To: Dr. Fred Hartmeister, Dean of the Graduate School
From: Mark Lagrimini (University of Nebraska–Lincoln)
Date: April 13, 2010
Re: Graduate Program Review of the Department of Plant and Soil Science

As requested by the Dean of the Graduate School, a committee consisting of Paré (chair), San Francisco, Webb, and Lagrimini (UNL) conducted a review of the graduate program in the Department of Plant and Soil Science. This review consisted of an individual study of the documentation provided by the department (Graduate Program Review 2003-2008), a tour of the facilities, and separate meetings with the department chair, the graduate students, and the graduate faculty on February 24, 2010. The following summarizes my observations and provides recommendations for the department.

Program Overview and Vision

This is a large interdisciplinary department representing program disciplines in biotechnology, crop science, entomology, soil science, horticulture, and fiber/biopolymer science. The Department of Plant and Soil Science has 29 faculty with 18 budgeted FTEs; 11 faculty holding joint appointments with Texas AgriLife Research, 4 faculty holding joint appointments with Texas AgriLife Extension, and one with USDA-ARS Cropping Systems Research Lab. This represents a significant increase from 20 faculty at the time of the last program review in 2003. The department currently has 120 undergraduate majors, up from 109 in 2003, and 94 graduate students (35 Ph.D.), up from 60 in 2003. The most notable change since the last program review in 2003 has been the expansion of the distance education offerings in terms of courses, certificates, and the Master of Agriculture degree program. In 2008 there were 24 students enrolled in the distance graduate programs offered by the department – one quarter of the total graduate enrollment. This growth in enrollment is commendable.

The overall vision of the graduate program directed towards growth. In 2008 the department completed a strategic plan, at which time it set goals for 2013. The department proposes to continue focusing on enrollment, increasing annual research funding to $4M, and constructing a new building to house the Plant and Soil Science Department. They also wish to create a center of excellence in Cotton Science and a center of excellence in Viticulture/Enology.
Faculty Productivity

Based on the criteria of publications, grant activity, and teaching activity, the faculty in the Department of Plant and Soil Science are very productive. In the past 3 years the faculty have averaged 3.7 refereed journal articles/FTE/year. This is good, but the large number of graduate students in the department should indicate even a larger number of publications per FTE. External grant funding has consistently ranked among the top 5 academic departments in the university, averaging $2.8M per year or $200,000/FTE/year. They have an ambitious goal of increasing total research funding to $4M by 2013. The department consistently generates student credit hours per FTE on par with CASNR.

Graduate Students and Graduates: Quality and Quantity

The response received from the graduate students was overwhelmingly positive. It was noted that the publication of research results by graduate students is a deficiency in the department. In 2008 there were approximately 35 resident M.S. and 35 Ph.D. students. Collectively they authored only 15 refereed publications. I recommend that the graduate faculty strive to achieve at least one published student manuscript for every 2 years in the program. At the current enrollment this would be 35 publications per year. This is a modest goal and should be obtainable in a short time. I cannot stress more that publishing is critical to graduate education, and research is not complete until it has gone through peer review and is published. It is also worrisome that the average GPAs of new students is on a downward trend. A plan for addressing this should be developed.

The graduate students indicated that the availability of funding and the current stipend amount ($18,400 for M.S. and $19,400 for Ph.D.) was sufficient.

Curricula Issues

One major change in the graduate curriculum since the last review was the conversion of M.S. in Entomology to M.S. in Plant Protection. Entomology has been designated as a “low-producing program”. The addition of weed science and plant pathology will create a new degree program that better addresses the needs of the industry. I acknowledge the rationale for this change. The department should focus on building numbers in this program, and the long-term viability evaluated during the next program review.
The students interviewed indicated that the existing courses were adequate but perhaps not sufficient. There were also issues with offering of courses on alternate years because of low enrollment. This makes it difficult to impossible for students to take all the courses they need in the time they are on campus. Additionally, the students remarked on the abundance of so-called “piggybacked” courses offered to undergraduate and graduate students. This was identified as an issue in the 2004 Graduate Program Review, leading to insufficient rigor for graduate students taking these courses. With a large population of graduate students with undergraduate degrees from TTU, there are limited courses available for them in the graduate studies. Recommendation is that more graduate-only courses be offered.

Both in the Graduate Student Survey 2010 and during our discussion with graduate students, there were numerous complaints about the departmental seminar program. Students indicated that faculty attendance was poor and the students would benefit from invited speakers. Recommendation is that attendance be required of students and faculty participation is highly encouraged by the chair. I also recommend that funds be dedicated to invited one or two guest speakers each semester.

Rating: GOOD

Facilities and Resources

The current facilities occupied by the Department of Plant and Soil Science are not adequate for the department to thrive. Faculty are located in 5 buildings both on and off campus. The facilities issue was indicated in the April 2004 Graduate Program Review recommendations, and has only worsened with the addition of more faculty and increased graduate student enrollment. I highly recommend the university invests resources into a new building of sufficient size to house the entire PSS department.

Rating: GOOD

Summary

Overall, I was impressed by the accomplishments of the Department of Plant & Soil Science given that the department does not have many of the resources available to land grant universities. They continuously grow enrollment and faculty numbers, modernize laboratories and classrooms, increase external grant funding, and improve relationships with Texas AgriLife and USDA ARS. Key deficiencies in the graduate program could be addressed through the 1) establishment of a graduate seminar series with adequate funding for external speakers, 2) increasing the number of publications authored by graduate students to a minimum of one for every 2 years of study, 3) offering more graduate-only courses, 4) increase the percentage of graduate students from other universities, and 5) improving the average GPAs and GRE scores for entering students. I also recommend that university pursue the construction of a new building to house the PSS faculty.
Overall rating: GOOD