Monday, PM, Arkansas Ballroom E, EXTENSION AND INSTRUCTION


Virtual classrooms and universities are now commonplace in the educational marketplace and increasingly, undergraduate and graduate teaching personnel are incorporating computer-based instruction and utilizing internet-based resources. We describe here the process of developing introductory animal and poultry science courses for distribution over the internet. The initial needs assessment indicated a strong demand in Arkansas for introductory level agriculture courses. Our initial target audience is the Arkansas Consortium for Teaching Agriculture (ACTA), a group of two and four-year institutions committed to agricultural education in Arkansas. In addition, the regional concentration of poultry integrators could directly benefit from students specifically trained in poultry science. Existing course material was adapted to a multimedia format using common HTML programming and more sophisticated interactive tools including Macromedia Authorware and Director. Course materials are available from any computer capable of connecting to the internet and equipped with the appropriate software. Course material is adapted/converted using a model that emphasizes interactivity between instructors, students and the computer. The initial modules were tested during the Spring semester at the University of Arkansas.

Key Words: Distance Education, Internet, Education


An evaluation was conducted on methodologies for storage of journal and related scientific articles on personal desktop and portable computers. A separate study was undertaken to evaluate storage of internally created desktop publications such as technical manuals. A high priority was given to the ease with which documents could be electronically searched and retrieved once made electronically resident. Particularly important was the ability to search simultaneously within the contents of many documents as opposed to searching only the bibliography-type information: (title, author, keywords, etc.). High priority was also given to the ease with which information could be exported out to other programs should technology changes demand, thus preventing obsolescence of the data files. Also important was the ease with which documents could be imported into the system (either from electronically resident files or from scanners). Labor requirements for reworking the information once it had been made electronically resident were also considered. Once made electronically resident, the information should be able to be distributed via a number of methods - CD, client-server databases, internet distribution, etc. Somewhat lower priority was placed on software and hardware costs to fulfill these objectives. Five major publications (technical manuals) were electronically published with Folio Views (™ Open Market Inc.). Several projects involving a total of some 30,000 pages of journal articles, university and experiment stations reports, internal reports etc. were scanned to a TIFF file format and electronically indexed with LaserFiche (™ Compulink Management Centers). Results and experiences with these technologies will be presented along with evaluations of several alternatives and recent updates. These technologies have proven to be highly effective for long-term document storage and retention for the individual animal scientist at minimal cost.

Key Words: document storage, document retrieval, document search


The Scholarship and Research Foundation of the Pacific Egg and Poultry Association (PePa), a west coast trade association, began awarding scholarships in 1965. The scholarship program was established as a means of rewarding high scholastic performance and encouraging careers in the poultry industries. The purpose of this paper is to present the results of a survey conducted of the 1965-1994 recipients. During the thirty year period, 513 individuals received PePa scholarships. Alumni association offices in Western Canada and the United States were able to provide current mailing addresses for 312 of these individuals. A letter was sent to each former recipient requesting information on post-degree career paths. Responses were received from 104 or 33.3% of the individuals. Both initial career choices and current occupations were tabulated. Broad occupational choices were categorized as poultry, agriculturally related, non-poultry, non-agricultural, still in school, or unknown. Those individuals in poultry-related careers were also categorized by more specific job definitions: live production, allied industry, extension, research/teaching faculty, and veterinary medicine. The poultry industries attracted 52.9% of the recipients for their first post-degree job. Currently, 50.0% of the recipients are employed by the poultry industries. Of those, 35.9% are in live production, 20.8% in allied industry, 5.7% in extension, 17.0% in research/teaching, and 13.2% in veterinary medicine.

Key Words: Careers, Scholarship, Recruitment

196 Do the poultry industries lose when their scholarship recipients choose non-poultry careers? F. A. Bradley*, Animal Science Dept., University of California, Davis, CA.

Various poultry industry organizations award collegiate scholarships. This has been traditionally viewed as a recruitment tool for the poultry industry. A survey of the 1965-1994 scholarship recipients of Pacific Egg and Poultry Association (PePa) Scholarship and Research Foundation revealed that 47.4% of those responding to the survey chose non-poultry related jobs for their first post-degree positions. Currently, 50.0% of those responding are employed outside of the poultry industries. Those in non-poultry positions include primary, secondary, and collegiate instructors, small animal veterinarians, real estate agents, government officials, military personnel, university administrators, physicians, lawyers, and computer programmers. A number of them commented on how they use the poultry information they learned in college in their everyday lives. Some told of being able to explain poultry related information to their children and/or of sponsoring youth activities revolving around poultry. While industry funds do not translate into individuals who filled industry positions, it can be argued that there was still a substantial benefit to the poultry world. Undoubtedly, these individuals are better poultry-educated consumers, supporters of youth poultry activities in their own communities, and poultry-sympathetic voters.

Key Words: Careers, Scholarship, Recruitment

197 Use of a web page to support instruction in poultry science. N. D. Paton*, A. H. Cantor, and A. J. Pescatore, University of Kentucky, Lexington KY.

The University of Kentucky offers a poultry production course to students on campus as well as to students at remote sites via distance learning programs. The remote sites have included other states, universities and community colleges. The course is broadcast via a compressed video system. To support the course, a web page was developed with the following objectives: to provide prospective students with information about the nature and content of the course; to facilitate the distribution of class material to all sites via the Internet; and to provide an additional medium for instructor/student interaction. It was important to accomplish this with limited technical expertise and finance. The poultry web pages, located at http://www.uky.edu/Agriculture/AnimalSciences/Poultry/ukpoultry.htm, were initially created using a word processing program and were modified using Netscape® Communicator 4.5 (Netscape Communications Corporation, Mountain View, CA). This allowed the professional and rapid preparation of web pages with limited knowledge of html programming. The poultry home page also provides information regarding the poultry section activities. A separate subsection, requiring a user identification and password, provides teaching material relevant to the course. Enrolled students are required to submit a class registration form via the web. This form also serves as a communication means by which students can communicate with the instructor. As the capabilities of computers accessing the page are varied, specially prepared class handouts are posted in portable document format (*.pdf) using Adobe® Acrobat® 3.0 (Adobe Systems Incorporated, San Jose, CA). Links to other sites are used to provide additional instructional material. Class assignments are downloaded in their native electronic format and are returned as attached files using e-mail. This is especially useful with assignments involving
A one semester, web-based, junior/senior level comparative nutrition course was developed to serve the needs of poultry science, animal science and pre-professional students. Prerequisites include one semester of introductory biology and 1-2 semesters of introductory organic chemistry. The overall goal of the course is to provide a fundamental background in the basic nutrient needs of animals and humans in both health and disease. All course information, class notes and sample examinations are on the web (www.cals.ncsu.edu/course/ntr415) and are available to any student with World Wide Web access and enrolled in the course. Unique features of this course include student download capability for class notes and illustrations in both black and white and color, a virtual office hours chat room where the instructor is available for two nights a week and the night before any examination and a virtual bulletin board for class messages. Technical links for those individuals needing assistance with web-page features are available on the home page as well as a hyperlink to the publisher of the course text that allows distance learning students to order directly from the vendor. Each lesson of the class contains download features and audio instructions emphasizing the objectives. Future changes to the course include the development of video conferencing features for tutorial purposes. Additionally, some lessons contain video material. A class survey after the first offering gave an overall rating of 4.2 out of a possible 5. Excellent written comments were also received.

Key Words: Nutrition, Web-based, Distance Learning, Poultry, Animal Human

A comprehensive program for Nutrient Management Planning with Animal Feeding Operations was developed by the Alabama Cooperative Extension System (ACES) and the state’s Natural Resources Conservation Service (NRCS) for statewide use by the poultry and livestock industries. The cornerstone of the program is a handbook entitled “Nutrient Management Planning with Animal Feeding Operations”. The material in this handbook was prepared to provide sufficient information for certified planners to assist animal operators and land managers in developing nutrient management plans that meet or exceed NRCS technical standards and guidelines. This handbook presents planning procedures, along with examples and worksheets, in a straightforward and easy to
follow manner. Rules for Animal Feeding Operations have been recently enforced and will require adoption of appropriate Best Management Practices (BMP’s), which includes Nutrient Management Planning for all operations. Nutrients are to be applied in confinement according to regulatory definition. Nutrient management is necessary for agricultural production systems to protect air, soil, and especially surface and groundwater quality. The Nutrient Management Planning Handbook supplements a comprehensive training program developed for ACES county agents, NRCS specialists, and certified crop advisors that will be directly involved in the nutrient management planning process. Land application of poultry waste requires careful planning to ensure that all nutrients in the system are accounted for and those being applied are adequate for plant growth production objectives. This program represents a progressive approach to addressing key environmental issues in Alabama, enabling the poultry industry to maximize economic return with minimal environmental impact.

Key Words: nutrient, manure, waste

203 Production and utilization of in-house composting layer manure. W. C. Merka*, S. A. Thompson, A. B. Webster, and P. B. Bush, 1University of Georgia.

Current and proposed environmental regulations involving the handling of manures from CAFO’s can cause animal production units to incur increased costs. Alternative methods to handle manures which prevent increased costs and perhaps increase profits should be developed. A promising method of handling layer manure in high-rise poultry houses is to compost the manure in-house. From October, 1997 to July, 1998 experiments were conducted in which layer manure was composted in an open-sided high-rise layer house. The compost was turned using a prototype compost turning machine powered by a 10 HP gasoline motor. By in-house composting the volume and weight of the manure was reduced by 34 and 20 percent, respectively as compared to that of untreated raw manure. The composted manure had an earth-like odor with improved handling properties, and a lower moisture content. The compost would not attract flies. This technique is very promising, however, control of drinkers is essential for its success. Composting produced a nutrient dense product (dry weight N, P, and K of 2%, 8% and 4%, respectively). In tests conducted with pine tree seedlings, one ton of broiler litter per acre was required to meet the P demands of the trees. However, using the composted product only 500 pounds per acre would be required to meet these same demands. At this rate the composted material produced from a 100,000 layer house would meet the P demands of 2400 acres of pine tree seedlings per year. A second set of experiments is currently being conducted in a tunnel ventilated high-rise layer house using the same test parameters.

Key Words: In-house Composting, Manure Handling, Tree Production

204 Odor problems associated with chlorine usage in poultry processing plants. J. K. Northcutt* and M. P. Lacy, The University of Georgia, Athens, Georgia 30602-4356.

With the implementation of the USDA’s Hazard Analysis and Critical Control Point System (HACCP) regulation, the majority of the U.S. poultry processing plants have increased chlorine (sodium hypochlorite, calcium hypochlorite, or chlorine gases) usage to help meet the pathogen reduction performance standards. While the allowable chlorine concentration is fixed at 50 ppm, plants have begun to use chlorine at every available opportunity throughout the plant, and many plants have added additional chlorinated sprays and washers prior to carcass chilling. This increased chlorine usage has created some unique problems for the poultry industry. One specific problem is excessive chlorine odors in the processing plant due to failure to optimize the disinfection capabilities of chlorine (fresh water input, water pH, and chlorine concentration). Irrespective of the chlorine source, optimal disinfection occurs when the pH of the chlorinated water is between 6.5 and 7.5 as hypochlorous acid formation is greatest in this pH range. In Georgia, the pH of the water coming into processing plants has been found to be as low as 4.2, and as high as 8.3. This is compounded by the fact that the chlorine source will affect water pH, and this effect varies with the source. Outside of the optimal 6.5 to 7.5 pH range, formation of chlorine gas and chloramines will increase, and these compounds can evolve to yield objectionable odors. In several poultry processing plants, line efficiency has been repeatedly disrupted due to objectionable odors, and it has been suggested that these odors were the result of chlorine gas and trichloramine. Data from water and air analyses showed that in all cases, both chlorine gas and trichloramine were within the U.S. Department of Standard’s established limits. However, the availability of information on trichloramine is limited, and thus, this presentation may be of assistance to Extension Specialists who have encountered similar problems while working with processing plants.

Key Words: Chlorine, Trichloramine, Poultry processing, Chemical odors, HACCP

Monday, PM, Arkansas Ballroom F & G, IMMUNOLOGY

205 A study of antinutritional substances in soy meal using immunological methods. P. Cotter*1 and N. Ruiz2, 1Framingham State College, 2Continental Grain Co.

Soy meal is an important component of poultry feed. Some cultivars are known to contain trypsin inhibitors, and lectins which may be antinutritional. We have applied the traditional immunological methods of hemagglutination, precipitation, and CBH to several sample sets known to be associated with field problems in broilers for the purpose of identifying the presence of possible antinutritional substances. Three of 5 samples from one set contained weak agglutinins for rabbit erythrocytes, but not for chicken or mouse RBC. Trypsinized rabbit erythrocytes were strongly agglutinated by all samples tested, suggesting lectin substances are known to contain trypsin inhibitors, and lectins which may be antinutritional. Soy meal is an important component of poultry feed. Some cultivars are accounted for and those being applied are adequate for plant growth production objectives. This program represents a progressive approach to addressing key environmental issues in Alabama, enabling the poultry industry to maximize economic return with minimal environmental impact.

Key Words: antinutrition, CBH, hemagglutinin, lectin, soy

206 Dietary polyunsaturated fatty acids significantly affect laying hen lymphocyte proliferation and IgG concentration in serum and egg yolk. Y. Wang* and J. S. Sim, 1Department of Agri., Food and Nutr. Science, University of Alberta, Edmonton, AB, Canada T6G 2P5.

48 White Leghorn laying hens, housed in cages with 2 birds each, were used to study the effects of different oils at 5% in the diets on laying hen immune functions. Birds were randomly divided into four groups and accessed to one of the four diets, which were AO (5% animal tallow), SO (5% sunflower oil), LO (5% linseed oil) and FO (5% fish oil). Feed (mash) and water were provided for ad libitum consumption. After 5 weeks of feeding experimental diets (from 24 to 29 weeks), the spleen lymphocytes and peripheral blood lymphocytes from 6 birds were assayed by polyclonal mitogen Con A stimulated cell proliferative response and phenotype determination (using FACScan flow cytometer). IgG concentration in plasma and egg yolk were analyzed by radial immunodiffusion. The results demonstrated that feeding high n-3 PUFA diets (LO and FO) for 5 weeks significantly suppressed Con A stimulated proliferation of both spleen lymphocytes and peripheral blood lymphocytes, and enhanced the IgG formation by plasma B cells and subsequently deposition in egg yolk. Reversed effects were produced by high n-6 PUFA supplementation in the diets. Dietary different fatty acids did not produce significant effects on the proportions of different lymphocyte populations.

Key Words: laying hen, polyunsaturated fatty acid, lymphocyte proliferation, IgG concentration, lymphocyte subset


This study was designed to examine the phagocytic function of macrophages(abdominal exudate cells, AEC) in broiler chickens fed various levels of dietary vitamin E (alpha-tocopherol acetate). Birds were fed commercial diet containing 15,000 (control), 100,000 or 200,000 IU per ton of feed. Birds were raised in environmental chambers under a 23 h light, 1 h dark cycle. Macrophages were elicited into the abdominal