Review of Animal and Food Sciences Graduate Program at Texas Tech University

April 4-5, 2012

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Executive Summary:

The review of the Animal and Food Sciences (AFS) department was held on April 4th and 5th of 2012. Prior to the review itself, the Graduate School provided the review team with a self-study document prepared by the department chair and faculty. The review team consisted of representatives from the Colleges of Agricultural Sciences and Natural Resources (EH), Arts and Sciences (LD) and Human Sciences (DF) from Texas Tech University and an external reviewer from the Division of Animal Sciences at the University of Missouri (CL). A second external reviewer, Dr. Denise Smith from Washington State University, was originally scheduled to be part of the review team but on April 3 the aircraft on which she was supposed to be flying in from Spokane on was delayed due to an equipment problem, causing her to miss a connecting flight. Unfortunately, she could not get to Lubbock soon enough on April 4th to participate in the major portion of the review.

On the initial day of the review we met first as a group in the Department of Biological Sciences to discuss the overall charge of the review team. Then the team met with the AFS department chair, Leslie Thompson, to work out the details of the agenda. Dr. Thompson subsequently led visits to several AFS facilities including the third floor of the Experimental Science Building that is dedicated to Food Science, the New Deal facility dedicated to swine, cattle, and sheep research, the Equestrian Center, the result of a $3.5 million donation, the Animal and Food Science Building and finally the Gordon W. Davis Meat Laboratory. We did not tour the Food Technology Building on campus. On the afternoon of April 4th, we met with the faculty and with some 25 graduate students. The following day the committee conducted an exit interview with the department chair in the early afternoon.

The consensus assessment of the review team is that the graduate program in Animal and Food Science is very good to excellent in all major areas that we evaluated. There were a few minor issues which are discussed below, however for the most part, the faculty, students and facilities of these programs appear to be exceptional. Further, we recommend the continuation of the AFS graduate program.
Program Review and Vision: (Excellent)

The vision of the program is written clearly and builds on the mission of Texas Tech and the College of Agriculture, Sciences, and Natural Resources (CASNR). The program has seen an increase in enrollment of graduate students, with a fifty percent increase in doctoral students in Animal Science over the past 6 years. The Food Science enrollment is fairly constant with a peak in 2007-08. The total number of AFS graduate students in 2010-2011 was 76 with a stated goal to have 100 by 2015. It is likely with five open faculty positions and the potential for each of these faculty to have five or more graduate students, this goal is reasonable and can be reached. The committee suggested that the department develops a track within the Animal Science doctoral degree for Food Science. This would necessitate a name change: Animal and Food Science with two areas of concentration. Based on this plan, the outside reviewer suggested the Food Science program should seek Institute of Food Technologists (IFT) accreditation which will help their graduates in seeking positions in the food industry and allow graduate students access to large scholarships through IFT.

Curriculum and Program of Study: (Very Good)

The Graduate Program has a large number and considerable variety of classes, all of these are not taught every year. Nevertheless, there are still some coursework needs that could be addressed especially if the department decides to pursue the creation of a Ph.D. track in Food Science. The open faculty positions offer the opportunity to develop new graduate level courses to complement the current offerings in Animal Science, but more importantly to further develop the Food Science program. Another recommendation of the committee is the addition of a faculty member specializing in agriculture-related statistics and experimental design; this person does not have to necessarily be housed in AFS, but this remains a significant need for CASNR to address.

The external reviewer recommended that the program develop a course in Food Engineering featuring mathematical models for the food industry. This course will be important as the Department works to gain accreditation by the Institute of Food Technologists; IFT considers the cornerstones of Food Science to be Food Chemistry, Food Microbiology, Food Engineering, and Sensory. The sensory course is currently taught by another department, but is considered satisfactory.

The graduate students suggested that their primary perceived needs involved the development and expansion of opportunities related to grant and manuscript writing possibly through a Professional Development Seminar series, and again reiterated the need for a relevant course in Biometry/Statistics/Experimental Design.

Faculty Productivity: (Very Good)

In terms of workload the faculty is well above the University average since 2005. The peak was in 2009 (21.77 hrs against 16.3 hrs for TTU), a workload that is 33% higher than the average University faculty.
There are currently 24 faculty including 8 professors, 6 associate professors, 2 assistant professors, with the remainder being non-tenure track. The publication record for the faculty is very good with an average of 4.4 refereed publications per faculty member in 2010. Also, the faculty have provided excellent service within their respective disciplines as far as responsibilities to and leadership in professional societies. The faculty have received $15.5 million in external research awards, the Department averages nearly $1 million in research grants each year for the period of 2005-06 through 2010-11, an average of $161,498 per year per faculty member. In comparisons with peer universities, Animal and Food Science’s research program measures up favorably to institutions such as Colorado State University and South Dakota University. It should be noted that the review team felt that this represents a rather remarkable achievement for a non-land grant university. The research program supports a significant number of their graduate students through their external funding efforts. In 2009 the department supported 48 RAs and 7 TAs, representing some 82% of the graduate student population of the department.

The external reviewer also noted that faculty have received numerous awards related to teaching and research efforts and provide service to the discipline’s professional societies, but the award and service records for the whole department were not provided in the self study and therefore were unavailable to the review team.

**Quality and Quantity of Graduate Students and Graduates: (Very Good)**

Overall the quality of the graduate students seems very good and the program is quite robust; importantly the relatively low average GRE scores have gradually improved. It is clear that this department is very successful in recruiting graduate students; perhaps it should impose even more restrictive admission standards. Although this perhaps seems counter-intuitive to increasing the number of graduate students, the rationale is that as the program’s reputation builds based on an emphasis of recruiting and admitting excellent students, the pool size should also improve. In 2009-2010 there were 37 refereed publications and 19 poster presentations by the 67 graduate students, which seems appropriate for the number of doctoral students in the program.

All reviewers found that the graduate students seem to be generally very happy with their decision to pursue graduate work at Texas Tech in AFS. They told us that they made their decisions based on the amount and variety of research being conducted in the Department, the enthusiasm of the faculty, the use of new technologies, and the opportunity to work with specific faculty members (an indication that the faculty have national reputations). When we asked them what was the best part of their graduate experience they said the number of students to interact with, top of the line facilities, interactions between faculty and graduate students, and the general collegiality within the Department. Students seemed generally ignorant of the doctoral tuition waiver that will be in place come this Fall, but greeted the information with enthusiasm.

The students also told the review team that the Graduate Student Association was not currently very active; we strongly recommend revitalization of this association as it could offer multiple opportunities...
for the professional development of graduate students (both as researchers and colleagues). Because there are a number of AFS facilities in Lubbock and in New Deal, despite their numbers many students felt that they do not have opportunities to interact with other students in the Department. Particularly, there seems to be a disconnect between the Animal Science and Food Science graduate students. We believe that the student association could enhance students' ability to get to know and appreciate each other on several levels. More funding and uniformity of stipends, and more interaction with the industry were points of interest, as such contacts now seem limited to specific research groups when industry representatives visit. Many students were genuinely concerned about the recent loss of an excellent biometrician/statistician to another university; the classes taught by this individual were critical to students in AFS, as well as those in the rest of CASNR. We were told by AFS faculty that the college is making a serious effort to replace this instructor with a person of similar expertise.

Among the documents provided to the review team was a graduate student handbook. The document appeared to be complete and clear enough to be used by the graduate student population. However, we noted that it did not include a section dealing with sexual harassment, which we were told would be added.

Judging by the number and amount of donations from alumni it is quite clear that the Animal Science graduates are very successful in their professional life and loyal to the Department.

For the current number of faculty members, the program seems to be close to capacity at a current ratio of 4.2:1 (graduate students: faculty member; 2009-2010); as of December 2011, that ratio had increased to 4.75:1. The addition of up to five new faculty has the potential to allow a significant increase in the number of graduate students in the department; one serious issue is where these students might be housed.

**Facilities and Resources: (Excellent)**

The AFS facilities are generally impressive both on campus and off campus. The new Animal Science building (2007) was planned well, especially considering the varied number of functions that are performed within the structure. Wet laboratory space, while somewhat limited appears to be adequate and is collegially shared by researchers. The ample research space in the Experimental Sciences Building for the Food Safety and Microbiology group is perhaps the best of its type on campus. The external reviewer noted that the equine center (a multimillion dollar donation from an alumnus) is one of the most impressive in the nation.

The external reviewer also noted that the departmental website is not up-to-date. This is an important recruitment tool for prospective graduate students and potential donors alike. We encourage the department to enhance, develop and then maintain their website, including posting the graduate student handbook online. We also anticipate that the space for graduate students will be inadequate if the goals for increased enrollment are reached, unless the Food Technology Building on campus is renovated in a timely manner.