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THEME: A Health Profession

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Table of Contents

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Experiential Education

By Phillip R. Zurbrick, Editor

(Dr. Zurbrick is Professor and Acting Head, Department of Agricultural Education, The University of Arizona.)

During the 1989 National Agricultural Education Summit when the fifty-four leaders were attempting to identify the basic "bedrock values" of agricultural education, someone suggested that experiential education should be included. The discussion which followed was both enlightened and frightening! Some of the "leaders in the profession" did not recognize experiential education as a component of agricultural education and others glibly equated the concept to "hands-on-experiences." "It is nothing more than 'learning by doing' which should be part of every educational program." After all, the English teacher requires students to write papers and the mathematics teacher requires students to complete homework problems. Such a broad interpretation of experiential education certainly weakens the concept and perverts the intent as envisioned by those who believe in its value.

Experiential education refers to learning activities that involve the learner directly in the phenomena being studied. The nature of the involvement is direct and purposeful addressing a real world problem in a natural setting. The concept can be characterized as relevancy, reality and application of theory to practice. In all of the afore discussion, you will note no reference to supervised occupational experience or supervised agricultural experience. These tend to be ways the concept of experiential education has been manifested in agricultural education. Certainly, the logic of using supervised occupational experience (SOE) as the accepted form of experiential education in a program designed to prepare learners for an occupation is sound. If the mission of agricultural education were to continue to be one dimensional, there would be little need to alter the concept of supervised occuaptional experience. However, with the expanded mission of agricultural education, it is not only logical but crucial that the profession rethink and renovate the concept of experiential education as practiced in agricultural education. Some vocational programs have narrowly limited experiential education to cooperative experience (on the job training). The broadness of agricultural education, with the vast array of occupations encompassing both employment and self-employment opportunities, suggest that a broader interpretation is both needed and desirable. Experiential experience, involving actual entrepreneurial responsibilities, are highly desirable for those individuals who anticipate self-employment opportunities. Agriculture has come to be recognized as a strong program based upon the ownership-type of supervised occupational experience. Certainly, it is neither prudent nor judicious to abandon this type of experience or, on the other hand, prescribe it for all students in agricultural education.

Preparation for employment is enhanced when students have had the opportunity to work in the desired area of endeavor. Thus, work experience programs (paid or volunteer) and agricultural cooperative experience (ACE) are sensible and effective types of experiential education. The opportunity for a person to develop a reputation as a good worker in their field of interest might be one of the most valuable characteristics education can offer! Literally, the forms of supervised occupational experience encompassed by "ownership" and "placement" types of supervised occupational experience is limited only by an individual's imagination! The truly creative individual can develop appropriate and efficacious programs to meet every imaginable circumstance.

Supervised occupational experience, be it placement or ownership, when used in agriculture, needs to involve agricultural experience. If SOE were used in business education, it would, correspondingly, be limited to experience in the field of business. Further, when these forms of experiential education are used as components of "in agriculture" programs, the occupational emphasis must be given primary emphasis. Violation of either of these two aspects significantly reduces the educational value of the experience for "in agriculture" programs.

Programs "about agriculture" may logically and appropriately use different forms of experiential education. The concept of supervised agricultural experiences (SAE) is broader and encompasses a wider range of experiences than SOE in agriculture. The concept of SAE needs to be recognized and accepted as **different**, but an equally useful form of experiential education in agriculture when used with students enrolled in "about agriculture" programs. An analogy might be made with experiential education and a gun. SAE and SOE are both forms of experiential education just like a shotgun and a rifle are types of guns. But, in both cases, they have a specific and appropriate use. Let's not use a shotgun (SAE) when it is more appropriate and effective to use a rifle (SOE).

Agricultural Education — Is It Hazardous To Your Health?

By Paul R. Vaughn, Theme Editor

(Dr. Vaughn is Professor and Chairman, Department of Agricultural Education and Mechanization, Texas Tech University.)

It seems as though every month we receive word about another individual in agricultural education who had died an untimely death or is suffering from a disabling illness. As I think about these people and examine my perceptions of their work styles, I can't help but wonder — did their work contribute to their illness? Is agricultural education a hazardous occupation?

There is no doubt that work in the profession is stressful and, as such, related to health. Recent studies by several researchers at Mississippi State University[1] have discovered that a large number of individuals in agricultural education suffer from both job and personal stress. Agricultural educators surveyed across the country rated stress as the number one health concern of the profession. These studies have also shown that stress is significantly related to many of the common health problems experienced by agricultural educators. Another important finding was that very few of the people in the profession follow a planned program for improvement of their health. This all points to a conclusion that agricultural educators are in a demanding occupation that may well be detrimental to an individual's health.

Before we accept that conclusion, however, we need to look at the U.S. population as a whole. A quick examination will show that agricultural educators are not unique in regard to health and related factors. Nearly 70% of all American workers suffer from stress. Most American workers could be described as having unhealthy life styles, and most do not follow any type of planned program for improvement of their health. So, is working in agricultural education really hazardous to your health? I contend the answer is still yes — **if we want it to be.**

Let's examine the reasons for such a conclusion. While there has been considerable confusion during the past decade as to the best way to keep healthy, two important facts have now been clearly established by medical research: (1) most deaths in the U.S. are related to the circulatory system (i.e., heart attacks, strokes), and (2) many circulatory problems could have been prevented if the deceased had chosen to live a different life style. The latest long-term study on exercise and health clearly shows that people who exercise regularly (even moderately) significantly decrease their risk of death due to circulatory problems. Smoking has been found to be related to heart disease and numerous other circulatory problems. Nutritional studies have also clearly pointed out the medical benefits of a low-fat, balanced diet.

Since most of us choose what we eat, whether we smoke, and how much we exercise, it is now possible to say (other factors withstanding) that many of us "choose how we die." The same logic identifies the hazards of working in agricultural education. We choose how much the job affects us by how much we allow it to affect our life style. If we let the stressful aspects of our job overwhelm us to the point that it negatively affects our diet, exercise, and other good health habits (such as smoking); we definitely will suffer ill health. On the other hand, if we control our diet, exercise regularly, and try to keep harmful substances out of our bodies, our chances of letting the job affect our health are minimal. And our chances of being productive educators are greatly enhanced.

The authors of the articles in this issue have done an excellent job in relating health concerns for the profession and ways to overcome them. I would add little to their suggestions except to say that many health problems are brought on by ourselves. My own health is a good example. Part of the stress of my life is caused by poor organization. Other parts are caused by unnecessary worry and self-imposed deadlines or crises. My goal for the future is to become more organized, to call upon others for help, to establish realistic goals, to seek more spiritual guidance, to exercise regularly and to eat healthy. I hope you will join me — let's make this great profession also a healthy one.

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FEATURE COLUMN

Computer Technology Resources

Rediscover the Spreadsheet

BY W. WADE MILLER, SPECIAL EDITOR

(Dr. Miller is Associate Professor, Department of Agricultural Education and Studies, Iowa State University.)

What the word processor is for words, the electronic spreadsheet is for numbers. Several recent studies of computer use in the nation's schools have shown that although most teachers have discovered many uses for word processors, they seldom use spreadsheets. These same studies have identified a small but dedicated minority of teachers who do use spreadsheets.

Why haven't more teachers discovered the value of the spreadsheet? Spreadsheets have not enjoyed a greater adoption rate for two principal reasons: some teachers feel that they are too complicated to learn and others feel that there is a lack of spreadsheet applications specifically for agriculture.

Nevertheless many teachers have found that they learn the rudiments of spreadsheets in a few hours and there are now hundreds of agriculture applications available.

First, let's simplify this electronic gadget. An electronic spreadsheet is very much like a large piece of paper with a built-in calculator: you write words and numbers on this piece of paper. You can also enter mathematical formulas in order to manipulate the numbers. Much of the work you already do is organized in a form that can easily be transferred to a spreadsheet. Some examples of these common forms are: record books, checkbook registers, livestock budgets, equipment maintenance records, grade books, fruit sales records, and net worth statements. Any records consisting primarily of numerical data can be kept on a spreadsheet.

The value of the spreadsheet lies in its ability to use the computer for quick and accurate calculations. For instance, you can change any numerical entry on the spreadsheet, and the computer will recalculate related values. This feature encourages you to engage in "what if" questions because the computer can recalculate all values in a matter of seconds.

The spreadsheet is organized in rows and columns. The intersection of a row and a column forms an area known as a cell, into which data can be entered. Columns are usually lettered, and rows are usually numbered. This labeling scheme allows the user to name and locate each cell. For instance, the first cell formed by the first column (A) and the first row (1) is named A1, the cell formed by the T column and the 14th row is T14.

Words (labels), numbers (values), or formulas can be entered in the cells. You can enter a formula to prompt the computer to sum the contents (numbers) in four different cells and then to compute the average of those numbers. For instance, a formula could look something like this: (A1 + A2 + A3 + A4) / 4 = ______. This is computer programming at its easiest. You do not need to learn BASIC, PASCAL, or any other language to write spreadsheet applications. All you need to do is follow a few basic rules from the instruction manual.

A specific program written on a spreadsheet is called a template or an application. You and your students can write spreadsheet templates. I have included with this article a sample template illustrating how a spreadsheet can be used in teaching. This simple template, which took only two hours to design and type, uses the familiar "Square Method" of balancing a ration, a method used by agriculture teachers for many years. The idea for this template came from a book entitled **Spreadsheet Applications for Animal Nutrition and Feeding,** by Ronald J. Lane and Tim L. Cross.

```
File: SQUARE METHOD            REVIEW/ADD/CHANGE                Escape: Main Menu
========A========B========C========D========E========F========G========H====
  1|                THE "SQUARE METHOD" OF RATION FORMULATION
  2|Directions:  Enter labels in A4 & A15.  Enter values in B4, B15 &. D9.
  3|                  ------------------------------->
  4|CORN        10.00 ______________________________            30.00
  5|----------  ------|                              |  (H4)  ---------
  6|Feed #1  % Protein|                              |Parts of feed #1
  7|   (A4)    (B4)   |                              |          '
  8|                  |                              |          '
  9|                  |          15.00               |          '
 10|                  |       -------------          |     +    '    +
 11|                  |       Animal's requirement   |          '
 12|                  |       Percentage CP (D9)     |         \'/
 13|                  |                              |           5.00
 14|                  |______________________________|  (H13) ---------
 15|SB MEAL     45.00                                 Parts of feed #2
 16|----------  ------  ------------------------------>          35.00
 17|Feed #2  % Protein                                        ---------
 18|  (A15)    (B15)                               = Total parts (H16)
 19|-------------------------------------------------------------------
 20|                 1.      Parts feedstuff #1 in ration       =   30.00
 21|                                                              ---------
 22|                 2.      Percentage feed #1 in ration       =   85.71
 23|                                                              ---------
 24|                 3.      Parts feedstuff #2 in ration       =    5.00
 25|                                                              ---------
 26|                 4.      Percentage feed #2 in ration       =   14.29
 27|                                                              ---------
 28|                 5.      Total parts in the ration above    =   35.00
 29|                                                              ---------
 30|                 6.      Percentage total of ration (100)   =  100.00
 31|                                                              ---------
 32|                 7.      Lbs. of feed #1 in 1 ton           = 1714.29
 33|                                                              ---------
 34|                 8.      Lbs. of feed #2 in 1 ton           =  285.71
 35|                                                              ---------
 36|                 9.      Total lbs. in ration (2000)        = 2000.00
-------------------------------------------------------------------------
```

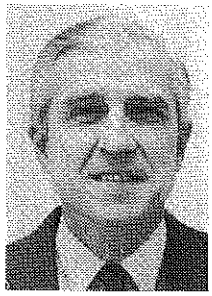
You can encourage your students to ask the "what if" questions, and they will see answers immediately. You can ask, "What if grain sorghum were less expensive than corn?"

(Continued on page 23)

How Healthy Are Agriculture Teachers?

Agriculture teachers are thought to be robust, outdoors-type people. They deal with animals, plants, machinery, and other high-energy subjects and pursue an active life-style. Surely they have few health care problems!

Agriculture teachers do have health care problems and concerns!



By Jasper S. Lee

(Dr. Lee is Professor, Department of Agricultural and Extension Education, Mississippi State University.)

Health and Education

Good health is the absence of disease and pain. It refers to having a sound body and mind. The presence of health problems means that physical or mental conditions occur that, to some extent, impair the normal life of the individual. Health problems can impair the capacity of individuals to perform their work.

There are those who would say that student achievement is a function of the teacher's performance. How a teacher relates to his or her environment is reflected in student achievement. Teachers who don't feel well are thought to respond differently from those who do in delivering educational experiences.

Feeling bad or feeling good certainly impacts how a teacher views the teaching day. Irritability, moodiness, loss of temper, lack of cooperation, and low energy level are certainly likely to be the key indicators of health problems. Assessing teacher health as related to education is a massive undertaking. All of the findings aren't in yet, but we are learning more every day about the health of teachers.

A Few Facts About Agriculture Teachers' Health

Agriculture teachers experience health problems not unlike the general population. Plus, a few environmental factors are thrown in. Teaching in laboratories where dangerous equipment or chemicals may be used or around animals that could cause injury adds to the possibility of injury.

Research at Mississippi State University has investigated the health status of agriculture teachers in the United States. And they have experienced a wide range of health care problems! The ten problems most often experienced in one school year are colds (experienced by 79% of the agriculture teachers), job stress (52%), fatigue (48%), influenza (39%), headaches (37%), personal stress (34%), teeth problems (27%), eyesight problems (26%), respiratory problems (25%), and depression (24%). Five of these top ten problems are emotional or psychosomatic conditions. Two are common communicable diseases which may or may not cause teachers to miss school. Sometimes teachers catch colds and influenza from their students when they come to school sick.

Agricultural educators place a lot of emphasis on safety in laboratories. Teachers are admonished to follow safety procedures meticulously. Evidently the emphasis on safety pays off. Only 14% of the agriculture teachers in the United States have experienced any type of laboratory injury. A few more have experienced hearing loss (15%) which may be attributable to teaching in noisy facilities or operating loud equipment, such as a chain saw, without adequate hearing protection.

Teachers and Absenteeism

Teachers are rarely absent from school because of emotion or psychosomatic problems. They are more likely to miss school because of influenza, colds, circulatory problems, genitourinary problems, and surgery. Does this mean that teachers who are "emotionally unhealthy" go on to school? Yes! And the answers aren't in on how teaching effectiveness is related to emotional health.

In 1986-87, the 12,053 agriculture teachers in the United States missed 43,631 days of school because of health care problems. Slightly over 243 additional full-time teachers would be needed to fill in for all of those who are absent. The cost to taxpayers could exceed $6 million annually for substitutes. As of now no value has been placed on the disruption teacher absenteeism causes in the continuity of the learning process of students.

A few teachers each year must have major surgery or face catastrophic illnesses which cause them to miss large numbers of days and sometimes even resign their teaching positions. These situations, however, tend to be relatively isolated and not attributable to the overall agriculture teacher population.

Teachers and Their Concerns

Why teachers miss school and what they are concerned about healthwise are not quite the same. The exception is stress.

The top health concerns of teachers are job stress, laboratory injuries, circulatory problems, eyesight problems, personal stress, and hearing loss.

Across the population of agriculture teachers, concern about laboratory injuries does not convert to a high number of days missed. The incidence of severe injury in a laboratory is thankfully fairly low. Those who do experience such injuries will, however, likely be absent from school several days or, in extreme cases, weeks or permanently.

(Continued on page 21)

Can Students Learn In Your School Environment?

By Lyle Westrom

(Mr. Westrom is an Instructor, Agricultural Division, University of Minnesota - Crookston.)

"The relationship revolving around the interaction between the teacher and the student is the single most significant factor contributing to school success" (Barter, 1984, p. 37). Agriculture teachers and agriculture students emulate the words of Barter. As one former high school agriculture student stated, "There was something special about walking into the agricultural classroom . . . it was different from the other classes . . . it seemed as though we were all family!"

Few would doubt that the student who made the statement was likely an excited learner in agriculture class with enhanced student outcomes. Just as you have experienced the joy of seeing a student "turn on" to education, you have undoubtedly gone home worried about the student you were not reaching. Why do teachers "miss" some students? Why do teachers appear to be more successful some days than others? It is now believed that schools create different kinds of environments for their teachers. Those environments influence the mental and physical health of teachers. Teacher health plays a role in teacher effectiveness and ultimately student learning.

The Environment Of Teachers

"Schools have for a long time imposed upon teachers a set of working conditions that can be described as demoralizing and debilitating" (Levine, 1986, p. 161). Studies by Landsmann (1978) and Lee and Westrom (1988) determined that over one-third of teachers felt that the school environment affected the health of educators. Those teachers experienced more laboratory injuries, more abuse/violence from students, greater job stress, more depression, increased insomnia, greater fatigue, undergo more minor surgery, and suffered greater hearing loss than their counterparts. This translated to more missed days due to injuries and communicable diseases.

Over 50% of teachers believed that administrators do little or nothing to assist teachers in maintaining physical and mental health. Teachers who perceived a lack of administrator assistance experienced greater abuse/violence from students, more frequent headaches, and more digestive problems. The most common suggestions offered by agriculture teachers regarding ways administrators could better assist teachers included: (a) positive feedback, (b) willingness to communicate, and (c) better management of the school environment and facility.

Teacher Effectiveness/Student Learning

Classroom teaching is the most important factor in student achievement. The key element in effective schools is teacher effectiveness. What makes the classroom teacher effective? Numerous writers mention factors such as enthusiasm, high expectations of students, time-on-task, and classroom management as keys to teacher effectiveness. Characteristics such as "high quality supervised agricultural experience program (SAEP)" and advising an active FFA Chapter are added to the list for agricultural education. It is thought that all of the above factors can be carried out only if the agriculture teacher believes that he or she has the capability to effect student performance.

Belief in one's ability to produce an effect is not all intrinsic. Outside factors may render a teacher partially or totally ineffective. "Conditions of work" are related to teacher effectiveness, teacher health, and ultimately student learning.

Teacher Health/Teacher Effectiveness

The United States Department of Education found that attendance rates were strengths of superior schools. This also translated into lower teacher turnover rates and higher pupil achievement.

The medical profession suggests that four percent absenteeism from sickness is a normal rate. Many schools surpass that rate and some reach a nine to 12% rate. Why?

Mental and physical health is not merely the absence of disease; it is a state of well-being. Factors such as stress relate to teacher health, even if teachers remain in the classroom. Recent studies have listed teachers second only to air traffic controllers in levels of stress (Barter, 1984). Fifteen percent of agriculture teachers have also cited environmental problems including (in descending order): (a) laboratory noise, (b) laboratory air quality, and (c) laboratory temperature. As Harlin, Jerrick, and Rosenthal (1976) stated, the teacher who has pain or discomfort; who is depressed or anxious, who cannot freely move about, hear, or see; or who is frequently absent, disrupts the learning program because students react poorly to the teacher's unhealthy condition.

Maintain Your Health For The Students

Do you use the local wellness center? If you are a typical agriculture teacher you probably said "no." Only 12 agriculture teachers out of 100 use a wellness center.

(Continued on page 23)

Teaching Tips

Sparking Student Interest In Magneto Ignition System

By Donald M. Johnson

(Mr. Newman is a Graduate Assistant, Department of Agricultural and Extension Education, Mississippi State University.)

Are you looking for a way to create student interest in studying the magneto ignition system commonly used on small gasoline engines? Would you like to provide your students with a "slow motion" demonstration of how the system components operate to produce a spark? If you answered yes to either of these questions, the demonstration set-up described below may be just what you are looking for.

Materials

The following materials are required:

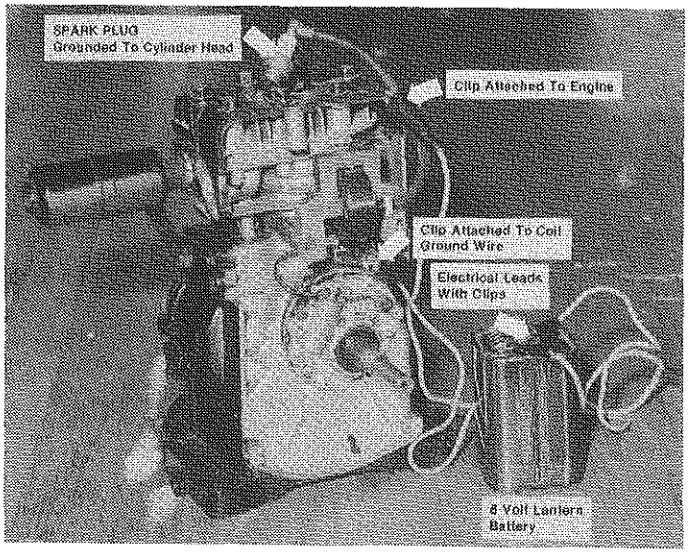
— One 6 volt lantern battery
— Two insulated electrical leads with clips
— One small gasoline engine with a functional flywheel magneto ignition system.

Set-Up

Prepare the demonstration set-up as follows. Refer to the engine manufacturer's service manual for proper procedures for performing each operation.

— Remove the spark plug from the engine.

— Remove small engine fuel tank, shroud, starter clutch, flywheel, and breaker point cover.



The photograph shows the completed demonstration set-up. Note: Disconnect the electical leads when not in use to prevent discharging the battery. Also, place the engine on a wooden table to prevent possible electrical shock. (Photo courtesy of Mr. Jim Lytle of Information Services, Mississippi State University.)

— Reconnect spark plug to high tension lead (spark plug wire) and ground the spark plug to the cylinder head.

— Connect one end of each electrical lead to the 6 volt lantern battery terminals.

— Connect the free end of one lead to the coil ground wire. Connect the free end of the other lead to the cylinder block.

Operation

The battery simulates the function of the flywheel magnet and coil to cause electrical flow in the primary circuit of the ignition system. This current flow causes a magnetic field to build up around both the primary and secondary windings of the ignition coil. Opening the breaker points by turning the crankshaft opens the primary circuit and causes the magnetic field to collapse. The rapid collapse of the magnetic field induces current flow into the secondary windings of the coil where the voltage is greatly increased. This increase in voltage, coupled with the increase in voltage caused by the discharge of the condenser, causes the electrical current to jump the spark plug gap and create a spark at the plug.

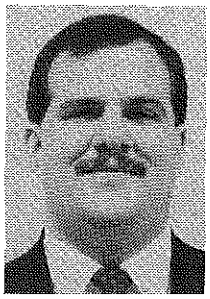
Summary

This demonstration set-up is easy to prepare and can be used as an interest approach or as a problem for supervised study. The set-up can also be modified for student laboratory activities. For example, by removing the cylinder head and rotating the crankshaft, students can observe the relationship between occurrence of the spark and the position of the piston. They can also conduct experiments to determine the effect of incorrect breaker point gap settings on ignition timing.

Regardless of how the set-up is used, it is sure to spark student interest in magneto ignition system operation. Why not give it a try the next time you teach small engine maintenance and repair?

THEME

Health Tips for Agricultural Educators



By Michael E. Newman

(Mr. Newman is a Graduate Assistant, Department of Agricultural and Extension Education, Mississippi State University.)

Agricultural educators have historically viewed themselves as overworked and underpaid, and they attribute many of their health problems to a lack of time for activities that would improve their health. In a national study of agricultural educators, Lee and Westrom (1989) found that the teachers were overweight and felt they suffered from job stress, personal stress, and fatigue. They also found that the health problems agricultural educators experienced most often were colds, headaches, influenza, and circulatory problems. These findings are similar to findings from health researchers in many other areas. Across the nation, people generally have similar health problems for similar reasons.

Health, fitness, and wellness all mean free from disease, having strength, vitality, stamina, and hardiness; being well in both mind and body (Cohen, 1987). This article focuses on factors that contribute to wellness, including health problems, causes of problems, and recommendations from health experts for better health, fitness and wellness, thereby improving the quality and length of life.

Health Problems and Causes

The three leading causes of death in the United States are cardiovascular such as heart attacks and strokes (50 percent of deaths), cancer (20 percent), and motor vehicle accidents (12 percent) (Bernstein, 1984). Many of the factors that cause these problems also cause health problems that may be less severe but lead to teachers missing days of school, not being as effective because of illness, or transmitting diseases to their students.

Lifestyle habits are the most important causes of illnesses and premature deaths, causing up to two-thirds of these problems, according to estimates (Bertera, 1986; Bernstein, 1984). Several examples of how lifestyles affect these causes of death and illness are listed below.

For cardiovascular disease, the leading causes are smoking, lack of exercise, and Type-A behavior. Other factors include levels of blood pressure and blood cholesterol. Smokers increase their risk of heart disease to almost double that of a non-smoker. In fact, smoking is the cause of more deaths from heart attack than from cancer. Exercise provides several benefits to reduce the risk of cardiovascular disease, which will be discussed more later. People with Type-A behavior are very competitive, high achieving go-getters who usually experience more deadly stress than people with Type-B behavior, especially those Type-A people who are prone to anger (Bertera, 1986; Bernstein, 1984).

The major contributors to fatal cancers are smoking, alcohol, and diet, although the effects of these are still being studied and exact effects are unknown (Bernstein, 1984).

The two lifestyle factors which contribute the most to fatal car accidents are mixing drinking with driving and not wearing seat belts (Bernstein, 1984).

Stress and Health

Stress is a necessary component of life. Without stress, there would be no reason to get out of the bed in the morning. All human accomplishment is the result of worry, frustration and discontent. This type of stress is called eustress or good stress (Chopra, 1987).

The health problems related to stress are the results of being exposed to excessive stress with sufficient mechanisms for handling that amount of stress. This type of stress is called distress or bad stress (Chopra, 1987).

The effects of stress on health are numerous. One of the most dangerous is that it weakens the immune system, increasing the chance of influenza, colds, and viral infections (Chopra, 1987; Start, 1983; **Prevention,** 1990). Stress also increases the level of cholesterol in the blood and increases blood pressure, both can lead to cardiovascular disease (Fischman, 1983).

In addition, stress affects mental health. Often the result of stress is irritability and fatigue, in some cases leading to teacher burnout (Newcomb, Betts, and Cano, 1987).

Ways to Improve Health

A few changes in lifestyle could add several years to the life expectancy and reduce the occurrence of many health problems of most people, agricultural educators included. Below are a few of the suggestions physicians are recommending:

Stop smoking. Someone who quits smoking reduces heart attack risk by half and lung cancer risk 8 to 10 times that of a smoker (Bertera, 1986). Also, stamina begins to increase almost immediately, allowing a person to enjoy exercise more. A person's lungs begin to clear up immediately after quitting smoking.

Exercise regularly. Regular exercise can lower blood cholesterol, increase heart and lung capacity, reduce stress and fatigue, and help to maintain ideal weight (Bertera, 1986). The exercise does not have to be all that hard or done for long periods of time to be of benefit (Findlay and Shryer, 1988). Twenty to thirty minutes of exercise three times a

(Continued on page 10)

Health Tips For Agricultural Education

(Continued from page 9)

week lowers the risk of heart disease. Men who burn as few as 500 calories per week in exercise had reduced death rates 15 to 20 percent lower than men who did not exercise. The good news is that people who are not active gain the most by becoming active. "A very modest level of activity seemed to have an important and very rapid impact," says Dr. James Rippe, a physician at the Massachusetts Medical School (Findlay and Shryer, 1988). Exercise also can reduce the effects of diabetes, arthritis, and high blood pressure. Remember to check with a physician before starting any exercise program.

Eat healthier foods. More of the diet should contain fiber from grains, cereals, fruits, and vegetables. Excessive amounts of fat, saturated fat, cholesterol, sodium, sugar, and alcohol should be avoided. Reducing fat intake to only 20-30 percent of total calories and exercising can reduce cholesterol levels. Low-fat milk products and other calcium-rich foods should be eaten daily, especially by women, to ensure an adequate supply of calcium (Bertera, 1986).

Wear seat belts. People who use their seat belts 100 percent of the time they are in a car reduce their risk of being in a fatal car accident by one-half (Bertera, 1986; Brody, 1989).

Lose weight. A healthier diet and exercise can help you maintain your ideal weight. This will reduce the chance of heart disease, diabetes, gall bladder disease, and some cancers (Brody, 1989; Bertera, 1986).

Drink less alcohol. Excessive drinking increases the risk of cirrhosis, heart disease, some cancers, high blood pressure, and automobile accidents. Brody (1989) recommends a maximum of two alcoholic beverages a day.

Control your temper. Angry, aggressive, Type-A behavior is well known as a contributor to heart attacks (Ames, 1982; Chopra, 1987). According to Dr. Gary E. Schwartz, a psychology professor at Yale University, anger produces more severe and long lasting effects on the heart than any other feeling, even fear (Ames, 1982).

Maintain a positive attitude. Stress resistant people have a specific set of attitudes toward life that allows them to handle stress and maintain their health. These people have an openness to change, a feeling of involvement, and a sense of control over events (Iso-Aholo and Weissinger, 1984). In several studies, the people who handled stressful life events without any ill-health effects displayed a sense of "commitment" to what they were doing, "control" over their environment, and a sense of "challenge" when faced by change (Iso-Aholo and Weissinger, 1984; Ames, 1982). Social ties were also an important factor in a person's ability to handle stress situations (Iso-Aholo and Weissinger, 1984; Ames, 1982).

The relationship between good health and happiness works both ways. Doctors think that healthier people are happier and that happy people are healthier (Ames, 1982). If your school or community offers a wellness program, take advantage of it. Make sure you and your students follow safety procedures in the laboratory to prevent accidents and ensure proper air quality. Follow the suggestions in this article and, with a little effort on your part, you can become a happier and healthier agricultural educator.

Recommended Sources of Health Information

If you do not think you are as healthy as you could be, then you may be interested in reading further about the subject. Below is a short list of brochures and books for more information:

- **Exercise and Your Heart** is a booklet available free from the National Heart, Lung, and Blood Institute, Building 31, Room 4A21, Bethesda, MD 20205. The booklet can be reproduced without special permission.

- **Foods and Health** is a free packet containing recipes, posters, and signs. Write to Foods for Health Program, National Health, Lung and Blood Institute, Building 31, Room 4A21, Bethesda, MD 20205.

- **The Healthy Approach to Slimming** is a booklet with weight charts, facts about calories, exercises and sample diets that costs $1.00 per booklet. Write to American Medical Association, P.O. Box 10946, Chicago, IL 60610.

- **Dealing with Stress: A Challenge for Educators** is a stress guide geared toward teachers by William C. Miller. The pamphlet (Fastback #130) is available from Phi Delta Kappa Foundation, Box 789, Bloomington, IN 47402.

- **Stress Management** is a comprehensive guide (book) to wellness by Edward A. Charlesworth, Ph.D. and Ronald G. Nathan, Ph.D. and is available from Ballantine Books.

- **Stress for Success** is a guide (book) for coping with stress on the job by Peter G. Hanson, M.D. and is available from Doubleday.

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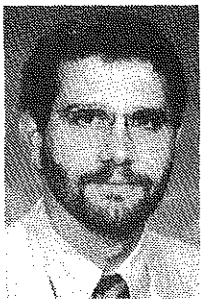
THEME

Work, Is It Your Drug Of Choice?



By Gary S. Straquadine
(Dr. Straquadine is Assistant Professor, Agricultural Education, Utah State University.)

The Agricultural Education profession is not immune to societal problems. Members of our profession are just as susceptible to marital problems, substance abuse, and mental illness. Yet, I believe how we view and resolve our character defects for optimum productivity requires review, especially as it relates to our work.

Several experts in agricultural education have considered the issue of the dissatisfied, overworked, burned-out teacher. These writings have ranged from an identification of the problem to a cursory analysis of the outcome of teacher dysfunction in agricultural education. Mattox (1974) examined why selected Arizona vocational agriculture teachers left the profession. Among his findings, he stated that dissatisfaction may arise due to the desire of the teacher to achieve more status, responsibility, rewards, and shorter working hours. He concluded that environmental factors such as long work hours, inadequate salary, and lack of advancement opportunities influenced experienced teachers to leave the profession.

More than ten years ago, Knight (1978) examined reasons teachers left the profession. He found that teachers were leaving the profession because of the time requirements of the job and characteristics of the profession.

In August 1979, the theme for this magazine was 'The Overworked Ag Teacher — Setting Priorities.' The three articles identified as part of this theme considered the problem of "too much to do, but too little time" as a matter of priorities. While the helpful hints may provide immediate assistance, the long term affects are minimized through the relentless addition of priorities in such a dynamic teaching area. Furthermore, the offering of priority or time management techniques is only treating the symptoms of a greater disease.

Racing ahead to the most recent decade, Newcomb, Betts, and Cano (1987) examined the extent of burnout among Ohio vocational agriculture teachers. They found that 17 to 30 percent of the teachers responding were identified in a high burnout category. These authors recommend support systems and coping skills be developed to reduce teacher burnout and stress.

From this brief review of agricultural education literature concerning job burnout and stress, it may be concluded that we have a problem. Teachers are leaving the profession in uncharacteristic numbers. Those that do remain often complain of job stress and possibly burnout. Finally, although without empirical measure, one would suggest that job morale is also being adversely affected. However, I believe this problem is actually the end product of a greater, yet unnamed problem in our profession: WORKAHOLISM.

Addictions in our society are well known and mostly misunderstood. Schaef (1987) defines an addiction as any substance or process that has taken over our lives and over which we are powerless. It may be a substance with a physiological addiction such as alcohol, drugs, nicotine or sugar. The concept of process addictions refer to a series of activities or interactions that "hook" a person, or on which a person becomes dependent. The most common process addictions include money, gambling, relationships, and, of course, work. Addictions lead us into increasing compulsiveness in our behavior and controls us in such a way that we feel we must be dishonest with ourselves or others about it.

As we enter into the agricultural education profession, we model the behaviors of our mentors. With the enthusiasm of youth, we teach school as if there is no tomorrow, taking students to as many FFA judging contests as possible, seeking office in the professional teacher organizations, serving the community. Meanwhile, we are always working to upgrade the curriculum and facilities. Before we know it, we are thinking about or interacting with our agricultural education programs more than our families, friends or ourselves. The evening meetings and the weekend activities begin to take their toll on our lives.

Without realizing our direction, we have fallen prey to work, a process addiction. For all practical purposes, we are much like an alcoholic or drug addict. We are dishonest to the ones we love about our work, blaming poor management on others or accepting responsibilities beyond our role as teachers of agriculture. More importantly, we are dishonest to ourselves. We aren't really there at family gatherings or social functions outside of the work environment. We are always thinking, planning, or evaluating our jobs. However, unlike the alcoholism or drug addiction, workaholism is considered a socially acceptable fact of life. In fact, unlike the alcoholic or drug addict that must deny or delay identifying their addiction, workaholics readily admit and brag about their work addiction. After all, the Protestant work ethic has been touted as a desirable characteristic for centuries.

The issue of workaholism is complicated further by the expectations of our society, especially our profession. Contrast the concept of workaholism with alcoholism or drug addiction. While the individual addicted to substances such as alcohol or drugs are unfortunate, society does not expect or require their addiction. This same is not always true for workaholics. Our jobs are not just another context where

(Continued on page 12)

Work, Is It Your Drug of Choice?

(Continued from page 11)

people acted out their workaholism, enmeshed by their own disease and that of others. Our jobs require more than the standard 40-hour work week. We prepare lessons and grade papers at home. We are expected to conduct SAEP visits outside of the school day. Advisory committee meetings, adult classes for the community, and continuing education for teacher certification will fill our days and nights. Yet, our jobs hold lots of promise. It promises power, money, and influence. It promises that you will be a nice person if you perform in certain ways. But it is these promises that keep us actively focused on the future in the belief that even if things are not so good now, they will be better. The future orientation of the promise in our jobs is one of the processes that prevents us from looking at the present functioning in the system and seeing it for exactly what it is, addictive. By continuing to present us with promise, our jobs remain central in our lives, in control of our present, and 'hook' us into an addictive relationship with the job, the giver of the promise.

Work is a very tricky addiction. When workaholics are most "into" their disease, they feel most alive, even though it may be killing them. Schaef and Fassel (1988) found that for the workaholic, the fix may not be the work itself, but the adrenaline high that accompanies the work. Workaholics describe a surge of energy they get from their work. They do not get the same surge on a family vacation or night out with friends. In fact, they experience a total letdown and depression when they are not at work or thinking about work.

Research on stress indicates that stress is a life-threatening process because the body is not built to withstand a constant rush of adrenaline. Yet, stress research provides us with an interesting perception about workaholism. Many workaholics have taken the recommendations of the stress and burnout research, such as conducted by Newcomb, et al. (1987). They exercise daily and eat right. But this "healthiness" results in their being able to work even harder and, therefore, maintain their addiction. It is very interesting to find that a workaholic's stress reduction activities appear to be promoting health when, in actuality, these activities only allow the workaholic to prolong their addiction. This action takes the focus off their addiction, actually supporting their addiction as they deceive themselves and others around them. Perhaps we could conclude that research which simply focuses on stress and stress reduction may indeed be supporting the perpetuation of workaholism.

Hawkins (1989) summarizes some of the behaviors and perceptions of workaholics. She begins with the lack of denial; workaholics readily admit and name their work addiction. Furthermore, workaholics suffer from delusion. They will not admit they are hurting themselves or those with whom they are in primary relationships. They have difficulty letting others share in tasks, often completing the task before others are there or after co-workers have gone home. Therefore, it is logical for workaholics to assume they can do anything. No job is too big or small for the workaholic to do alone. If they don't know how, they look it up in a book and do it. This characteristic prevents dependency on others and serves the disease by making the workaholic indispensable to others because of the know-how. Yet, this promotes isolation and results in difficulty in maintaining personal contact with others. The lack of interaction can cause one to focus all their attention on tasks and objects with flexibility. Tunnel vision, both physically and conceptually, will then be added to their list of character defects.

Burnout is the bottom for the workaholic. Burnout may present a subtle awareness that your school doesn't suit you or a desire to leave the profession all together. Burnout may find expression in physical or mental illness. Just as the disease of alcoholism may end in death through suicide, body disease, or mental illness, the same outcomes are available to the workaholic.

We are stressed and burning, if not already, out. How do we get out of this mess? First, you need to be willing to admit something is wrong. Is your life a mess because your role as an agriculture educator has taken such a dominant dimension in your life? Do you measure all your successes in life through your work? I know more than one agriculture education teacher who keeps a list of all their students' FFA awards (contest, proficiency awards, State and American FFA Degrees) as if that is the first question St. Peter will be asking at the Pearly Gates. Is it difficult for you to detach from the work day as you return home? Do you spend excessive time on the telephone or planning and grading papers? Are you emotionally detached from your family, your friends, and most of all, yourself? Your addiction to your work may be greater than you think and, more importantly, greater than it should be.

Interested in recovery? You must be willing to give up old behaviors as you realize you are no longer in control of your life, your work addiction is controlling you. But, do not go out to regain control; for in control, we hold life still. Nonrecovery is about being stuck, about not living; and as we control, we hold our lives still. Control is an illusion.

To aid in your recovery, you must learn to share your emotions. As you work out your program of recovery, you will be faced with fear, anxiety, and guilt. Others, family, friends, co-workers, who understand what you are trying to do can help you through these tough times. No one should go it alone.

In resolving your workaholism, it is important not to set up your recovery as a dualism, an "either/or" situation statement. It is more than just a choice between your work or yourself and your family. Unless you are truly independently wealthy, employment and the monetary rewards for your work are necessary. Therefore, work is necessary. However, you need to choose the extent of interaction that will make you a viable member of society, not just the work force. It is not a matter of choosing your work or choosing yourself and your family. It is a matter of choosing life.

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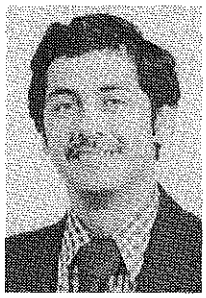
Teacher Stress — Teacher Burnout: A Profession At Risk



By Jamie Cano

(Dr. Cano is Assistant Professor, Department of Agricultural Education, The Ohio State University.)

At a time when the public, administrators, and students are demanding more from our teachers, the issue of stress and burnout surfaces as a teacher concern. In addition, when the percent of the agricultural education teachers in the high burnout category is near 30 in one state (Newcomb, Betts, and Cano, 1987), it becomes imperative that agricultural education teachers educate themselves about stress and burnout.

Teaching is an emotionally and mentally exhausting profession. Some potential causes of stress in the lives of today's teachers of agriculture include setting unrealistic expectations; internal and external pressures to succeed in the agricultural program; economic concerns (both personal and program related); lack of self-confidence; conflict in values and goals; and, lack of goals.

Teachers of agriculture have long been noted for being hard workers. Agricultural education teachers are constantly making decisions that affect the lives of students, and they are continually giving and sharing emotionally and intellectually. As the result of this continual giving, it is not unusual for agricultural education teachers to work long hours and have more work to complete than is humanly possible.

Given the conditions identified, job stress is likely to develop. Job stress results when there is a difference between the teacher's goals and expectations, and the ability to achieve those goals and expectations. If teachers of agriculture were able to "work off" or "get rid" of their stress through the use of good coping strategies, teachers would be able to reduce problems with job stress. However, if the stress is not "worked off" or "gotten rid" of, strain will develop, and as this strain surpasses the teacher's level of tolerance, a phenomenon called "burnout" develops.

What is Burnout?

Webster (1988) defines burnout as exhaustion as a result of physical or emotional stress. Because teachers of agriculture are constantly working with students in emotional and intellectual situations, a state of physical, emotional, and mental exhaustion may occur. Igodan (1984) defined burnout as the physical, emotional, and mental exhaustion brought about by unrelieved work stress.

The burnout syndrome varies in symptom and degree from person to person. The important thing to remember is that situations which cause stress for one teacher may not cause stress for another. Likewise, things that cause stress at one point in a person's life may not cause stress at another time.

Stress cannot and probably should not be completely eliminated from the teaching-learning environment. A certain amount of stress is necessary for creative and constructive change. But when the degree of stress becomes excessive, it becomes detrimental. Agricultural education teachers need to be able to identify the source or sources of undue stress which will ultimately cause burnout.

Signs of Stress

Physical Symptoms

The physical signs are easy to notice and identify. There is usually a feeling of exhaustion and fatigue, such as being unable to shake a lingering cold. In addition, a likely candidate for burnout may be suffering from frequent headaches and gastrointestinal disturbances, sleeplessness, and shortness of breath. Since the symptoms identified may also indicate a medical illness, candidates should never hestitate to seek medical assistance if in doubt.

Behavioral Symptoms

Behavioral signs are not as readily noticed or identified as the physical signs. Behavioral symptoms include a teacher's quickness to anger and instantaneous irritation and frustration. The teacher may find it too difficult to hold back feelings: the slightest pressure makes the teacher feel overburdened and angry. Once the anger is eased, paranoia may develop. At this point, the teacher begins to feel that just about everyone, including other teachers, are out to get their job which may lead to professional jealousy.

Professional jealousy is often the source of stress. The "grass often looks greener on the other side," and consequently teachers frequently compare themselves with other teachers. Often, the burnout candidate sees positive traits in others that they are unable to see in themselves. This makes for uneasiness, shyness, attempts to cover inappropriate behavior, and efforts to create an impression that is different from the real person. The candidate at this point becomes overconfident and in the process may look foolish to all.

There may be other behavioral signs of a burned-out teacher of agriculture present. For example, the teacher may look, act, and seem depressed. The teacher may seem to keep to himself or herself more. Of great concern is that the depressed sign of burnout may be tougher to diagnose since

(Continued on page 14)

Teacher Stress — Teacher Burnout: A Profession at Risk

(Continued from page 13)

teachers of agriculture are usually physically situated away from other teachers.

Who Is Prone To Burnout?

There seems to be a true dichotomy regarding agricultural education teachers who are prone to burnout. As odd as this may sound, the agricultural education teachers most likely to get burned out are those who are truly dedicated and committed to the profession of teaching. Why those dedicated and committed? Simply because the individuals who are dedicated and committed actively seek answers to questions and problems and also respond to the recognized needs of their students. The dedicated and committed teachers are the individuals who put in the long hours and hard work for which agriculture teachers have been known.

Many agricultural education teachers in the public schools have the tendency to work too much, too long, and too intensely in making the total agricultural education program a success. Successful agricultural education teachers are pressured by the students they serve and from the community to excel. Also, along with this comes the pressure from the school administrators to give even more.

Often times, the dedicated and committed teacher of agriculture will give in to all internal and external pressures in order to please all parties involved, thus causing stress and ultimately burnout. However, not only the dedicated teachers are prone to burnout.

Another type of agricultural education teacher who is prone to burnout is the one who does not take the job of teaching seriouly. This type of teacher may become bored very quickly. By being bored, the methodology utilized by the teacher will become routine rather than challenging, thus setting the tone for burnout.

Suggestions for Coping with Stress and Burnout

To alleviate job stress, several coping strategies are offered which have been found to be effective. The coping strategies are problem identification, creation of peer support systems, variations in specific classroom situations, freeing oneself from time constraints, devoting quality time for rest and relaxation, attending professional meetings and conferences, and limiting the number of work hours.

Problem Identification

Since teacher stress is unique to each teacher, the initial step in dealing with stress is the identification of the problem or problems and their respective causes. There are several workshops offered year round in many communities across America with topics which relate to the identification and management of stress. Attend one of these workshops. The one or two hours an individual spends at one of the these workshops might prove to be some of the most valuable time invested.

Peer Support System

A support system within the school is one of the most effective means of reducing stress. Since most agricultural education programs consist of one teacher departments, the agriculture teacher must be able to communicate and share with other teachers. This communication usually reveals that many of the teachers are facing the same problems. Ask other teachers in the school for their suggestions and ideas. Listen to others who have burned out at one time or another. By sharing and opening up to other teachers, the agricultural education teacher will make his or her job less stressful. And, by making the job less stressful, the teacher may be able to lessen his or her burnout.

Classroom Situations

Situations within our own classroom often are the cause of stress. Planned variations in scheduling of classes, using a variety of teaching methodologies, modification of seating arrangements, and fluctuation in the classroom environments can be valuable in alleviating stressful situations. For example, fund raising is a very frustrating experience for teachers of agriculture. Do not use the same fund raisers time after time; change to other activities. Let the students handle more of the responsibilities of fund raising; after all, fund raisers are for the students' benefit.

A sure way to avoid boredom in the classroom is to write lesson plans to include at least three different teaching techniques during one lesson. Rotate teaching techniques as much as possible. Likewise, if possible, rotate the sequence in which the classes are offered to break an otherwise monotonous schedule.

Just as we must rotate teaching techniques to avoid boredom, we must also alternate the classroom physical arrangement. How many times does the furniture in your home get rearranged? Better yet, why is it done? The primary purpose for rearranging the furniture at home is to give the room a different look. The same is true for a classroom. Why not move furniture around? It does wonders to help break classroom dullness.

Time Constraints

Because of the rigorous and time consuming programs of agricultural education, time pressures could be cited as a cause of stress. To relieve this pressure, experienced students could be asked to help with bulletin boards, clerical work, serve as resource people, or work with small groups within the classroom as group leaders. Have different people do different jobs which the agricultural education teacher would normally do. Parents and FFA Alumni members can also be used for much of the same type of assistance.

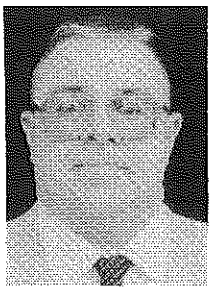
Rest and Relaxation

If at all possible, teachers of agriculture should try to free themselves from school work on weekends. Being that this is not always possible, with careful planning, some free weekends could be scheduled. A relaxed weekend helps the teacher of agriculture come to class on Monday with renewed enthusiasm and energy.

In a study of Ohio teachers of agriculture, it was found that approximately 85% of the agriculture teachers did not sufficiently use recreational resources as a means to cope with job stress (Newcomb & Cano, 1986). Most times the exhaustion of the burnout is emotional and mental. Play tennis, jog, dance, swim, ride a bicycle, go camping! Engage in any activity that will take your mind off your work. Teachers of agriculture need to be able to rest and relax on a regular basis.

(Continued on page 22)

Health In The Teaching Laboratories



By Glen M. Miller

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If you have the opportunity to travel around the United States and visit agricultural education programs in the secondary schools, you become impressed by the ability of teachers to manage all kinds of laboratories. New or old, small or large, teachers of agriculture do a good job of managing their facilities. Most safety equipment is in place, machinery is thoughtfully placed and in adequate working condition, and thought has been given to student safety. Teachers are aware and concerned with student safety and are doing all they can within the constraints of their budget and facilities to provide a safe environment.

Teachers are often more concerned with everyone's safety than their own. Have you ever noticed when teachers talk about laboratory accidents that many of the most serious accidents have happened to teachers — not students? When I think of the colleagues in my own experiences in teaching, I remember the person pinned between a tractor and a car when unloading from a trailer — a teacher; the person whose artery was cut because of an exploding grinding wheel — a teacher; the person suffering exposure to toxic fumes — a teacher; the person suffering a stroke due to a blood clot moving from a deep puncture wound — a teacher; and the person with a severe hearing loss due to operating machinery — a teacher.

Dr. Stan Burke (1989) found that of the 954 accidents reported in Virginia, 159 involved teachers. An alarming 86% of the teachers responding reported being involved in an accident. The per capita rate of accidents was 6 per teacher. Why do teachers, who stress safety with their students, experience serious accidents and often long-term reductions in health? Three factors could be responsible for increased risks to the health of teachers in the laboratories.

They are:

1. Opportunity
2. The Superhero complex
3. Unaware of risk

Opportunity

Teachers have more opportunity to experience accident or injury simply because they are in the laboratory more consecutive hours than students. Teachers may be moving from skill area to skill area conducting demonstrations and supervising. This leaves the opportunity to cut corners and to fail to take all necessary safety precautions. Teachers are sometimes distracted by multiple activities and students who need help. Fatigue plays a role when many students are involved in complex skills.

The Superhero Complex

Teachers believe they are indestructible and indispensible. Teachers will do things in the laboratory they would never allow students to do. When alone, they believe they can lift incredible weights, be unharmed by fire, repel flying objects, ignore the loudest noise, and generally work without the benefit of safety devices they require their students to use. The sad fact is that there is positive reinforcement for a period of time for ignoring the safety rules. You may accomplish a task time after time without safety precautions. You start feeling like a superhero — indestructible.

Teachers also imagine themselves as indispensible. I must go to work even though I am ill because no one else can do the job. Normally, an ill teacher in the lab is doing a disservice to self and students. Risks resulting from inattention and medication are real. The teacher's ability to supervise others is also reduced.

Unaware of the Risks

Like so many other occupations, teaching agricultural education and agricultural mechanics is full of subtle and hidden dangers to our health. What are the long term effects of stress, of exposure to toxic fumes, dust, vibration, chemicals, and noise? Let us zero in on noise.

Personal safety equipment and first aid equipment must be grouped for easy access and use by students. Safety equipment must include hearing protection devices.

Health In the Teaching Laboratories

(Continued from page 15)

Farmers who attended the 1988 Farm Progress Show in West Brooklyn, Illinois had hearing losses at the rate of 47% for men and 18% for women (Lankford, 1988). Far surpassing the general population, this finding is significant for teachers. In fact, on average, 323,000 people working in agriculture are exposed to noise levels exceeding 85 dBA every day (EPA Report No. 550/9-81-101). The health risks fall into several categories.

Loss of Hearing

The damage done to the ear by excessive noise is a very subtle thing in most cases. We notice the noise when it begins, but after a time we think we have adjusted to the noise. What has really happened is the cells in the ear that have been detecting the noise and sending messages to the brain have temporarily stopped working. If we leave the noisy environment, we normally recover. A person may leave school and play the radio in the car on the way home. The next morning, when the car is started, the person notices that the radio is very loud. The temporary loss (or threshold shift), has corrected itself with rest. If we continue to abuse the sensory cells in our ear day after day, sooner or later they stop working. We may notice that parts of speech are missing as we listen to conversations. This type of loss is permanent. A hearing aid may help by amplifying the sound for the few sensory cells that are still working in the damaged frequency(s).

Interference with Communication

Noise can interfer with our ability to hear or be heard in the agricultural mechanics laboratory. If laboratory noise is 80 dB, you must speak loudly to be heard. If the noise is in the range of 85 to 90, dB you must shout. If the noise if 95 dB, people must get very close together to be heard. Under these conditions, students may miss critical instructions or the instructor may miss the cries for help from a student in trouble.

Performance Effects

Student and teacher performance can be affected by noise. This is especially true for cognitive activities. Motor activities are also adversely effected by noise, especially when the noise is intermittent rather than continuous (Broadbent, 1979). Research has shown performance can be enhanced in noisy environments with the use of hearing protection devices (Miller, 1986). This increase in performance may be as high as 14% for cognitive activities and 3% for motor activities. Broadbent (1979) also found some research which indicated that people exhibit less helpful behavior during and after noise exposure than they do in quiet environments.

Annoyance

Constant noise is less annoying to us than intermittent noise. In some cases, people report fatigue, irritability, and sleeplessness which is attributed to noise in the environment.

Evidence for Noise and Stress Disease

Stress disease may be the result of ancient conditioning of human beings to dangerous situations. Our ancestors would experience mobilization of biological functions in preparation to fighting the danger or running away from danger. There is evidence that we may still experience this reaction. This biological reaction may lead to such stress induced diseases as heart attack, stroke, ulcers, and cancer. Research by E.A. Peterson and his colleagues found that long term noise exposures for monkeys (85-90 dB) led to chronic elevation in blood pressure. This elevation did not return to normal after the noise was stopped (Peterson et al. 1978). Hattis and Richardson (1980) implicated high noise levels with cardiovascular disorders. All of this research is potentially flawed, but should still cause us concern for our health in the agricultural mechanics laboratory.

Appropriate safety equipment must be mandatory for student use.

The Common Warning Signs

Exposures to excessive noise in the laboratory result in the following warning signs:

1. You must raise your voice to be heard.
2. You cannot hear (understand) someone less than two feet away.
3. Speech around your sounds muffled or dull after you leave a noisy area.
4. You have a pain or ringing in the ears (tinnitus) after exposure to noise.

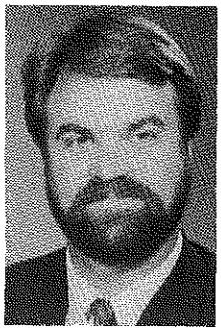
Our Response

It is critical that teachers become aware of their health risks in the laboratory. We must be as well-educated about our own safety as we are about our students' safety. Specifically, we need to be aware that some of our exposure to fumes, dust, chemicals, stress, noise, etc., are more critical to the teacher because of exposures over the length of a teaching career.

In relation to noise, routinely protect yourself from high levels of noise. Hearing protection devices (HPD) are available in a wide variety of styles and performance ranges. I personally prefer the disposable type because I find them effective and comfortable after an adjustment period. After the short adjustment period, it is actually easier to hear and understand your students.

(Continued on page 23)

The Software Sampler
Small Engine Troubleshooting



By Jeffrey A. Wood, Special Editor
(Dr. Wood is Associate Professor and Coordinator of Agricultural Education, Department of Agriculture, Illinois State University.)

Imagine that you are going to mow the lawn and the engine does not start. Do you check for fuel first, or replace the entire carburetor? Do you check for spark first, or replace the condenser or ignition module? Small Engine Troubleshooter provides the agriculture instructor with a new way to teach students how to think logically in diagnosing problems such as these.

Small Engine Troubleshooter presents the student with a realistic engine description and problem. First, the student must decide if the problem is with the carburetor, ignition, or compression. A series of tests are available which aid the student in focusing on possible causes. When the student is ready to "turn the wrench," a detailed list of repairs is available. Each repair the student attempts adds to the "repair bill," which serves to challenge the learner to determine the most cost-effective manner of diagnosis and repair. Over 100 help screens guide the student through realistic problem-solving situations.

The program includes tests, test helps, repairs, and repair helps. Each test provides the learner basic information, promoting possible clues to the problem solution. Each time a student selects a test, a cost is added to the "repair bill." Tests are generally less expensive than repairs. Test helps and repair helps are free and provide clues as to whether a logical decision has been reached. There is no reward for fastest time in diagnosis and problem solving; the bottom line is the cost of the "repair bill."

The Small Engine Troubleshooter package includes software, tutorial, instructor's utilities, "Service and Repair Instructions" by Briggs and Stratton, "Small Engine Operation, Repair and Maintenance" by Hobar, instructor's guide and reference, and free back-up diskettes.

The engines can have a carburetor, an ignition, or a compression problem. There are 29 tests for the carburetion system, 22 tests for the ignition system, and 23 tests for the compression system. There are 21 repairs to select for the carburetion system, 17 for ignition, and 14 compression repair choices.

Using the instructor's utility disk enables the teacher to select and assign a specific engine to the problem disk for student use. The instructor's utility disk also allows the teacher to print a hardcopy of a summary which details specifically how a student performed, including the entire problem solving sequence leading to the "repair bill."

Among the many noteworthy features of the program is the documentation which is exceptionally well written. Additionally, the tutorial program is excellent and could easily stand alone without my need to refer to documentation. The program package is very comprehensive and includes two textbooks in addition to free diskette back-ups.

Two accoutrements lacking in the program are the use of graphics and the ability to save and print more than one student's work at a time. Graphics could enhance the program and would provide additional visual clues to learners who have not yet developed the ability to think sequentially in problem-solving situations. The minor inconvenience of printing a student's results could be overcome by requiring students to use the utility diskette themselves, though this would breach security of the instructor's program and enable students to randomly change parameters within the program.

The program requires an IBM-PC or compatible, 512K, DOS 3.0 or higher, and a single disk drive. The program is available in 5¼" (360k) and 3½" (720k) formats. The software costs $39.95. A comprehensive program package which includes instructor's utilities software, program software, instructor's guide and reference, and two textbooks costs $99.95. A lab pack contains all the software needed to run the tutorial and program on up to 10 computers at the same time. The lab pack is available for $169.95. The program is available from Lumen Software, Inc., P.O. Box 778, Adelphi, MD 20783, (301) 434-4316 or Hobar Publications.

Hardiness: It's Not Just For Plants

By Deborah L. Finfgeld

(Ms. Finfgeld, RN, MSN, CS is Assistant Professor, Illinois Wesleyan University.)

Individuals engaged in agricultural education may readily think of the term "hardy" in relationship to plants. Botanists use the word "hardy" to describe plants that can survive unfavorable environmental conditions such as extremes in temperature or moisture. Its application in botany, however, is a more contemporary use of the term. The word "hardy" comes from the Old French, "hardi," which meant bold, daring, fearless (Klein, 1971). Thus, it originated as a term to describe certain human personality characteristics.

Professionals who are interested in physical and mental health have adopted both uses of the term. That is, hardiness is defined as a personality characteristic which impacts physical as well as psychological well-being.

Studies indicate that the overall well-being of teachers is an area worthy of some concern. A recent Harris poll of teachers in the United States predicted that one-fourth would leave teaching by 1990. The Carnegie Forum on Education and the Economy went on to predict that 50% would leave by 1992 (Martinez, 1989). Martinez suggests that this high rate of burnout results from physiological and psychological exhaustion, depersonalization, and lack of on-the-job accomplishment.

Research indicates that in order to avoid burnout, hardiness is an important personality characteristic to nurture in teachers. Teachers who demonstrate hardiness exhibit greater endurance than those who fail to incorporate hardiness into their personality structures (Holt, Fine, & Tollefson, 1987).

Health Benefits of Hardiness

Health care professionals suggest that high burnout rates can be curtailed by "cultivating" a hardy personality. An individual who possesses a hardy personality is one who: (a) is able to perceive of realistic ways to change adverse situations, and (b) is committed to accept challenges and their positive and negative consequences. These attributes have been labeled perceived control and courage (Finfgeld, 1989).

Kobasa, Maddi, and Kahn (1982) suggest that hardiness helps to mitigate the otherwise debilitating effects of stressful life events. Hardy people perceive adverse situations as meaningful, controllable to at least some degree, and opportunities for growth. These individuals can activate coping mechanisms which transform events into less stressful situations, rather than avoiding them.

It is further hypothesized that hardy people are able to prevent illness-provoking biological states such as exhaustion or depression of the immune system. In sum, they exhibit resilience in the face of adversity, and vigorously endure.

The hardy individual's vigorousness and longevity may be due to a variety of factors. First, several researchers suggest that individuals who are hardy are more likely to engage in behaviors that promote health (Daniel, 1987; LaGreca, 1985; Wiebe & McCallum, 1986). In other words, they have a realistic sense of control over their own good health, and they are committed to the challenge of maintaining it.

Pollock's (1989) research with diabetics supports this contention. Her findings suggest that diabetics who rated high in hardiness enjoyed greater physical adaptation than those who rated low in hardiness. This may be due to their vested interest in behaviors which promote good health.

In addition to the direct relationship between hardiness and health promoting behaviors, the findings of Kobasa, Maddi, and Puccetti (1982) suggest that there may also be some addictive benefits of hardiness. Their research indicates that hardiness diminishes psychological distress while health promoting behaviors decrease physiological stress. Interestingly, individuals who are both hardy and regularly participate in health promoting activities such as exercise, remain significantly healthier than those who are high in only one or the other.

Illustrative Cases

Foolhardy

A hardy individual should be clearly differentiated from one who is "foolhardy." Foolhardiness entails an unrealistic perception of control, or a denial of one's human limitations. Further, a person who is foolhardy, demonstrates recklessness rather than courage. Take for example, the person who speeds down a slick road at 90 miles an hour, fails to wear a seat belt, and believes he is in full control of this situation. Clearly this individual fails to comprehend his own vulnerability and powerlessness. In addition, this behavior could not be construed as courageous, but rather reckless. As a result, this individual's physical well-being is threatened.

Defiant-Compliant

In contrast to the foolhardy individual is the "defiant-compliant" person. Unlike someone who is foolhardy, the defiant-compliant type possesses one of the critical attributes of hardiness but lacks the other. The defiant-compliant person recognizes their ability to change a situation but lacks the courage to accept the consequences incurred when the

change takes place. For instance, everyone is familiar with the colleague who relentlessly complains about the administration, long hours, low pay, and the like. This individual can frequently come up with realistic solutions to some of these problems, but fails to carry them out. Laziness is usually not the barrier to change in this situation. Instead, the individual may lack the courage to accept the consequences (positive or negative) of change. In this case, the consequences of inaction are frustration and anger which undoubtedly threaten psychological well-being, and potentially physical well-being also.

Helpless-Hopeless

In certain instances the defiant-compliant individual moves to a more helpless-hopeless mode of inaction. Unlike the hardy individual, the "helpless-hopeless" person perceives events as totally out of their control. These individuals assume they have no real control over their health status. They see no reason to participate in good health care practices, and do not think twice about engaging in physically damaging activities such as drinking and smoking excessively.

In this case, lack of perceived control automatically eliminates courageousness. That is, in order to be courageous, an individual must be committed to changing a situation, and commitment to change implies a perception that the situation is within one's control. Thus, this person is the polar opposite of someone who is hardy.

Acquisition of Hardiness

Experts in the field of psychology suggest that hardiness may be learned early in life. In other words, individuals are more likely to demonstrate hardiness if they have experienced a variety of events, are taught to think abstractly, are encouraged to function independently, and have hardy role models. This does not mean, however, that hardiness is only learned during childhood (Maddi & Kobasa, 1984). Maddi and Kobasa suggest that increasing hardiness in adulthood is complicated but not impossible.

The first step in acquiring hardiness is placing one's personal control within proper perspective. Unlike foolhardy individuals who overestimate their control, and hopeless-helpless people who underestimate it, hardy individuals recognize both their strengths and limitations.

The simple fact is that we all have physical and psychological weaknesses and strengths. For example, individuals with chronic diabetes can recognize the limitations of that disease, but learn to adapt based on factors which are within their control (for example: diet, exercise, medication). In other words, people can have a chronic disease, but may still be considered hardy based on how well they learn to use the innate power they have over a situation.

The second step to acquiring hardiness, is learning how to commit one's self to a challenge and then accepting the positive and negative consequences. In the case of the diabetic, the consequences of adhering to a strict regimen of diet, exercise and medication are both positive and negative. The positive consequences are the most obvious; however, the negative consequences are equally influential. In fact, many diabetics choose not to control their diabetes in order to avoid those consequences.

Adhering to a recommended regime may mean an entire lifestyle change. Many times individuals are reluctant to alter their eating and exercise habits regardless of the potential payoffs. In addition, people often refuse to take prescribed medications due to their side effects, or the financial drain.

In sum, hardy diabetics recognize what is realistically controllable, and demonstrate courage in accepting the positive and negative consequences of their self-care actions. Hardy diabetics receive long term payoffs — vigorous endurance rather than fragile existence.

The last thing for the individual to keep in mind is that in order to cultivate hardiness, bad things do not have to happen to good people. Human beings have the innate ability to learn some things vicariously. Careful observation and cognitive rehearsal of others' responses. Bandura (1977) observed this phenomenon in children and labeled it role modeling.

Acquiring hardiness has short term as well as long term implications. Experts agree that hardiness is an important aspect of lifestyle management. It has been suggested that hardiness may result in self-improvement and a proactive approach to life (Bolton, 1985). Thus, hardiness is an important personality characteristic to adopt. In order to do this, teachers must apply learning principles on a personal basis as well as in the classroom.

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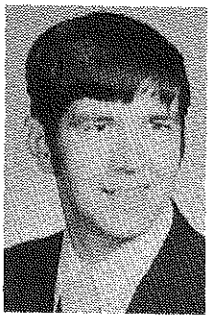
Book Review
Computer Skills and Parliamentary Procedure



By David L. Howell, Special Editor
(Dr. Howell is Associate Professor, Department of Vocational-Technical and Adult Education, University of New Hampshire.)

Our friends at the Interstate Printers and Publishers have helped us again in two important areas. If your students are just getting into computers or parliamentary procedure, these references will be helpful.

The book, Developing Computer Skills was reviewed by Dr. James Legacy, the coordinator of the agricultural education program at Southern Illinois University. He recently spent his sabbatical in Hawaii teaching a computer applications class, and this June he will be heading for South Africa to teach a similar course at an agriculture research station.

The review of The How in Parliamentary Procedure was completed by C. Peter Mortenson, who joined our teaching profession recently after working in the woods of Northern Idaho for ten years. In the past two years he has been teaching horticulture in New Hampshire and introducing students to parliamentary procedure.

Developing Computer Skills, by Eric C. Egertson, Danville, IL, the Interstate Publishers, Inc., 1989, 212 pp., Price $14.95. This text is best described using it's subtitle "Operating Principles and Software Application for Apple IIe, IIc, and IIGS." This is an introductory text which focuses on the operation of the Apple computer II series. The book includes a twenty page introduction to computer systems in general, followed by fifty pages of BASIC and graphics programming and a brief presentation of ProDOS operating system. This concludes PART I of the book. Part two titled "Software Applications" is devoted to the use of Appleworks and Paintworks software. The Appleworks information is presented in three chapters titled, Wordprocessing; Database, and Spreadsheet. Each section includes an explanation of the application as well as illustrations and practice problems. The text concludes with a ten page presentation of Paintworks and a seven page glossary of computer terms. A twenty-one page teachers guide is available. This guide includes tips on how to use the text as well as answers to the review questions of each of the text chapters.

The text is well written and could be easily understood by advanced high school agriculture students. The materials are presented in a well organized manner. The text is well illustrated and examples are used to reinforce explanations given. The examples used are in a well organized manner. The text is well illustrated and examples are used to reinforce explanations given. The examples used are NOT agriculture examples. Agriculture teachers will need to add their examples to make materials more meaningful to agriculture users. For those teachers with Apple computers and Appleworks software, the text may be **JUST THE THING** you were waiting for. The book is written for advanced high school and junior college users.

Dr. James Legacy, Coordinator
Agriculture Education, S.I.U.
Carbondale, Illinois

The How In Parliamentary Procedure, by Kenneth Lee Russell. Danville, IL: The Interstate Printers and Publishers, Inc., 1990, fifth edition, 80 pp., Price $2.00.

The How In Parliamentary Procedure, according to the author, "has been written for all individuals who participate in group meetings." His statement hits the nail right on the head, with the key word being "meetings" and not competition. This book will provide new FFA members with a quick and easy way to understand the basics of parliamentary procedure. Its use for other groups — student council, fire departments, etc., — would be just as effective. The main topics of each chapter are easy to understand and follow, giving the reader a good sense of how to use them, as well as why they are important to the proper running of a meeting. There are numerous examples in language FFA members actually use in a meeting.

The How in Parliamentary Procedure is a thin paperback, eight and one-half by five and one-half inches, a size that won't quite fit in your back pocket; this will shorten the life of the book as students will wrinkle it putting it in there. However, at $2.00 a copy each student can have his/her own. It has 49 pages of information containing 20 chapters from "How to introduce new business' to "How to write up the notes into the minutes of the meeting," along with a "Summary of Motions," "Sample Study Questions," a glossary, and a short index. All of the chapters are short, usually one to three pages, with only two chapters being six pages long.

This book should make it easy for members of any group to effectively take part in their meetings. For the vast majority of FFA members and others participating in meetings, this book will provide all the background ever needed. For those who need a more intricate understanding of parliamentary procedure, this book will still act as an excellent initial training guide.

C. Peter Mortenson
Horticulture Instructor
Pinkerton Academy
Derry, New Hampshire

How Healthy Are Agriculture Teachers?

(Continued from page 6)

What's a Teacher to Do?

Agriculture teachers are a lot like the farmers and others they have taught over the years. The farmers often knew more than they put into practice on their farms. Teachers know more about health than they often practice in their personal lives.

Agriculture teachers could improve their health status if they practiced what they know to be good for their health. From another point of view, if agriculture teachers followed good health practices as religiously as they do laboratory safety practices, they would be healthier.

Teachers need to be aware of the mechanisms for coping with health care matters. They need to practice positive health care principles. Begin with these: eat right (regular meals and proper nutrition), relax a little while eating, watch your weight, get regular medical checkups, establish time for rest and relaxation to escape from the pressures of teaching, get appropriate physical exercise, and avoid using damaging substances such as tobacco and drugs.

One Additional Challenge

Teachers are role models for their students. Youth are impressed by the people they respect. They model the behavior of the adults they observe. Teachers need to demonstrate good health and good health care practices. Sloppy attitudes toward health matters by a teacher are certainly noticed by students. The teacher who gulps down greasy fried potatoes and a cola is saying by example that it is okay to eat this way.

More information is needed on this topic, but are the students of teachers who smoke more likely to smoke or if teachers demonstrate poor nutrition are their students more likely to not eat right? Certainly, students can't learn the right thing if they only observe the wrong thing. This reminds us of "monkey see, monkey do" — an important way monkeys (as well as people) learn.

Put a little more emphasis on your health. You will feel better in the long run! When you feel better you will be a better teacher!

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Work, Is It Your Drug of Choice?

(Continued from page 12)

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NOTICE — Coming In August

"Expanding Audience Base"

Teacher Stress — Teacher Burnout: A Profession at Risk

(Continued from page 14)

Professional Enrichment

Attending professional workshops and conferences is another way to provide for professional renewal. It could prove to be very beneficial to take time off to attend a workshop, as long as it is a learning experience and not an emotional encounter. "Getting away" has a great therapeutic advantage. Attending professional meetings serves two purposes.First, it allows the agricultural education teacher to get away for a while, and secondly, the workshop may turn out to be truly valuable and of some use to the teacher upon returning to school.

At professional meetings, teachers have the opportunity to meet, talk, and share problems with other professionals in the same field. It is always reassuring to know that others are experiencing the same problems or the same doubts. The professional interaction that takes place at such meetings, as well as the social gatherings, can send the teacher of agriculture back to their respective schools with renewed enthusiasm and with a more positive perspective about the agricultural education program.

Limitation of Work Hours

Another way to avoid burnout is to limit the number of hours the agriculture teacher works. Realistically, three hours after the close of school per day should be enough time to conduct some SAE visits and prepare lesson plans for the following day. Newcomb and Cano (1986) found that approximately 85% of the teachers of agriculture in Ohio were not taking the time to take care of their personal well beings. This is very critical in that as teachers of agriculture, the job demands are such that one must remain in good health. The teacher of agriculture can have more time to take care of many of those details related to one's well being and good health by limiting the number of working hours.

Summary

Some potential causes of stress in the lives of today's teachers of agriculture include setting unrealistic expectations on behalf of the teacher and the student; internal and external pressures to succeed in the agricultural program; economic concerns, both personal and program related; lack of self-confidence; conflict in values and goals; and lack of goals. Of utmost importance is that agricultural education teachers be able to identify the source or sources of undue stress which may ultimately cause burnout.

Signs of stress include the physical symptoms of exhaustion, fatigue, headaches, gastrointestinal disturbances, sleeplessness, and shortness of breath. Behavioral symptoms of stress may include instantaneous irritation and frustration, professional jealousy, and depression.

In summary, stress and burnout cannot be totally eliminated, but certain measures can be taken to lessen the level of stress which ultimately leads to burnout. Several coping strategies which may be employed to alleviate stress include problem identification, peer support systems, variations in classroom management, making free time, some rest and relaxation, attending professional meetings, and limiting the number of working hours.

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Can Students Learn In Your School Environment?

(Continued from page 7)

Do you report laboratory or classroom environmental problems to your administrator? Reporting environmental problems does not guarantee that they will be fixed, but it does shift the burden of responsibility.

Does your principal give you the support that you need to deal with day-to-day stress factors? If not, seek a faculty support group. Many teachers have been surprised to learn that other teachers have experienced similar problems.

Tomorrow another freshman will walk into your classroom. Will you be mentally and physically ready to provide that "unique" agricultural education experience? You owe it to yourself and "the new student" to be prepared. Preparing yourself might mean joining a wellness program, improving the physical environment you work in, or developing a support relationship with one of your colleagues.

To make a student the beneficiary of maximum learning in your classroom, take care of yourself today; mentally and physically!

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Health In the Teaching Laboratories

(Continued from page 16)

To learn about other health dangers which exist in your laboratory, contact your state department of education, your nearest Department of Agricultural Education, or the U.S. Department of Health and Human Services, NIOSH/OSHA.

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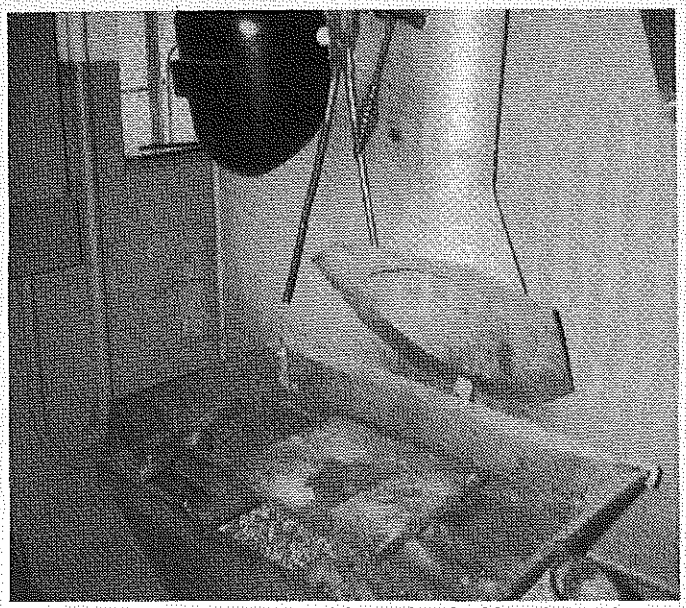
Computer Technology Resources Rediscover the Spreadsheet

(Continued from page 5)

or "What if we are able to get lower quality corn at a cheaper price?" or "What happens if we change the crude protein requirements for a pen of feeder cattle?" If you change the crude protein (CP) content of one of the feed ingredients or change the CP requirement for an animal, the ration will reformulate itself accurately in seconds.

This is only one idea. You have at least two choices regarding additional templates. You can buy templates written by others, or you can write them yourself. A source of ready-made templates may be your Extension Service. Private companies and individuals have written hundreds of spreadsheet templates for agriculture. There are books and magazines containing example templates. You can easily modify any template you find to suit your needs or preferences. If you would like to design your own spreadsheet applications, an excellent source for ideas is Extension pamphlets. But watch out: spreadsheet use can be habit forming. Once you or one of your students has written a template, you will probably think of many other templates you need. You could then become a dedicated spreadsheet user.

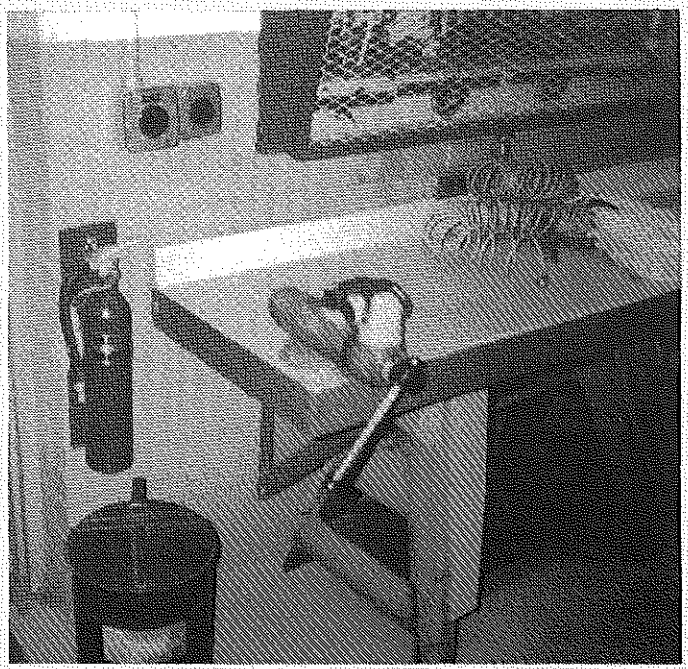
Stories in Pictures



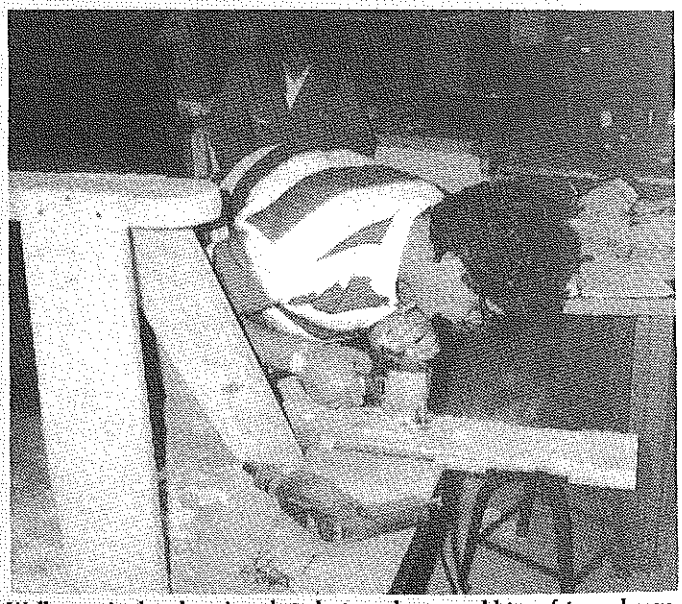
Removal of toxic fumes is essential for student health and critical to instructor health.

Safety signs aid the instructor in maintaining a safe environment.

Keeping the Profession Healthy



Proper safety equipment is essential in the Agricultural Mechanics laboratory.



Well organized and equipped student work areas add to safety and easy supervision.

(All photos courtesy of Dr. Glen M. Miller, Department of Agricultural Education, The University of Arizona.)