason says. "This brings a different type of student to our classrooms. I felt our school needed to branch out and provide something different and challenging."

> "I have found that students **can and will** apply **scientific knowledge** without even realizing it."

Teaching the 'Y' Generation

Thomason continues, "I have been teaching agriculture for 19 years, and I have found the students of the 'Y' generation are not satisfied with the traditional teaching methods I learned in college. Today's students have access to more information through the media and the Internet, and at a speed that outpaces the classroom setting and budget. The teachers in our department had always provided hands–on instruction, but we found that when we included more math and science elements in the instructional process, we created interest in the subject."

In 1997, the agricultural education department, along with the school administration, informally surveyed the students and teachers regarding the possibility of creating an agriscience curriculum. This needs assessment indicated that not only were students and teachers excited about the possibility, but also that they wanted to sign up immediately. With these results in hand, the school applied for and received a grant to develop and equip an agriscience lab.

Shifting the Teacher's Mindset

Thomason says the move toward agriscience was more of a change in the teachers' mindsets than anything else. "As agriculture teachers, we've always taught science," he says. "Most of us are only one or two courses away from being certified in science. It isn't the subject matter that teachers tend to shy away from. It is more the question of how to incorporate more science."

Thomason continues, "In our program, we found that some of the changes needed were quite subtle. Instead of just building a wood project, for example, we'd talk more about engineering the structure and how the design impacts the structure's use. We introduce theory, then teach the hands–on skills with references to biology, science and chemistry. The students might still build a birdhouse, for example, but in addition to learning how to work with wood, they also learn the preferences and habitat of different kinds of birds so they can build houses appropriate for the species they want to attract. That's the shift in mindset I'm referencing."

One of Thomason's students collects a water sample to check for *e-coli*.

Creative Ways to Incorporate Science

When students first enter Thomason's agriscience class, they might be expecting cows and plows. Imagine their surprise when they are asked to–gasp–chew gum! "I have found that students can and will apply scientific knowledge without even realizing it," Thomason says. "On the first day of class, I have the students perform an experiment in which they develop a hypothesis, measure an object by weight in grams, identify its contents, record test time and chart the results. They then make comparisons, analyze the conclusions and report findings."

The experiment? Determining which bubble gum has the most sugar. "This is a fun activity I use to help students understand the definition of agriscience, the notion of identifying and using concepts of biological, chemical and physical science to teach agriculture," Thomason says.

Thomason's students are required to identify an agriculture–related subject that interests them, research and develop a hypothesis, and conduct an agriscience experiment. "I see it as my job to engage these 'Y' students who don't necessarily accept the facts as stated. I try to create an atmosphere of fun, excitement and learning and challenge them to prove their hypotheses using scientific principles."

Hands-on Research

Thomason's creative approach works well with a wide variety of students. When a student is having difficulty coming up with an idea to research,

Thomason's students apply science skills in a dissection lab activity.

Thomason engages the student in a conversation about his or her interests and after-school activities and tries to ferret out ideas the student can apply in his or her life.

One project required students to determine the efficiency of different fuels in small gas engines. "We took two small engines that were the same make and brand," Thomason says. "We measured the fuel for each engine and tested different octane levels. The students charted how long the engines ran on the different fuels and determined which fuel was the most efficient. They found that the engines operated most efficiently on the high-test fuel. This experiment provided information the students can use in their lawn-mowing jobs. When they see how the science relates to their lives, they get excited about it. This activity was much more engaging than having them take a small engine apart and put it back together."

Benefits are Bountiful

Beyond the level of engagement Thomason has achieved in the classroom, he has found his agriscience students become more involved in FFA through the agriscience fair and other activities. "When you move your curriculum to agriscience, you suddenly make available more opportunities for students to achieve," he says. "Agriscience can provide benefits for every student, rural to urban. It opens doors."

The long-term results of this program are still being measured, but the program's students are showing gains in the Georgia High School Graduation test and college prep exams. The North Georgia Technical College staff noticed the change in curriculum and began collaborating with the Franklin County faculty. Student achievement within the program became evident when students began graduating from the program and entering college. This led to college credit for agriculture course work for Franklin County's graduating seniors.

"Adding agriscience is a win-win situation," Thomason says. "The students win, their parents win, and I learn something new almost every day. Everyone wins."

The Agriscience Teacher of the Year program is sponsored by the PotashCorp as a special project of the National FFA Foundation. For more information on this program, visit [www.ffa.org/programs/ag_sci/index.html#teacher] or call 317-802-4402.

Professional Growth

You Can't Win if You Don't Enter

Being named the 2003 Agriscience Teacher of the Year came as quite a surprise to Owen Thomason of Martin, Ga. For one thing, Thomason filled out the award application as a way of challenging one of his students to complete the Agriscience Student Recognition award application. He never expected to win.

"Basically, I made a deal with one of my students. I'd complete the teacher application, if she would complete the student application. Then we'd swap and critique each other's work," Thomason chuckles. "Although I encourage my students to apply for things constantly, it took me 18 years to complete an award application for myself."

Why did it take encouragement from a student to fill out the application? Thomason says it's because as a teacher he is reluctant to try and draw attention to himself, rather than to the students and the program.

"Like many teachers, I had the mindset that I should strive to draw attention to my students, not to myself," Thomason says. "However, I'm glad I did because being involved in this program has been a tremendous shot in the arm for our program. We get to show what we've done and what our students are accomplishing. All the media attention has increased the level of respect the agriculture program has in the community. The financial prize is just icing on the cake."

Thomason also believes the simple process of completing the application provides a good mechanism for self-evaluation and reflection. "Answering the questions on that application makes you sit back and reflect," Thomason says. "It forces you to examine what you're doing and think about what you could do to enhance the program. In today's rush-rush world, we are constantly moving quickly. We seldom take time to reflect on what we've done, to ask ourselves what we could do better, or to just savor the small victories. Filling out this application helps you do that. I think it makes you a better teacher."

Details

In the Agriscience Teacher of the Year program, every state winner receives $100, and the national finalists each receive a $500 cash award and a $1,500 grant for their school to purchase agriscience equipment. The application form, selection criteria and other details can be found online at [www.ffa.org/programs/ag_sci/index.html#teacher]. For more information, please send an e-mail message to [agriscience@ffa.org] or call 317-802-4402.

Which Octane Fuel Will Accomplish More Work?

By Owen Thomason, Agriscience Teacher
Franklin County High School
Carnesville, Ga.

Goal

Students will apply agriculture mechanics techniques and skills while investigating and discovering which octane fuel will be most efficient to use in a small gasoline engine.

Materials

- 2 small gasoline engines that are alike. Examples include: push mowers, stationary engines, tillers, etc.
- 1 gallon of each octane fuel – 87, 89, 93
- 1 quart measuring cup
- Stopwatch
- Chart and graph paper

Duration: 1 to 2 hours

Introduction

With the high cost of gasoline, many consumers tend to purchase the least-cost fuel for lawnmowers and other small engine equipment. Many manufacturers recommend high-octane fuels for their products to improve performance and longevity. Students and adults question the value of this recommendation based on the price of the fuel, not the efficiency. This lab will help students determine which octane will perform the most work. By using two engines instead of one, students will validate results and note differences. If a significant time difference is noted, students will brainstorm reasons for this and develop theories as to why this took place. This activity will also lead into discussions about oils, air intake and other mechanical changes that can affect an engine's ability to work.

Procedure

Students will run engines "dry" to begin experiment. A clean fuel tank is a must for this activity to insure that damage to the engine does not occur. The lesson should also take place in a well-ventilated lab or outside. Be careful of carbon monoxide fumes if conducted inside.

1. Pour a measured amount of fuel into the fuel tank.
2. Start engine and stopwatch at the same time and measure time required to use all of the fuel provided. Make sure engines are set a the same RPMs during the experiment.
3. Record time it takes the engine to stop for each octane fuel and engine.
4. Compare times and fuel type for each engine.
5. Graph results using paper or computerized spreadsheet program, such as Microsoft Excel.

Evaluation

Lead class discussion based on results. Determine which fuel should be recommended to homeowners, businesspersons and others.

Discover more by researching how fuels are developed, fuel additives, refinery methods and product recommendations.

Students can also compare cost versus time, amount of work performed per ounce/quart/gallon of fuel. In addition, students can perform experiment by actually cutting a measured amount of grass per quart of fuel and develop a measurement of work.

Instruction

How Do Common Household Products Affect Soil pH?

By Owen Thomason, Agriscience Teacher
Franklin County High School, Carnesville, Ga.

Goal

Students will be able to understand the relationship between plant growth and pH while identifying differences between the pH of several types of household products normally poured on the ground around homes.

Materials

- Gather two or three gallons of soil, mix thoroughly and send sample of soil to state soil test lab for pH measurement.
- Soil test analysis
- Samples of common household products:
  - —Bleach
  - —Liquid soap
  - —Soft drinks
  - —Juices
  - —Cleaning fluids
  - —Motor oil
  - —Fuel
  - —Other liquid-type products
- Simple soil pH test kit
- pH paper
- Glass containers for test soils
- Measuring cup
- Chart and graph paper

Duration: 1 hour or more, depending on individual or group activity

Introduction

Many individuals in our society use their yards or shrubs as places to dispose of used household products. Washing the car, changing oil, and pouring out mop pails are examples of activities during which people often allow household products to seep into the ground. Have you ever noticed a difference in the plants around this area of disposal? Do you have dead spots in your yard or very green sections of grass?

A change in soil pH can make plants grow differently. This simple experiment will give students an idea of how household products that are spilled, dumped or accidentally placed on the soil can change its fertility. This activity will also lead into discussions about proper disposal methods and environmental concerns. Students will also investigate other nutrients that aid soil's fertility and develop an understanding of the effect improper disposal can have on the earth.

Procedure

1. Make a chart listing the product, the original soil pH, the pH of the product and the resulting pH after application.
2. Take a measured amount of each product and apply to the soil. Some of the products can be diluted to different strengths to make the experiment more realistic such as: 1 ounce of bleach per gallon of water, 3 ounces per gallon, full strength.
3. Test household solution with pH paper and record pH.
4. Wait a measured amount of time before testing soil pH.
5. Test and record.
6. Chart differences and compare/contrast.

Evaluation

Discuss results and make observations about the experimentation method. Lead students to discover fertility requirements for grasses and shrubs and develop ideas about the change in soil being beneficial or detrimental to the plant.

Discuss the effect of chemical additives on the soil and the resulting residue. Discover alternative disposal methods for common household products. Students can alter the experiment by measuring nitrogen, phosphorus and potash changes in addition to pH changes.

Instruction

H.O. Sargent Award

YOU MAKE DIVERSITY WORK

accepting

cultural, racial, age, gender, ability, regional differences

connecting

people of different backgrounds and interests

being

role models

developing

programs and activities that support diversity

H.O. *Sargent Award*

Nominate an FFA member or non-member who makes diversity work in your community!
For an application or more details, visit www.ffa.org/programs/hosargent/index.html, or contact: H.O. Sargent Award Program Coordinator, hosargent@ffa.org, 317-802-4244.

THE FFA MISSION: FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

THE AGRICULTURAL EDUCATION MISSION: Agricultural Education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control or supervise state association, local chapter or individual member activities except as expressly provided for in the National FFA Organization Constitution and Bylaws.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

MONSANTO imagine™

The H.O. Sargent Award program is sponsored by Monsanto as a special project of the National FFA Foundation.

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Local Program Success is a national initiative designed to enhance the quality and success of local agricultural education programs. LPS uses the total program concept of Instruction, SAE and FFA and four strategies (Program Planning, Marketing, Partnerships and Professional Growth) to assist local teachers in facilitating successful local programs that meet the needs of students and the communities they serve.

Creating Technology Partnerships

By Jim Armbruster, Local Program Success Specialist
National FFA Organization

We live in an exciting time in history. Technology is evolving more rapidly than ever before. In many cases, what was impossible yesterday is not only possible today, but also economically feasible. What a great time to teach agriculture!

Of course, all that technology requires teachers to stay on their toes and keep current with what is happening in industry. A great way to do that is to reach out to leaders in your community and ask them to share their expertise with your program.

Precision Farming

Take precision agriculture as an example. Access to the equipment used for precision farming, particularly the equipment used to collect and analyze data , can frequently be accessed by contacting your local equipment or local fertilizer dealers. In many cases, the dealers have examples of real farming situations you can use to teach students how to analyze and implement the information. It can be as simple as contacting the dealers and asking for assistance.

Other resources related to precision farming can be found at [www.deere.com/en_US/ag/servicesupport/ams/yieldmonitor-mapsub1.html] or [www.ghcc.msfc.nasa.gov/precisionag/].

Your local Natural Resource Conservation Service office can also be a great source of information on the use of GPS systems and much more. These systems can be used to teach field mapping, slope, erosion control and other aspects of land management. The use of these units can be applied to production agriculture or the management of urban agriculture facilities including golf courses, parks and urban forest areas. GPS units are inexpensive and can be purchased from most any electronic supplier.

Beyond Production Agriculture

New technologies are not limited to production agriculture. Lasers, for example, are used in the layout and design of irrigation systems, golf courses and urban parks. Water quality sensing equipment is used to determine the quality of water in aquatic environments used by everyone from fish producers to golf course managers.

Remote sensing and environmental control systems are used in the greenhouse industry. These devices feed information to a master computer for controlling the production environment in greenhouses. These systems provide greenhouse operators with the ability to apply irrigation water, fertilizers and crop chemicals from a central location with pinpoint accuracy.

Reaching Out

It really doesn't matter what type of agriculture you have in your area, reach out to the leaders and governmental agencies for input on the technology they are using and evaluate whether or not it should be a part of your agriculture program. Ask the professionals at the NRCS office or your local Farm Service Agency office to suggest people in the community who are leading the way in technology adoption, then follow up with them. After you've learned more about what they are doing, consider inviting them into your classroom for a guest presentation, if the topic fits.

All of the new technology can be intimidating. However, if you reach out to those in your community, you'll find individuals who are eager to share their expertise with today's young people, and you'll learn along with your students. Plus, you won't have to purchase equipment–they already have it.

Change can be difficult and it almost always requires us to move outside our comfort zones. However, the rewards you and your students will receive when you venture forth into the brave new world of technology will be worth the effort.

Partnerships

Keeping Pace with Today's Technology

By Tony Small
Local Program Success Manager
National FFA Organization

Many factors have led to increased demands for change in plant and animal development over the past few years. These include:

- demands on land usage for purposes other than food and fiber production
- increased demand on food and fiber due to population increases
- consumer demands for increased quality and adaptability of products used in the food and fiber industry

Through all of this, scientists and businesses have implemented current and new technology to develop products that keep pace with the demand. As agriculture educators, we need to keep pace so that we can adequately prepare our students for their futures. We can not be satisfied with teaching the same things year after year. We must stay updated on new technology and the new curricula that are being developed.

Biotechnology in the Classroom

Teaching students to use applied biotechnology methods to increase plant production in the program greenhouse or land lab would be an excellent project to influence both students and community members regarding the need for biotechnology education. Teachers may choose from an ever-increasing number of options to work with students. The options may be enhanced by team teaching with the local science teacher and having their students visit your greenhouse or lab area to understand how the science principals they are learning relate to real-life situations.

Teaching Resources

There are many web sites that can provide information regarding using biotechnology with students. Some of our national FFA sponsors–such as Monsanto, DuPont, Pioneer, Cargill and Renessen–have and continue to provide excellent workshops and materials for teachers. Make sure to look for the reminders on the Teacher Resource page of every issue of *FFA Advisors Making a Difference.*

A quality resource developed by the National Council for Agricultural Education is titled *Biotechnology for Plants, Animals and the Environment.* The curriculum includes lessons and lab activities covering a wide variety of topics ranging from cells and DNA to gene transfer to careers and more. This resource has now been updated to the second edition and can be purchased through the *Agricultural Education Resource Catalog*. To place an order, call 1-800-332-2668 or order online at [www.ffaunlimited.org] and request item BPAECD. There is also a student manual available containing laboratory activities, which accompanies the lessons on the CD, and can be ordered by asking for item BPAESM.

National Agriscience Training Institute

The National FFA Organization will also be offering the National Agriscience Institute, which is designed to provide innovative methods for teachers to integrate more science and math into their curricula. The areas FFA is targeting this year are environmental science, sustainability and biological sciences (including biotechnology). This project is sponsored by DuPont as a special project of the National FFA Foundation, and includes a partnership with Lab-Aids.

DuPont has been very helpful in sponsoring the agriscience institute by providing funding for a week-long training for six agriculture teachers selected to work with teachers across the country. DuPont is also sponsoring workshops developed and presented by the six trained teachers at both the national FFA convention and the NAAE convention. Lab-Aids [www.Lab-Aids.com] has been very supportive of the program by providing lab equipment for both interactive convention classrooms and is currently working to design products specifically for agriculture classroom experiences. Make plans to attend the workshops this year at both the national FFA convention and the NAAE convention. The ideas you take home will provide new insight for student interaction in your classroom.

In this fast-changing world, agriculture teachers need to stay informed on industry changes and standards. With the increase in professional development training, new curriculum and sponsor support, it is up to you to stay in tune with changing technology. With opportunities for students and teachers in FFA programs and awards, and with resources available using current technology, you are more prepared to assist students than ever.

Call on key partners and make sure you provide quality communication to the school officials and public on the great things you are doing for students in the program. You–the agriculture teacher–are the key to keeping the program strong and students prepared for their futures. Change and new ideas will keep you and the program fresh and interesting and learning right along with your students. Stay engaged and ensure Local Program Success!

Professional Growth

Tissue Culture Focus Creates Strong Program

Famous (or perhaps infamous) for being the home of the legendary Sheriff Buford Pusser, Adamsville, Tenn., is a rural community located just 100 miles east of Memphis. The town's roots are in agriculture, and it boasts a strong agricultural education program that emphasizes science via tissue culture.

Finding Funding

Adamsville Junior-Senior High is a school of 600 and accommodates grades 7 through 12. A grant from the Tennessee Valley Authority in 1992 allowed the agricultural education program to build a 24′ x 30′ self-contained lab specifically for tissue culture work. In addition to the lab, the program has four greenhouses and a shop. There are 162 students in the agriculture program, which is led by Jeff Lipford.

Additional grants have allowed for expansion of the lab's capabilities. The Adamsville program has state-of-the-art, sophisticated equipment and students conduct all of their own chemistry work. Specifically, they have begun making all of their own media.

Media is the mix of ingredients an organism requires to survive. Every organism is finicky and requires a different media. It is much more economical for Lipford's students to produce the media in the lab rather than purchase it from a vendor.

Instructional Structure

The block system was introduced at Adamsville six years ago and Lipford is convinced that the quality of instruction is better under this system. "I would not want to give up those 88-minute class sessions for a traditional teaching block, especially in my lab courses," he says.

The students finish four entire courses each semester. Horticulture technology, an advanced level course, is where most of the tissue culture work is completed. Students must complete two other fundamental or intermediate agriculture/ horticulture courses before they can enroll in this course.

Lipford teaches the students all aspects of the production process from the test tube to the hanging baskets in the greenhouse. A strong curriculum and the rotation of courses have been important to the program's success. Tennessee has a strong state curriculum and Lipford uses many of the state's horticulture materials. He recommends the text, *Plants From Test Tubes*, by L. Kyte and J. Kleyn as an excellent resource. The book presents materials in layman's terms.

Reaping the Benefits

Has this advanced technology and strong curriculum increased enrollment and student quality? Without a doubt. "The environment in the lab is like a medical lab. Everything must be sterile and the students must be very disciplined," says Lipford.

Adamsville students complete hands-on learning activities in the tissue culture lab.

In addition, the tissue culture lab is attracting chemistry students to the agriculture department. "These are very bright students who are way ahead of the others. We are providing them specialized opportunities in our lab. They probably would have never come into the agriculture building if it wasn't for this project." Other evidence that enrollment has increased is the addition of a second teacher two years ago.

The benefits for students include college credit. Adamsville is the first high school in Tennessee to have an articulation agreement with a college. Adamsville students can earn dual credit at Jackson State Community College while in high school. Lipford hopes this will encourage students to pursue an advanced degree.

Lipford's advice for those wishing to start a lab? "Start by looking for funding," he recommends. "Grant money is plentiful, but it is not always easy to find." Several of Lipford's grants were rejected, but he was able to acquire $200,000 over 10 years. "Don't give up the first time a grant is rejected," says Lipford.

He further recommends teachers take advantage of every learning opportunity. Lipford attends as many conferences as he can. It's obvious that his efforts are paying off. Maybe he and his students will discover a way to clone the success of their program!

Professional Growth

Bridging the Collegiate Gap

By Eric Schilling
Collegiate Specialist
National FFA Organization

How do we get our students to fill the collegiate gap? What do I do now? What is out there for me? These may be questions your graduating seniors ask you about the future of their FFA experience.

In the coming months, you will be able to help your students understand the opportunities that are available as the National FFA Organization collegiate services staff unveils new program opportunities for your graduating students. By implementing these programs, we can begin to bridge the gap that currently exists between FFA and other organizations at the high school and post-secondary levels.

Iowa State University Collegiate FFA Chapter members attended the 2003 National Collegiate Agricultural Education and Alpha Tau Alpha Conclave events held in conjunction with the national FFA convention in Louisville.

What Gap?

The gap is that space from the point highly involved high school FFA members graduate to when their higher education is complete and they are out in the workforce and one day realize what an impact this organization had on their lives. This space in the middle has been a question for advisors, students, alumni, sponsors and the National FFA Organization for years. We are excited to share the answer to this question with you. FILL IT! Fill that gap with programs, education and opportunities for students to develop further while attending college.

The first step in filling the gap is educating your students before they leave the high school campus, and are having trouble finding their classes at a post-secondary campus, let alone an organization to belong to. Michelle Gregory, the admissions advising councilor for agricultural education for the University of Minnesota, visits 80 to 100 high schools every year to promote the opportunities available for students at the university.

Pave the Way

According to Gregory, one of the best things an advisor can do is invite collegiate representatives to visit the local program and speak to students. During these visits to the classroom, post-secondary representatives share a variety of information regarding different opportunities to get involved on campus.

The other educational tools Gregory recommends is visiting the campus with your class and meeting faculty in areas that interest your students. This allows students to learn more about those with whom they will be interacting and they can more easily become involved on campus through their affiliation with the professors.

Once students are enrolled and on campus, they can be recognized for achievements involving organizations and individual successes. This builds a sense of community and safety by being a part of an organization such as Alpha Tau Alpha (ATA) or Post Secondary Agriculture Students (PAS). However you hope to engage students, advisors are truly the key to the students' openness to making a connection with FFA at the collegiate level.

Collegiate Web Site

Another gap filler will be introduced this fall when the National FFA Collegiate web site is launched. This site will enable students to search for information about specific program opportunities, learn more about college life, find a career path that suits them and find out how to join or start a collegiate FFA chapter.

Collegiate Track

One place you will want to be this year as a collegiate student or advisor is at the national FFA convention. For the very first time, there will be an educational track specifically for college students. This track will include multiple workshops on career development, interviewing skills, agricultural education as a profession and many others. FFA staff are creating opportunities for college students to gather for social events as well.

When agriculture educators fill the gap with efforts such as Gregory shared, a new web site, and collegiate opportunities at convention, we will have built a stronger bridge of support and understanding of what agricultural education and FFA is all about. When the gap is filled, volunteerism increases, industry improves and most importantly, you as the local teacher and advisor, continue living the legacy you started with your students the day they walked into your classroom. For comments, questions, ideas and to be added to the collegiate FFA listserv, contact collegiate@ffa.org. Stay tuned for more details on new programs as we begin to bridge the gap.

Partnerships

Teacher Resources

World Expo 2005 Student Travel Opportunity

This once-in-a-lifetime international experience is open to national convention Agriscience Fair 2004 participants in grades 10-12. In addition to the regular Agriscience Fair application process, those applying for the World Expo 2005 opportunity must complete a 250-word essay on how their scientific research supports the expo's theme, "Nature's Wisdom." See the World Expo 2005 flyer online at [http://www.ffa.org/programs/ag_sci/documents/agsci_worldexpo2005flier.pdf] or EXPO 2005 Web Page [http://www.expo2005.or.jp/en/whatexpo/]. For more details, contact Damon Spight, [dspight@ffa.org], 317-802-4402. Application deadline is August 16, 2004.

Career Development Event Adjustments

The National FFA Organization's Award and CDE Advisory Committee reviewed a number of clarifying adjustments and recommended approval by the National FFA Organization Board of Directors. The board of directors approved these clarifying adjustments at the January 2004 board meeting. For questions or a complete list of clarifications, contact Candice Murphy, CDE program coordinator, [cmurphy@ffa.org].

H.O. Sargent Award

The H.O. Sargent Diversity Award is a special honor and recognition given by the National FFA Organization to celebrate the work and dedication of FFA members and non-FFA members advancing efforts to diversify FFA and/or agricultural education. The award program, initially established through the leadership and vision of Mr. G.W. Owens of the New Farmers of America and Dr. H.O. Sargent of the U.S. Department of Education, was re-instituted in 1995 in commemoration of the contributions underrepresented groups and majority groups together have made to FFA and agricultural education.

Activities that qualify an individual for the award are as varied as the imagination and resources allow. This is in part because "diversity" is broadly defined to embrace any activity that has a goal of bringing balance between minority and majority groups within your community, school, chapter and more. Consequently, pen pal programs, community service activities, cultural awareness programs, membership recruitment campaigns, and a wide range of other projects make a nominee eligible for the award. It's all about accepting, connecting and developing. Both FFA members and non-members can apply or be nominated. The application deadline is June 30 (postmark date). For more details or an application, visit [http://www.ffa.org/programs/hosargent/]. For more information, contact Damon Spight, [dspight@ffa.org], 317-802-4402. The H.O. Sargent Diversity Award program is sponsored by Monsanto as a special project of the National FFA Foundation.

Precision Agriculture Tool Kit

Precision agriculture is the fastest growing aspect of agriculture in North America. With the continuing trend to make growers even more efficient and profitable through technological advances, knowledge and understanding of the precision ag industry is very important. When it comes to teaching about this new frontier of ag technologies, do you have the right tools and information to bring it into your curriculum? John Deere Ag Management Solutions (AMS) has developed a Precision Ag Education Tool Kit specifically tailored to help you bring precision ag topics and applications to your classes and course curriculum. For more information, see your local John Deere dealer.

Instructional Resources

Need lesson plans, classroom projects and teaching activities for agriculture, aquaculture, forestry, animal science, environment, food science/culinary arts, horticulture, floriculture, landscaping, turf management and production? Check out this website [http://www.khake.com/page81.html].

Bringing NASA Technology to the Farm

NVision's Precision Ag application/tutorial was developed under an agreement with the University of Mississippi and NASA. The application is based on industry standard Environmental Systems Research Institute's Map Objects architecture. The program includes an application for viewing various forms of provided data, a remote sensing tutorial, a GIS tutorial, a basic data package, and extensive help files. The NVision Precision Ag application/tutorial includes:

- License-free demonstration application for Precision Ag
- Tutorial material adopted for use in this application by NVision and other sources
- License-free aerial photography
- License-free multi-spectral imagery
- License-free vector data layers for selected sites
- License-free raster data for selected sites

NVision Solutions provides a download site for FFA and 4-H members that have access to the web. This service is provided free of charge. Please visit [http://www.nvisionsolutions.com/FFA]. NVision only asks for the intended number of students/users. No other information is required. The corporate point of contact is Craig A. Harvey, CIO/Exec VP, NVision Solutions, voice: 228-688-2205 ; fax: 228-688-3843; e-mail [charvey@nvs-inc.com].

Staller Recognized as Agribusiness Leader of the Year

The National Agri-Marketing Association (NAMA) has selected Bernie Staller as the Agribusiness Leader of the Year. The award is NAMA's highest honor and is designed to recognize an outstanding leader in agribusiness, education, government service or other agribusiness related area. Solicited from senior-level position holders in private, public or academic service, nominees exemplify excellence in agribusiness by their significant contributions to the industry. The award will be presented during the Agri-Marketing Conference in April. The list of past recipients of the award reads like a Who's Who in American agribusiness, including many past National FFA Foundation Sponsors' Board chairs.

Official Jacket Update

Starting in the month of March, the official jackets shipped to chapters began featuring emblems that have been updated to restore the design and color of the original FFA emblem. The jacket's front emblem now matches its back emblem, and the color of the thread used for the jacket's embroidery matches the yellow in the new emblem. In August and September, chapters will begin seeing their jackets arrive in the original shade of FFA blue. For a complete description of all changes that have been made to jackets and what changes are still to come, please refer to the article published in the Oct. 2003 issue of *FFA Advisors Making a Difference*, pages 10-11 [www.ffa.org/media/html/med_pub_index.htm]. For more information, contact Lee Anne Shiller at [lshiller@ffa.org].

Collegiate FFA

Do you have a collegiate FFA chapter? Are you interested in beginning a collegiate FFA chapter? If you answered "yes" to these questions, please contact Eric Schilling and Kristy Miller, your Collegiate Services team! To confirm your National Collegiate FFA Chapter affiliations or to join collegiate FFA, contact [collegiate@ffa.org], 317-802-4214.

Washington Leadership Conference

Start planning your trip to D.C.! The dates for this year's conference are: June 1-6, June 8-13, June 15-20, ~~June 22-27,~~ July 6-11 and July 13-18. Note: the week of June 22-27 is sold out. Prices for the conference have increased and are as follows: student package $550; advisor double $585; advisor single $780; advisor guest $975; room-only package $475. This year's conference will consist of high levels of service learning, mentoring and volunteerism strategies, problem-solving skills, relationship-building skills and character development. The FFA premier leadership conference is shaping up to be the best yet! You should have recently received information for WLC via the mail. For more information, send an e-mail message to [wlc@ffa.org], visit [www.ffa.org/programs/conferences/html/conf_wlc.html] or call 317-802-4312.

Agriscience Student of the Year

The Agriscience Student of the Year is one of the more lucrative award programs FFA offers. In recent years, participation in this area has been on the decline, while participation in the Agriscience Fair has continued to set new records. Please encourage students involved in agriscience at the state level to consider entering their project in the student of the year category. Every state winner receives a $500 scholarship, and the top two from each state are considered for national participation. The national winner receives $5,000 in scholarship money, the largest scholarship opportunity in FFA award programs. In 2003, only eight states submitted applications. Applications are due to the National FFA Center postmarked by July 15. For more information, visit [www.ffa.org/programs/ag-sci/index.htm].

Agriscience Teacher of the Year

Participation in the Agriscience Teacher of the Year program has also been on the decline. Every state winner is entitled to $100, and the national finalists receive $500 and a $1,500 grant for their chapter. The National FFA Organization would like to receive an application from every state. Teachers involved with agriscience are encouraged to take advantage of this great opportunity. Applications for the Teacher of the Year are due to the National FFA Center postmarked by July 15. For further assistance in this area, please send an e-mail message to [agriscience@ffa.org] or call 317-802-4402.

Collegiate FFA Listserv

Calling all collegiate FFA chapters! Planning is in process to start a monthly collegiate FFA e-mail that will provide many valuable updates for your collegiate chapter. If you and your students are interested in joining this listserv, please submit your name, e-mail information and any content ideas that you may have to Kristy Miller, program coordinator of Collegiate Services, [kmiller@ffa.org], 317-802-4220.

Biotechnology in Agriculture

Biotechnology is the most significant discovery in the history of agriculture. Biotech plants have been engineered to meet almost every challenge imaginable. Biotech crops are responsible for many desirable traits including increased yields, herbicide- and disease-resistance, flood and drought tolerance, and variable growth seasons to adapt to many climates. All of these traits help the producer.

Consumers receive benefits as well from food items with higher protein, lower fat and less allergens. All these developments enable producers to increase profits while maintaining consumer-friendly retail prices. This would seem to be the perfect solution to the world's food and fiber needs.

There are many moral, ethnic and safety issues being raised world wide concerning genetically enhanced food items. Zambia's President Levy Mwanawasa has thousands of tons of Bt corn locked away, refusing to let his starving citizens eat it because someone told him it contained poison. This is the same Bt corn that makes up one-third of the corn grown in the United States. The European Union recently announced they are preparing to launch new laws to label and track all genetically modified food. Are these truly safety concerns or trade embargos?

Regulations may force food companies to label all foods containing biotechnology ingredients. Surveys show that even in the United States this would decrease product sales. Some food companies are using palm oil from Malaysia rather than soy or corn oil to avoid such labels. Will this force biotech crops into a segregated market?

By Nolan Hornbuckle
2004 NYFEA National President
Collinsville, Alabama

I feel that much of the problem originates from misunderstandings and misconceptions. The consumer must be made aware of safety facts. The lack of education about this and many other issues are not in the classrooms. It is our job to educate the public as well as the students. We, the members of the National Young Farmer Educational Association, urge you to become involved in your communities, establish a Young Farmer chapter, help educate the producer as well as the consumer. It can also benefit your FFA program by the community becoming involved in your programs. We invite you to visit us at www.nyfea.org.

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Look for your next issue of *FFA Advisors Making a Difference* in April. It will feature stories about Program and Chapter Planning, as well as provide teaching resources and FFA news.