Suggestions for Contributors to *Journal of Natural Resources and Life Sciences Education*

Scope of Contributions. The Editorial Board will review: (1) reports of original research pertaining to concepts of resident, extension, and industrial education; (2) analyses and syntheses of existing knowledge or research, instructional techniques and methodology, surveys of instruction, and other studies that contribute to the development or better understanding of educational efforts; (3) reviews or digests of a comprehensive and well-defined scope; (4) case studies (see J. Nat. Resour. Life Sci. Educ. 21:2–3); (5) short communications and letters to the editor; (6) slide set articles; (7) newsfeatures; and (8) ideas and issues. Articles may confirm and strengthen the findings of others, revise established ideas or practices, or challenge accepted theory, providing the evidence presented is significant and convincing. Manuscripts based chiefly on personal philosophy or opinion are acceptable if they conform to the above criteria. The editor solicits media reviews (including books, videos, films, slide sets, and computer software) and profiles, or they may be volunteered. The Editorial Board will also consider slide sets (see J. Agron. Educ. 9:85) and computer software papers (see J. Agron. Educ. 14(1):51). The journal encourages “Letters to the Editor,” including comments and criticisms of published articles and editorials, suggestions for journal improvement, and other educational concerns or viewpoints.

Page Charges. Page charges are assessed as follows: $45/page for the first four pages; $165 for each additional page over four pages ($83/half page). Authors may be charged for the cost of illustrations or tables beyond $15 for each contribution. Authors may purchase reprints of their articles.

Prior Publication. Manuscripts published in *Journal of Natural Resources and Life Sciences Education* must be original reports. They may not have been published previously or simultaneously submitted to another scientific or technical journal. In general, publication in nontechnical media will be considered prior publication only when all of the data and conclusions are included in the nontechnical medium.

Manuscript Preparation. Manuscripts must conform to the requirements set forth in the ASA *Publications Handbook and Style Manual*. Copies of the style manual are available at the mailing address, above. Type the manuscript doublespaced on good grade bond paper, approximately 21 × 28 cm. The lines of type must be numbered on each page. Submit five copies, all on line-numbered paper. Type each table on a separate sheet and type captions for tables and figures together on one sheet (more as needed) and place at the end of the manuscript. Include an abstract at the beginning of the manuscript.

Author/Paper Documentation. Include this documentation at the bottom of the title page. It lists author(s) and complete address(es) first, sponsoring organization(s) with incomplete address(es) second, and date received last (added by Headquart-ers). Identify the corresponding author and person from whom reprints should be requested with an asterisk(*). Professional titles will not be listed. Other information, such as grant funding, may be included before the date received in the documentation or in the acknowledgment at the end of the article.

Tables. Number tables consecutively. Use the following symbols for footnotes, in this order: † ‡ § ¶ # †† ‡‡ etc. To indicate statistical significance, * and ** have priority in this order to show 5 and 1% levels of significance.

Figures. Provide photographs for halftone reproduction as glossy prints with good dark and light contrast. Prepare drawings for graphs and charts with India ink on white drawing paper. Typewritten matter is not usually acceptable on graphs and charts. So far as possible, use photographs and drawings that can be reduced to a 1-column width (8.4 cm). A good size for a drawing is twice that desired in the printed figure. Lettering or numbers in a printed figure should not be smaller than the type size in the body of an article as printed in journal or larger than the size of the main subheads. Label each figure with name of author, title of article, and number of figure.

Official Sources. The journal uses the following as sources of editorial style:

1. General style: ASA *Publications Handbook and Style Manual* (ASA, CSSA, SSSA) and the CBE *Style Manual* (Council of Biology Editors)
2. Spelling: *Webster's New Collegiate Dictionary*
7. Journal abbreviations: *Chemical Abstracts Service Source Index* (American Chemical Society)

Abbreviations. Standard abbreviations listed in the CBE *Style Manual* (5th ed., 1983) and the *Publications Handbook and Style Manual* may be used without definition. Authors shall provide one footnote that contains abbreviations for all words or terms used in the manuscript for which there are no abbreviations given in the ASA or CBE style manuals.

Nomenclature. Show the Latin binomial or trinomial and authority for all plants, insects, and pathogens at first listing in the abstract and manuscript. Identify crop cultivars (not experimental lines and strains) by single quotation marks at first listing only; e.g., 'Ranger' alfalfa (*Medicago sativa* L.), 'Ranger'.

Units of Measure. Use SI units for all measurements. Report all yields of crops in units of weight or mass. Exceptions may be allowed by the editor.

References. List all citations to published literature alphabetically by senior authors at the end of the manuscript. Citations should include names of all authors, the year, complete title, publication, volume number, and inclusive pages, as appropriate.

Reference lists may include Agronomy Abstracts, theses, and dissertations. If available, the publication number or dissertation abstract number should be given. Unpublished data, personal communications, and unavailable information may be included in the text in parentheses.

Length of Manuscript. About four pages of manuscript will usually equal one printed page. Space for figures and tables must be estimated separately.

Format. The usual format of an article is: (1) Title and author(s), (2) Author/paper documentation, (3) Abstract, (4) Introduction and review, (5) Body, (6) References, (7) Tables, and (8) Figures.

Manuscripts (five copies) should be sent to:
Managing Editor, *Journal of Natural Resources and Life Sciences Education*, American Society of Agronomy, 677 South Segoe Road, Madison, WI 53711.
EDITORIAL

Is The Public Tucked In?
David A. Munn*

Agriculture in this century in the United States has been swept with currents of change. The era of mechanization with tractors replacing draft animals resulted in greatly increased productivity per farmer. The applications of sciences such as chemistry and biology in the form of animal breeding, feeds, fertilizers, hybrid seeds, and pest control chemicals in plants and animals from World War II to the 1970s resulted in tremendous increases in productivity per animal and per unit of land. During all this time, the number of people actually engaged in farming has dwindled from 40% to less than 2% of our population. For people in the cities, food is plentiful with astonishing choices and variety available year-round for approximately 10 to 15% of our income. That is among the lowest of industrialized nations.

With a huge support system of people, machinery, and equipment between the farmer and the restaurants and supermarkets, it can truthfully be said that agriculture is the nation's largest industry. With hardly a pause for breath, the farming community and its science-extension support system seem ready to plunge into the new waters of biotechnology and genetically engineered organisms. But suddenly the general public seems alarmed that the system is breaking down. It may have begun with works like Rachel Carson's *Silent Spring* and ecologist Barry Commoner's alarm bells about nitrogen fertilizer destroying our atmosphere and water. People like Jeremy Rifkin and his Foundation for Economic Trends have picked up the torch, arguing against the use of technology such as bovine somatotrophin to enhance dairy cow productivity and for the immutability of species (freedom of living things from human genetic engineering in the name of improvements).

A great debate has begun by advocates of low-input sustainable agriculture and to a greater degree by organic farming advocates that agriculture is a way of life as much if not more than a business. Some of these people see and preach that nature is "good" and that science and technology are "bad" from the perspective of humankind's well-being and the long-term future of the planet. Division S-3 (Soil Biochemistry and Microbiology) of the Soil Science Society of America sponsored a symposium on agricultural ethics at the 1992 Tri-Society Annual Meetings in Minneapolis ("Agricultural Ethics: Issues for the 21st Century"). There was a disclaimer that symposium speakers' views were their own and in no way represented an official position of the Soil Science Society of America or the affiliated American Society of Agronomy and Crop Science Society of America. I attended the symposium and found it very thought-provoking. It would seem that our science has pushed ahead of the social impact statements and public education that might be appropriate to bring the majority of our population who are not scientists or farmers into the current food production pact.

The great educational task before American scientists and agriculture is science literacy and a basic understanding of how foods are produced and processed. How can we as educators solve this need?

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Your comments concerning the content of this editorial or other published material in this journal are welcome at any time. Please send your Letter to the Editor to: David A. Munn, JNRLSE Editor, The Ohio State Univ., Agricultural Technical Institute, 1328 Dover Road, Wooster, OH 44691.
GUEST EDITORIAL

Regional Poultry Training Programs

Bernard C. Wentworth*

The poultry industry will need more qualified young women and men, according to a survey conducted by industry leaders [Midwest United Egg Producers (MUEP) and Midwest Poultry Federation (MPF)]. In fact, the survey suggested the need for a 10-fold increase in the number of graduates in a 13-state Midwest area. The 231 surveyed organizations suggested a need for more than 600 graduates during the next 5 to 10 years. Currently, the average salary is $31,000 in the typical position where vacancies will exist. However, all schools in the Midwest region graduate fewer than 10 B.S. students with a degree in poultry annually and only another eight graduates with either an M.S. or Ph.D. degree.

All segments of our society concerned with poultry (industry, federal and state governments, and academic institutions) agree there is no clear reason why employment in the poultry industry is viewed as an unprestigious occupation. The image that college graduates process chickens, pack eggs, and shovel manure is incorrect. In reality, it is a rapidly moving and challenging occupation with extensive opportunities for growth, self satisfaction, and reward.

Attempts to Increase Training. Preliminary discussion of interest groups that met in Chicago on 19 Nov. 1992 suggests that the University of Minnesota and Iowa State University had interest in providing a coordinated effort to strengthen and implement a more aggressive poultry postgraduate training partnership.

Representatives of the University of Wisconsin made it apparent they were prepared to train undergraduate students in the Midwest. A major deterrent to regional undergraduate programs is the cost of out-of-state tuition. There may be a mechanism formulated to provide tuition reciprocity or industrial grants to pay out-of-state tuition differentials. Wisconsin stressed its current graduate program as an area that also generates strengths for undergraduate teaching.

The states of Illinois, Michigan, and Indiana were eager to obtain additional resources to bolster poultry programs, whereas Ohio State University outlined a plan to use specialized faculties to teach poultry courses instead of moving students to the professors.

The University of Nebraska, represented by Dr. Elton Aberle, announced that currently there was a consortium in place with Nebraska, Kansas, Missouri, Oklahoma, and Arkansas, which was making progress toward formulating a complete plan for undergraduate and graduate training in poultry science. However, it was not apparent in November which school in this consortium would take the lead role. Apparently, much of the training would be dependent on Agriculture Satellite Corporation (Ag*Sat) networking of specialized advanced courses to build depth into subject matter.

Support Higher Education, Poultry Training. With the current trend of poultry industry growth in the Midwest, there is need for at least two locations where there is a concentration of complete, in-depth opportunities for undergraduate training in poultry science. Successful expansion of poultry training is going to require some very close coordination between industry leaders, government officials, and academic administrators. The industry has identified a need for expansion. However, great universities have diversity, and current leadership in some major universities realize that all universities cannot offer everything for everyone.

There is hope that most agricultural specialties will be available to qualified students on a regional basis. These specialties should be available at a cost comparable to the current in-state land-grant school tuition cost.

How Would Such a Program be Funded? Some financial planners have proposed a check-off of processed animal feed to maintain a competitive animal industry. Industrial grants could help pave the way for more regional poultry training programs. The assurance that the public (consumer) is getting a fresh, safe, wholesome product that is produced under rigorous animal care and processing procedures will require an added cost to the consumer of maybe 0.1 cent per dozen eggs or per pound of broiler, turkey, or duck, as well as each pound of further processed or value-added product. The producer (farmer) should not be expected to absorb the added cost of quality assurance, marketing programs, and value-added research and development. These products with less than 0.1 cent added on the cost to the consumer would generate $7.8 million for support of higher education in specialized quality assurance research and development, product marketing strategies, and long-term, environmentally friendly, efficient production. I believe the consumer's slight cost increase would be worthwhile.

Bernard C. Wentworth is chair of the UW-Madison Poultry Science Department, President of the Poultry Science Association, and is actively involved in the Midwest poultry department issue. Your comments concerning the content of this editorial or other published material in this journal are welcome at any time. Please send your Letter to the Editor to: David A. Munn, Editor, The Ohio State Univ., Agricultural Technical Institute, 1328 Dover Road, Wooster, OH 44691.


*Corresponding author.

Why Publish Research Articles in JNRLSE?

Dear Editor:

It has happened before and I did nothing but grumble. This time I decided I should voice my opinion that articles in this journal should either be about education or clearly related to education. Papers that report research results belong in one of the other journals. The recent article on triticale (J. Nat. Resour. Life Sci. Educ. 21:137-141) is quite good, but why is it published in an “education journal” rather than Journal of Production Agriculture, Crop Science, or Agronomy Journal?

WILLIAM W. McFEE
Department of Agronomy
Purdue University
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Editor's reply:

Dr. McFee raises a very valid issue. I feel good about the quality of the paper, “Potential for Adopting Triticale in Morocco,” by Mergoum, Ryan, Shroyer, and Abdel Monem (JNRLSE 21:137-141), and the rigor of the review process. Extension and international agriculture (not just agronomy) contributions are welcome in this journal. If research results are presented, they will normally be within the context of extension-technology transfer program development and not the principle focus of the work. After a very serious study, a panel headed by Dr. John Graveel for the ASA Board of Directors has changed the name of the journal, and we hope to attract a still broader clientele.

It is true that the American Society of Agronomy has five journals devoted primarily to basic or applied research in crops, soils, and the environment. I also don't want to see the basic role of this teaching and extension journal eroded into another research outlet.

A colleague of mine at Ohio State, Dr. Bernie Erven, made a profound statement several years ago in a combined faculty conference: “Our mission as university faculty is to discover and to teach.” Sometimes teaching is very successfully combined with discovery. Extension and technology transfer surely are teaching activities to a different clientele. I would welcome letters on this issue from our readers.

DAVID A. MUNN
Editor
Internships

Internships are in the news lately. The Agronomic Science Foundation, which is partially funded by the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, recently began supporting High School Teacher Internship Programs. One such program, located at the University of Illinois-Urbana, is highlighted in this section. Other similar programs at the University of Wisconsin-Madison, Clemson University, the USDA, and Cornell University are outlined here, also. We hope you find this special group of newsfeatures helpful in your quest for educational excellence.

--Susan Ernst, Managing Editor

Spotlight on the High School Science and Agriculture Teacher
1992 Summer Internship Program, University of Illinois

The University of Illinois at Urbana internship program is developing and continuing to gain interest in the educational community, especially for those in the areas of science and agriculture. The program is partially funded by the Agronomic Science Foundation, which the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America support.

The primary objective of the program is to provide agricultural research experiences in the plant and soil sciences for two selected agriculture/biology teacher teams. Other objectives are to: (i) increase the agricultural literacy of science (biology) teachers and the scientific literacy of agriculture teachers, (ii) increase attention given to science in high school agriculture courses and attention given to agriculture in high school science courses, (iii) promote teamwork among secondary science and agriculture teachers, (iv) stimulate greater high school student interest in college study in agronomy and the plant sciences, and (v) strengthen the relationship/linkage between high school science and agriculture teachers and the Agronomy Department at the University of Illinois.

Program Benefits. The teacher teams formed by the program consist of one biology teacher and one agriculture teacher. Therefore, one immediate benefit of the experience is the opportunity of cross-talk between teachers in different disciplines. Even if the teachers come from the same high school, which the members of one team did in 1992, they didn’t have much opportunity for cross-fertilization of ideas on their home turf. The internship experience provided a new type of forum for exchanging ideas—a mini-sabbatical.

Program Details. Each teacher team spent 4 weeks working on their mentor’s project. About 2 weeks were spent gaining an in-depth familiarity with the goals, personnel, and procedures of the research project, and the last 2 weeks were spent doing experiments that led to the development of the lesson plans. The 2 weeks of experimentation were intensive, with project support personnel and graduate students often becoming actively involved in fine-tuning the lesson plans the teachers ultimately wrote.

Also in the last 2 weeks of the program and continuing after the on-campus portion of the program ended, each teacher team developed a poster reporting on their internship experience and the development of lesson plans. Each team presented their poster twice, once at the annual meeting of the Illinois Science Teacher Association, and the second time at the annual meetings of the American Society of Agronomy.

Program Analysis. What did the faculty members make of the program? “It was fun,” summarizes the reactions of the two Urbana faculty. The first year of the program provided lessons for building future improvements. The faculty mentors learned that many university research programs have little that is directly translatable into a high school laboratory teaching lesson plan. Many, if not most, high schools lack much of the scientific equipment that university researchers take for granted. Thus, a big part of developing high school lesson plans is the choice of appropriate laboratory technology upon which to base the lesson plans. Keeping the limitations in mind, the following lesson plans were developed in Urbana:

High school teachers learn valuable information by working with university researchers.
Scientists for a Summer

A number of College of Agricultural and Life Sciences faculty served as mentors this summer as part of the University of Wisconsin-Madison's Biology Summer Research Program for Minority Undergraduates. The program, administered by the Center for Biology Education, matches minority undergraduates with UW-Madison faculty who share similar research interests.

"The purpose of the program is to encourage and prepare minority students for graduate study in the biological sciences," says Louise Liao, associate director of the center. "Minority students are appallingly under-represented in graduate programs in the biological sciences. This is especially true for African Americans."

The students spent eight weeks working in laboratories across campus.

Liao says the purpose of the program is not to recruit students to UW-Madison's graduate programs, but to prepare students for graduate work at any institution.

The research projects will add an impressive line to the students' resumes. At a research symposium where participants described their work, the schedule included such titles as: Host specificity in brome mosaic virus; Suppression of tumorigenicity of uroepithelial carcinomas by chromosome 6 transfer; and Biological effects of the tumor promoter TPA.

The students were paired with mentors in such diverse areas as biochemistry, plant pathology, horticulture, nutritional sciences, meat and animal sciences, and environmental toxicology. Besides working 35 to 40 hours each week in the labs, the students also attended two-hour seminars twice a week. During these seminars, students presented their own research, heard about faculty members' research, and learned how to prepare for graduate study. —NALIEE JOHN-SON, reprinted from the University of Wisconsin College of Agricultural and Life Sciences Quarterly (Vol. 11, No. 3; Fall 1992).

Broadening High School Science Teacher Skills

For most of his four years as a pre-med undergraduate at Cornell University, Preston Parry thought he was going to be a medical doctor. He changed his mind after participating in the Summer Student program at Eleanor Roosevelt Institute (ERI). Now he says he will probably go into molecular medicine instead.

Parry, returning to Cornell as a fifth-year senior, spent the summer break in the laboratory of ERI President and Senior Fellow, David Patterson, Ph.D.

"I've had a great time here! Everyone has been really helpful, taking the time to show me how to improve my technique," Parry said. "[This program] has put a lot of substance to what I studied in school." He says he is a lot more excited about the genetics courses he is already signed up for next semester.

"That's what the program is all about," beamed Patterson. "Hands-on experience in the working labs at ERI is the way I know of to get bright young people like Preston interested in careers in science."

ERI also participates in the Minority High School Student Research Apprenticeship Program, funded by the National Center for Research Resources, National Institutes of Health. The program was expanded this year to include minority high school science teachers or high school science teachers who teach a significant number of minority high school science students. The teachers are compensated at a rate of $2050 per month. Two such teachers spent the summer in ERI labs.

Ruth J. Baldivia, who teaches honors biology classes at Denver's West High School, worked in the lab of Carol Jones, Ph.D.

Mack D. Fair, a Denverite who teaches advanced placement biology at East High, a school with a large minority population, worked in the Patterson lab and expressed surprise in learning that
USDA Summer Intern’s Research is “Useful”—and Then Some

Two years ago, Aimee Crago didn’t know what an alfalfa plant looked like. Today, after spending two summers as a USDA intern, she’s helped USDA scientists rate alfalfa plants for resistance to anthracnose, one of the crop’s worst diseases.

To Crago, what science is all about is “the feeling I had, when I finally realized something had been discovered and the information would be useful.” In the future, alfalfa farmers—who can lose up to $200 million nationally when severe epidemics of plant disease strike—may rate Crago’s work as far more than just “useful.”

Crago worked with Plant Pathologist Nichole O’Neill in the Soybean and Alfalfa Research Laboratory, part of the Agricultural Research Center in Beltsville, MD. The project involved rating more than 2000 strains of alfalfa and ranking them for resistance to anthracnose.

Crago grew thousands of seedlings in lab growth chambers. She sprayed them with a liquid solution of fungus spores and recorded how many survived. O’Neill compiled the results for use by both commercial firms and scientists.

As a result, a commercial breeder plans to release a new, anthracnose-resistant commercial variety of alfalfa next year. O’Neill continues to look for biochemical clues that explain how some alfalfa plants ward off the disease. “If we can identify the mechanism and the genes controlling it, we might be able to insert the genes into alfalfa plants. Then industry can develop new, highly resistant commercial varieties for farmers,” she suggests.
existing courses as well as new courses designed specifically for the SARR certificate. SARR emphasizes the interrelationships among production agriculture, the natural resource base, the larger food system, and the revitalization of rural neighborhoods. Among the courses students would be required to take include an introductory class in sustainable agriculture and a capstone seminar that would feature student-driven issue teams addressing challenges facing rural Wisconsin. Students also would participate in an internship related to sustainable agriculture.

Interest in the certificate comes out of environmental and economic concerns and declining farm numbers. "We feel that alternative agriculture ideas need to be offered as an option to students," says Doug Rouse, a UW-Madison plant pathologist and working group chairperson. "A number of students are already interested in this area."

SARR is designed to complement a parallel certificate called Agriculture, Technology, and Society. The goals of both certificates are to help students think critically about various production, environmental, economic, social, and structural issues facing agriculture.

Reprinted from CIAS Connections (Vol. 3, No. 2), CIAS, UW-Madison, 146 Agriculture Hall, Madison, WI 53706.

**Test Insurance: Scraping Away Test Anxiety**

Feeling stuck on that big test, science-phobes? Then chemistry Professor Art Ellis at the University of Wisconsin-Madison has just the solution for you.

In an effort to make introductory science courses more user-friendly, Ellis has taken a cue from promotional advertisers and crafted a chemistry test that employs the same "scratch-off paper" technology encountered in instant winner contests.

Dubbed "test insurance" by the veteran chemistry teacher and researcher, the novel test format works like this: If a student is stuck on a test problem, he or she can buy a clue to an essay question or an answer to one part of a multi-step problem using as currency a fraction of the points awarded for a correct answer.

By using a coin to scratch off gray strips from opaque white paper—the same silk-screened overlay used on instant winner lottery tickets—a student can get part of an answer or a clue that may help him or her approach a complicated problem with a greater degree of confidence.

Ellis' motivation is to provide a jump start for students who may initially draw a blank when confronted with a complex problem. By providing a safety net for students, Ellis said he hopes to reduce test anxiety and, at the same time, improve the quality of the test as a learning experience.

"Test anxiety is such a common thing, especially in introductory science courses," said Ellis, who has taught general chemistry courses for 15 years. "This is a strategy for trying to overcome anxiety and it also serves as a mechanism for promoting more analytical and creative thinking on the part of students. Unpleasant experiences in these gatekeeper courses often undermine their potential for creating enthusiasm for science."

Using Chemistry 103, an introductory chemistry course of about 250 students, as a testbed, Ellis, with the help of the general chemistry staff, has experimented successfully with the novel test format. Student evaluations, while highlighting a couple of potential problems, were overwhelmingly in favor of test insurance.

Heather Spear, a UW-Madison sophomore, used the test insurance option and found that it helped reduce anxiety and improve performance.

"I knew that if I was stuck I had another way out," she said, "and it did help me out when I used it. Points are deducted for using it, but I would have lost more points if I hadn't used it."

Another Chemistry 103 student, Kevin McCoy, also liked the idea: "I think it's a novel approach. In a certain sense, the scratch-off format had a way of allowing the test to lose some of its seriousness."

A potential pitfall, McCoy said, is that students may uncover a clue or answer that they already know: "My fear was that I would scratch the thing and it would tell me something I already know. But I scratched anyway and it gave me a concept that, for whatever reason, I hadn't thought of before."

Both McCoy and Spear would recommend use of the scratch-off option to other students and both would like to see the format come into play in other classes, particularly science and math courses that typically have exams with multiple-step problems.

For Ellis, the format is a way to be more creative when writing a test. "I wanted to shy away from essays and multiple-step problems because with an essay, if a student doesn't get the central theme, they get nothing," he said. "In the case of a multiple-step problem, if they don't get the first step, they get nothing. This seemed to be a reasonable way around the problem."

According to Ellis, scratch-off technology is relatively simple and cost-effective for tests. Its practical nature and, more importantly, its potential for enhancing exams, Ellis hopes, may prompt other professors to try the novel technique.

"Our post-examination surveys tell us that the format both improves the efficacy of the test as a learning experience and reduces anxiety," Ellis said. Moreover, it conveys a clear message to the students that the teacher wants them to be successful in the course."—TERRY DEVITT, reprinted from Wisconsin Week (Apr. 29, 1992), 25 Bascom Hall, 500 Lincoln Drive, University of Wisconsin, Madison, WI 53706. Phone (608) 262-3571.
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Association of American Geographers annual meeting, 6–9 April, Atlanta, GA (202-234-1450).

Soil Ecology Society annual meeting, 3–8 May, Michigan State University, East Lansing, MI (616-671-2212).


American Society for Surface Mining and Reclamation annual meeting, 16–19 May, Spokane, WA (304-425-8332).

National Agricultural Biotechnology Council annual meeting, 2–5 June, Purdue University, West Lafayette, IN.

National Association of Colleges and Teachers of Agriculture (NACTA) annual meeting, 13–16 June, Twin Falls, ID.

American Society of Agricultural Engineers Conference on Application of Advanced Information Technologies for Management of Natural Resources, 17–19 June, Spokane, WA (616-429-0300).

American Society of Agricultural Engineers summer meeting, 20–23 June, Spokane, WA (616-429-0300).


World Conference on Animal Production, 28 June–2 July, Edmonton, Alberta, Canada (403-492-3029).

American Society of Animal Science annual meeting, 6–9 July, Spokane, WA (217-356-3182).


International Workshop on Rapid Methods and Automation in Microbiology, 16–23 July, Kansas State University, Manhattan, KS (913-532-5654).


International Congress of Plant Pathology, 28 July–6 August, Montreal, Canada.

American Society of Plant Physiologists annual meeting, 31 July–4 August, Minneapolis, MN (301-251-0560).

Ecological Society of America annual meeting, 31 July–4 August, Madison, WI (602-965-3000).

American Agricultural Economics Association annual meeting, 1–4 August, Orlando, FL (515-294-8700).

Botanical Society of America annual meeting, 1–5 August, Ames, IA (913-864-3255).

Plant Growth Regulator Society of America annual meeting, 6–9 August, St. Louis, MO (919-549-2408).

Soil and Water Conservation Society annual meeting, 8–11 August, Fort Worth, TX (515-289-2331).


Agriculture Institute of Canada annual conference, 18–21 August, Memorial University of Newfoundland, St. John's, Newfoundland, Canada (709-772-4784).


American Phytopathological Society annual meeting, 6–10 November, Nashville, TN (612-454-7250).

Society of American Foresters annual meeting, 7–10 November, Indianapolis, IN (301-897-8720).

American Society of Agronomy, Crop Science Society of America, Soil Science Society of America annual meeting, 7–12 November, Cincinnati, OH (608-273-8080).

North Central Weed Science Society annual meeting, 7–9 December, Kansas City, MO (217-356-3182).

American Society of Agricultural Engineers Symposium on Integrated Farm Management and Landscape Modification for Environmental Protection, 12–14 December, Chicago, IL (616-429-0300).

Entomological Society of America annual meeting, 12–16 December, Indianapolis, IN (301-731-4535).

American Society of Agricultural Engineers winter meeting, 14–17 December, Chicago, IL (616-429-0300).

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Weed Science Society of America annual meeting, 7–10 February, St. Louis, MO (217-356-3182).

National Agricultural Biotechnology Council annual meeting, 23–26 May, Michigan State University, East Lansing, MI.


American Society of Plant Physiologists annual meeting, 30 July–3 August, Portland, OR (301-251-0560).

Plant Growth Regulator Society of America annual meeting, 4–6 August, Portland, OR (919-549-2408).

American Phytopathological Society annual meeting, 6–10 August, Albuquerque, NM (tentative) (612-454-7250).

American Agricultural Economics Association annual meeting, 7–10 August, San Diego, CA (515-294-8700).

Soil and Water Conservation Society annual meeting, 7–10 August, Norfolk, VA (515-289-2331).

American Society for Horticultural Science annual meeting, 7–11 August, Corvallis, OR (703-836-4606).

Botanical Society of America annual meeting, 7–11 August, Knoxville, TN (913-864-3255).

Society of American Foresters annual meeting, 18–21 September, Anchorage, AK (301-897-8720).


Entomological Society of America annual meeting, 10–14 December, Dallas, TX (301-731-4535).

1995

American Society of Agronomy, Crop Science Society of America, Soil Science Society of America annual meeting, 29 October–3 November, St. Louis, MO (608-273-8080).

To include your event in fyi, contact Susan Ernst, Managing Editor, Journal of Natural Resources and Life Sciences Education, 677 South Segoe Road, Madison, WI 53711.