129 Effect of feed withdrawal on total antioxidant, antioxidant enzyme activities, H/L ratio, and carcass characteristics in male broiler chicks subjected to acute heat stress. K. Mahmoud* and O. Al Marashdeh, Jordan University of Science & Technology, Irbid, Jordan.

One hundred forty-four day-old Lohman broiler chicks were randomly assigned into four regimens of feed withdrawal through the first three weeks of age to evaluate their effect on bird’s antioxidant status, heterophil/lymphocyte ratio (H/L), and carcass characteristics. One group of chicks was fed ad libitum (FW-0; control) and the other three groups were subjected to feed withdrawal for six hours one (FW-1), two (FW-2), or three (FW-3) times a week. Carcass weight (Cwt), breast weight (Brwt), and abdominal fat weight (Afwt) were evaluated by the end of the fourth and sixth weeks of age. At six weeks of age, twelve randomly selected chicks were sampled from each group before and after heat stress challenge (HS); 35 °C; 3 hr) to assess the response of H/L and plasma levels of total antioxidant (TAO), glutathione peroxidase (Gpx), superoxide dismutase (SOD). Carcass weight was comparable among all treatments at four weeks of age, however FW-1 and FW-3 chicks recorded lower (P<0.05) carcass weight compared to control group at six weeks of age. Breast weight at four and six weeks of age was not affected by feed withdrawal regimens. Compared to control group, Afwt was higher in FW-3 at four weeks of age however it was numerically lower at six weeks of age. Heat stress elevated (P<0.001) H/L ratio and TAO with no sign of feed regimen effect. Plasma activities of SOD and Gpx of FW-3 chicks were not affected by HS; to the contrary, chicks of all other groups experienced an increase (P<0.05) in plasma SOD activities when challenged with HS. The FW-3 chicks recorded the least increase in H/L ratio with minimal deviations of plasma activities of both SOD and Gpx as they were challenged to HS. These results may insinuate that chicks subjected to three times of feed withdrawal could be more tolerant to heat stress.

Key Words: Feed withdrawal, Broiler, Heat stress


The feeding behavior of broilers (Gallus gallus domesticus) was investigated in a novel environment to test the immediate feeding strategy of birds when effort is required to obtain a food reward. Broilers were tested at 9 weeks of age in groups of 5, 10 and 20 birds, to examine the mediating effects of group size on feeding behavior. Each group was tested once in an arena with three small feeders that contained equal total amounts of food, but varied in the ratio of food resources to non-edible ‘filler’ material. The feeders were of high quality (HQ), containing 75% food and 25% filler, medium quality (MQ), with 50% food and 50% filler, and lastly low quality (LQ), with 25% food and 75% filler. Measurements were extracted from a video recording of each trial. All analyses were conducted using a Mixed Model ANOVA in SAS statistical analysis software (v. 8.1, SAS Institute, Cary, NC). All significant results are reported at the P<0.05 level. Every group size consumed significantly more food from HQ feeders than MQ or LQ feeders. The number of feeding bouts and their average duration, total residence time at the feeder, the number of individuals feeding, and the frequency of aggressive interactions all increased with feeder quality. Regarding group size effects, total residence time at the feeder and the number of individuals feeding increased, while average feeding duration decreased with increasing group size. As group size increased, more individuals accessed the feeders, suggesting that resource monopolization did not occur. Our results demonstrate that despite generations of intense artificial genetic selection for heightened performance, broilers are immediately able to distinguish feeder quality based upon the effort required to obtain a food reward. These results demonstrate that broilers adjust their feeding strategy according not only to the quality of the food resources but also to the number of competitors present. From an applied standpoint, our results suggest that broilers will favor clean feeders and may avoid feeders filled with wood-shavings from the litter.

Key Words: Broiler, Feeding strategy, Behavior

---

Extension and Instruction: Scientific Session


Limited information exists concerning dietary protein requirements of the Hungarian or gray partridge (Perdix perdix) when reared for sporting purposes and producers could benefit from such information. In this experiment, 560 Hungarian partridge hatchlings were randomized into 16 environmental chambers based and contained 2,811 kcal/kg ME. Protein and light intensity were assigned to each of four chambers in a 2x2 design. In addition, 2 reps/set were used for the two protein regimens, high (H) or low (L) and two lighting intensities (5 and 10 Lux). Data for body weight gain of birds due to protein level. However, during the 4-8 and 8-13 wk periods, feed consumption was greater (c. a. 11.8% and 21.6%, respectively) in the H regimen. However during the 4-8 and 8-13 wk periods feed efficiency was lower (P<0.05) for the L as compared to the H regimen where 13 wk feed efficiencies were 5.021 and 5.961 g feed/g BWG, respectively. Light intensity had little if any effect on performance characteristics. Mortality was not influenced by treatment, but averaged 20% overall. Using a feed scattered additive

Key Words: Partridge, Protein, Light

132 Overview of management practices of small flock owners in Minnesota. J. Griggs*, J. Bender*, and J. Jacob, University of Minnesota, St. Paul, University of Minnesota, St. Paul.

A study of Minnesota farms that produce small flocks of broiler chickens was conducted to learn about the different management practices being used to raise these flocks. Information about management practices was obtained either through an on-farm interview or a telephone interview with the owner of each farm. The questionnaire used for the telephone interviews was an abbreviated version of the one used for the on-farm interviews. Participants of the on-farm interviews were individuals identified by state inspectors at small processing facilities as those who raise broilers without antibiotics. Candidates for the phone interviews were broiler growers listed in ‘Minnesota Grown’, a listing of farms published by the Minnesota Department of Agriculture. There were a wide range of housing systems and broiler management practices being utilized by the farms.
surveyed. Some flocks were raised entirely indoors, while others were raised exclusively outside once they were old enough to handle nighttime temperatures. The quality of pasture provided to broilers that have access to the outdoors was found to vary greatly. Some flocks had access to thick pastures of mixed grasses, while the outdoor areas used on other farms consisted of dirt or, in one case, woodchips.

Key Words: Broilers, Management, Free-range

133 California’s poultry health inspection program. F. Bradley* and C. Cardona, University of California, Davis.

As California’s 2003 Exotic Newcastle Disease outbreak was brought under control and the statewide poultry show ban lifted, University of California Cooperative Extension (UCCE) worked with the California Department of Food and Agriculture (CFDA) to develop a Poultry Health Inspection Program. The 73 fairs hosting poultry shows come under the jurisdiction of the State Veterinarian, who in turn can mandate an inspection program. Veteran fanciers, 4-H leaders, judges and veterinary students were all viewed as potential Poultry Health Inspectors (PHIs). A curriculum was developed to train PHIs in conducting visual poultry health checks. Problematic birds were divided into 3 categories: those showing symptoms of exotic diseases, those unsuitable for display, and those needing attention post-show. In the event of a category 1 entry, PHIs were instructed to shut down check-in, quarantine the area, and call the CFDA field veterinarian. Category 2 entries included birds showing signs of non-exotic diseases and maladies. Those birds were to be excused and their owners supplied with educational materials (diagnostic laboratory locations and handouts on ectoparasite control). Included in category 3 were birds with slightly overgrown spurs and those with razor keels. While allowing those birds into the show, PHIs were instructed to concentrate on the need for post-show attention. Materials were provided on spur/beak care and internal parasite control. Six training sessions were held and 148 PHIs certified. Most counties had 1 or more resident PHIs. Program coordinators worked with fair managers to ensure that appropriate inspection sites and controls were in place. Fairs were supplied with all the printed materials. Every fair was able to easily contract with one or more PHIs for the 2004 season. The State Veterinarian is continuing this effort as a mandated program in 2005. As in its initial year, funding is provided by CFDA and no costs are incurred by local fairs. The program is an important collaboration between UCCE, CFDA, and poultry fanciers and should enhance biosecurity in California.

Key Words: Poultry, Show, Inspection

134 Survey of California’s poultry health inspectors. A. Robinson* and F. Bradley, University of California, Davis.

A telephone survey was conducted of California’s newly trained Poultry Health Inspectors (PHIs). At the time of the survey in late 2004, 147 PHIs had been certified. Up to 4 attempts were made to reach each PHI. Successful contacts were made with 98 individuals (67%). Less than half (42) of those surveyed had served as a PHI during the 2004 fair season. Those PHIs who had worked at least one fair were asked a series of 11 questions. The majority of PHIs (62%) worked a single fair. A small number had inspected birds at 3 or more fairs. The manner in which fairs selected a PHI did not seem to be weighted towards local individuals, as 67% of the PHIs had no previous relationship with the contracting fair. Several survey questions dealt with on-fairgrounds arrangements for the inspection. Fair management in general did a good job of complying with requirements that the inspection site was shaded, secure, and remote from the poultry building. In most cases, they provided adequate staffing to handle the paper work. Less than half the fair managers followed through in terms of providing the PHI with an identification badge and hand sanitizer supplies. While management had been sent laminated inspection process posters and masters for the educational hand-outs, fewer than 50% had those available at the time of inspection. At the conclusion of the formal survey, PHIs were asked for their thoughts and suggestions. Many comments indicated improved quality of birds that were on exhibit, resulting from PHI involvement and inspection procedures. Concerns were raised about payment from fairs and requests were made for additional educational material to share with exhibitors. Survey results have been used to correct problems at specific fairs. In addition, issues raised during the survey were addressed at PHI refresher courses held in early 2005. Continuing communication between program coordinators, PHIs, fair management, and exhibitors will contribute to program improvement.

Key Words: Poultry, Inspector, Survey

135 A tool for training 4-H poultry judging teams - An interactive CD-ROM. J. Jacob*, University of Minnesota, St. Paul.

Poultry judging is a tool used in youth development in that it helps youth learn to make and defend decisions. Poultry judging also teaches 4-H members about live production chickens and the basis of grade and quality of poultry products. With the reduction in the number of state poultry 4-H specialists with experience in 4-H poultry judging, team coaches are in need of easy-to-use resources to help them teach themselves as well as the 4-Hers about the poultry judging classes (past egg production, egg quality, and ready-to-cook poultry). This interactive, multimedia CD-ROM was designed as a virtual contest to help poultry judging coaches and participants develop their poultry judging skills.

Key Words: Youth, 4-H, Poultry judging

136 Percentage of undergraduate students involved in youth poultry programs in Texas. J. Butler* and J. Carey, Texas A&M University, College Station.

Direct contact with youth involved in Junior Market Poultry shows is considered by the Department of Poultry Science at Texas A&M to be an important recruiting tool for the undergraduate program. The Houston Livestock Show and Rodeo and the San Antonio Stock Show and Rodeo are the two largest such events in Texas. A review of the 1996-2004 records was conducted to determine the percentage of incoming freshmen, graduating seniors, Poultry Science Club officers and poultry judging team members that were participants in the Houston or San Antonio shows as youth. Average broker show participation over the time frame of the study was 861 and 327 for Houston and San Antonio, respectively. Turkey show participation over this time frame was 463 youth. Over the time frame of the study 137 freshmen entered the department 31.4% having participated in these youth programs. Of 48 Poultry Science club officers, 46.5% were Houston or San Antonio participants. Out of a total of 68 judging team members, 62.2% were involved in these programs. The total graduating seniors over the time frame of the study was 211, of which 19.7% had participated in at least one of the shows as a youth. These data demonstrate that involvement in poultry activities as youth is an effective recruitment tool for the department, student leadership positions are largely held by youth program participants and a substantial percentage of graduating seniors were participants in these poultry shows as youth.

Key Words: Youth programs, Recruiting, Livestock shows

137 Youth turkey show in North Carolina. G. S. Davis*, C. R. Parkhurst, and J. L. Grimes, North Carolina State University, Raleigh.

A youth turkey show was initiated in North Carolina 5 years ago. The objectives of the turkey show were to teach youth how to raise turkeys, to learn more about the turkey industry, and to learn more about the academic and career opportunities that are available at North Carolina State University and within the turkey industry. This is a program whereby each participating youth was provided 1 to 4 one day old tom pouls during the second week in June. The pouls were donated by commercial turkey hatcheries in North Carolina. Each participant brought one tom to the NC State Fair during mid October to be judged. The age categories were 8 years of age and younger, 9 to 13, and 14 to 18 years of age. Each youth was required to walk or carry their tom from a cage to a judging score ring. Judging allowed 45 points for the breast 15 for the legs, 5 for the wings, 5 for the back, 10 for finished product, 5 for feather score, 8 for market defects, and 2 for questions. A grand champion and reserve champion was chosen from the age groups 9 to 18 years of age. The next day these champions were auctioned at the fair, and during the past 5 years the average price for the grand champion was $3,000 and $2,500 for the reserve champion. There were 35 participants in 1999, 58 in 2000, 85 in 2001, 101 in 2002, 126 in 2003, and 155 in 2004.
and 180 in 2004. To date, 10 students who participated have entered North Carolina State University.

Key Words: Youth, Turkey show, Judging


Motion picture animation technique and “state of the art” anatomical rendering combine to create an interactive, science-based learning experience. This project, a pilot for a larger study, explores the reproductive system of a hen, showing the anatomy of the system and the formation of an egg as it passes through the oviduct. The student can see the egg in the context of the larger anatomy, explore the oviduct both internally and externally, and, via time lapse and animation, follow the creation of an egg from beginning to end.

This unique approach has the potential to excite the curiosity of students who may not have had a previous interest in science, and to enhance student comprehension of system processes and anatomical structures. The pilot project, which will ultimately result in a complete virtual chicken, is an example of how a collaborative investment in a teaching tool can be used for a variety of classes, students and outreach programs.

A sample of the animation will be demonstrated during the presentation.

Key Words: Education, Egg formation, Computer aided instruction

139 Experiences in inquiry-based learning in an introductory animal science class: Science answers to questions you didn’t know you had about animal agriculture. F. Robinson*, B. Wuetherick, C. Strawson, S. Greenwood, N. Wolanski, and K. Schmid, University of Alberta, Edmonton, AB, Canada.

The University of Alberta is actively promoting the integration of teaching and research at the undergraduate level. In 2004, Animal Science 200 (An Introduction to Animal Agriculture) was reworked to meet the following objectives: 1. To develop problem solving skills early in university education to aid in life long learning; 2. To create an awareness in all students of issues facing livestock and poultry producers; 3. To provide a forum to develop skills in teamwork, public speaking and electronic media presentation; 4. To establish linkages between student, faculty and industry groups; 5. To boost student confidence through positive research-based experiences; 6. To introduce non-ag students to agriculture issues to encourage them to think of ag education and career paths; and 7. To provide consumers with science-based answers to questions relating to animal agriculture.

A list of 40 questions about animal agriculture were prepared, dealing with all agricultural species and a wide range of current issues. A total of 23 groups of 2 students randomly selected a question. Example questions included: If your car burned methane how far down the road could one cow get you, If a hen lays an egg and defecates out the same opening, why are most eggs laid sparkling clean. Students were allowed only 6 mouse clicks in the presentation and they were given one opportunity for a practice presentation in Powerpoint. Students are taken to commercial beef cattle, dairy and poultry operations, in addition to a feed mill, a premix plant, a poultry slaughter plant and a further processing plant. To provide a foundation for effective integration of lecture material, each student is assigned an object used in animal agriculture (eg. finger from chicken plucker, laying hen environment enrichment toy, Roche color fan). Students present a PowerPoint poster to the class and discuss the item’s purpose, alternatives to use of the object and consequences for not using it. Urban students are brought close to the level of rural students through these experiences.

Key Words: Recruitment, Experiential learning, Teaching

140 Recruiting animal and poultry science students on campus: Providing experiential opportunities to benefit both urban and rural students. F. Robinson*, B. Wuetherick, C. Strawson, N. Wolanski, S. Greenwood, and K. Schmid, University of Alberta, Edmonton, AB, Canada.

Minimal growth, or a decline in undergraduate student enrollment has become an issue in many universities. At the University of Alberta, the introductory Animal Science class has become an avenue for students from other faculties to enter the Agriculture Program. While many of these students are academically very strong, and many are registered in a pre-veterinary medicine program, a majority of these out-of-faculty students have little or no agricultural experience. Retention of these students in further animal and poultry courses is desired. Strategies used to equalize the background of students have undergone refinement over the past 10 years.

All students are required to spend at least 3 hours in a hands on laboratory at the U of A Poultry Research Unit, and the Dairy Unit. Each student must spend one shift at the Dairy Unit in cow milking with modern milking equipment. Tours are taken to commercial beef cattle, dairy and poultry operations, in addition to a feed mill, a premix plant, a poultry slaughter plant and a further processing plant. To provide a foundation for effective integration of lecture material, each student is assigned an object used in animal agriculture (eg. finger from chicken plucker, laying hen environment enrichment toy, Roche color fan). Students do not practice their presentation with the item, but they are permitted to practice with other objects if they chose.

The FFA is well connected to high school agribusiness programs throughout Alberta. They conduct a broad range of practical agricultural skill and career related events for students. FFA Poultry Career Development Events (PCDEs) are conducted in the majority of the United States. They also publish an extensive manual on poultry judging, general poultry science, and the poultry industry. Until 1996, no PCDEs were conducted in Alabama. In that year, a group of ag teachers approached the Auburn University Poultry Science Department (AUPSD) about conducting a PCDE. Through that event, it became clear that the FFA’s goal of attracting students to ag careers fit well with the more specifically poultry related goals of AUPSD’s recruiting program. The FFA was also supportive of students receiving information on educational opportunities in the AUPSD and career opportunities in the poultry and allied industries. Participation in the Alabama PCDE program has grown from 50 students from a dozen schools in 1996, to about 200 students from 50 schools in 2004. The AUPSD has focused on the recruiting aspect of this program. At each PCDE, faculty and students of the AUPSD speak to the high school students about scholarships, internships, work study, curricula, and extracurricular activities in the AUPSD, and career opportunities in the industry. Recruiting brochures, scholarship information, T-shirts, magnets, decals and pins are handed out. In support of the PCDE program Poultry Inservice Shortcourses are conducted biennially. About 70 ag teachers have participated in them. They provide information on preparing students for the PCDEs, the structure and functioning of the poultry industry, and teaching poultry science in ag classes. Information and materials provided at the PCDEs are also shared more extensively at the shortcourses. While direct contact with the high school students in the PCDE program has had a positive effect on enrollment in the AUPSD, the relationships developed with the ag teachers has likely had a greater effect.

Key Words: Recruiting, Undergraduate, FFA

142 Maximizing recruiting results through a prospective student database and strategic personal contacts. F. Dillman* and R. Lien, Auburn University, Auburn, Alabama.

Historically, many prospective students failed to complete enrollment in the Auburn Univ. Poultry Sci. Dept. (AUPSD) and communication with them did
not occur in a systematic manner. Now, prospects and their admission process is monitored continuously to maximize successful enrollment. All information from prospect contacts made through recruiting efforts is entered in a Microsoft Access database. Prospects are then sent letters and materials leading up to a personal telephone contact by a current poultry student usually from their hometown or a nearby town. In this manner, when a prospect personally contacts or visits the AU/PSD it can easily be determined what information they have been provided and when they should enroll. Once a prospect initiates the admission process and indicates Poultry Science as their major we access their admission data using a filtered on-line university report. Among other useful data this report provides the prospect’s ACT, GPA, progress in the admission process, and contact information. From this report each existing prospect’s data in the database is updated and data for “new” prospects is entered. New prospects are immediately sent a letter and materials to inform them of current educational opportunities in the AU/PSD. Database queries and reports reveal prospects in need of a personal contact to make sure they complete each step in the admission process in a timely manner. This contact may be from a current student, staff, or faculty member and by either telephone or E-mail, depending on the situation. Prospects may benefit from advice to retake the ACT, apply for scholarships, consider a different major, get their tuition deposit paid, or have their transcripts or ACT scores sent in or updated. This process has allowed the AU/PSD to offer scholarships to outstanding applicants at a much earlier date. Although it was initiated with its focus on increasing the percentage of prospects enrolling, it appears that a more marked effect may be an increase in the number of prospects.

Key Words: Recruiting, Undergraduate, Database

143 Understanding and recruiting the high school student. W. Krueger*, A. Sams, C. Creger, J. Daniels, and J. Lee, Texas A&M University, College Station.

A former Dean of the TAMU College of Agriculture once said, “One can love a horse or cow, but it is difficult to love a chicken.” He was thinking about what attracts students to a department, and what attracts high school counselors and science teachers to fields of study. Their list does not include Poultry Science. Poultry Science is not an attractive and exciting field to high school students. About 50% of the students who major in an agricultural curriculum ultimately work in that field, and some of those become disillusioned and change fields. Add to this a lack of faculty interest in the concerns of students, and the pool of poultry science students can become limited. To develop a core group of freshman in Poultry Science one must turn to people who understand youth and agriculture - the Agricultural Science Teacher and County Extension Agent. Neither has training in Poultry Science. They must to be taught the “new poultry industry and its opportunities.” This takes time. Once there is a core of students; these students, if encouraged, will recruit more students. The Agriculture Teachers and Extension Agents who provide the core students must be continually cultured.

Key Words: Student recruitment

144 Undergraduate recruiting at Texas A&M University. J. T. Lee* and A. R. Sams, Texas A&M University, College Station.

Recruiting at Texas A&M University is a multi-tiered system of student programs and activities to engage the adults that mentor those students and keep them involved in our system. Potential poultry students are targeted and cultured by the department even before they enter high school through livestock shows. Several faculty members travel around the state judging poultry shows, giving presentations on raising show poultry, and engaging FFA and 4-H members. Once a year, the department sponsors a Market Poultry Workshop where faculty and staff members give presentations on every aspect of raising show poultry that parents and students from across the state attend. The department also enlists current undergraduate students in the recruiting process with a group called Aggie REPS. At live stock shows and departmental events, the REPS visit with perspective students and parents about the opportunities in the department. The REPS are also instrumental in planning and conducting the Poultry Science Institute for high school junior and seniors. The Poultry Science Institute gives these students the opportunity to attend a three-day workshop touring industry facilities, receiving lectures by professors, and living as college students. The FFA and 4-H poultry judging contests are also a major recruiting tool that the department uses to gain access to hundreds of high schools students every year. Texas A&M University hosts three poultry judging contests a year as well as sets up a dozen other contests around the state allowing interaction with prospective students. Last year, the department started conducting summer judging workshops for agriscience teachers around the state. The purpose of these workshops are three fold: 1) increase the knowledge of Texas agriscience teachers about the poultry industry and coaching poultry teams, 2) build relationships with agriscience teachers in order to gain access to their students, and 3) maintain the number of participants in our programs as potential students. Student recruiting in the Poultry Science Department at Texas A&M University is a complex system requiring the participation of faculty, staff, and students.

Key Words: Recruiting, Undergraduate students

145 Recruiting poultry science students through on-campus experiential learning events. G. Davis*, J. Emmert, K. Eskew, and C. Owens, University of Arkansas, Fayetteville.

Recruitment activities are essential to maintaining an undergraduate enrollment in Poultry Science. Increased tuition cost and admission standards, and student perception of agriculture have created an environment where aggressive student recruitment is necessary. There is still a significant demand for poultry science graduates, who have a variety of career choices of which students, high school teachers, parents and counselors are often unaware. Thus, communicating opportunities is a major recruiting objective of the Poultry Science Department at the University of Arkansas. Earlier findings have shown that students are likely to attend universities where they have developed a direct contact while in high school. Historically, these have been through science fairs, band and cheerleading camps, or other on-campus experiences. We address this need through a Poultry Science Youth Conference, the purpose of which is to attract students from diverse backgrounds and interest areas to our campus so that they can establish a direct contact and experience college life in northwest Arkansas. Promotional brochures are distributed to science teachers, agricultural science teachers, county Extension faculty, and high school counselors. The four-day, three-night event is sponsored and participants are charged a modest registration fee. A typical conference includes group exercises, subject matter workshops, interaction with the poultry industry, college orientation events, and recreation activities on and off campus. In 2004, students were divided into groups and given the task of developing a poultry product. Students participated in workshops and activities that provided background about product development. Each group was provided a description of the audience and the dietary specifications for the product. Students conducted market analysis, a store audit, nutritional profiles and preparation processes. Students prepared the product for taste evaluation, designed packaging and conducted a marketing presentation. Evaluations were positive with most students indicating a strong interest in poultry science.

Key Words: Recruiting, Experiential learning, Youth conference