

Demystifying Promotion to Professor

College of Agriculture and Natural Resources
Michigan State University

Summer-Fall 2011

	Page
University-level Policies and Programs	
Faculty Guide for RTP @ MSU	1
RTP Toolkit (from ADAPP-ADVANCE)	8
<i>"From Associate Professor to Professor: Productive Decision-making at Mid-Career"</i> (workshop offered annually by the MSU Office of Faculty and Organizational Development)	9
RTP Annual Schedule	10
Review by the CANR RTP Committee	
Members	11
Principles for Faculty Evaluation	12
Elements of a Strong RTP Package	14
Review at the Dean's Level	
Years in Rank: Promotion from Assoc Prof to Prof	15
Strengthening Scholarship Across the Mission	16
What is a Professor?	18
Special Focus: External Letters and the Reflective Essay	
MSU External Letter policy	19
Reflective Essay: Perspectives and Guidelines	20
Reflective Essay examples	24

Faculty Guide for Reappointment, Promotion and Tenure Review

- [Overview of the Reappointment, Promotion and Tenure Process](#)
- [Criteria and Standards](#)
- [Time Table for 2010-11 Reappointment, Promotion and Tenure Actions](#)
- [Recommendation for Reappointment, Promotion or Tenure Action Form](#)
- [Annual Review](#)
- [Peer Review/College-Level Committee Review](#)
- [Joint Appointment](#)
- [External Letters of Reference](#)
- [Confidentiality of Letters of Reference](#)
- [University-Level Review](#)
- [Early Promotion/Tenure](#)
- [Visa Status/Foreign Nationals](#)
- [Stopping the Tenure Clock/Extension of the Probationary Appointment](#)
- [Delay in Reappointment Decision](#)
- [Effective Dates](#)
- [Promotional/Tenure Base Salary Increases](#)
- [Negative Decisions](#)
- [Survive and Thrive in the MSU Tenure System Workshop](#)
- [Data - 5-Year Summary of Promotion and Tenure Actions University-wide](#)
- [Tenure/Promotion Recognition Dinners](#)
- [Post-Tenure Review](#)
- [University-Level Policies/Forms Relevant to the Reappointment, Promotion and Tenure Process \(web links\)](#)

Overview of the Reappointment, Promotion and Tenure Process¹

MSU has a multi-level review process for reappointment, promotion and tenure (RPT) decisions. Recommendations for reappointment, promotion and tenure are made in the department according to unit, college and university bylaws, policies and procedures. Recommendations that do not involve the award of tenure are reviewed successively by the dean, the provost and the president, who makes the final decision. Recommendations that involve the award of tenure are reviewed successively by the dean, the provost, and the president, who makes the final recommendation to the Board of Trustees for action.

The RPT process includes the following steps:

1. Faculty member and department chairperson/school director complete their respective parts of the Recommendation for Reappointment, Promotion or Tenure Action form.
2. External peer evaluation (letters of reference), if required by unit procedures.
3. Faculty member has an opportunity to confer with the department/school peer review group before a decision is made.
4. Department/school peer review group provides advice to the chairperson/director regarding reappointment, promotion and tenure decisions.
5. Department chairperson/school director conducts an independent evaluation, taking into consideration peer evaluation, and forwards a recommendation to the dean.
6. College-level reappointment, promotion and tenure committee provides advice to the dean about department/school recommendations for reappointment, promotion and tenure.
7. Dean independently reviews each recommendation for reappointment, promotion and tenure and forwards a recommendation to the provost.
8. The Associate Provost and Associate Vice President for Academic Human Resources and the Senior Associate Provost consult with the provost on the dean's recommendations.
9. The Associate Provost and Associate Vice President for Academic Human Resources, the Senior Associate Provost, and the Vice President for Research and Graduate Studies jointly review each recommendation with the applicable dean and approve/disapprove the recommendation on behalf of the Office of the Provost. Approved actions that do not involve an award of tenure are forwarded to the president for final action.
10. Board of Trustees takes action on recommendations involving the award of tenure.

The RPT process is initiated by the provost each year in early November with a distribution of materials to be used for that year's review cycle, including a list of faculty for whom tenure action is required.

Decisions to promote and tenure faculty members are the most important made by the University, for they will determine MSU's reputation and prominence for many years to come. Departments, schools and colleges are expected to apply rigorous standards and to refrain from doubtful recommendations of reappointment, tenure or promotion.

Departments, schools and colleges are required to base decisions about reappointment, promotion and tenure on criteria and procedures that are clearly formulated, objective, relevant, and made known to all faculty members. These procedures are also required to include a means by which a probationary tenure system faculty member is evaluated and informed annually of his/her progress.

Faculty are reviewed according to the criteria and standards in department/school bylaws or other relevant documents, college bylaws or other relevant documents (if any), and the University's statement on "Appointment, Reappointment, Promotion and Tenure Recommendations." **It is critical that faculty learn about the standards and criteria in their department/school and/or college.** The department chairperson/school director should provide this information upon initial appointment in the tenure system or as soon as possible thereafter.

The University's statement requires that achievement and performance levels must be competitive with faculties of leading research-intensive, land grant universities of international scope. Expectations of excellence are embodied in the following standards for reappointment, promotion and tenure:

1. Reappointment with award of tenure: Each tenure recommendation should be based on a clear record of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected at peer universities.
 - a. For the faculty member appointed initially as associate professor on a probationary basis in the tenure system who has established such a record, the tenure recommendation is effective upon reappointment after one probationary appointment period.
2. A recommendation for promotion from assistant professor to associate professor in the tenure system (with tenure) should be based on several years of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected for promotion to associate professor at peer universities. A reasonably long period in rank before promotion is usually necessary to provide a basis in actual performance for predicting capacity to become an expert of national stature and long-term, high-quality professional achievement.

A recommendation for promotion from associate professor to professor in the tenure system should be based on several years of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected at peer universities. A reasonably long period in rank before promotion is usually necessary to provide a basis in actual performance to permit endorsement of the individual as an expert of national stature and to predict continuous, long-term, high-quality professional achievement.

Recommendations for reappointment, promotion or tenure are based upon a faculty member's scholarly contributions. In particular, assessment of faculty performance should recognize the importance of both teaching and research and their extension beyond the borders of the campus as part of the outreach dimension, as appropriate to the particular responsibilities assigned to the faculty member and the missions of the unit.

Time Table for 2010-11 Reappointment, Promotion and Tenure Actions

This is the University schedule; departments/schools and colleges may have internal due dates.

On or Before

August 2, 2010	Office of the Provost sends advance copy of Timetable and list of faculty for whom tenure action is required, i.e., faculty whose probationary appointment ends on August 15, 2012.
November 10, 2010	Office of the Provost distributes materials electronically to initiate tenure system reappointment and promotion recommendations, including a list of faculty members for whom reappointment recommendations are required.
Date to be determined	Chairpersons and directors inform individual faculty members in a timely manner when their completed Form D "Recommendation for Reappointment, Promotion or Tenure Action" and supporting materials have been forwarded to the dean.
February 28, 2011	The following forms are sent from the Dean through the web application to Academic Human Resources: Form A: "Tenure System Reappointment

Recommendations."

Form B: "Promotion List."

Form C: "Documentation of Annual, Written, Tenure

System Faculty Review."

Form D: "Recommendation for Reappointment,

Promotion or Tenure Action" and an

updated curriculum vitae for each

faculty member listed on Form A and Form B

Deans request chairpersons and directors to inform individual faculty in a timely manner of whether or not the dean has approved the department's recommended action and that the dean has forwarded a completed "Recommendation for Reappointment, Promotion, or Tenure Action" form to the provost. Even if the dean does not approve the department's recommended action, all review materials in support of such an action will be made available for review by the provost and her/his staff.

Mar 3-April 8, 2011

Deans' conferences with the Associate Provost/Associate Vice President for Academic Human Resources, Senior Associate Provost and the Vice President for Research and Graduate Studies to review individual recommendations

April 25, 2011

Provost notifies deans of recommendations accepted for recommendation to the president and the Board of Trustees.

May 2-6, 2011

Deans notify chairpersons and directors, who notify faculty members, of actions taken by the Office of the Provost and the president on recommendations not involving the award of tenure.

May 31, 2011

Final lists of reappointments and promotions involving the award of tenure are prepared and forwarded by the Office of the Provost for recommendation to the president and for the agenda for the Board of Trustees.

June 17, 2011

Meeting of the Board of Trustees.

June 20, 2011

Notification to deans of final approval for actions involving the award of tenure; deans notify chairpersons and directors, who notify faculty members.

October 14, 2011

Delayed actions due.

Date to be determined

Those with delayed reappointment, promotion, and/or tenure actions should be informed as soon as possible following final action by the president or Board of Trustees.

December 15, 2011

Deadline for notification to faculty who are not reappointed.

Recommendation for Reappointment, Promotion or Tenure Action Form

This (required) form, referred to as Form D, outlines many of the activities that are relevant to decisions on promotion, tenure and reappointment. It provides the opportunity to document, provide evidence for and assess faculty scholarship in the functional areas of instruction, research and creative endeavors, and service within the academic and broader community, as well as in cross-mission initiatives.

Sections I, II and III of Form D are summary evaluations completed by the chairperson, director and/or dean. The following materials are completed and submitted by the faculty member:

1. Evidence of scholarly activities as requested in Section IV
2. A reflective essay about accomplishments over the reporting period (5 page maximum)
3. A curriculum vitae as a more complete listing of scholarly activities and works
4. Other evidence as required by the unit (such as letters from reviewers) or desired by the faculty member

Annual Review

All tenure system faculty must be evaluated and informed annually, in writing, about their progress. The Faculty Review policy provides principles and guidelines for implementing these reviews.

Peer Review/College-Level Committee Review

Unit Level

Each department and school is required to establish procedures so that its faculty can provide advice to the chairperson/director regarding recommendations for reappointment, promotion and tenure. University guidelines for the composition of peer review committees are included in the statement on Peer Review Committee Composition and External Evaluations.

College Level

Each departmentally organized college is required to establish a college-level reappointment, promotion and tenure committee that is charged to provide advice to the dean about department/school recommendations for reappointment, promotion and tenure. College-level committees are required to incorporate a set of principles that are included in the statement on College-Level Reappointment, Promotion and Tenure Committees.

Joint Appointment

Only the primary unit will make a recommendation for reappointment, promotion or tenure for a faculty member with a joint appointment. However, the chairperson/director of the primary unit is obligated to consult with the chairperson/director of all joint units prior to submitting a recommendation.

External Letters of Reference

External letters of reference are required for all reviews of tenure system faculty involving the granting of tenure or promotion. External letters of reference are required in order to ensure that individuals recommended have an achievement and performance level that is comparable with faculties of peer institutions. The statement on External Letters of Reference provides principles and procedures that must be applied uniformly to all faculty in the unit for soliciting external letters of reference.

Confidentiality of Letters of Reference

Letters of reference, as part of an official review file, are held in confidence and will not be disclosed to a faculty member under consideration or to the public except as required by law or University policy. In all such instances, the information made available will be provided in a form that seeks to protect the identity, privacy, and confidentiality of the evaluator.

University-Level Review

All recommendations for reappointment, promotion and tenure are jointly reviewed by the Associate Provost and Associate Vice President for Academic Human Resources, the Senior Associate Provost, the Vice President for Research and Graduate Studies, and the applicable dean. In addition to reviewing recommendations against the standards and criteria of the department/school and/or college and the University, the Associate Provost, Senior Associate Provost and the Vice President assess the candidate's independent role in research and scholarship and the commitment to seek external funding, as appropriate to the discipline and assignment of the faculty member.

Additionally, the Associate Provost and Associate Vice President for Academic Human Resources and the Senior Associate Provost consult with the provost on the deans' recommendations.

Early Promotion/Tenure

A promotion or tenure action is **not** considered "early" if justified by a record of performance at another university or during a fixed term appointment at MSU that is required by immigration regulations or other relevant reason, provided the performance meets MSU standards. Early promotion/tenure is based on an exceptional record of accomplishments at MSU that is based on department/school/college and University criteria. Early promotion/tenure is reserved for extraordinary cases.

Visa Status/Foreign Nationals

Foreign nationals (those holding non-immigrant status) may be appointed within the tenure system, but may not be awarded tenure unless they have acquired permanent resident status or complete a Tenure Policy Exemption Agreement.

Alternatively, an extension of the probationary appointment is automatic if a tenure decision is required before permanent resident status is obtained and the candidate has been recommended for tenure.

Stopping the Tenure Clock/Extension of the Probationary Appointment

Automatic

The tenure system probationary appointment is extended automatically for one year for the following reasons:

1. Leaves of absence with or without pay that are six to twelve months.
2. Changes in appointment to 50% time or less for one year.
3. Upon request from a faculty member on approved leave of absence (paid or unpaid) for twelve weeks or longer for reasons related to the birth or adoption of a child. Automatic extensions for this reason are limited to two separate one-year extensions.
4. Immigration/visa status that does not permit the award of tenure for candidates who have been recommended for tenure.
5. An extension recommended as an outcome of a hearing and/or appeal conducted pursuant to the Faculty Grievance Policy.

Requests

Extension of the probationary appointment may be requested from the University Committee on Faculty Tenure for reasons related to childbirth, adoption, the care of an ill and/or disabled child, spouse, or parent; personal illness, to receive prestigious awards, fellowships, and/or special assignment opportunities, or other such serious constraints.

The procedure for requesting an extension of the probationary tenure system appointment is included in the statement on Implementation Practices (Stopping the Tenure Clock).

Delay in Reappointment Decision

On an individual case basis, there may be justification to delay the final reappointment, promotion, or tenure decision until the fall (final recommendations are due on or before October 15). Upon the request of or after consultation with the faculty member, the department/school chairperson/director and dean may concur that another review will be held early in the fall for the purpose of reviewing additional information and making a final recommendation. The request for a delay must be approved by the Associate Provost and Associate Vice President for Academic Human Resources.

Effective Dates

The effective date for reappointment with tenure is the first of the month following final approval by the Board of Trustees. The effective date for reappointment without tenure is August 16 of the year following the recommendation, e.g., for recommendations made in April 2006, the effective date is August 16, 2007.

The effective date for promotion with or without the award of tenure is the first of the month following final approval by the Board of Trustees.

The effective date for non-reappointment is August 15 of the year following the recommendation, e.g., for recommendations made in April 2006, the effective date is August 15, 2007.

Promotional/Tenure Base Salary Increases

Central support for promotional increments for tenure system faculty is provided at \$2,000 per promotion from assistant to associate professor and at \$2,500 per promotion from associate to professor. For those appointed at the associate professor rank but without tenure, \$2,000 will be provided upon receipt of tenure. If unit promotional policy exceeds the above funding, units are responsible for the additional amount. Promotion/tenure salary increases are effective with the general increase, normally October 1, and are in addition to the annual merit increase.

Negative Decisions

The decision not to reappoint a non-tenured faculty member does not necessarily imply that the faculty member has failed to meet the standards of the University with respect to academic competence and/or professional integrity. This decision may be contingent, wholly or in part, upon the availability of salary funds and/or departmental needs.

A faculty member who is not recommended for reappointment must be notified in writing by the chairperson/director and/or dean as soon

as possible and no later than December 15 preceding the expiration of the appointment. Upon written request of the faculty member, the administrator of the basic administrative unit making the decision must transmit in writing the reasons for the decision.

Appeal Procedures

The **administrative review procedure** is an informal process providing an avenue for faculty/ academic staff to request an independent assessment from their department chairperson/school director, dean, and Office of the Provost on personnel matters such as salary status, reappointment, promotion and tenure.

If a non-tenured faculty member believes that the decision not to reappoint was made in a manner that is at variance with the established evaluation procedures, he/she may, following efforts to reconcile the differences at the level of the basic administrative unit and the dean of the college, initiate an appeal in accordance with the **Faculty Grievance Policy**. The time frame for initiating a grievance begins upon receipt of notification of the negative decision from the dean or department chairperson/school director.

Survive and Thrive in the MSU Tenure System Workshop

The Office of Faculty and Organizational Development in the Office of the Provost sponsors this workshop each fall. This workshop is for probationary tenure system faculty to provide assistance in functioning successfully within the tenure system at MSU.

The workshop has the following objectives:

1. To expand faculty members' understanding of key concepts, topics and issues within their department and about University reappointment, promotion and tenure procedures
2. To discuss approaches to documentation and record keeping for reappointment, promotion and tenure purposes
3. To provide practical information on making choices, balancing conflicting demands, managing departmental politics
4. To provide an opportunity for communication and problem-solving among faculty and academic administrators

Data - 5-year Summary of Promotion and Tenure Actions University-wide

Over the five reappointment cycles from 2005 through 2009, there have been 25 associate professors reappointed with tenure; 290 assistant professors reappointed for a second three-year probationary appointment; 208 promotions to associate professor; 163 promotions to professor; and 32 individuals not reappointed. Additionally, extensions of the probationary appointment were approved for 6 associate professors and 31 assistant professors.

Generally, at Michigan State, the tenure rate for starting cohorts is about 70%, i.e., faculty members who have resigned or are no longer appointed in the tenure system are included in the base calculation. The tenure rate is approximately 90% for faculty who are reviewed in a given year.

Tenure/Promotion Recognition Dinners

Each fall the Office of the Provost hosts a recognition dinner ceremony in honor of faculty members promoted to the rank of professor and for those awarded tenure.

Post-Tenure Review

Post-tenure review is implemented through several existing policies and procedures (contained in the Faculty Handbook), including a clarifying interpretation by the University Committee on Faculty Tenure on the meaning of the term "incompetence" in the disciplinary and dismissal policies. Performance is monitored through the use of annual written performance evaluations as required by the policy on "Faculty Review." Work performance, as determined in such reviews, is to be reflected in annual merit salary adjustments and as a basis for advice and suggestions for improvement. Although not triggered by a fixed number of years of low performance, discipline in a variety of forms may be invoked under the "Policy and Procedure for Implementing Disciplinary Action where Dismissal is Not Sought." In more serious cases, the "Dismissal of Tenured Faculty for Cause Procedure" can be invoked.


University-level policies/forms relevant to the reappointment, promotion and tenure process

- [Administrative Review](#)
- [Appointment, Reappointment, Tenure and Promotion Recommendations](#)
- [College-Level Reappointment, Promotion and Tenure Committees](#)
- [Conflict of Interest in Employment](#)
- [Disciplinary Action Where Dismissal is Not Sought, Policy and Procedure for Implementing](#)

- [Dismissal of Tenured Faculty for Cause](#)
- [External Letters of Reference](#)
- [Faculty Career Advancement and Professional Development: A Special Affirmative Action Responsibility](#)
- [Faculty Grievance Policy](#)
- [Faculty Review](#)
- [Granting Tenure](#)
- [Implementation Practices \(Stopping the Tenure Clock\)](#)
- ["Incompetence." Definition of the Term by the University Committee on Faculty Tenure](#)
- [Non-Reappointment](#)
- [Non-Tenured Faculty in the Tenure System](#)
- [Operating Principles of the Tenure System](#)
- [Peer Review Committee Composition](#)
- [Post-Tenure Review](#)
- [Promotion of Tenured Faculty](#)
- [Recommendation for Reappointment, Promotion or Tenure Action Form](#)
- [Reference Letters for Reappointment, Promotion and Tenure Recommendations. Confidentiality of](#)
- [Salary Adjustment Guidelines. Academic](#)
- [Survive and Thrive Workshop](#)
- [Tenure Action and Promotion](#)

Footnote:

¹ Web links to all relevant policy statements and forms are listed at the end of this document.

Print 

[Back](#)

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About ADAPP-ADVANCE

Frequently Asked Questions

Resources for...

e-Newsletter

Helpful Links

Reappointment, Promotion, And Tenure Toolkit

Home > Reappointment, Promotion, And Tenure Toolkit

Reappointment, Promotion and Tenure Policies and Procedures in the MSU Faculty Handbook

Workshops, Programs and Resources on Reappointment, Promotion and Tenure

- Resources for Faculty
- Resources for Administrators

Check List of Required Practices in RP&T – Unit Guidelines

- Printer Friendly Document

Check List of Required Practices in RP&T – College Guidelines

- Printer Friendly Document

Reappointment, Promotion and Tenure Policies and Procedures in the MSU Faculty Handbook

Operating Principles of the Tenure System

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/TenurePrinc.htm>

Summary:

Provides principles regarding the start dates for probationary appointments, leaves of absence, notification of non-reappointment, appointments of foreign nationals, interpretation of the tenure rules and where tenure resides.

Granting Tenure

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/granttenure.htm>

Summary: Faculty members with the Rank of Professor in the tenure system are granted tenure from the date of appointment.

Faculty members appointed as Associate Professors without tenure and who have served previously at MSU are appointed in the tenure system for a probationary period of, generally, two to five (2-5) years.

A newly appointed Associate Professor can be granted tenure from the date of appointment.

Faculty members appointed as an Assistant Professor are appointed for an initial probationary period of four years and may be reappointed for an additional probationary period of three years.

Reassigning Tenured Faculty

<http://hr.msu.edu/documents/facacadhandbooks/facultyhandbook/facultyreassign.htm>

Summary:


Tenure at MSU resides in the University. Thus, if a unit is discontinued, reassignment of the faculty is normally in another academic unit and is negotiated with the faculty member and the receiving unit.

Stopping the Tenure Clock

Implementation Practices

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/implementation.htm>

Summary:

 Office of Faculty & Organizational Development	Page 9
MICHIGAN STATE UNIVERSITY	
Office of the Provost	
Home Mission & Policies Opportunities & Intended Participants Contact Us	
<input type="text" value="Search"/>	

From Associate Professor to Professor: Productive Decision-making at Mid-Career

[About](#) | [Register](#)

(For Recently Appointed Associate Tenure-System Professors)

Theodore H. Curry II, Associate Provost and Associate Vice President for Academic Human Resources

Deborah DeZure, Assistant Provost for Faculty and Organizational Development

Ian Gray, Vice President for Research and Graduate Studies

June Youatt, Senior Associate Provost

Panel of Deans, Chairs and Mid-Career Faculty

Thursday, March 18, 2010*, 8:30 a.m. - 11. a.m., Please note the location for this seminar has been changed to Big Ten B.

(Registration begins at 8:00 a.m.; program begins at 8:30 a.m.)

* This program was originally scheduled for Tuesday, March 16.

This program, new in 2009, is designed for and open to faculty who have attained tenure within the past five years or who are associate professors in the tenure system new to MSU and its reappointment and promotion process. The objectives of this workshop are to:

- 1) clarify expectations for attaining the rank of full professor;
- 2) enable new associate professors to better anticipate the opportunities and challenges they will face and to inform their mid career decision-making and experiences; and
- 3) provide a venue in which to ask questions about this new stage in their careers.

The workshop includes presentations by Theodore Curry, Ian Gray and June Youatt, who comprise the group of senior academic administrators who review tenure, reappointment and promotion applications on behalf of the Provost. They will discuss the process and expectations for promotion to professor as well as MSU promotion data. A panel of deans and chairs will share their observations and suggestions about productive approaches to the mid-career experience followed by Questions and Answers. Deborah DeZure will share highlights of a recent study of mid-career faculty at MSU and identify relevant MSU resources and support programs and services. The session will conclude with Questions and Answers with a panel of mid-career faculty, chairs and deans and a recap of critical themes. This program is co-sponsored by the ADAPP-ADVANCE grant and F&OD.

Annual Schedule of RTP Reviews

Page 10

DEPARTMENT-SCHOOL LEVEL

RTP discussions with chair and department-school review committee	Spring-Summer
Organizing RTP dossiers	Summer-early Fall
Solicitation of external reviews (only for 2 nd reappt and prof reviews)	Summer-early Fall
Department- and school-level review of RTP candidates	Middle-late Fall
Submission of RTP dossiers to College	2 nd Fri in December

COLLEGE LEVEL

(To go into effect Fall 2011: Preliminary presentation of RTP candidates by CANR chairs and directors to Dean and Directors , Early Fall)

CANR RTP Committee reviews	Very early January
College-level Dean and Director reviews	Late Jan-early Feb
***Initial feedback to candidates re status from chairs-directors to candidates	Early -mid Feb
Revision of dossiers, if needed, with resubmission to College	Mid-late Feb
Submission of dossiers, including Dean's recommendation, to University Committee (Gray, Youatt, Curry)	Late Feb

UNIVERSITY LEVEL

Dean's meeting with University Committee to review dossiers	Mar-Apr
***Preliminary decision from Univ review communicated to candidates by chairs-directors	Mar-Apr
Review of Univ-level decisions by provost, then, president	Apr-mid May
***Final decision communicated to candidates by chairs-directors	late May-early June
Tenure actions taken by MSU Board of Directors	June board meeting

(RTP decisions go into effect July 1 of that year; declinations of first and second reappointments result in position terminations on August 15 of the following year)

Members of the CANR RPT Committee

(Reappointment, Tenure, and Promotion)

2011-12

<u>Representative</u>	<u>Department/ School</u>	<u>Term Expires August 15th</u>
Roy Black (immediate past chair)	AFRE	2012
To be named	ANS	2014
To be named	BAE	2014
Pete Kakela	CARRS	2013
Brian Teppen	CSS	2013
Rufus Isaacs	ENT	2013
Karen Potter-Witter	FOR	2012
Sharon Hoerr	FSHN	2013
Bill Taylor	FW	2014
Rand Beaudry	HRT	2014
Pascal Kamdem	PKG	2012
George Sundin (chair)	PLP	2013
Eric Strauss	SPDC	2012

PRINCIPLES FOR FACULTY EVALUATION

CANR Promotion and Tenure Committee

1. To effectively evaluate a faculty member, the Committee must consider and evaluate three major categories for excellence:
 - a. an assessment of the faculty member's performance of **assigned duties**;
 - b. an assessment of the person's **scholarly achievements**; and,
 - c. an assessment of the person's **service activities**.

In conducting assessments, the Committee operates on the premise that faculty excellence is a matter to be judged, not measured.

2. **Assigned duties** for a faculty member can include research, teaching, extension/outreach and/or administration. Because the college is a collaborative effort, contributions to collaborative works are included in the assessment of performance of assigned duties. Furthermore, it is expected that a faculty member will demonstrate a commitment to standards of intellectual and professional integrity in all aspects of faculty responsibilities. The Committee acknowledges that some faculty positions will be more disciplinary oriented with few additional responsibilities, whereas others may have extensive assigned duties in teaching, extension/outreach, advising, or administration. However, some scholarly activities are expected of all tenure-track faculty members regardless of assigned duties. The Committee assesses performance according to assigned duties, not in relation to the budgetary appointment.

3. In order to evaluate a faculty member, the Committee --- following Boyer (1990) and Weiser (1999) --- defines **scholarly achievements** as a creative work that is peer-reviewed and publicly disseminated. As such there are six forms of scholarship:

- a. discovery of knowledge;
- b. multidisciplinary integration of knowledge;
- c. development of new technologies, methods, materials or uses;
- d. application of knowledge to problems;
- e. dissemination of knowledge; and,
- f. interpretation in the arts.

This definition can be applied to teaching, research, extension/outreach, service and administration duties. The Committee is interested not only in how faculty invest their time, the activities in which they participate, and who they reach, but also in the short, medium and long term results and impacts of the faculty's scholarly efforts.

4. **Service activities** are implicit in the appointment of all faculty members. A faculty member is expected to demonstrate excellence in service through a continuing commitment to academic professional and public service activities.

5. A faculty member is expected to demonstrate **continual improvement** in his or her intellectual and performance capabilities by improving his or her effectiveness in teaching, research, extension/outreach, service and/or administration. A faculty member also is expected to make contributions to the collegial environment of his or her academic unit.

References

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Guidelines were prepared by Professor Doug Landis, CANR RTP Committee, Entomology. These recommendations have been adopted by the CANR RTP Committee and are used in portfolio reviews.

Promotion to Professor

Bottom line: clear evidence that the candidate has established a prolonged program of excellence in the area(s) of major appointment and has at minimum good performance in area(s) of minor appointment.

Generally this will include:

- Evidence of national and international recognition from solicited letters or other sources
- Regularly invited to present at peer universities, national and international meetings

- In Research
 - Obtains consistent funding and has maintained a strong program over an extended period
 - Obtains funding from diverse sources including competitive national sources (USDA, NSF, NIH etc.)
 - Consistently attracts, graduates and places high-quality students/post-docs
 - Has an extended record of publication in the best journals available for the particular discipline as measured by impact factors and within-discipline journal rankings
 - Is achieving strong citation rates.

- In Teaching
 - Is recognized as an excellent teacher by colleagues and students
 - Shows passion/innovation
 - Consistently obtains excellent SIRS summary scores (primarily 1's)
 - Shows sustained evidence of scholarship in teaching and learning

- In Outreach
 - Obtains consistent funding to maintain a strong program over an extended period
 - Is recognized by clientele and colleagues as excellent in outreach
 - Shows passion/innovation
 - Shows sustained evidence of scholarship in outreach

- In Service
 - Strong contributor to Departmental activities
 - Contributor to University level activities
 - Strong contributor at national/international level
 - Sought out as journal peer reviewer, potentially editorships
 - Sits on national (USDA, NSF, NIH) grant review panels
 - Leadership in national/international committees
 - Organizes national/international symposia, meetings, and workshops

PROMOTION FROM ASSOCIATE PROFESSOR TO PROFESSOR

MSU-CANR for the years 1974-2007

Study undertaken by Associate Dean R. Brandenburg

YEAR	AVE YRS FROM ASSOC TO FULL PROF	Standard Deviation	Minus Outlier >= 10	FIVE YEAR AVERAGE		
				beginning	ending	
1974	4.0					
1976	4.0					
1978	5.0					
1981	4.8					
1982	8.0					
1983	5.9	0.1				
1984	5.6	1.4				
1985	5.6	1.8				
1986	6.4	1.6		1982	1986	6.0
1987	6.2	0.8		1983	1987	6.0
1988	5.7	0.5		1984	1988	5.9
1989	5.8	0.8	5.8	1985	1989	5.9
1990	5.5	1.2	5.5	1986	1990	5.8
1991	5.3	1.9	5.3	1987	1991	5.6
1992	5.5	0.5	5.5	1988	1992	5.6
1993	6.4	0.9	6.4	1989	1993	5.7
1994	5.3	2.3	5.3	1990	1994	5.7
1995	6.9	1.3	6.9	1991	1995	6.1
1996	8.3	4.6	6.3	1992	1996	6.8
1997	7.6	0.4	7.6	1993	1997	7.0
1998	8.3	4.5	6.4	1994	1998	7.7
1999	7.0	1.0	7.0	1995	1999	8.3
2000	7.3	2.0	6.6	1996	2000	8.1
2001	6.9	4.6	6.2	1997	2001	8.1
2002	6.1	1.6	6.1	1998	2002	7.6
2003	6.6	3.7	5.0	1999	2003	7.1
2004	8.3	3.3	6.0	2000	2004	7.2
2005	9.0	3.6	4.0	2001	2005	7.4
2006	7.4	3.6	5.8	2002	2006	7.1
2007	7.3	1.8	6.3	2003	2007	7.6
TOT AVE	6.6	2.7				

CANR INITIATIVE

Strengthening faculty scholarship across the mission

Background

During Fall Semester 2007 there was a robust discussion of scholarship—what it is and how it might be evaluated—in our College. This discussion was prompted by a call from the Dean’s Office: the need to sharpen our ability to fulfill mission-related obligations as we do a better job of acknowledging and rewarding faculty for the work they do.

While faculty at MSU and CANR are expected to make contributions through research that move the frontiers of knowledge in their respective fields, they also undertake a variety of other work—undergraduate education, graduate education, and an array of Extension-outreach-engagement responsibilities, on campus, around the state, across the nation, and all over the world—that often falls outside of the conventional way that we acknowledge and reward faculty for work in the research domain. It appears to some that research has become (or is becoming) the primary frame of reference for evaluating and rewarding faculty work. At issue, then, is how do we judge the quality of work undertaken across the mission (not just in research)? And, what does scholarship look like when it is expressed outside of research?

While these are important questions, it became apparent quickly that there are differences of opinion about what scholarship is and how it might be evaluated across the mission. For example, some saw virtually any work undertaken by faculty members—when that work is prepared and deployed thoughtfully (e.g., teaching an undergraduate class)—as scholarship. Others saw teaching classes as an important scholarly activity, but not as scholarship, which they saw as creating something new for a body of knowledge through peer-validation.

In addition, two primary concerns were expressed about the discussion of scholarship, generally. First, there were concerns that these discussions might lead to “one size fits all” metrics across CANR—applied to everyone, everywhere irrespective of potential differences in the work they do (e.g., teaching a study abroad course vis-à-vis involving students in an engagement experience overseas). In other words, while there is not likely to one answer to any core question (e.g., What is quality of Extension work), there probably are multiple answers to any question, with each answer fitting the nature of the work undertaken and/or the academic context in which it is being exercised. Second, concerns were expressed that emphasizing scholarship across the mission might diminish the value of work associated with teaching classes, doing Extension, and undertaking other non-research roles. If we were to emphasize work associated with scholarship in teaching, for instance, would that emphasis diminish the value of teaching classes? If so, then it might be better not to have these discussions at all.

Points of Agreement

Interestingly, while no consensus emerged about how to frame the discussion, including how to define basic terms, there was general agreement about a framework—advanced in first form in September that stayed in tact as the semester-long discussion unfolded: 1) for **evaluating the quality and impact of teaching, research, and Extension-outreach-engagement activities**; and 2) for **defining and evaluating the quality and impact of scholarship associated with teaching, research, and Extension-outreach-engagement**. Both outcomes seemed to be worthy in intent and outcome. The dual focus is expressed in the boxed-contained text that follows.

In all activities associated with teaching, research, and Extension-outreach-engagement, faculty members undertake work that is informed by an academically recognized body of knowledge, undertaken in a scholarly manner, and evaluated as having quality with impact. Page 17

Scholarship across the mission—irrespective of whether it is associated with teaching, research, or Extension-outreach-engagement—involves creating something new and valuable (that is, makes a contribution) in a disciplinary, professional, multidisciplinary, or interdisciplinary field; having the work validated as such by peers; and making the work “public,” that is, is available in an academically legitimate location for use in teaching, research, or Extension-outreach-engagement work.

Undergirding this two-pronged framework—again without much disagreement, although with interpretive differences—were statements authored at various times by faculty committees at the University and CANR levels, respectively.

From MSU policy:

<http://www.hr.msu.edu/HRsite/Documents/Faculty/Handbooks/Faculty/AcademicPersonnelPolicies/iv-recommendations> *Through its faculty, MSU will create knowledge and find new and innovative ways to extend its applications, to serve Michigan, the nation, and the international community. The faculty must infuse cutting-edge scholarship into the full range of our teaching programs. At MSU, faculty are expected to be both active scholars and student-focused, demonstrating substantial scholarship and ability to promote learning through our on-campus and off-campus education and research programs. The essence of scholarship is the thoughtful discovery, transmission, and application of knowledge, including creative activities, that is based in the ideas and methods of recognized disciplines, professions, and interdisciplinary fields. What qualifies an activity as scholarship is that it be deeply informed by the most recent knowledge in the field, that the knowledge is skillfully interpreted and deployed, and that the activity is carried out with intelligent openness to new information, debate, and criticism.*

From CANR Promotion and Tenure Committee policy:

<http://www.canr.msu.edu/canrhome/files/documents/CANR%20PROMOTION%20AND%20TENURE%20PACKAGE3.pdf> *In order to evaluate a faculty member, the Committee defines scholarly achievements as a creative work that is peer-reviewed and publicly disseminated. As such there are six forms of scholarship: discovery of knowledge; multidisciplinary integration of knowledge; development of new technologies, methods, materials or uses; application of knowledge to problems; dissemination of knowledge; and interpretation in the arts. This definition can be applied to teaching, research, extension/outreach, service and administration duties. The Committee is interested not only in how faculty invest their time, the activities in which they participate, and who they reach, but also in the short, medium and long term results and impacts of the faculty's scholarly efforts.*

What is a Professor?

(specific reference to MSU—
a research-intensive, Land Grant institution, with international obligations)

1. A professor has an **established reputation at the national and/or international level(s)** in her or his field(s) of study*. The reputation has been earned through years of sustained success and includes a verifiable record of accomplishment.
2. The professor has a **reputation of being at the leading-edge of thinking and, often, practicing**. True to the definition of scholarship, the professor creates or generates new knowledge, which is peer-reviewed and/or affirmed, and (then) used by others in their work. This approach translates into having a record of securing grants and contracts; of advancing knowledge through publication in high-end publications; and being cited by peers and practitioners as a source for their work.
3. A professor **has presence, as a leader, at MSU and beyond** (e.g., professional societies, national-level and/or international organizations). She or he “leaves a mark” because Initiatives and programs exist because of a professor’s engagement. In light of a professor’s standing, she or he is invited to speak at conferences; earns awards and honors from professional, civic, and industry organizations; is invited to serve on review panels; and is, generally, a “go to” person on topics associated with her or his expertise.
4. There is a **longstanding and consistent track record of quality of performance with impact of activities** in (at least) one dimension of the academic mission (e.g., research), and frequently in multiple dimensions, across the mission. The professor takes pride in doing work well, whether that work involves teaching an undergraduate class, chairing a task force, or writing a research proposal. Others provide testimony to the quality and impact of a professor’s work.
5. A professor **mentors well, giving time and attention to the importance of guiding the next generation of scholars**—from undergraduate students, to graduate students, to post-docs, and to junior faculty members. A professor often has a successful track record in graduate education; and strives to involve undergraduate students in innovative and career-influencing ways. A professor also serves as a faculty mentor—informally and formally—and she or he often has a presence in academic governance at the department, college, or university levels.

*When submitting dossiers for promotion to professor there is **documentation of evidence and alignment of commentary**—from what the candidate says about himself or herself; to what the unit administrator and MSU peers say about the candidate’s work; to what is written about the candidate by nationally-internationally recognized scholars (from MSU peer institutions).


External Letters of Reference - Faculty Handbook

IV. ACADEMIC HUMAN RESOURCES POLICIES (Cont.)

This statement was endorsed by the University Committee on Faculty Affairs on March 14, 2006 and by University Committee on Faculty Tenure on February 8, 2006; it was issued by the Office of the Provost on May 3, 2006. Implementation is encouraged during 2006-07 and is required in 2007-08.

External letters of reference are required for all reviews of tenure system faculty involving the granting of tenure or promotion. External letters of reference are required in order to ensure that individuals recommended have an achievement and performance level that is comparable with faculties of peer institutions. It is recognized that practices and procedures in units may vary; however, the process of soliciting external letters of reference must incorporate the following principles and procedures, which must be applied uniformly to all faculty in the unit. Any exception to these principles must be approved by the Office of the Provost prior to implementation.

1. External letters of reference must be submitted by regular mail on institutional letterhead and carry the evaluator signature. When timing is critical, a letter may be submitted electronically, but must be followed by a mailed original.
2. All external letters of reference solicited and received must be included in the review materials. Unsolicited letters will not be included in the review materials.
3. If an external letter of reference is solicited and the referee fails to or declines to submit a letter of evaluation, this information shall become part of the candidate's review materials. If a reason is provided in writing, it shall become part of the candidate's review materials unless precluded by an agreement on confidentiality.
4. College/department/school procedures will specify the minimum number of external letters (with a recommended minimum of four).
5. The department chairperson/school director/dean of a non-departmentally organized college shall form a list of external referees. Department/school/non-departmentally organized college procedures will specify the number of evaluators to be suggested by the candidate, to which the department chairperson/school director/dean of a non-departmentally organized college (and others as provided by department/school/college procedures) will add names. In accordance with college/department/school procedures, the chairperson/director/dean will determine which of the potential external referees will be asked to provide letters of reference. College/department/school procedures will specify a proportion or number of external letters of reference to be solicited from persons suggested by the candidate.
6. Candidates must not discuss their case with prospective or actual external evaluators at any stage of the review process, except as provided by department/school/college procedures. Soliciting external letters of reference and providing materials to the referees is solely the responsibility of the department chairperson/school director/dean of a non-departmentally organized college.
7. External referees must be professionally capable to evaluate the candidate's scholarly work objectively and to comment on its significance in the discipline. Letters must predominantly represent persons other than collaborators and in no case faculty formerly serving on the equivalent of the candidate's guidance committee when the candidate was a graduate student.
8. College/department/school procedures will specify the materials sent to external referees.
9. The unit administrator's request to an external referee must include:
 - a) the unit's statement on confidentiality, which must be consistent with the University's statement as contained in the policy "Confidentiality of Letters of Reference for Reappointment, Promotion and Tenure Recommendations"
 - b) a request to disclose any potential conflicts of interest
10. For each external referee, the unit administrator shall provide:
 - a) Name, rank/title, institutional affiliation.
 - b) Brief summary of the referee's qualifications or CV
 - c) Name of the person who recommended the evaluator, e.g., candidate, chairperson/director/dean, or other (specified).
 - d) An assessment of the evaluator relationship to the candidate, including potential conflicts of interest.

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THE REFLECTIVE ESSAY:
PERSPECTIVES AND GUIDELINES

College of Agriculture and Natural Resources
Michigan State University

Introduction

The Reflective Essay is an integral part of the reappointment, tenure and promotion process at virtually all universities. The reason for its universal importance is that “a capacity for reflection and self-evaluation...is a critical ingredient in a professor’s life” (McGovern, p. 96).

As such, the Reflective Essay holds a unique position in the candidate’s dossier of supporting evidence. The CV (curriculum vitae) and Form D—no matter what the length—will be read and discussed by reviewers. Consequently, the Reflective Essay should *not* be a summary of evidence presented in those documents. Instead, the Reflective Essay is “an opportunity to weave a tapestry of understanding of [your] scholarly pursuits” (Smith, p. ii).

Intent and Use

The Reflective Essay serves as the “key orienting and organizing element of the [dossier]” (Froh, et. al. p. 108) with the purpose of “providing a frame of reference or context for the items submitted to the committee” (Diamond, p. 24). Consequently, the Reflective Essay is the primary opportunity the candidate will have to convey the nature and meaning of her/his scholarly work and philosophy to those reviewers from his/her and other disciplines (Millis, p. 69).

Above all, the Reflective Essay should (a) convey the candidate’s vision

of herself/himself as a maturing or mature scholar (including describing one’s scholarly niche); (b) communicate the contributions made during the reporting period in advancing toward that vision; (c) provide an indication (evidence) of the impact of the candidate’s scholarly efforts; and (d) show development-evolution of the candidate’s scholarship.

The objective of the Reflective Essay “is to convey as much depth and richness as possible by [employing] selective evidence of [scholarly] accomplishments” (Froh, et. al., p. 106). Above all, candidates should remember that the Reflective Essay is “a reflection of the care [the candidate] take(s) in communicating scholarship” (Smith, p. ii).

Preparation Guidelines

The preparation of the Reflective Essay should begin early in one’s MSU-CANR career, and should be updated on a periodic basis throughout the reporting period (e.g., during the annual evaluation process). Approaching it this manner will enable the candidate to prepare a document that represents a more accurate and convincing expression of the evolution of one’s scholarly development.

With all of this in mind, here are 8 guidelines for the development of a Reflective Essay:

1. Because the Reflective Essay is just that—a personal reflection written in

essay format—it is important that it be *crafted as an intellectual piece, an academic contribution in its own right, rather than as a document that reports academic accomplishments*. Most of all, the essay should “demonstrate a capacity to be reflective and self-critical; hence, capable of continued growth and change” as a scholar (Diamond, p. 24).

2. The Reflective Essay should *convey the candidate’s vision of himself/herself as a maturing or mature scholar*. It is an opportunity to convey one’s scholarly philosophy and vision; to describe how scholarly priorities were established; to share the logic of one’s program of scholarship (and its development); to make explicit the strategy (choice making) used over the years; and to be clear about one’s future trajectory.
3. The Reflective Essay should be *expressed in a manner that is consistent with CANR’s interpretation of scholarly activities and scholarship*. Scholarly activities cut across the mission of teaching, research, and outreach / Extension / engagement. Activities are “things scholars do” (e.g., designing and offering an undergraduate class). While scholarship also applies to all mission dimensions, it is an outcome, not an activity. Scholarship involves creating something new; and it is designed to advance understanding by contributing something new to a body of knowledge. “Newness” is peer reviewed or validated; and products of scholarship are made available in publicly accessible forms and in
4. Because each candidate’s mix of assigned duties is unique, *the essay should address all aspects of the candidate’s assigned duties—activities and scholarship—in a manner roughly proportionate to those duties—teaching, research, outreach / Extension/ engagement, and service to MSU and profession* (Froh, et. al., p. 107). It is understood that scholarly activities and scholarship influence a wide range of audiences (e.g., disciplinary peers, scholars in other disciplines, students, public officials, industry members, members of non-governmental organizations). Consequently, just as each candidate’s assigned duties is unique, the impact of each candidate’s activities and scholarship is also likely to be unique (at the very least distinctive in nature and contribution).
5. Because the hallmark of the scholarly life is integration and connections across the mission, the Reflective Essay should *demonstrate the candidate’s integration of work across her/his assigned duties* (e.g., how research influences teaching; how Extension influences research).

publicly available locations. The Page 21 worth of both scholarly activities and scholarship is evaluated in multiple ways: in terms of intellectual quality (substance-content); quality of expression (how the work is constructed and presented, particularly in terms of its relevance to intended audiences); and its impact on and/or use by intended audiences.

6. The Reflective Essay “provides a vehicle for discussion of special circumstances that have affected your work to-date” (Diamond, p. 24). There are always critical times or points in an academic’s life, when an academic decides to move in one way or another. Sometimes these times or points are products of one’s own doing—a outcome of intent. At other times, they are either a result of opportunity (“being in the right place at the right time”) or unexpected circumstance (e.g., departure of a senior collaborator from MSU).

7. The Reflective Essay also provides an opportunity for the candidate to explain “any contradictory or unclear materials in the [dossier]” (Seldin, p. 10). However, explanations should be reserved for unique events; and, when included in the essay, the description should not consume an undue portion of the essay.

8. A useful means of developing a Reflective Essay may be to periodically consider a series of

“reflective prompts” that will induce reflection about “why we teach; why we work as we do; why we choose certain priorities in ...scholarship; why we publish in this or that field or particular topic;...[thereby leading to] meaningful inquiry into what we do and how we do it” (Zubizarreta, p. 208, italics in original; for additional useful prompts, see McGovern, pp. 103-08).

Final Comments

Remember...the Reflective Essay is the candidate’s opportunity to communicate the quality of thinking, vision and logic of the program, strategy and implementation—incorporating what has been achieved to date; the trajectory of the program; and the targets and milestones anticipated in the next 10 years. The Essay must emphasize the intellectual foundation of the work and plans for the future. The Essay must *not* be a reporting or listing of what has been done in the past; this is well covered in Form D and the CV.

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"Biosensors to Save Lives"
Evangelyn C. Alocilja, Ph.D.
December 14, 2010

This paper summarizes my accomplishments for the reporting period 2005-2010. It also presents my vision for the next phase of my career at Michigan State University. In summary, I am committed to empowering students (mentoring), saving lives (research), enhancing curricula (teaching), and serving others (service).

Accomplishments

I. Mentoring

One of my passions in life is to empower young people to achieve their potential. During the reporting period (2005-2010), I mentored 20 undergraduate professorial assistants, 10 summer research interns, 15 senior design students, 13 high school students, 15 PhD students, 2 MS students, 3 post-doctoral research associates, 2 visiting scholars, and 2 public school teachers. I trained them in conducting research, writing technical papers, thinking critically, analyzing data, doing good laboratory practices, teamwork, and research presentation skills. Through my guidance, encouragement, and training, these students gained skills that made them competitive in vying for awards. I am happy to report that 3 undergraduate (UG) students received the Department of Homeland Security Undergraduate Fellowship, one UG received the Duvall Fellowship, 12 undergraduate students received awards during the annual University Undergraduate Research and Arts Forum (UURAF), 3 graduate students received the Department of Defense SMART (Science, Mathematics, And Research for Transformation) Fellowship, 2 received the Fitch Beach Graduate Student award, and several received BAE department awards. These awards bring distinction and honor to these students as well as to MSU and the department. I have also graduated 6 PhD and 2 MS students during the reporting period all of whom are currently engaged in jobs related to their earned degrees. My previous students have performed well in their respective assignments. For example, Cynthia Meeusen (MS 2000) is now a Senior Controls Engineer at Disney World; Stephen Radke (PhD 2004) is now the account manager at JBT Technologies. These graduates, students, postdocs, scholars, and teachers will likely become innovation leaders in their respective areas of specialization. In all their future endeavors, they will carry the name of MSU and impact society in extraordinary ways.

As a demonstration of my collaborative and interdisciplinary approach, I also mentored 3 graduate students from other departments by providing technical guidance, financial support, and laboratory facilities to develop diagnostic biosensors directly applicable to their field of specialization. This approach has encouraged true collaboration, resulting in jointly authored peer-reviewed papers and jointly funded projects, contributing to MSU's brand of being a collaborative institution.

As evidence of my commitment to diversity, I mentored a faculty-student team from a minority serving institution (MSI), in this case the Whittier College, California. This mentoring has led to the submission of a research proposal, and subsequent successful receipt of funding, to strengthen the MSI faculty's research capabilities, facilitate MSI's undergraduate research, and strengthen collaboration with MSU. This continued interaction will have long-lasting impact on the MSI and will expand the positive influence of MSU in the academic community.

My commitment to mentoring goes beyond the boundaries of MSU. I mentored 2 high school teachers to enhance their respective school's science-based high school curriculum by providing lab facilities, materials, and technical guidance during the curriculum development. I am proud to report here that a curriculum on "Nanotechnology and Biosensors" has been developed for the Union High School in Grand Rapids, Michigan which graduates about 200 seniors per year. Another curriculum is currently being developed for the Jonesville High School, Jonesville, Michigan. Hundreds of students now and in the

future will be impacted by these curricula. Similarly, I mentored 2 visiting scholars from outside the US. These interactions have led to more scholars coming. Again, this is a great way to expand MSU's reach in the international arena.

As part of recruitment and service, I mentored 13 high school students, 9 of whom have won national and international awards, such as the Siemens Math-Science-Technology Competition, Intel Science Talent Search Competition, BIO Competition, and Presidential Scholars. These students will carry the name of MSU wherever they go.

2. Research

I like the challenge of pioneering. This is the story of the Nano-Biosensors Lab (NBL) at MSU. Before my tenure, this facility and the biosensors research program did not exist. I am proud to report that NBL and the biosensors program have gained international prominence in such a brief period of time. I initiated (from ground zero), equipped, and strengthened the facility and program mostly from externally sourced funds. Most of the lab's work and accomplishments can be found in the following URL: <http://www.egr.msu.edu/~alocilja>. My research program can be summarized in one word "Biosensors" and its mission is "to save lives". Within the broad field of biosensors, my niche area is developing field-operable handheld nanoparticle-based biosensors for the point-of-care and rapid diagnosis of infectious disease agents in resource limited and clinically-relevant field settings. We have synthesized novel multifunctional reagents and developed accompanying biosensor devices that will allow for rapid "cradle-to-grave" diagnosis, that is, from sample handling to diagnostic results, within one or two hours. Our technologies have resulted in 3 US patents and 13 patent applications. As an indicator of international prominence, my paper was selected as one of 16 (out of 1200 submissions) to be a plenary presentation during the 2010 World Congress on Biosensors, held in Glasgow, UK.

Biodefense is a field that I am committed to. I am so glad that I have been given the chance to be part of the first team of investigators in 2004 to propose the National Center for Food Protection and Defense (NCFPD), now a Homeland Security center of excellence (<http://www.ncfpd.umn.edu/>). I am also part of the second team of investigators to work for the renewal of the NCFPD for the second term (2010-2016). NCFPD is a network of universities, federal agencies, and private companies committed to the protection of the US food supply system.

I find writing proposals as an opportunity to express my creativity. This interest has helped me generate external federal and state funds in the amount of \$4.5 million for the period 2005-2010. These grants allowed me to conduct research on biosensors with applications in global health, biodefense, food/water safety, and product integrity. These grants also allowed me to mentor excellent students, publish papers, and attend conferences. These research expenditures contribute greatly to the national ranking status of the department, college, and university.

I like writing papers; it is a window for others to see what we do. For the period 2005-2010, I contributed 1 book (in review), 5 book chapters, 1 magazine article, 60 peer-reviewed journal articles and proceedings, and 69 research presentations. Several of the articles included undergraduate and high school students as co-authors. The impact of these papers on the biosensor and rapid diagnostic communities can be measured by the *Hirsch* index (*h-index*)¹. For this report, I used the software "Publish or Perish"² and Google Advanced Scholar *h-index* calculators; both evaluation tools gave the same result. As of September 15, 2010, my *h-index* is 15 and have received 768 citations with 26 citations/year. Furthermore, the most cited paper with 65 citations is a paper with only two authors: me and my graduate student. This paper is cited 8 times per year. The first 3 well cited papers, getting 50 or higher citations, have only two authors as well. These data show that my work on biosensors is useful to colleagues in the

¹ *h-index* is a number system that "attempts to measure both the scientific productivity and the apparent scientific impact of a scientist" (<http://en.wikipedia.org/wiki/H-index>).

² (Harzing, A.W. 2010. *Publish or Perish*, version 3 available at www.harzing.com/pop.htm)

field. To put my scientific impact in perspective, I compared my *h*-index with that of two female colleagues (a full professor and an associate professor) in two institutions (Cornell University and Purdue University) who are in similar departments as I am and who do biosensor work. The associate professor is in a similar tenure time frame as I am. The full professor has an *h*-index of 19 and 1,039 citations and 104 citations/year. The associate professor has an *h*-index of 6 and 118 citations and 3 citations/year. Furthermore, my citation is increasing exponentially with time as shown in Figure 1. All these data show that my scholarly work has contributed to the scholarship of other scientists and is highly valued by the scientific community.

Research impact can also be measured by the number of invitations to speak at prestigious meetings and conferences. During the reporting period, I gave 11 invited presentations. These invitations included those by the National Academy of Sciences and the World Congress on Biosensors. These speaking engagements bring national prestige and recognition of the research excellence on biosensors at MSU. Correspondingly, they bring national and international recognition to the department, college, and university.

One way to test the creativity and utility of a technology is through rigorous patent review. I am happy to report that together with my students, I received 3 US patents and made 13 patent applications. I worked with the Office of MSU Technologies and various companies to potentially commercialize these biosensor technologies.

Through my research work, I have established international collaborations with the Canadian Food Inspection Agency, Canada; CIATEJ (Centro de Investigación y Asistencia en Tecnología y Diseño del estado de Jalisco), Mexico; Zhejiang University, China; University of the Philippines Los Baños; Tamil Nadu University, India; University of Baghdad, Iraq; and Fraunhofer, Germany. I intend to continue these collaborations into the future.

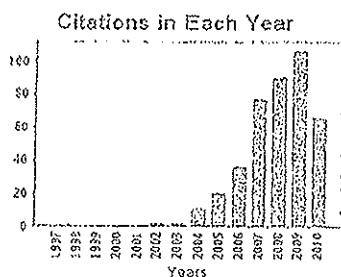


Figure 1. Citation Report by the ISI Web of Science, Author=(Alocilja E*)

3. Teaching

My latest achievement in teaching is developing 2 courses on biosensors and simultaneously laying the foundation for the BE-Biomedical Engineering (BE-BME) concentration for the BE students. Before this initiative, our BE-BME students did not have a BE-BME course in the department. Now, we have our own course which differentiates and provides uniqueness to our students. The BE-BME concentration prepares students to integrate various disciplines towards the early diagnosis and potential elimination of diseases. While they take classes in broader areas of biology, chemistry, and engineering, BE-BME students specialize in medical diagnostics and devices. In the long-term, the BE-BME concentration will include classroom education, industry internships, and study abroad program to train and develop students with a global perspective on diseases. The ultimate aim of the BE-BME program is to equip graduates for their careers in medicine, pharmaceuticals, and medical devices. Through their unique education at MSU, we hope that the graduates would be able to effectively diagnose diseases (medicine), understand the function of reagents in diagnostic assays (pharmaceuticals), and contribute to the efficient design of diagnostic tools (medical devices). As professionals in these fields, they can impact society through the

control and eradication of infectious diseases, improving quality of life, and saving lives. The future of BE-BME is positive as the medical-related industries are booming. Together with the BAE faculty, I look forward to moving this field in unique and exciting ways to a level that is world-class and world-renown consistent with MSU's goals and missions.

4. Outreach and Service

I am actively involved in outreach and service to the university and the community. I enjoyed my membership in the department, college, and university-level committees and review panels. I also enjoyed my time as a faculty in teaching short summer courses offered by the university.

I actively presented papers and organized sessions at the following professional meetings: Institute of Biological Engineering, ASABE, IEEE, American Chemical Society, and PITTCON. I served as member of review panels for the National Institutes of Health (NIH) and the National Science Foundation (NSF). Participation in these prestigious review panels indicates national recognition of the biosensors program at MSU. Because of my active involvement in review panels, NIH has granted me the privilege of continuous submission for 2010-2011. I also served as a reviewer for several journals.

Most of my community service is toward helping international students and families. They are a vulnerable group on campus due to their unique circumstances being away from home, having to learn a new language, adjust to a new culture, and live in a new environment. A small help always goes a long way in alleviating stress and homesickness.

The above summarizes my activities on mentoring, research, teaching, and service. I feel humbled by these accomplishments because I know that I could not have done these alone. It is all by God's grace! He is the ultimate source of wisdom, strength, and passion!

Vision

So where do I go from here? With God's gracious provision of wisdom and resources, I see the trajectory of my biosensor research as moving in two areas of application: biodefense and global health. My goal for the next phase of my career is to be the leader in developing biosensors for "personalized monitoring of infectious diseases" (PMID) in resource-limited settings, such as under field conditions and rural health clinics. The PMID concept will be used in the design, development, and validation protocols for evaluating performance measures. Of particular interest is the development of biosensors for personalized diagnosis of tuberculosis (TB) and its associated challenges: human immunodeficiency virus (HIV) co-infection and TB drug resistance. It is estimated that 1.8 million people die every year of TB, and it afflicts mostly the poor. It is my earnest desire to help reduce the deaths and emotional pain of losing a parent, a child, or a loved one from this disease. Thus, working to eliminate this disease in the world has become not only my research priority but my life-long mission. My vision is to make easily accessible diagnostics to the people in the comfort of their environment. Early diagnosis can lead to immediate treatment and interventions (while the patient is still in the clinic). I have already started to lay the groundwork for this long-term research. I am currently working with a scientist at the Centers for Disease Control and Prevention (CDC) in identifying early markers of TB infection before the organism shows up in saliva and phlegm. I am also working with colleagues from the Institute of International Health and the Center for Latin American and Caribbean Studies to set-up clinical trials of the TB biosensor in several villages in Mexico. Furthermore, I hope that my membership in the NIH review panels would provide me with tips on successful grant writing for NIH funding. In the broader sense, this biosensor platform can be adapted to detect other infections especially for neglected diseases in developing countries, and biodefense applications in field settings. These versatile platforms will allow me to strengthen my international presence with my collaborators around the world. Key initiatives will be immediately pursued with the Canadian Food Inspection Agency, the University of the Philippines Los Banos, and the University of Baghdad, Iraq.

As a complement to the BE-BME program, I would like to pursue the establishment of (1) an MS/MBA program in BE-BME, and (2) an interdisciplinary science-based PhD program on biosensors and rapid diagnostics. The rapid growth in medicine, biotechnology, pharmaceutical, and health care industries has created a demand for biomedical scientists with knowledge of business principles and practices. A science-based PhD program will allow non-engineering students to pursue the development of novel diagnostic technologies in various fields for the modern world we are in.

I recognize that my vision will not be accomplished by my might or by my power alone, but by God's grace according to His promise in Jeremiah 29:11 which says: "For I know the plans I have for you," declares the LORD, "plans to prosper you and not to harm you, plans to give you hope and a future." With God's promise and enabling, I look forward to an exciting and rewarding professional endeavor ahead.

Sieglinde Snapp
Reflective Essay (August, 2010)

My faculty position in the Kellogg Biological Station (KBS) and the Department of Crop and Soil Sciences (CSS) has proved to be an ideal fit. The work is productive and rewarding, with outstanding research facilities and unique opportunities to collaborate at KBS and beyond.

My initial faculty position at MSU was as an Assistant Professor of Integrated Vegetable Crop Management, hired in 1999 and promoted to Associate Professor in 2004. My research and extension responsibilities were in agronomy of potato and vegetable systems. I enjoyed the position: it was a tremendous opportunity to learn and engage with extension educators, industry and growers in Michigan and beyond, and to apply ecological principles to real world challenges in horticulture. I developed a number of multidisciplinary projects, and succeeded in promoting integrated nutrient management for more sustainable production practices. In 2005 I was ready for new challenges and I applied for my current position of soils and cropping systems ecologist. I was thrilled when I was offered this position in 2006. It has been - and continues to be - a unique opportunity to make a difference in agroecology, as a co-PI on the LTER, as a KBS faculty member, and through collaborations with colleagues to extend ecological knowledge.

Integrated, inquiry-based research, teaching, and extension

My position offers a balance of research, teaching, and extension. This is an excellent fit with the integrated approach I use, where research informs my teaching and extension, and vice versa. Engaged, participatory approaches to learning are at the foundation of my program. This is in synchrony with MSU's goal to produce life-long learners. A few examples follow, with papers cited listed in my vitae. In teaching I have set up inquiry-based learning opportunities, in courses such as CSS 360 Soil Biology and CSS 431 International Agricultural Systems. In CSS 360 I devised a laboratory exercise where students designed a greenhouse experiment to investigate interactions of soil organisms and plants. Over time I fine-tuned the degree of guidance I provided in this lab, so as to provide enough structure while promoting student exploration. Student feedback has been fundamental in this evolving process, and has indicated that for some students this has been a memorable experience; it has opened new horizons for them as they developed and tested hypotheses, followed through and shared what they learned. The lab was informed by research I have conducted on cover crop traits and soil organisms, quantifying impact on soil biophysical properties and root health (Snapp et al., 2007; Wilke and Snapp, 2008). Colleagues have adapted the lab procedure for their own courses.

Engaged activities and promoting inquiry-based learning has been at the core of my extension program as well. In the 1990s I worked as a soil scientist based in southern Africa where I promoted the systematic linkage of long-term experimentation at research stations with farm based experimentation. I have continued this approach at MSU, where I have had the opportunity for extensive collaboration with agricultural economists and social scientists to facilitate stakeholder involvement, through surveys, advisory boards and on-farm experimentation. These approaches promote communication and co-learning, with gains in research relevance through systematic feedback from farmers and other stakeholders (Snapp et al., 2002; 2003; 2005; Snapp, 2004). I have published on these client-oriented, participatory research methods, including the 'mother and baby trial' design (Bezner-Kerr et al., 2007; Snapp, 1999; Snapp and Heong, 2003).

A number of plant breeders and agronomists have cited the 'mother and baby trial' methodology as being key to breakthroughs in developing varieties preferred by farmers, and testing integrated use of genetics with resource-conserving technologies (e.g., Virk et al. 2009. *Experimental Agric.* 45:77-91; <http://engagedscholar.msu.edu/magazine/volume4/snapp.aspx>). The

design facilitates the systematic integration of farmer and researcher assessment of technologies through linking on-farm and research trials in a lattice statistical design or using mixed modeling REML. Uptake of new varieties by resource-poor farmers in rain-fed systems of sub-Saharan Africa and South East Asia has been rare; what some have called the forgotten farmers by the first green revolution. Reports of 15 to 70% yield gains among smallholders, and dozens of new varieties being adopted in combination with sustainable management, are tributes to the power of the interdisciplinary, participatory approaches that I have helped pioneer¹. Participatory research and extension methodology is still under development, but shows promise as a means to address biocomplex, real world problems. MSU has leading scientists working on methods that address coupled-human natural systems, and this is a perfect fit for my program.

Research

Throughout my career I have been interested in the under-explored world of the plant-soil interface in row crop ecosystems, at scales from plant to field. Recently I have become interested in scaling out over space and time, to investigate consequences at the watershed and regional scale of different intensities of management and types of plant species present. My position at KBS is ideal for learning about how biogeochemical processes in nutrient management and soil quality operate at different temporal and spatial scales. Since 2006 I have been one of the principal investigators on the NSF-funded Long-Term Ecological Research (LTER) row crop ecology project at KBS, with a focus on agroecological processes and agronomic practice. Long-term research trials provide unique insights into system performance and nutrient cycling at different states, transitional and equilibrium. I am particularly interested in whole system comparisons, and have used ecosystem services, profitability and energy budgets as creative ways to evaluate system performance (Gelfand et al., 2010; Snapp et al., in review).

I initiated a temporal experiment in the Living Field Laboratory, a satellite trial I manage at the LTER-KBS. This has been instrumental in testing how management practices alter equilibrium, through feedbacks that influence plant N fixation and soil C and N pools over a decade or more. This novel opportunity has facilitated my interaction and collaboration with internationally known researchers, including Lauri Drinkwater at Cornell University. I have been fortunate to work with her and colleagues on an NSF-funded project investigating cropping system interventions to retain N and protect water quality while reducing greenhouse gas emissions (Drinkwater and Snapp, 2008; McSwiney et al., 2010).

Expanding our understanding of biological processes involved in soil carbon sequestration, nitrogen dynamics, crop growth and yield potential is at the core of my research program, and is the basis for the sustainable practices I promote. This was the foundation for my previous applied position in horticultural systems at MSU, and for my current research. Investigating interactions involved in organic and inorganic nutrient management led to my research on how 'recoupling' carbon and nutrients through utilizing compost and cover crops can have plant-health implications as well as environmental benefits. This was the basis for widespread adoption by Michigan potato farmers of compost and an array of cover crops, for high quality root systems, tubers, improved soils, and lower agro-chemical costs (Po et al., 2009; 2010; Snapp et al., 2005; Snapp et al., 2007).

I am particularly interested in plant-soil processes and management practices that buffer the N cycle and release temporarily captured (immobilized) nitrogen at a measured rate. This is proving essential to improve nutrient management, and efficiency. I have been fortunate to work with a talented team of students, technicians and postdoctoral scholars to pursue these questions at KBS, leading to recent publications in journals such as *Ecological Applications* and

¹ Ortiz-Ferrara et al., 2007. *Euphytica* 157:399-407; T.S. Walker, Background Paper on Participatory Research for World Development Report, 2008

Agriculture Ecosystems and Environment (McSwiney et al., 2010, Snapp et al. 2010). We are documenting the role of coupled carbon-nutrient sources as an underlying principle of sustainable and organic row crop production practices. This is in addition to the role played by crop diversity from cover crops and rotation sequences.

The role of 'perennialization' in row crop systems is the other central sustainability principle that I am investigating. This term refers to extending the duration of living cover through choice of species type for cover crops and cash crops. In both temperate and tropical corn-based ecosystems we have found that perennial cover reduces excess nitrate leakage, and may support climate stabilization by contributing carbon to stable organic pools (Snapp et al., in review; Snapp et al., 2010). Uniquely, colleagues and I have documented in a country-wide experiment in Malawi that soil C status and nitrogen fertilizer efficiency can be improved through perennialization, diversifying corn with pigeonpea and other multipurpose, long-lived legumes (Beedy et al., 2010). We term this novel technology 'agroshrubbery'. This was developed through cropping systems, participatory research and evolved with a specific set of traits different from agroforestry systems. Based on input from social and biological science, we document a unique role for legume shrubs and vines that provide a wide range of ecosystem services to ensure farmer acceptability, including nutrient-enriched grains as well as soil-building residues. In combination with moderate fertilizer doses, improved fertilizer efficiency and yield stability from agroshrubbery systems could provide multiple, nutrient rich sources of grain and lead to a more 'green' revolution for smallholder farmers (Snapp et al., in review).

At KBS I have initiated a multi-disciplinary approach to test and deploy perennialized varieties of annual crops, including the promising new crop 'perennial wheat.' This was recently supported by a million dollar USDA-OREI grant and has led to my collaboration with pioneering researchers working on developing perennial grain cropping systems, with potential for profound improvements in food and environmental security (Glover et al., 2010 *Science* 328:1638-1639). The LTER at KBS is an outstanding opportunity to develop a more perennial type of row crop system, that can enhance soil C and N retention, without undue loss of yield potential. I am particularly excited about the directions the LTER-KBS is planning for the next phase of research, including investigating the potential of perennialization, and exploring the social and biological science interface, which are areas of abiding interest to me. Investigating the impact of ecologically-based management at scale in terms of yield tradeoffs with other ecosystem services is LTER research is a new area of research in my program, funded in part by an EPA-funded grant with Sasha Kravchenko. These are examples of the exciting directions that we are pursuing at KBS, which are a perfect fit with my future research interests.

Extension

It is an extraordinary privilege to have a position that combines ecology with an explicit extension responsibility (25%). It is a great pleasure to interact with MSU Extension educators, and I have been fortunate in the collaborations I have developed with extension from across the Midwest, with farmers, and with a diversity of farmer organizations (e.g., Midwest Organic and Sustainable Education Service; Corn Marketing Program of Michigan; Michigan Organic Food and Farm Alliance; and Soil Food and Healthy Communities). The research projects I have developed while at MSU have all included extension specialists and educators, agricultural advisors from private and public sectors, working closely with scientists from natural and social science disciplines. It is my experience that real world problems require time invested in communication across disciplines. It requires full integration of research and extension, as well as iterative learning that enhances research and outreach as a project evolves. Through these approaches I have played a key role in solving problems as diverse as a fruit cracking disorder afflicting the Michigan tomato industry (Huang and Snapp, 2004; 2009; Snapp, 2005) to practical cover crop options for row crop production (McSwiney et al., 2010; Snapp et al., 2005; 2010).

My goal in developing extension materials and programs is not so much to develop recommendations as to promote learning about ecological principles by extension educators, and farmers. As an example, MSUE staff and the farmer advisory board of the Corn Marketing Program of Michigan have recently expressed interest in how to maintain soil quality in the face of emerging markets for crop residues. My response has included developing extension training materials (Doll and Snapp, 2009; Snapp and Grandy, in press) and participating in MSUE programs around the state to reach hundreds of farmers. In these educational materials and presentations I have not developed recommendations on levels of residues that can safely be removed; rather, I have synthesized findings from the literature to articulate the underlying science of how residues influence soil organic matter formation, and conserve soil, while sometimes temporarily immobilizing nutrients. I have also used recent research from my field trails to quantify tradeoffs, to elucidate plant-soil processes involved, and to urge farmers to make informed management choices.

Promoting on-farm assessment of soil quality, by farmers and agricultural advisors from the private and public sector, is another aspect of my extension program. Working with a Soil Science Society of America committee on field monitoring, I published a chapter on step-by-step evaluation of soil quality, including biological, chemical and physical tests that can be conducted at a field scale (Snapp and Morrone, 2008). I am committed to providing tools for extension and farmers to carry out lifelong learning, in the spirit of Professor Liberty Hyde Bailey, and the Bailey Scholars program at MSU.

Instruction and graduate student mentoring

Promoting ecological knowledge among agricultural students is core to my teaching interests. I was instrumental in developing two new specializations in the College of Agriculture and Natural Resources-MSU which were just approved in 2009. These are Sustainable Agriculture and Food Systems (www.safs.msu.edu, undergraduate) and Ecological Food and Farming Systems (www.effs.msu.edu, graduate). Twenty plus students are in the SAFS program, and the first EFFS student just graduated in CARRS, with six more enrolled. I enjoy working with and supervising the academic specialist responsible for promoting these new programs, which are poised to grow quickly and meet the demands of a 'greening' student population.

The three courses I have taught at MSU are CSS 360 Soil Biology, CSS 431 International Agricultural Systems and CSS 893 Sustainable Agriculture Field Methods, a summer intensive graduate course at KBS. I co-developed CSS 360 with Robertson, and co-taught it until recently when I was asked to re-envision and teach CSS 431 in the spring of 2009. This course is an excellent fit allowing me to draw upon my extensive African agricultural systems experience, and my abiding interest in applying the lessons of applied ecology to rural development. This led me to publish a book - which I co-edited and wrote extensive sections of - for use as a course text book (Snapp and Pound, 2008). Student evaluations were high, consistently below 2 on a scale of 1 to 5. The field methods course is also new, and had an enrollment of 10 motivated graduate students when I offered it in the summer of 2008. It was a very enjoyable course to teach, with high student participation in defining research methods and approaches to explore. It used to advantage the KBS field station tremendous diversity of ecosystems as opportunities for student projects and demonstration of above and belowground agroecology methods. Student evaluation scores were very high.

I have led a number of graduate and undergraduate seminars, with topics such as international agriculture, soil organic matter dynamics, plant mineral nutrition, participatory methods, sustainable agriculture and 'Eating Green in Michigan', a UGS 101 Freshman Seminar. These have been student initiated or highly participatory and wonderful opportunities to engage with students on topics of mutual interest.

Mentoring students is one of the most satisfying aspects of my job. I have served as major advisor to 12 graduate students, in addition to the three I co-advised at University of Malawi pre-MSU, and three students who just joined my laboratory. My students often major jointly in CSS and Ecology, Evolution, Behavior and Biology (EEBB), a unique educational opportunity offered at MSU, and an enriched experience for my students at KBS. I am committed to supporting diversity in ecology and agricultural sciences through mentoring students from underrepresented ethnic groups, which is reflected in the large number of undergrad and grad students I have mentored from diverse backgrounds (8 out of 21), and the successful outcomes in terms of 100% graduation, and their current positions (see my vitae). This has not always been easy, and I continue to learn how to adjust my advising to meet different student needs and learning styles. I am proud of having graduated two African women PhDs, who are now university lecturer and senior scientists in their home countries. I was recently chosen to be a mentor by a SEEDS fellow, which has been an outstanding opportunity to contribute to this diversity program.

Service

My service at MSU has reflected the interdisciplinary, integrated approach I take to scholarship. I have served on numerous search committees for faculty and extension educators, wearing diverse hats as the occasion merited, providing perspective as a member of the African Studies faculty, KBS faculty, or CANR faculty. I appreciate the opportunity to provide an agroecology perspective in my on-going advisory role to the director of the KBS, and as chair of the LTER-KBS agronomy committee. I have greatly enjoyed contributing to graduate education, through a formative role in setting up the new Ecology, Food and Farming Systems specialization, as the KBS representative to the Plant Science Recruitment committee and through service on the CSS Graduate Committee. I supervise the coordinator of the EFFS and SAFS specializations, and we are working to promote MSU's strengths in sustainable food systems and agroecology to a broad audience of potential students. I have been part of several MSU initiatives to respond to international agricultural research and education opportunities, including a training of Gates senior staff, the Tanzania Sustainable Development Initiative and most recently as a team member of a successful USDA-HED grant to promote curriculum development and MSU linkages with University of Malawi. I anticipate that my service will continue to expand as part of the normal professional development of a faculty member.

I also provide service through my professional societies, including on-going roles as a rapid response team member to the American Society of Agronomy Executive Board, and as an Associate Editor for the Agronomy Journal. I look forward to providing leadership in the agroecology section of ESA as chair-elect, and related opportunities I am starting to pursue to build linkages between ESA and ASA. I am committed to expanding links between long-term agricultural experimentation and the NSF-funded LTERs (where I was just appointed to the International LTER committee).

Summary

My integrated program of scholarship, instruction and extension is closely aligned with the MSU vision of a world grant. Through understanding and promoting ecologically-based management, I aim to improve resource use efficiency and promote ecosystem services from agriculture. My research has elucidated sustainability principles such as the role 'perennialization' and coupling carbon and nutrient management can play in row crop production. I seek to use participatory engaged approaches to extension and education to promote learning around these topics, and am excited to see expanded use of cover crops and integrated nutrient management in the Upper Midwest, and spatial diversity in the form of multi-purpose 'agroshrubbery' in southern Africa, where a greener revolution is starting to unfold.