

**Plant Pathology
Implementation Plan Report FY 2021
Based on 2015-2016 Periodic Program Review**

1. Create two new Regular Title Series tenure-track faculty lines in the department.

Assessment Method: Numbers of regular, full-time Plant Pathology faculty in each title series.

Results: Since 2016 there has been considerable flux in the number and nature of the department faculty. Three new faculty members were hired. One was an Associate Professor in the Extension title series (ETS), one was a Professor in the Regular title series (RTS), and the third was an Assistant Professor in the Special title series (STS). A new funding line was provided only for the STS position. The RTS position had been recruited to CAFE as the Associate Dean for Research, but left that position and now has responsibilities as regular faculty in the Department but with his position still funded by the College. The ETS position was not initially on a regular funded line. However, when another Extension faculty member left the department, her funding supported the new Extension faculty member. The Department also experienced the tragic loss due to the untimely death of a Professor (RTS) in December of 2020, and he has not yet been replaced. Due to severe budget cuts mandated by the University and the College, insufficient funding is currently available to replace that vacant position. In fact, part of the funding from the vacant position was used to fully fund the new STS position.

Analysis of results and reflection: Since the last review, the Department has gained one funded STS faculty line that, although not in the title series specified in this recommendation, nevertheless helps all other faculty by taking a significant role in instruction of Plant Pathology courses, and by extensive interaction with Ag. and Med. Biotech. students, many of whom seek research or extension internships in the Department. Also, because the additional RTS faculty member is funded from College administration rather than in the Department budget, and also because the vacant RTS line has insufficient funding to be filled, there has been an overall erosion of the RTS contingent rather than an increase as recommended. We don't anticipate rectifying this situation until new funding can be identified for that vacancy and at least one new faculty line.

Ongoing improvements: The Department still considers it a priority to recruit an additional faculty member to broaden its research and instructional base if funds can be identified for the purpose.

2. Identify relevant laboratory space for the new faculty hires

Assessment Method: Change in laboratory square footage available, and in quality of the facilities.

Results: The Extension title series faculty members have had a significant increase in quantity and quality of available laboratory space. Two Extension faculty members in the Lexington campus share a laboratory in the Plant Sciences Building (PSB), which was expanded by converting half of the adjoining

room from office to laboratory space, with the desks replaced by laboratory benches. The result was an increase from 435 sq. ft. to 725 sq. ft., a 67% increase. On the Princeton, KY campus, with the development of the Grain and Forage Center of Excellence at UKREC, the facility has undergone a major renovation. There, the space dedicated to Plant Pathology (two Extension faculty members) remained the same but was overhauled and upgraded. Furthermore, with the provision of a molecular biology laboratory shared with other departments, the available space for the Plant Pathology programs has effectively increased by approx. 50%.

Analysis of results and reflection: Progress has been substantial for the four ETS faculty members. However, no new space has become available for RTS faculty members in the Department. In fact, space has become even more of a premium because of the success two years running in obtaining competitive federal funds for major new equipment items; a super-resolution confocal microscope and a liquid chromatograph-qTOF mass spectrometer (LC-MS). These initiatives, though multi-unit, were spearheaded by Plant Pathology with the understanding that the instrumentation would be housed in the Department.

Ongoing improvements: Regular title series faculty members continue to struggle to find adequate space for their programs. This is a continuing priority consideration in the Chair's discussions with the College Administration.

3. Provide startup funds for the new faculty hires, including adequate funds for major equipment.

Assessment Method: Results of negotiation with new faculty hires.

Results: In connection with the new faculty hire in 2017 (ETS), startup funds were provided by the College to help with technical support, equipment, and current expense over the first three years from her start date. Also, in connection with the new faculty hire in 2021 (STS), modest startup funding was provided by the College and the Department.

Analysis of results and reflection: The College and University have recognized and accommodated the needs of the new faculty members hired into the department.

Ongoing improvements: For future hires, needs for startup funds will depend on distribution of effort and job responsibilities, especially in basic and applied research components. Therefore, negotiation of startup funds will continue to be an integral part of the hiring process.

4. Replace plant growth chambers with current, more efficient models, particularly in the containment suite.

Assessment: Availability of growth chambers to accommodate the needs of research and extension (applied research) programs.

Result: Three Conviron PGC-Flex plant growth chambers were purchased in 2016. All are in 2-tier configuration, totaling 228 square feet in usable growth space. Also, a nonfunctioning walk-in chamber in PSB was repaired in 2020.

Analysis of results and reflection: The new growth chambers will allow studies of pathogens of rice, maize and sorghum with BSL2-level containment, greatly enhancing prospects for research, student training, and funding of the program.

Ongoing improvements: Although the recent addition of three chambers has addressed this goal, as other growth chambers age they will need to be replaced. The suite of containment chambers in the Plant Sciences Building is now 18 years old, and their replacement should be considered if funds can be identified.

5. Avail institutional resources that have been implemented to help increase applications from traditionally underrepresented minorities.

Assessment: Staff members, faculty members and students from traditionally underrepresented minorities.

Results: The Department has seen an increase in staff and faculty diversity from 2016 to 2020, followed by a decrease in 2021 roughly back to the 2016 levels; Graduate Student diversity has increased. A recently hired office staff member, an African-American female, resigned in mid 2021 due to difficulty identifying an acceptable childcare solution. An African national who was on the technical staff also resigned. In late 2020 an African-American member of the faculty passed away. Currently, with respect to the 11 domestic graduate students in Plant Pathology, one is African-American, one is Mixed-race, and nine are White. Two of the students are Hispanic. The current graduate student class also includes two students from Brazil, five from China and one from Japan. By gender, the Department has 8 female and 11 male graduate students. The Department has not discriminated on the basis of sexual orientation and has included members of the LGBT community within the past six years.

Analysis of results and reflection: The recruitment of an African-American female to the office staff was a positive move toward the goal of parity for underrepresented minorities. Unfortunately, she ultimately resigned due to insufficient availability of childcare. This was largely due to the COVID-19 pandemic. Because the administration has approved advertising for a new staff member in that position, there is potential to recover some staff diversity depending on whom is hired. Current demographics of Faculty Members are: 33% female and 17% Asian American. Among traditionally underrepresented groups, no African-Americans and no Hispanics are on the faculty.

Ongoing improvements: The Department is committed to enhancing diversity among faculty, staff, and students. Attention must be given to improving retention, particularly of traditionally underrepresented minorities. The same applies to graduate students, who continue to be relatively diverse even among the U.S. nationals. Continued effort recruiting women and minorities is desirable.

6. Develop a comprehensive graduate student orientation program for both domestic and international students.

Assessment method: Participation of graduate students in ongoing (PPA 784) and new (PPA 770) orientation programs.

Results: The PPA 784 course continues to be taught each Fall term to all incoming graduate students (four in 2016, three in 2017). This course provides an overview of both the M.S. and Ph.D. programs, an introduction to library and database resources, tutorials on graphics and bibliographic software that is licensed to the University, best practices for laboratory research, notes and records, and scientific ethics. Also, the seminar course, PPA 770, has been altered to involve more formal exercises, including draft and final Abstracts, and two practice seminars, with the final seminar including the complete slide shows in ppt or pdf format. The instructor provides timely feedback on all exercises. The new format for PPA 770 has been in effect since 2016 as a degree requirement for all Plant Pathology graduate students.

Analysis of results and reflection: In general, students and faculty seem satisfied with the results of the new PPA 770 format. Formal student feedback on PPA 784 was discussed in a department meeting (18-SEP-2017). It was concluded that course material is most effective if the skills taught in the course are utilized quickly in their lab work or in other courses.

Ongoing improvements: The faculty decided that it would be most beneficial if other department courses and research activities are structured such that the skills taught in PPA 784 are reinforced by lab and course exercises as early as possible in their programs.

7. Promote an active social committee to foster interactions among all members of the department.

Assessment method: Meetings of the social committee, and social activities.

Results: The Association of Plant Pathology Scholars (APPS) includes the graduate students and postdocs in the department, and organizes many of the social events. APPS has met 1-2 times each quarter. In addition, prior to the pandemic, APPS held three annual events: a breakfast and two dinner cookouts. The department also holds its annual winter holiday luncheon (except during the pandemic), which is organized mainly by the staff and APPS leadership. Other parties such as baby showers and retirement parties are also held when it is appropriate and safe to do so.

Analysis of results and reflection: Within the limitations of time and resources, the Department has maintained an active social environment. All groups within the department are involved, and especially the enthusiasm of graduate students to organize and run events has been gratifying.

Ongoing improvements: With the many professional and personal demands on the time of all members of the Department, it is difficult to envisage increasing social activities. Members of the department continue to be encouraged to participate. APPS continues to be very active.

8. Develop plans to promote travel to professional meetings by all graduate students in the department.

Assessment Method: Proportion of PPA Graduate Students attending and presenting at scientific meetings each year, and number of meetings and presentations by each student.

Results: Each year (until the COVID-19 pandemic) the department has had an increase in Graduate Student participation in meetings. In 2019, 11 Graduate Students attended a total of 17 national or regional meetings. Students advised by Faculty Members in the Extension title series have also been attending and presenting in extension meetings and events.

Analysis and reflection: The dramatic positive trend in participation was interrupted by the COVID-19 pandemic, although some participation of virtual meetings continued. We hope to meet or exceed the 2019 levels of participation at regional and national meetings once it becomes sufficiently safe to travel.

Ongoing improvement: Nearly all faculty advisors have had students attend meetings. There is still some room to expand participation, so the students and their advisors are encouraged to continue identifying appropriate meetings, to plan for student presentations at meetings, and to utilize block grant funds to help defray the costs.

9. Examine new sources of funding to support in-state travel for extension faculty and develop plans with the Associate Dean for Extension to adequately fund the extension programs within the Department.

Assessment Method: Budget available for Extension travel.

Results: The Extension faculty in Plant Pathology have garnered far more funds, including funds available for travel, than ever before. The increase is due to gifts and grants, including substantial salary savings on grants.

Analysis and reflection: The increased availability of funds has greatly benefited the Extension program. A concern, however, is that it is more difficult to obtain needed funding for travel for programs or commodities that have less opportunity for grant funding compared to others.

Ongoing improvement: The most desirable change, from the perspective of the Department, is a boost in funding from the College for travel and operating expenses for the Extension program. Nevertheless, the Extension team cooperates to ensure that available funds provide for basic program needs of the entire Plant Pathology Extension program.

10. The Department should discuss with the college administration possible financial support for undergraduate research projects, where such support can aid in graduate student recruitment directed towards underserved minorities.

Assessment Method: College and University support for students in traditionally underserved minorities.

Results: Funding was not obtained specifically for underserved minority Undergraduates conducting research internships. However, small amounts of funding are available from University programs, and the Faculty Members have been successful in funding Undergraduate internships from their grants. It is also notable that a Faculty Member established a collaboration with the Carter G. Woodson Academy, providing internships to African-American and Hispanic High School Students. Of those interns, at least two have enrolled in the University, one at CAFE and the other in A&S. Four others have enrolled in colleges and

universities (three of them in Kentucky). With regard to Graduate Students, the College and University have assisted with financial support to help in minority recruitment. Currently, two Hispanic students, one of whom is a White female, and the other is an African-American male, have partial support from the College and University, with the remainder of support from grants and the Department.

Analysis of results and reflection: Considering that this recommendation is directed toward “graduate student recruitment,” the key consideration is diversification of the graduate class, especially with respect to traditionally underserved minorities. The program’s domestic Graduate Student body now stands at 18% Hispanic and 9% African-American, indicating success in this endeavor. However, with a small number of domestic students overall (currently 11), those demographics may alter substantially in any direction in the future.

Ongoing improvement: The Department will continue to strive for greater minority recruitment, and hopefully the College and University will continue to reward success in this endeavor.

11. Encourage Faculty to take sabbatical leaves to improve their skill sets and refresh their perspectives on their careers.

Assessment Method: Numbers of Faculty Members considering and taking sabbatical leave.

Results: One faculty member took a year-long sabbatical funded by the Jefferson Science Fellow program of the Department of State and US-AID. This was achieved through a highly competitive application process.

Analysis of results and reflection: Faculty sabbaticals in this department have been far less frequent than the traditional once in seven years, largely because of family reasons.

Ongoing improvement: Difficulties in taking sabbaticals were discussed in a faculty meeting, and almost always have to do with family obligations. A recent sabbatical in another U.K. department (Computer Sciences) was described as extremely useful, so that is an option that more faculty might consider.

12. While the need for additional space may result in a college level analysis of space allocation, every effort should be made to keep the Plant Pathology research and extension faculty in the Plant Sciences Building.

Assessment Method: Space inventory.

Results: This goal was met. All Lexington-based PPA programs are based in the Plant Sciences Building, with the exception of the Plant Disease Diagnostic Laboratory (PDDL), which is based in the greenhouse complex nearby. The Department has two Extension faculty members and a second based at UKREC and Grain and Forage Center of Excellence in Princeton, Kentucky, which is appropriate for their commodity responsibilities (grain and oilseed crops).

Ongoing improvement: As the Department grows, discussion continues with the College administration to keep the physical coherence of the unit.

13. Not applicable; Original suggested goal was rejected.

14. Increase Master's Program degrees conferred.

Assessment Method: Track numbers of students enrolled, and degrees conferred in the Plant Pathology Master's Program over a five-year period. The target is three degrees per year beginning in 2021, resulting in 15 degrees produced over 5 years by 2026.

Results: The Department implemented a Plan B (non-thesis) M.S. program in 2019. This option has not yet been used. Numbers of M.S. degrees awarded by the Department were zero (0) in AY 2017, one (1) in AY 2018, zero (0) in AY 2019, one (1) in AY 2020, and two (2) in AY 2021. Currently, five (5) students are enrolled in the M.S. program. All of these students were or are in the thesis (plan A) option.

Analysis of results and reflection: The department has experienced a gradual increase in the number of M.S. degrees and students since the previous program review. Considering that all of those were thesis-based M.S. programs, the advantage of the new non-thesis M.S. offering has not yet been realized. However, considering that the option was only made available two years ago, there has not yet been sufficient time to judge its effectiveness in increasing demand for M.S. degrees from the Department. The expectation is that total numbers of M.S. students will increase after the pandemic abates.

Ongoing improvement: The department continues to reach out to prospective applicants who may be interested in the M.S. plan A or plan B option. A 4+1 program in Plant Pathology is also under consideration.