ASAS Graduate Student Symposium: Decisions, Decisions, Decisions. How to make informed decisions on your future career opportunities to developing a successful research program.

510 Extension employment opportunities following the completion of a M.S. degree in animal science. G. P. Lardy*, *North Dakota State University*, *Fargo*.

The Extension Service continues to undergo change as many land grant universities face budgetary shortfalls and smaller numbers of people are employed in production agriculture. But rather than viewing this as a reason not to pursue an M.S. degree, it should be viewed as an opportunity for students interested in extension work. Livestock producers continue to require expertise which will help them improve efficiency of production, reduce or eliminate costs, and remain financially competitive in a business environment which is increasingly demanding additional technical competence in a wide variety of disciplines. This is driven, in part, by regulatory agencies at the federal and state level, customers, suppliers (e.g. processors), and service providers (e.g. lending institutions). Producers need additional expertise to ensure production systems are not only technically and financially sound, but also meet consumer standards for a wide variety of traits and/or expectations related to production practices (e.g. animal welfare, humane handling). Students seeking employment as regional extension educators or county extension personnel must have an appreciation for how to apply technical expertise at the farm or ranch level. They must also possess the following skills (either through life experiences or training): knowledge of animal husbandry techniques, written and oral communication skills, and an ability to interpret technical data and create useful information. The greatest challenge for students in the future may be identifying meaningful ways of gaining "on-farm" experiences if they did not grow up on a farm or ranch. Students expressing an interest in extension-related careers should be encouraged and mentored. Animal science departments should also consider additional ways to work within the Extension Service in their state to provide meaningful internship opportunities for M.S. students interested in extension careers. In the future, as more explore regionalizing extension programs, there will likely be increasing opportunities for M.S. level personnel not afraid to get manure on their boots!

Key Words: extension service, M.S. degree, job opportunities

511 Career opportunities in the animal science industry for graduate students. W. J. Platter*, *Elanco Animal Health*.

Dramatic changes in animal agriculture during the first decade of the new millennium, including the trends of consolidation, globalization and increased market volatility, have raised the competition for positions within the industry. However in recent years, companies have recognized a need for employees with a higher level of critical-thinking capacity, an enhanced understanding of data interpretation and a greater degree of scientific and technical training. The increased technical nature of the business has created more job opportunities for graduate students in the areas of sales and marketing, quality assurance, technical service and research. For those students with an interest in applied industry jobs, a multi-disciplinary understanding of key scientific areas related to animal production, an increased level of business acumen and a general understanding of practical applications of science in production settings are vital. The influx of biotechnology and molecular biology in animal agriculture has increased the need for employees in research and development positions with these areas of expertise. Leveraging the knowledge and skills gained during graduate school will increase the rate in which new employees learn and advance in their careers. Regardless of the area or position within the animal agricultural industry, those students with an entrepreneurial spirit and the motivation to continuously learn throughout their career will be of most interest to employers.

Key Words: animal science, careers, graduate education

512 Unique and non-traditional opportunities with an advance degree in animal science. J. L. Garrett*, *JG Consulting Services*, *Dowling, MI*.

Traditional animal science degree programs include farm and companion animal applications in biosciences, veterinary sciences, nutrition, health, reproduction, metabolomics and genomics. Non-traditional career opportunities for animal scientists commonly include the same areas of scientific application, but for the benefit of humans rather than animals. Both traditional and non-traditional employers wish to hire people to solve their work problems, so that the employer's short-term financial needs and long-term vision are pursued. Since problem solving is a primary interest and skill for most animal scientists, employers from industry, academia, government and non-profits have positions, traditional and non-traditional, for animal scientists. In today's global environment, animal scientists with advanced degrees who are interested in pursuing non-traditional opportunities must invest in an honest assessment of their abilities, interests, knowledge, skills and work styles (AIKSW), and understand their strengths and weaknesses in these areas. Beyond a resume or curriculum vita, development of an effective Personal Marketing Plan (PMP) will help animal scientists proactively sell their strengths to non-traditional employers, and may help employers determine potential fit more quickly and accurately. In this session, a brief discussion of determining AIKSW and developing an effective PMP will be reviewed, along with examples of where animal scientists are currently employed in unique and non-traditional roles.

Key Words: career development, non-traditional careers, animal science careers

513 Should I go get a Ph.D. and if so, is a post-doc warranted? M. Hogberg*, *Iowa State University*, *Ames*.

Students face several decisions as they progress through their college days. As undergraduates, the question is often "Should I get a job or should I go on to graduate studies?". As graduate students approach finishing their M.S. degree, they again are faced with the question of whether to terminate their formal education or continue on in pursuit of a Ph.D. This paper will explore the reasons for pursuing a Ph.D. and also reasons not to pursue this terminal degree. Career goals and aspirations play a major role in this decision. At the conclusion of a Ph.D. students again have a choice to make as to whether to seek a post-doc position or look for employment. This paper will discuss the objectives of post-doctoral training and what students should consider in making this decision. The role of career goals and objectives will be reviewed and used as a guideline on pursuing this issue. Major objectives for post-doctoral training of expanding training as an independent researcher, expanding grant writing experiences and the opportunity for depth of training will be covered.

Key Words: graduate school, post-doctoral training

514 Developing a competitive research program and securing tenure as a new faculty hire. B. W. Hess*, *University of Wyoming*, *Laramie*.

Developing a competitive research program and securing tenure can be a daunting task for a new faculty hire. There is no special formula that suits all; however, the task may be less daunting if one considers several principles that are common among those who have trudged down the path leading to success. The following nouns are offered as examples of key elements to developing a competitive research program and securing tenure: Courage; Confidence; Compatibility; Consistency; Collaboration; Colleagues; and Commitment. Embarking on a career in academia certainly requires courage. A new faculty hire must face many new challenges and guard against being deflected from a major career hurdle. Building a research program that garners support hinges upon one's ability to convince those whom are in a position to make decisions that the program possesses the prowess required for success. The trick is to strike a balance between exuding sufficient confidence without exaggerating capabilities. Furthermore, it is critical to research topics that are compatible with one's training and interests. Focusing on strengths will naturally generate consistency and lead to the ability to maintain a research program. Although independent research is of utmost importance, collaboration with others may be necessary to realize a program's full potential. Colleagues can provide invaluable insight and lend expertise that enhances the program's competitive advantage. It is prudent to welcome the advice of those who have completed the journey successfully. Additionally, because procurement of funds to support a research program is inherently essential, commitment to pursuing all possible mechanisms of funding is critical. Presenting and publishing results also demonstrates commitment to establishing a reputation necessary to maintain a competitive research program and securing tenure. The level of commitment required to accomplish these goals supersedes the tangibles; a commitment to those who are engaged in the research is also required. Practicing some or all of the seven "Cs" may help a new faculty hire develop and maintain a competitive research program and attain tenure.

Key Words: research, tenure, success

Breeding and Genetics: Beef Cattle & Sheep Breeding

515 Genotype by region and season interactions for postweaning gain in beef cattle. J. L. Williams*[1], M. Lukaszewicz[1,2], I. Misztal[1], and J. K. Bertrand[1], [1]*University of Georgia*, *Athens*, [2]*Institute of Genetics and Animal Breeding, Polish Academy of Sciences*, *Jastrzebiec, Poland*.

The objective of this study was to determine if sires perform consistently across different environments and calving seasons in the US. Data and pedigree information were provided by the American Angus Association. A preliminary bivariate analysis containing yearling contemporary group as the sole fixed effect was conducted for postweaning gain in the Southeast (SE) and in the Northwest (NW) as these regions are perceived as opposite extremes in climate. In a second analysis, gains in these two regions were further divided based on season of birth (spring and fall) and fit in a four trait model with fixed effects as previously mentioned. Spring records included 6304 and 37129 observations in SE and NW, respectively. Fall records consisted of 38987 and 5800 observations in the SE and NW, respectively. Heritability estimates from the first analysis were 0.20 ± 0.01 and 0.27 ± 0.01 for gain in SE and NW, respectively. The genetic correlation between the two regions was 0.79 ± 0.02. Heritability estimates from the second analysis were 0.25 ± 0.04 and 0.18 ± 0.02 for spring and fall gain in SE and 0.26 ± 0.02 and 0.16 ± 0.03 for spring and fall gain in NW, respectively. Genetic correlations between NW and SE were 0.56 ± 0.15 and 0.76 ± 0.07 for spring and fall, respectively. Correlations between spring and fall were 0.85 ± 0.06 and 0.57 ± 0.11 for SE and NW, respectively. The genetic correlation between spring in NW and fall in SE was 0.58 ± 0.08 and that between fall in NW and spring in the SE was 0.44 ± 0.17. Sires may perform differently across both seasons and regions suggesting it may be better for producers to select bulls based on performance in the calving season utilized in their production region. Subsequent analyses will be performed on weaning weight to determine if strong selection at weaning is leading to low correlations in postweaning gain.

Key Words: Angus, genotype by environment, postweaning gain

516 Estimation of genetic parameters for mature weight in Angus cattle. R. B. Costa*[1], I. Misztal[1], J. K. Bertrand[1], and S. Northcut[2], [1]*University of Georgia*, *Athens*, [2]*American Angus Association*, *St. Joseph, MO*.

The objective of this study was to estimate genetic parameters for weight of up to 5 years in Angus and to investigate options for including mature weight (MW) as a trait in a genetic evaluation. Data were obtained from American Angus Association. Only female records in herds with at least 500 animals and with > 10% of animals with weights at ≥ 2 years were included. Traits in the analysis included weaning weight (WW, n=81,525), yearling weight (YW, n=62,721), and weights measured from 2 to 5 years of age (MW2, n=15,927, MW3, n=12,404, MW4, n=9,805, MW5, n=7,546). Genetic parameters were estimated using a multiple-trait animal model with fixed effects of contemporary group and linear effect of (actual age - standard age), both in days (205, 365, 730, 1,095, 1,460, and 1,825 for WW, YW, MW2, MW3, MW4, and MW5, respectively). The random effects were animal direct, maternal, and maternal permanent environment. Estimates of direct variances were 298, 563, 925, 1221, 1406, and 1402; maternal variances were 167, 153, 123, 136, 167, and 110; the variances of maternal permanent environment were 124, 120, 61, 69, 103, and 134; and residual variances were 258, 608, 829, 1016, 1017, and 1202 for WW, YW, MW2, MW3, MW4, and MW5, respectively. For the direct effect, the genetic correlation of WW and YW was 0.84 and of WW and MW ranged from 0.66 (WWxMW4) to 0.72 (WWxMW2). The genetic correlations of YW and MW ranged from 0.77 (YWxMW5) and 0.85 (YWxMW2). Among MW2, MW3, MW4, and MW5, the genetic correlations were ≥ 0.98. Correlations between maternal effects ranged from 0.52 (WWxMW4) and 0.95 (WWxYW). Regarding only MW, the correlation between maternal effects ranged from 0.54 (MW4xMW5) to 0.94 (MW2xMW3). Variability of maternal effects at MW may be an artifact due to low heritabilities and low number of records. A genetic evaluation for mature weight may include MW2, with weights at higher ages accommodated by variance adjustments to the scale of MW2.

Key Words: mature weight, growth, multiple-trait