

003

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Washington State University

MAJOR CHANGE FORM -- REQUIREMENTS

(Submit original signed form and TEN copies to the Registrar's Office, zip 1035.)

See https://www.ronet.wsu.edu/ROPubs/Apps/HomePage.ASP for this form.

\*Submit an additional copy to the Faculty Senate Office, French Administration 338, zip 1038.

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MAR 19 2013

WSU REGISTRAR

Department Name Plant Pathology

1. CHECK PROPOSED CHANGES.

- \* [ ] Change department/program name from ... to ...
\* [ ] New degree or program in ...
\* [ ] Change name of degree from ... to ...
\* [ ] Drop degree or program in ...
\* [ ] Extend existing degree or program to ... campus
[ ] New Major in ...
[ ] Change name of Major from ... to ...
[ ] Revise Major requirements in ...
[ ] Drop Major in ...
[ ] Revise certification requirements for the Major in ...
[ x ] New Option in Master's of Science in Agriculture with a Plant Health Management option
[ ] Revise requirements for the Option in ...
[ ] Drop Option in ...
[ ] New Minor in ...
[ ] Revise Minor requirements in ...
[ ] Drop Minor in ...
[ ] New Undergraduate Certificate in ...
[ ] Revise Undergraduate Certificate requirements in ...
[ ] Drop Undergraduate Certificate in ...
[ ] Other ...

Effective term/year 8-2014 (Fall 2013)

Table with 3 columns: Contact Person (Dean Glawe, PhD), Contact Phone No. ((206) 616-9554), Contact email (glawe@wsu.edu)

2. GIVE REASONS FOR EACH REQUEST MARKED ABOVE. (Attach additional paper if necessary; see reverse side.) Additional paperwork attached.

4. SIGN AND DATE APPROVALS.

Handwritten signatures and dates for Chair, Dean, and General Education Com.

SEP 05 2013

Catalog Subcom/date Academic Affairs Com/date Graduate Studies Com/date Senate/Date

## Master's Degree in Agriculture – Plant Health Management Option

**Option Title:** MS in Ag: Plant Health Management

**Department(s) or Program(s):** Plant Pathology

**College(s):** CAHNRS

**Contact Name:** Dean Glawe, PhD  
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**phone:** 206-616-9554

### 1. DESCRIPTION AND RATIONALE

#### *(a) Delivery Model:*

Courses for the degree will be delivered online, asynchronously, through WSU's Learning Management System to post-bachelor's level students throughout the world.

#### *(b) Rationale for offering the option:*

The land grant mission of the University is to extend access to education. Delivering the degree online, asynchronously, provides access to qualified place bound individuals state-wide, nationally and internationally.

In Fall 2013, the Graduate Program will broaden its current MS in Agriculture online offerings with a new specialization in Plant Health Management, as approved by the Dean of CAHNRS, The Graduate Affairs Committee, the Graduate School, and the Provost.

Design of the new degree track was informed by research conducted in August 2010 by Eduventures (see Appendix A), an industry leader in research and consulting for higher education institutions. Their findings suggested that offering an online specialization in plant health management to the Master's Degree in Agriculture should present a viable opportunity for Washington State University due to future labor market needs.

Job growth among Plant and Soil Scientists is predicted to increase faster than the average for all occupations: 15.5% from 2008-2018. This occupational group held about 14,000 jobs in 2008 and the Bureau of Labor Statistics (BLS) (<http://www.bls.gov/opub/mlr/2009/11/art5full.pdf>) projected this figure to increase by 2,200 jobs to 16,100 by 2018. 7,000 of these jobs were predicted to arise due to growth and replacement needs. Career trajectories and promotion opportunities are typically correlated with education levels in this industry.

While six of the 10 largest schools conferring Agriculture Master's Degrees offer online courses, the online market is far from saturated. Only three schools in Eduventures' list of online "active" universities who are leaders in distance education have Agriculture programs. There are presently no online degree programs in plant health management.

Eduventures' advice was to consider re-branding or developing new online MS in Ag products that could capitalize on the strong labor market in agriculture and related careers. Their assessment (see attached Eduventures report, page 6) was that the appeal of acquiring a Master's degree in a distinctive program area in agriculture, distinguishable from more general degree programs, could be a substantial factor in attracting students.

**(c) Description:**

The new MS in Agriculture degree track in Plant Health Management will be a terminal professional degree—it is not intended to prepare students for the PhD. It will meet credit requirements for the MS in Agriculture degree. The degree can be completed in four terms (two semesters and two summer sessions or three semesters and one summer session) if pursued on a full-time basis.

The degree track will be well-suited for career-changers and for people currently employed in plant-based industries who need training to prepare them for career advancement. The track will require a modest list of prerequisite courses that could supplement a bachelor's degree in almost any subject (including liberal arts disciplines), rather than requiring a previous degree in an agricultural or biological science. Some of the courses already can be taken online from WSU while others could be taken at community colleges. The following table lists the WSU courses prerequisite for admission. Equivalent college level courses could be substituted for the WSU courses (for example, an undergraduate botany course for Hort/Crop Sci 102).

Courses required for admission to the MS in Ag degree track in Plant Health Management are listed in the below table.

Course	Credits	WSU Online
Biol 106 - Introductory Biology: Organismal Biology	4	√
Chem 101 - Introduction to Chemistry	3	
Chem 102 - Chemistry Related to Life Sciences	4	
Hort 102, Crop Sci 102 - Introduction to Cultivated Plants	3	√
Hort 202, Crop Sci 202 - Crop Growth and Development	4	
Soil Sci 201 - Soil: A Living System	3	√
Stat 212 - Introduction to Statistical Methods	4	

Graduates will be qualified to manage commercial-scale operations (farms, greenhouses, landscapes, parks), and to diagnose and address problems caused by microbial pathogens,

environmental factors (including soil), insects, nematodes, and weeds. They will be equipped for decision-making roles, with strong skills in maximizing plant health using modern, scientifically sound methods.

Unlike traditional IPM or plant protection degree programs that emphasize interventions once plant problems or disorders develop, this program will employ a holistic approach to develop and maintain plant health, preventing or minimizing problems caused by pathogens, weeds, insects, or unfavorable soil conditions. Consequently, graduates will be well-qualified to use both conventional and organic approaches to growing plants while minimizing reliance on pesticides or other reactive interventions that often are limited in effectiveness but can entail substantial economic and environmental costs.

Training will include a practicum/internship to be arranged with employer, university, or non-profit; it must be approved by the student's advisor, and will include a written proposal with learning objectives. Upon completion a written report will document achievements and progress toward meeting learning objectives. Students will be required to take at least one course in the following disciplines: entomology, plant pathology, soil science, and weed science.

## **2. NEEDS ASSESSMENT**

### **Projected Number of Students and Degrees**

We expect an enrollment of 15 students during the first year of the program. Given the market analysis, we do expect the program will grow quickly. WSU already is a leader in graduate education in disciplines related to the new degree track. The university also has an established and respected presence in educating soil scientists, entomologists, and weed scientists, and the graduate program in plant pathology currently is the largest (in terms of numbers of graduate students) in the USA. The new online program in Plant Health Management is by nature interdisciplinary and will draw upon existing strengths in all of these areas as marketing efforts are developed.

We anticipate that the demand for the Plant Health Management track could exceed that for existing MS programs because it will be ideal for place-bound students who currently lack such an option. In addition, as an internet-based program it will be available to a national, and possibly international, audience of students. We predict that enrollment in the MS in Ag program, which is currently 22 students, will increase about 2-fold once the Plant Health Management track is accessible. We anticipate a 12% increase annually in enrollment in this track once the program becomes better known to the industry. Based on the Eduventures report this may be a conservative estimate of growth potential.

The time frame for completion of the online degree will vary based on the student's ambitions and flexibility. The FASTEST a student could transition through the program (given the timing of course offerings) would be 1.5 years. The slowest a student would move through the program (at one course per semester) would be 5.5 years. Based on past experience we estimate an average of 3.5 years to complete the online Plant Health Management track.

	Site	Year 1	Year 2	Year 3	Year 4	Year 5*
Enrollments	WSU Online	15	17	19	21	24

\* Year of full enrollment

<b><u>MS Ag Required Core: 10 credits</u></b>		
Course	Course Offered	Status
<b>STAT 412</b> (non-thesis): 3 cr Statistical Methods in Research I	Every fall	Online version offered each fall
<b>AGRI 587</b> : 3 cr Research and Extension in Agriculture	Every fall	Online version offered each fall. Moderated by the student's advisor and committee members.
<b>AGRI 702</b> : V 1-18 cr (min. total 4 cr required) Master's Special Problems, Directed Study, and/or Examination	Every fall	Online version offered each fall
<b><u>Core Plant Health Courses: 12 credits</u></b>		
Course	Course Offered	Status
<b>CROP_SCI 305</b> : 3 (2-3) cr Ecology and Management of Weeds	Initially, every other spring	Online version will be launched in Spring 2014
<b>ENTOM 340</b> : 3 cr Agricultural Entomology	Every fall	Online version will be launched in Fall 2013
<b>SOIL_SCI 441</b> : 3 cr Soil Fertility	Every spring	Online version offered each spring
<b>PL_P 501</b> : 3 (2-3) cr Biology and Control of Plant Diseases	Every spring	Online version offered each spring
<b><u>Additional 8 cr from:</u></b>		

<b><i>ECONS 505</i></b> : 3 cr Economics for Agricultural Decision Making	Every fall	Online version offered each fall
<b><i>ENTOM 555</i></b> : 3 cr Agricultural Chemical Technology for Crop Protection & Production	Every fall	Online version offered each fall
<b><i>IPM 552</i></b> : 2 cr Pesticides and the Environment	Every fall	Online version offered each fall
<b><i>SOIL_SCI 368</i></b> : 3 (2-3) cr Introduction to Geographic Information Systems	Every fall	Online version offered each fall
<b><i>SOIL_SCI 547</i></b> : 3 cr Soil Fertility Management	Fall, even years	Online version offered fall, even years
<b><i>E_M 501</i></b> : 3 cr Management of Organizations	Every spring	Online version offered each spring
<b><i>E_M 522</i></b> : 3 cr Supervision and Leadership for Engineering and Technology Managers	Every spring	Online version offered each spring
<b><i>E_M 564</i></b> : 3 cr Project Management	Every spring	Online version offered each spring
<b><i>PHIL 530</i></b> : 2 cr Bioethics	Every summer	Online version offered each summer
<b><u>Total: 30 cr hours</u></b>		

#### 4. RESOURCE ASSESSMENT

##### Faculty

Projected course coverage is shown in Appendix B.

CAHNRS will be able to cover all Plant Health Management courses with existing faculty (salaries indicated on "Projected-5-Year Coverage" document attached).

We did not budget for new faculty for the urged increase in the Pullman-based enrollment because we have capacity to add that amount of students in our current class size & faculty workload assignments.

CAHNRS will direct resources generated through online course delivery for this program to varying departments as needed for instructional support.

Engineering Management confirmed that our projected enrollments will not cause coverage issues for the EM courses which are in the “Additional 8 credits” category.

**(a) Curriculum**

- WSU Online provides support to faculty in the development and delivery of the online course:
  - An eLearning Consultant, with expertise in instructional design of online courses will work 1:1 with faculty members developing online courses to ensure that best practices and pedagogical recommendations for successful online learning are understood.
  - The WSU Online media team will work with faculty to create appropriate media and interactive activities to promote learning and enhance engagement.
  - The same eLearning Consultant will continue to support the faculty member during delivery as issues unique to the online learning environment arise.
  - WSU Online provides face-to-face orientation and trainings and online tutorials to support online instructors.
  - Managing proctored exams for the course, if needed.
  - 24/7 technical support.
  - Ongoing maintenance or updating of courses, each semester of offering is provided by WSU Online.
  
- WSU Online provides support to students:
  - Acquiring required resources, such as texts and media.
  - Arranging for proctored exams.
  - 24/7 technical support.

**5. STUDENT LEARNING OUTCOMES** *Please see the current bylaws for the MS in Agriculture program (see Appendix C) for an overview of the mission, objectives and learning outcomes for this program. Specific learning outcomes for the Plant Health Management track are listed below.*

<b>Specific Program Learning Outcomes</b>	
1.	Able to work as a first-line manager in a broad range of agricultural and crop settings including both conventional and organic plant production systems.
2.	Able to maximize plant health based on a thorough understanding of crop plant biology, soil characteristics and other environmental factors, weeds, insects, nematodes, and microbial pathogens.

3.	Able to make timely diagnoses of plant diseases and disorders in order to support decisions for managing plant disorders and diseases.
4.	Able to utilize critical thinking and abstract reasoning skills in analyzing issues regarding managing health of crop, ornamental and landscape plants.
5.	Demonstrate information literacy and oral, written, and group communication skills.

**Assessing Learning Outcomes:**

Assessment of the Plant Health Management track in the MS in Ag program will be monitored as described in the current Graduate Program Learning Outcomes Assessment in Master of Science in Agriculture that was approved by the Graduate School in 2008 (see Appendix C). The assessment rubric from that document is found on the next page.

Outcome	Data	Source	Collected*
<b>1a.</b> Breadth of knowledge of agricultural disciplines and closely related fields	Acceptable performance in agriculture- and management-related courses prescribed by the advising committees	Cumulative GPA of 3.0 or above	Each semester
<b>1b.</b> In-depth knowledge and expertise of general and specific concepts in agriculture must be demonstrated	Ability to successfully pass oral and written preliminary exams and final thesis before advisory committee and affiliated faculty	Academic coordinator will collect graduate exam success/failure data	After each course examination
<b>2a.</b> Comprehensive skills and techniques	Successful completion internship/practicum	Graduate Advisory Committee Feedback	Review of final paper on internship/practicum
<b>2b.</b> Excellent communication skills	Successful performance in writing and presenting scientific information through class projects and assignments	Faculty Member Feedback, Peer Reviews	After each class assignment



<b>3a.</b> Outstanding leadership skills	Performance reviews of leadership in class presentations and discussions	Instructors, Advisor and/or other committee members; Feedback requests after presentations	Annually by committee; through post-delivery evaluations after presentations
<b>3b.</b> Ethical behavior in academics and research	Annual performance reviews	Advisor and/or other committee members	Annually
<b>3c.</b> Appreciation and respect for diversity	Annual performance reviews;	Advisor and/or other committee members	Annually
<b>3d.</b> Appreciation for global cultures, traditions, perspectives	Annual performance reviews	Advisor and/or other committee members	Annually
<b>4a.</b> Increase the number and diversity of high quality applicants and students	Applicant data including number of completed applications, GPA, student demographics	Graduate School and Academic Coordinator	Annually
<b>4b.</b> Strengthen distance delivery, expand beyond Washington state boundaries	Student enrollment data.	Academic Coordinator	Each semester
<b>4c.</b> Place more students in lead academic, research, and industry positions	Alumni data showing placement of students	Exit interview summaries	Annually

\*A written annual evaluation form will be filled out by the advisor each year and submitted to the graduate program coordinator and department chair for review to monitor each individual student's progress on these criteria.

## 6. DIVERSITY

WSU is committed to the promotion of diversity within the student population and online classroom. Online education is often viewed as a means of delivering education to underrepresented populations. The online environment lends itself to mitigating racial, gender, age and cultural stereotypes in community building.

## **7. FUNDING**

The program will be funded using the current WSU Online rate of return for graduate credit. The Graduate WSU Online model allocates funding only for student AAFTE served at a distance, in excess of the college baseline. Students dually enrolled in on-campus and on-line courses are not eligible for funding. CAHNRS administration agrees to invest revenue generated by this track back into the program for additional faculty and TA support, as needed, to support the predicted enrollment expansion demands of this program.

## **8. MS IN AGRICULTURE: PROGRAM WEBSITE AND HANDBOOK**

CAHNRS has created a comprehensive website and handbook that covers all aspects of the existing program, including expectations for students and advisors, description of thesis, non-thesis, how this program is managed and what expectations are for students. Plant Health Management is a new option in the MS in Agriculture.

The website address is: <http://msag.wsu.edu/>

# Appendix A



*Online Higher Education Learning Collaborative*

## Online Master of Science in Agriculture Programs

**Washington State University**

August 2010

**Executive Summary**

**Background and Methodology**

**Employment Prospects**

**Agriculture Education Trends**

**Competitive Overview**

**Conclusions**

### Offering an Online Master's Degree in Agriculture Is a Viable Opportunity for Washington State University Because of Future Labor Market Needs and Because Enrollment and Programming Trends Suggest Online Agriculture Master's Programs Can Succeed as Market Entrants

- Agricultural Manager jobs are expected to grow 6 % from 2008-2018, slower than the average for all occupations, while employment of self-employed farmers is expected to decline by 8%
  - Small-scale, local farming, particularly horticulture and organic farming, offer the best opportunities for entering the occupation
- Job growth among Agricultural and Food Scientists is predicted to increase faster than the average for all occupations: 16% from 2008-2018
  - Agricultural and food scientists with a master's or degree in agricultural and food science will experience good opportunities in coming years
  - Agricultural scientists who have advanced degrees usually begin in research or teaching
  - Employment of agricultural and food scientists is relatively stable during periods of economic recession
  - Layoffs are less likely among agricultural and food scientists than in other occupations, because demand for food fluctuates very little with economic activity

### **While Agriculture Programs Are More Popular at the Undergraduate Level, Recent Trends in Agriculture Conferals Suggest New Programs Can Succeed if They Enter the Master's Degree Market**

- Agriculture programs are most popular at the undergraduate level with bachelor's degrees being the most commonly awarded credential
  - Estimated enrollment for Agriculture bachelor's degree increased steadily from 2003 to 2009 (16% total over that period) while Agriculture master's degree decreased 7% between 2003 and 2009
  - An increase in graduates with bachelor's degrees could, however, translate to more candidates for master's-level programs
- The market share of degree conferals among the 10 largest Agriculture master's programs decreased 38.7% to 33.4% from 2003 to 2009, suggesting there is increased competition and that smaller and newer programs can gain market share
- Among specialized Agriculture programs, 90% of Agriculture master's degrees awarded in 2009 were in five of the 14 major disciplines
- In 2009, the five largest Agriculture master's disciplines, in terms of conferals, were:
  - Agricultural Business and Management
  - Plant Sciences
  - Animal Sciences
  - Food Science and Technology
  - Agriculture General

## **While Six of the 10 Largest Schools Conferring Agriculture Master's Degrees Offer Online Programs, the Online Market is Far from Saturated**

- Six of the 10 largest Agriculture master's institutions, in terms of degree conferrals, offer online master's degree programs
  - Agricultural Business and Management is the most commonly awarded master's degree (offered at seven out of 10 of these schools)
  - While business-oriented Agriculture master's degrees are the most popular in terms of conferrals, there is only one online program at the 10 largest schools that can clearly be identified as an Agriculture business program
- Graduate-level Agriculture programs are rare among the most "online active" schools, suggesting there is room for new entries into a market that is far from saturated
  - Only three schools in Eduventures' list of online active schools have Agriculture programs
- Research universities vary with regard to whether or not they allow courses used to earn a certificate to be applied toward a master's degree
  - The fact that so few schools report awards for undergraduate certificates in Agricultural disciplines may indicate many of these certificate programs are non-credit and, therefore, would not generally be applicable to master's degree programs
  - If WSU could design online graduate certificate programs to feed into online master's programs, they may be able to attract potential student attention away from schools that have certificates but do not allow credits to transfer

### Based on This Research, OHE-LC Staff Recommend the Following Next Steps for Washington State University:

- Develop master's programs that prepare graduates to become Agricultural and Food Scientists and Organic Farmers as these are areas where job prospects will be best
  - Because WSU Online Organic Agriculture certificate program, developing an online master's program in Organic Agriculture with the certificate program curriculum could allow WSU to develop an attractive program at a lower cost than developing a new specialization
  - Of the existing Agriculture master's programs at WSU, Food Science and Agriculture would be the best choices for an online program because the labor market for related jobs will be strong and these are two of the more popular master's specializations
  - Consider re-branding the M.S. in Agriculture as "M.S. in Agricultural Science" to create an better identification with the occupational field
- When developing online master's programs, consider developing more specialized, rather than general, programs since specialized programs are more popular
  - Agricultural Business and Management would be a good choice if deciding to develop a new program since this is the most popular specialization among Agriculture master's degrees and it does not have a strong online presence
- When developing online master's degree programs, consider the relative merits of branding a program as an M.Ag, which is considered a terminal degree, and an M.S. from which graduates often go on to continue their graduate education
- Market Agriculture programs as preparing graduates to work in a field that is safe during economic recessions



**Executive Summary**

**Background and Methodology**

**Employment Prospects**

**Agriculture Education Trends**

**Competitive Overview**

**Conclusions**

## **Washington State University (WSU) Seeks to Gain a Deeper Understanding of the Market for Online Agriculture Programs**

- The goal of this project is to identify the agriculture program or programs for which WSU is best positioned to offer an online Master of Science degree. To respond to this need, the OHE-LC team will conduct secondary research to answer the following questions:
  - Are online master’s degrees in agriculture more generic or specific in nature?
  - Which agriculture disciplines are most popular in terms of degree conferment? Are some agriculture disciplines more popular in, or amenable to, an online format than others?
  - Based on labor/education trends, what are the likely growth areas for agriculture education?
  - Based on information regarding faculty areas of expertise and university resources, in which agriculture disciplines would WSU be best positioned to offer an online master’s degree?
  - Which peer institutions, *i.e.*, land-grant and doctoral/research universities-extensive (formerly referred to as Research I Universities), have the most successful master’s level online agriculture programs and in what discipline areas are they successful?
  - What agriculture certificates, particularly online, are offered by these peer universities? Do any of these build into masters programs?
  - Is a “Master of Science in Agriculture” the best way to brand such an offering? What alternatives names might be more successful and why?
  - Are online agriculture programs more common at the bachelor’s or master’s level?
  - Would offering an online master’s in organic agriculture, which is currently offered as a certificate, be a viable program offering?

### OHE-LC Staff Used a Number of Sources to Answer These Research Questions

- OHE-LC staff mined the Bureau of Labor Statistics (BLS) and relevant industry associations such as the American Association for Agricultural Education and Agricultural and Applied Economics Association to retrieve industry and occupational trends and projections in the agriculture sector
- OHE-LC staff reviewed data from the National Center for Education Statistics to determine degree conferral trends
  - Eduventures' Conferrals to Enrollments Conversion Calculation formula was used to estimate enrollments in Agriculture programs
- OHE-LC staff conducted a competitive assessment of providers to identify existing precedents of online agriculture programs
  - Institutional web sites were used to provide programmatic characteristics of identified providers

**Executive Summary**

**Background and Methodology**

**Employment Prospects**

**Agriculture Education Trends**

**Competitive Overview**

**Conclusions**

**Agricultural Manager Jobs Are Expected to Grow 6 % from 2008-2018, Slower than the Average for All Occupations, While Employment for Self-employed Farmers Will Decline by 8% Due to the Ability of the Agriculture Sector to Produce More with Fewer Workers**

- Farmers, ranchers, and agricultural managers, who held more than 1.2 million jobs in 2008, focus on the business aspects of running a farm
  - Nearly 80 percent were self-employed farmers and ranchers, and the remainder were wage and salary agricultural managers
- According to the BLS, experience gained from growing up on or working on a family farm is the most common way farmers learn their trade, however, modern farming requires making increasingly complex scientific, business, and financial decisions, so postsecondary education in agriculture is important, even for people who were raised on farms

Employment Projections from the BLS		
Occupation	Number of jobs 2008 (2018*)	Change, 2008-18
		Number %
Farm, ranch, and other agricultural managers	248,100 (262,700)	14,600 6
Farmers and ranchers	985,900 (906,700)	-79,200 -8

\*Projected

**Small-scale, local farming, particularly horticulture and organic farming, offer the best opportunities for entering the occupation. This may mean an opportunity for Washington State to expand its Organic Farming certificate program into a degree program.**

### Job Growth Among Agricultural & Food Scientists Is Predicted to Increase Faster than the Average for All Occupations: 16% from 2008-18

- Agricultural and food scientists held about 31,000 jobs in 2008 and the BLS projected to increase by 4,800 jobs to 35,900 by 2018
  - Soil and plant scientists accounted for 13,900, food scientists and technologist for 13,400, while the remaining 3,700 were animal scientists
  - In addition to jobs in industry, many people with graduate education in these sciences held faculty positions in colleges and universities
- Agricultural and food scientists with a master's or degree in agricultural and food science will experience good opportunities in coming years, although positions in basic research and teaching at colleges and universities are limited
- Agricultural scientists who have advanced degrees usually begin in research or teaching
  - With experience, they may advance to jobs as supervisors of research programs or managers of other agriculture-related activities

**Employment of agricultural and food scientists is relatively stable during periods of economic recession. Layoffs are less likely among agricultural and food scientists than in other occupations because demand for food fluctuates very little with economic activity.**

# Agenda



**Executive Summary**

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**Employment Prospects**

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## **Agriculture Programs Are Most Popular at the Undergraduate Level with Bachelor's Degrees Being the Most Commonly Awarded Credential**

- Information on Agriculture program conferrals is made available via the Integrated Postsecondary Education Data Systems (IPEDS) Database
- All Agriculture degrees and certificates are subsumed under Classification of Instructional Program (CIP) code 01 which is defined as:
  - Instructional programs that focus on agriculture and related sciences and that prepare individuals to apply specific knowledge, methods, and techniques to the management and performance of agricultural operations.

<b>Agriculture, Agriculture Operations, and Related Sciences (CIP Code 01) Awards in 2009</b>		
<b>Credential</b>	<b>Number of Credentials Awarded</b>	<b>Number of Institutions Awarding Credentials</b>
<b>Undergraduate certificate</b>	5,059	325
<b>Associate degree</b>	4,525	371
<b>Bachelor's degree</b>	15,160	178
<b>Graduate Certificate</b>	18	6
<b>Master's degree</b>	2,252	88



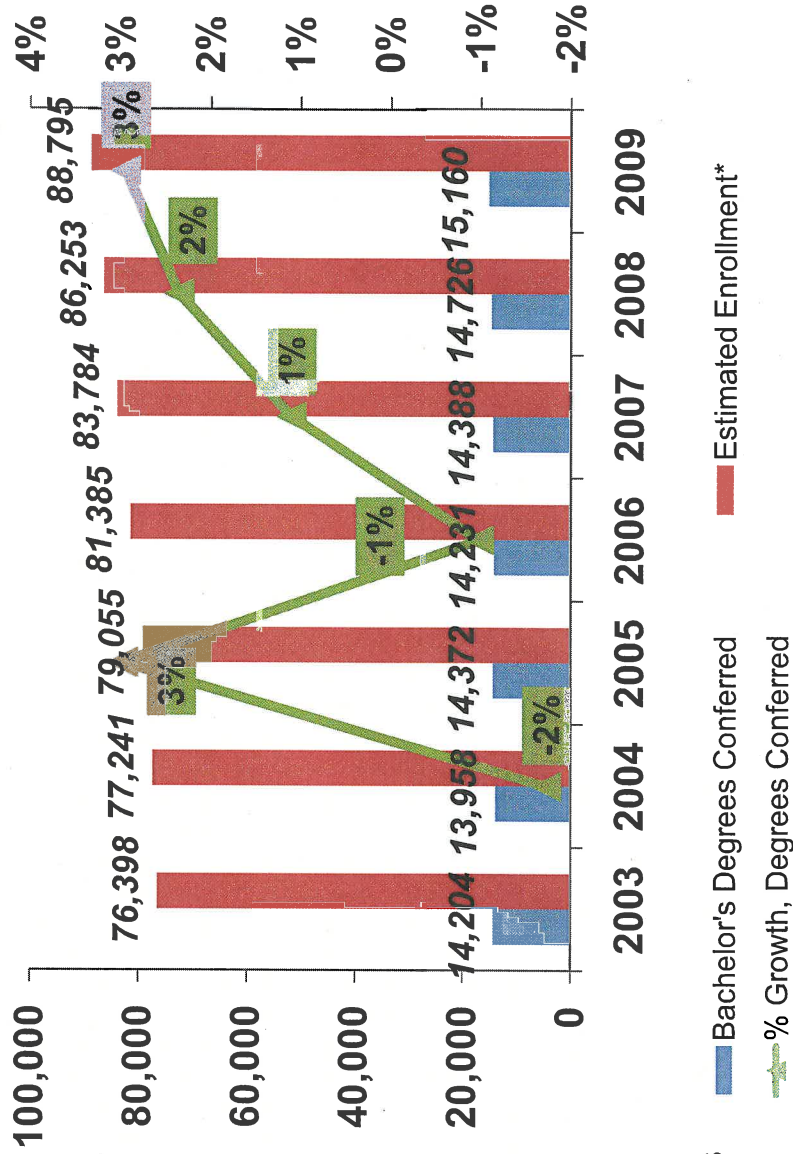
## Education Trends : Bachelor's Degrees in Agriculture



### Estimated Enrollment for Agriculture Bachelor's Degree Increased Steadily in Recent Years and Grew a Total of 16% from 2003 to 2009

- A total of 198 institutions awarded Agriculture bachelor's degrees between 2003 and 2009 with 178 institutions awarding degrees in 2009
- The 5 largest programs, in terms of degree conferment, from 2003 to 2009 were:
  - Texas A & M University
  - University of California - Davis
  - University of Florida
  - California Polytechnic State University - San Luis Obispo
  - Cornell University

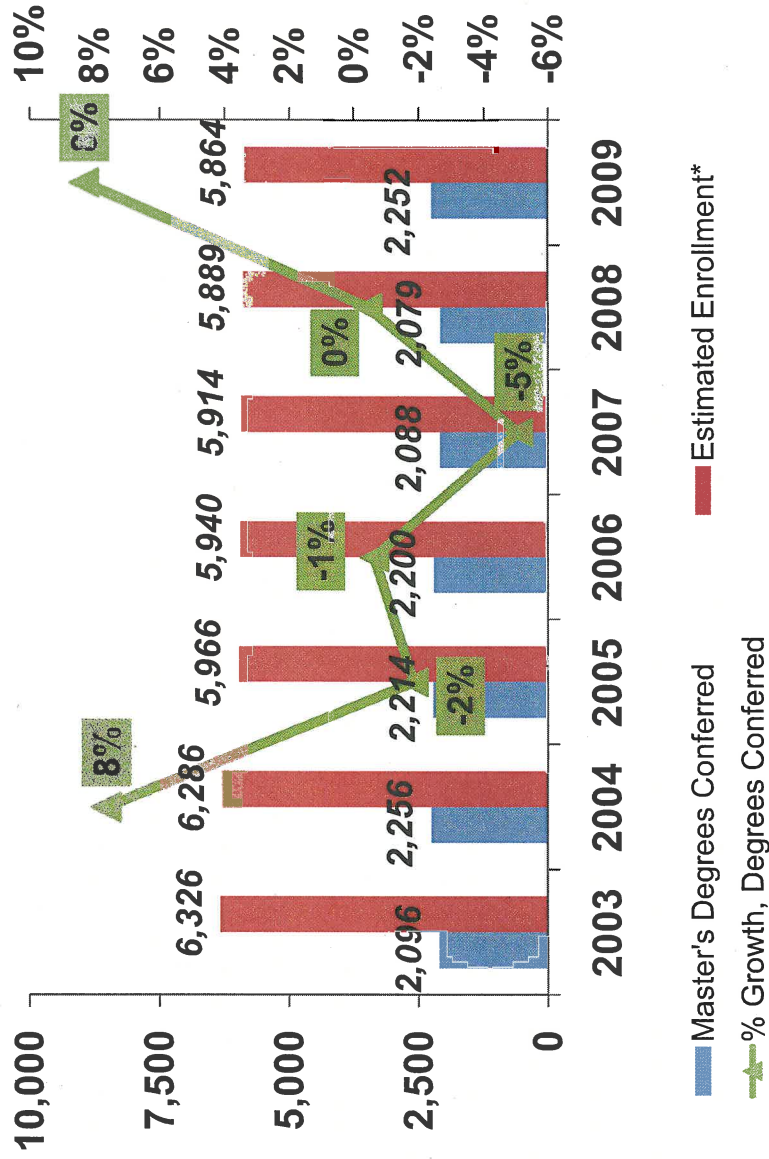
Agriculture Bachelor's Degree Trends



## Enrollment Estimates for Agriculture Master's Degree Decreased 7% Between 2003 and 2009

Agriculture Master's Degree Trends

- There was a net increase in the number of institutions awarded degrees between 2003 and 2009
  - 88 institutions awarded degrees in 2009 compared with 84 in 2003
- Master's degree conferrals increased 8% between 2008 and 2009



The market share of degree conferrals among the 10 largest Agriculture master's programs decreased 38.7% to 33.4% from 2003 to 2009 suggesting there is increased competition and that smaller and newer programs can compete for students.

## 90% of Agriculture Master's Degrees Awarded in 2009 Were in 5 of the 14 Major Disciplines for Which There is a Specialization

- The most popular Agriculture master's degree in 2009, Agricultural Business and Management, accounts for 23% of all master's degrees awarded
- M.Agr. degrees are considered terminal degrees while M.S. degrees are more appropriate for students who may want to continue on to a PhD program

Agriculture Master's Degree Conferals by Discipline in 2009		
Discipline	# of Degrees Conferred	% of All Agriculture Master's
<b>All Programs</b>	<b>2,252</b>	<b>100%</b>
Agricultural Business and Management	523	23%
Plant Sciences	447	20%
Animal Sciences	400	18%
Food Science and Technology	323	14%
Agriculture General	308	14%
Soil Sciences	109	5%
Agricultural Production Operations	50	2%
Agricultural Public Services	29	1%
Agriculture Operations and Related Sciences Other	21	1%
Applied Horticulture/Horticultural Business Services	19	1%
International Agriculture	10	0%
Agricultural and Food Products Processing	9	0%
Agricultural Mechanization	4	0%
Agricultural and Domestic Animal Services	0	0%

**While the top 4 Agriculture master's disciplines were in more specialized areas, General Agriculture Programs ranked 5<sup>th</sup>, above many other specialized disciplines.**

**Executive Summary**

**Background and Methodology**

**Employment Prospects**

**Agriculture Education Trends**

**Competitive Overview**

**Conclusions**

## Six of the 10 Largest Agriculture Master's Institutions, in Terms of Degree Conferalls, Offer Online Master's Degree Programs

- Online master's programs at the largest Agriculture schools, in terms of master's degree conferalls in 2009, are more specialized than general
- 7 of the 10 of largest schools awarded more Agricultures Master's Degrees in Agricultural Business and Management than they did in any other Agriculture discipline
- At the other 3 of the 10 largest schools a General Agriculture Master's is the most commonly awarded Agriculture master's degree

School Name and Rank, in Terms of Agriculture Master's Conferalls, in 2009	Has Online Master's	Online Degree Specializations Offered
University of Florida (1)	Yes	<ul style="list-style-type: none"> <li>• Soil and Water Science</li> <li>• Entomology and Pest Management</li> <li>• Agricultural Education and Communication</li> </ul>
Texas A & M University (2)	Yes	<ul style="list-style-type: none"> <li>• Master of Agriculture in Agricultural Development</li> <li>• Master of Agriculture in Poultry Science</li> <li>• Master of Fisheries Science</li> <li>• Master of Natural Resources Development</li> <li>• Master of Wildlife Science</li> </ul>
Kansas State University (3)	Yes	<ul style="list-style-type: none"> <li>• Food Science</li> <li>• Master's in Agribusiness</li> </ul>
Purdue University (4)	No	N/A
University of California-Davis (5)	No	N/A

**While Business-Oriented Agriculture Master’s Degrees are the Most Popular in Terms of Conferrals, There Is Only One Online Program at the 10 Largest Schools That Can Clearly Be Identified as Agribusiness: The Program at Kansas State University**

- Because of the amenability to online delivery and the relative lack of online programs clearly branded as Agricultural Business and Management among the top 10 school, this is a viable program development opportunity to explore
  - Programs are amenable to online delivery because less face-to-face training is required than in other programs such as plant and animal sciences
  - WSU could build components of an agribusiness program from its existing online MBA Program

Online Agriculture Program Availability among the 10 Largest Agriculture Master’s Institutions, in Terms of Degree Conferment		
School Name and Rank, in Terms of Agricultures Master’s Conferrals, in 2009	Has Online Master’s	Online Degree Specializations Offered
University of Georgia (6)	Yes	<ul style="list-style-type: none"> <li>• Master of Agricultural Leadership</li> </ul>
Colorado State University (7)	Yes	<ul style="list-style-type: none"> <li>• Agricultural Extension Education M.Agr. in Agricultural Sciences</li> <li>• MS in Rangeland Ecosystem Science</li> </ul>
Cornell University (8)	No	N/A
Oklahoma State University (9)	No	N/A
University of Illinois at Urbana-Champaign (10)	Yes	<ul style="list-style-type: none"> <li>• Education</li> <li>• Crop Sciences</li> <li>• Food Science and Human Nutrition</li> </ul>

## Graduate-level Agriculture Programs Are Rare Among the 100 Most Online Active Schools, Suggesting There Is Room For New Entrants into a Market That is Far from Saturated

- The source of the information in the table to the right is the Eduventures' Online Higher Education Learning Collaborative program database 2009, which lists the 100 schools in the U.S. with the most active online presence
- Only three schools in the Eduventures database had online Agriculture programs
  - All of these programs, whether degree or certificate, were at the graduate level
- The University of Illinois Urbana-Champaign should be considered a strong competitor as it is also a top 10 school in terms of master's degree conferrals

School	Credential(s)	Disciplines Offered Online
University of Nebraska Lincoln	Master's Degree	<ul style="list-style-type: none"> <li>• Applied Science - Agriculture</li> </ul>
University of Wisconsin Extension	Master's Degree	<ul style="list-style-type: none"> <li>• Agricultural Education and Sustainable Community Development</li> </ul>
University of Illinois Urbana-Champaign	Certificate, Master's Degree	<ul style="list-style-type: none"> <li>• Agricultural Crop Sciences (Cert)</li> <li>• Dairy Science (Cert)</li> <li>• Horticulture (Cert)</li> <li>• Agricultural Education (Master's)</li> <li>• Crop Sciences (Master's)</li> <li>• Food Science and Human Nutrition (Master's)</li> </ul>

### Online, For-credit Agriculture Certificate Programs at Research Universities Are Rare at the Undergraduate and Graduate Levels

- Only 9 schools with a Carnegie Classification of Research University conferred an undergraduate certificate in Agriculture in 2009 and only 3 conferred graduate certificates
  - The number of undergraduate Agriculture certificates awarded by Research Universities in 2009 greatly outnumbered the number of graduate certificates (158 versus 4) and the number of certificates awarded at Research Universities is clearly low for both levels
- Research Universities vary with regard to whether or not they allow courses used to earn a certificate to be applied toward a master's degree
  - The University of Illinois does allow students to transfer courses taken as part of a graduate certificate program to one of their master's programs but only if it was originally taken for credit
  - The University of Illinois is the only school among the top 10 largest Research Universities that clearly states its for-credit graduate certificates can later be applied to an online master's degree
- The fact that so few schools report awards for undergraduate certificates in Agricultural disciplines may indicate many of these certificate programs are non-credit and, therefore, would not be applicable to master's degree programs

**If WSU could design online graduate certificate programs to feed into online master's programs, they may be able to attract potential student attention away from schools that have certificates but do not allow credits to transfer.**



**Executive Summary**

**Background and Methodology**

**Employment Prospects**

**Agriculture Education Trends**

**Competitive Overview**

**Conclusions**

### **Agriculture Programs at the Master's Level Do Not Have a Strong Online Presence and with Good Strategic Planning, WSU Can Develop Programs That Will Succeed as New Entrants to the Market**

- Though enrollments in Agriculture master's programs have been shrinking in recent years, there are a number of reasons why online Agriculture master's programs should be poised to succeed in the coming years
  - The job market for certain agricultural occupations, particularly agriculture and food scientists, is predicted to grow faster than the average for all occupations
  - In recent years, bachelor's in Agriculture programs have grown and an increased number of individuals with undergraduate degrees means more individuals who can feed into master's programs
  - The relatively weak presence of graduate-level Agriculture programs in the online arena means programs offered online could succeed as early entrants to the market
- Master's programs that prepare graduates to be agricultural managers, agriculture and food scientists, and organic farmers are more likely to succeed than others
  - The amenability of content to delivery in an online format, the workforce applicability of the content, and the uniqueness of the discipline will factor into a program's ability to succeed online
  - Agriculture Science, Food Science, and Organic Farming programs already exist at WSU and online programs would give graduates good opportunities to compete in the job market
  - Agricultural Business and Management programs are the most popular Agriculture Master's specialization, yet the discipline has a weak online presence

## Appendix B: Projected Course Coverage

Course Abbreviation	Course Title	Hours	Instructor
<b>Fall Semester</b>			
STAT 412	Statistical Methods in Research I	3	L L Ding
AGRI 587	Research and Extension in Agriculture	3	T. Koenig
AGRI 702	Master's Special Problems, Directed Study, and/or Examination	V 1-18 (minimum)	ARRGT
ENTOM 340	Agricultural Entomology	3	A. Felsot
EM 501	Management of Organizations	3	H. Rumsey
ENTOM 555	Agricultural Chemical Technology for Crop Protection	3	A. Felsot
SOIL SCI 547	Soil Fertility Management ( <i>offered fall even years</i> )	3	J. Davenport
IPM 552	Pesticides and the Environment	3	G. Piper
ECONS 505	Economics for Agricultural Decision Making	3	G. Briand
SOIL SCI 368	Introduction to Geographic Information Systems	3	R. Rupp
<b>Spring Semester</b>			
AGRI 702	Master's Special Problems, Directed Study, and/or Examination	V 1-18 (minimum 4 cr required)	ARRGT
CROP SCI 305	Ecology and Management of Weeds	3	I. Burke
SOIL SCI 441	Soil Fertility	3	B. Pan
PL P 501	Biology and Control of Plant Diseases	3	D. Glawe
EM 501	Organizations and People	3	W. Gray
EM 522	Supervision and Leadership	3	G. Sudikatus
EM 564	Project Management	3	H. Rumsey
<b>Summer Semester</b>			
AGRI 702	Master's Special Problems, Directed Study, and/or Examination	V 1-18 (minimum 4 cr required)	ARRGT
PHIL 530	Bioethics	3	W. P. Kabasenche

	MS AG Core (10 credits)
	Plant Health Core (12 credits)
	Additional Course Work (8 credits)

## **Appendix C: MS in Agriculture Bylaws**

### **Masters of Science in Agriculture Program Bylaws**

**Washington State University**

**Administrative Home: College of Agricultural, Human, and Natural Resource Sciences**

**Last Revised: January 30, 2013**

**Faculty Senate Approval Date: not applicable**

### **I. Objectives**

- A. Degree offered: Master of Science in Agriculture
- B. Discipline: Agriculture
- C. Mission of the Program: To enhance the career trajectory of agricultural professionals, practitioners, and educators by improving their ability to apply new and emerging scientific findings and technologies to the advancement and expansion of their disciplines through:
  - 1. Successful completion of high quality courses designed to support expertise expansion in targeted areas or disciplines;
  - 2. Participation in an immersion-based, high quality research experience;
  - 3. Opportunities to disseminate knowledge through participation in and/or development of extension programs or media.

The degree program is primarily designed to support the educational advancement of place bound, time bound students in an online course delivery format; however, students on campus also may apply for the program. The overall goal of the program is to prepare Master's level graduates for professional, practitioner, and educator opportunities in agriculture, so that they may provide leadership and disseminate knowledge to an increasingly complex society.

- D. Objectives:
  - 1. To prepare students to become experts in professional fields related to agriculture.
  - 2. To prepare students to become outstanding educators and practitioners in agricultural disciplines.
  - 3. To prepare students to become outstanding leaders and team players in collaborative and interdisciplinary application of their expertise to address local, regional, national and/or global problems associated with agriculture.
  - 4. To enhance the visibility and impact of master's level graduate programs in agricultural sciences.
  - 5. To provide students with an experiential-based research opportunity designed to translate content provided in course work to reality.
  - 6. To provide student with a pathway for manifesting their career objectives.
  - 7. To transition students to higher level of understanding of agriculture-based disciplines through graduate education.

E. Learning Outcomes:

1. To enable students to become experts in their professional agricultural fields.
  - a. Expand breadth of knowledge and expertise in agriculture disciplines and closely related fields.
  - b. Increase depth of knowledge and expertise in agriculture disciplines.
  - c. Enhance the ability of students to adapt to emerging changes in technology, the economy, and communication that have a dramatic impact on the agricultural industry.
  
2. To enable students to become outstanding educators and practitioners in agricultural disciplines, the program will foster the development of excellent communication and teaching skills, as well as a comprehensive understanding of research approaches used to address agricultural issues. The successful student will embody the following:
  - a. Mastery of research skills and techniques as demonstrated by the major advisor, advisory committee, and faculty at large through confirmation that the student has successfully completed all phases of an independent research project. The student will:
    - i. Demonstrate an ability to critically assess and comprehend societal problems, stakeholder concerns and scientific questions that formulate major issues to be addressed through applied and/or basic research.
    - ii. Demonstrate scientific literacy by independently accessing, interpreting and summarizing literature and other sources of knowledge on the research topic.
    - iii. Develop research objectives and hypotheses through the use of logic and critical thinking.
    - iv. Propose and execute experimental protocol to test stated hypotheses.
    - v. Collect, summarize and interpret experimental data.
    - vi. Apply standard rules of ethics to their scientific endeavors.
  
  - b. Mastery of communication skills for conveying research concepts, findings, and implications to their scientific colleagues, as well as stakeholder groups. Successful students will demonstrate their mastery of effective:
    - i. Oral communication of research concepts, findings and implications to scientific and non-scientific groups through preparing and delivering seminars or public presentations.
    - ii. Written communication of research concepts, findings and implications to scientific and non-scientific groups through thesis preparation, authoring scientific journal articles, authoring extension bulletins, etc.
    - iii. Delivery of education programs to students and stakeholders about research concepts, findings and their implications to agriculture.
  
3. To prepare students to become outstanding leaders and team players in collaborative and interdisciplinary application of their science to the local, regional, national and global problems and issues at large, the program will foster within students the ability to effectively work within a team construct or community as positive leaders and team players. The program will foster the following within successful students:
  - a. Effective leadership skills.
  - b. Commitment to integrity and ethical behavior.
  - c. Appreciation and respect for diversity.
  - d. Appreciation for global cultures, traditions, and perspectives.

4. By enhancing the visibility and impact of the graduate programs in agricultural disciplines, the program will:
  - a. Increase the number and diversity of high quality applicants and students in the program.
  - b. Strengthen the college's role in distance delivery by expanding access beyond Washington State boundaries.
  - c. Place more WSU graduates in lead teaching and industry positions.

## **II. Membership**

- A. **Graduate Faculty within the Master of Science in Agriculture Program** may be WSU tenured and tenure track faculty, WSU non-tenure track faculty, or WSU adjunct faculty, subject to the limitations and definitions in this document. All Graduate Faculty must be "Initial Program Faculty" (listed in Section XI of this document) or subsequently approved as Graduate Faculty through the process outlined in section B below.

### **1. WSU Campus Participation**

- a. The Master of Science in Agriculture Program is offered through the Pullman campus of Washington State University and principally at a distance through the Washington State University Global Campus as approved and authorized by the Higher Education Coordinating Board (HECB) of Washington State.
- b. Approved tenured and tenure track Master of Science Graduate Faculty at all regional campuses, agricultural extension sites, and other affiliated university sites may participate equally in the Master of Science in Agriculture Program as supporting faculty with full program rights and responsibilities. As such they are entitled to act as chair, co-chair, or member of graduate student committees; teach graduate courses; supervise research; and act as a Master of Science in Agriculture Program Curriculum Committee member.

### **2. Graduate Faculty Participation**

- a. Graduate Faculty participation in Master of Science in Agriculture Program is independent and separate from academic department, school, or college affiliations.
- b. All active members of the Graduate Faculty of the Masters of Science in Agriculture Program are eligible to vote on program issues.

### **3. Disciplinary Expertise**

Graduate Faculty within the Master of Science in Agriculture Program are expected to have a MS, PhD or equivalent degree in a field related to agriculture, agricultural education, agricultural technology or related fields. In addition, they must have demonstrated disciplinary expertise in a field related to agriculture, interest and experience in mentoring and teaching of graduate students in this field, and relevant professional accomplishments.

### **4. Active Research Appropriate to Master of Science in Agriculture Program**

Graduate Faculty must be actively involved in research, extension and/or graduate level teaching related to agriculture, agricultural education, agricultural technology or related fields as evidenced by recent external grant or contract support, related peer-reviewed publications

within the last 5 years, graduate student mentoring within the last 5 years, teaching of relevant graduate level courses, or other relevant professional accomplishments.

**5. Non-Tenure Track Graduate Faculty**

**a. Internal to WSU**

Non-tenure track Graduate Faculty internal to WSU includes research, clinical, and affiliate faculty. This category of Graduate Faculty also includes USDA-ARS researchers. These researchers are classified as WSU adjunct faculty but may function in the same roles as WSU tenured and tenure-track faculty. USDA-ARS faculties are entitled to act as chair, co-chair, or a member of graduate student committees; teach graduate courses; supervise research; and act as a student committee member. Other non-tenure track faculty internal to WSU (research, senior instructors, instructors, clinical, affiliate) may be active Master of Science in Agriculture Graduate Faculty and are entitled to act as co-chair or member of graduate student committees; teach graduate courses; and supervise research. When serving as co-chair of a student committee they must work with a tenured, tenure-track or USDA-ARS faculty member who also is an active member of the Master of Science in Agriculture Graduate Faculty.

**b. External to WSU**

Professionals who are not WSU faculty may be granted Graduate Faculty participation within the Master of Science in Agriculture Program if they are first officially approved as adjunct faculty for WSU. Adjunct faculty who are approved as active Graduate Faculty are entitled to act as a member of graduate student committees; teach graduate courses; and supervise research. They may not serve as student committee chair or co-chair or on the Master of Science in Agriculture Program Steering Committee.

**6. Individual Committee Member Internal to WSU**

Individuals not officially participating as Graduate Faculty within the Master of Science in Agriculture Program (for example, a faculty member from another WSU department or program) may serve on graduate committees as long as they are a member of the Graduate Faculty in their own program or discipline and their committee appointment is approved by the Steering Committee of Master of Science in Agriculture Program.

**7. External Individual Committee Members**

Individuals not officially participating as Graduate Faculty within any graduate program at WSU (for example, a faculty member from another university or research entity) may be approved to serve as a thesis/dissertation committee member for an individual student on a case-by-case basis. The committee chair for that student should forward the name and a curriculum vitae of the desired committee member to the Master of Science in Agriculture Program Director or the Associate Dean for distribution to the Steering Committee. With approval of the Steering Committee, the nomination (with accompanying CV or other documentation of expertise) is forwarded to the Dean of the Graduate School for final approval.

## **B. Application for Membership**

1. Initial Graduate Faculty within the Master of Science in Agriculture Program are listed in Section XI of this document and have been approved by the Master of Science in Agriculture Steering Committee and Dean of the Graduate School.
2. Candidates for Graduate Faculty participation within the Master of Science in Agriculture Program should be nominated by an existing Master of Science in Agriculture Graduate Faculty member or may self-nominate. The nomination should include a letter of nomination and curriculum vitae for the nominee. The Director of the Master of Science in Agriculture Program or the Associate Dean will circulate application materials to all active Graduate Faculty prior to voting. Acceptance as Graduate Faculty requires a positive vote from a majority of faculty who respond to the vote, as well as from a majority of the members of the Master of Science in Agriculture Steering Committee.
3. In addition to a commitment to maintain the highest standards of mentoring for graduate students, anticipated contributions or qualifications for all successful Graduate Faculty applicants include one or more of the following:
  - a. History or reasonable expectation of an active research program that can plausibly be relied upon as the source of continuing support (financial, infrastructure, mentoring) of a Master of Science in Agriculture graduate student.
  - b. History of or willingness to participate as appropriate in administrative, teaching, and other functions of the Master of Science in Agriculture Program. This may include serving on graduate program steering or curriculum committees; serving as a thesis committee member or chair; or providing graduate level instruction.
  - c. History of publication of peer-reviewed manuscripts and/or Tier I extension publications in a discipline related to agriculture.

## **C. Continuation of Active Membership**

1. Graduate Faculty appointments to the Master of Science in Agriculture Program will be reviewed for continuation of active membership by the Master of Science in Agriculture Program Steering Committee every 3 years with one-third of the membership reviewed each year. They will be evaluated for contributions to graduate instruction, research, and teaching. Contributions to the program shall be a requirement for continued active membership. Contribution may take the form of:
  - a. Committee chair, co-chair or member for graduate students
  - b. Teaching or co-teaching a graduate course
  - c. Supervising research for graduate students
  - d. Serving on the Master of Science in Agriculture Program Steering or Curriculum Committees
2. Faculty who do not make any of the contributions as stated in C.1 above to the Master of Science in Agriculture Program for three consecutive years will be designated as inactive Graduate Faculty. Inactive Graduate Faculty do not have voting rights. Initiation of any of these activities described in C.1 above will result in restoration of active Graduate Faculty designation.



**D. Discontinuation of Membership**

Upon request of an active Graduate Faculty member, that individual's membership will be discontinued. If that individual's situation should change, they may reapply for Graduate Faculty participation at any time.

Membership of Graduate Faculty who do not follow the mentoring procedures and guidelines as outlined in the current Master of Science in Agriculture Handbook can be discontinued based on documented evidence of chronic lack of compliance. The Associate Dean, Director of MS Ag and members of the Steering Committee will review the documentation, and membership will be revoked if a majority of the Steering Committee members and the Director vote in favor of discontinuation. In the case of a tie, the Associate Dean will cast the decision making vote.

**E. Membership Appeal Process**

Faculty appeal of any membership decision in the Master of Science in Agriculture Program must be made in writing to the Director of the Master of Science in Agriculture Program or the Associate Dean within 30 calendar days of the decision. The appeal is determined by a majority vote of all Master of Science in Agriculture Graduate Faculty (see Section IX for definition of quorum). Final written appeal may be made to the Dean of the Graduate School within 30 calendar days of the Master of Science in Agriculture Graduate Faculty vote.

**III. Administration**

Administration of the program will be overseen by the Academic Program Coordinator of the Master of Science in Agriculture Program, who reports to the Associate Dean of Academic Programs in the College of Agricultural, Human, and Natural Resource Sciences (CAHNRS). A Steering Committee composed of Chairs and Directors of participating departments, schools or centers (i.e. Dept. of Crop and Soil Sciences, Dept. of Horticulture, School of Economic Sciences, Dept. of Plant Pathology, Dept. of Entomology, Dept. of Animal Sciences, Dept. of Food Science and the Research and Extension Centers in Mt. Vernon, Puyallup, Prosser and Wenatchee) will collectively serve as the guiding voice of the program. Based on consensus, the Associate Dean of Academic Programs will implement the recommendations made by the Steering Committee. A subset of faculty from participating departments may be called upon to serve on the Master of Science in Agriculture Program Curriculum Committee to address course content, development, and delivery issues.

**IV. Graduate Program Director**

- A. A Director of Master of Science in Agriculture Program may be nominated by Graduate Faculty or a member of the Steering Committee. Based on majority vote of members of the Steering Committee, the Associate Dean will appoint this person as Director. If a suitable candidate is not identified, the Steering Committee will serve as the collective voice of the Master of Science in Agriculture program, as described in III above, and the Associate Dean will assume the responsibilities of the Director.

- B. The Director shall serve a term of 4 years and is eligible for re-election if nominated to continue in this position in accordance with the terms of the initial appointment and with final approval of the Master of Science in Agriculture Program Steering Committee as described in IV.A. above.
- C. The Director may be removed from office by a majority vote of the Master of Science in Agriculture Program Steering Committee and with the approval of the Associate Dean.
- D. Duties of the Director of the Master of Science in Agriculture Program
  - 1. Serve as the liaison between the Graduate Faculty and the Steering Committee.
  - 2. Engage with Steering Committee and Graduate Faculty on policy development.
  - 3. Implement policies as directed by the Steering Committee.
  - 4. Represent the Master of Science program at campus and off-campus events, and recruitment activities.
  - 5. Participate in Steering Committee meetings.
  - 6. Call and preside at meetings of the Graduate Faculty.
  - 7. Coordinate curriculum development, delivery and assessment activities for the Master of Science in Agriculture Program with the Steering Committee and Graduate Faculty.
  - 8. Create and implement a recruitment and retention plan for the Master of Science in Agriculture Program.
  - 9. With support from the Academic Program Coordinator for the Master of Science in Agriculture Program:
    - a. Coordinate all program administrative activities with the Graduate School.
    - b. Submit course or curriculum change or approval forms.
    - c. Submit bylaws change or approval forms.
    - d. Update and review for accuracy all publications related to the Master of Science in Agriculture Program including web pages, catalog copy, and recruitment materials.
    - e. Develop and update a SharePoint site on the CAHNRS website for Graduate Faculty and students enrolled in the program. (<https://sharepoint.cahnrs.wsu.edu/ap/CAHNRS-AP/MSAg/default.aspx>)
    - f. Review and make final recommendations concerning acceptance or rejection to the program based on recommendations of the Master of Science in Agriculture Program Steering Committee for submittal to the Graduate School.
    - g. Review and make final decisions concerning program of study approval based on the recommendation of the Chairs/Directors on the Master of Science in Agriculture Program Steering Committee whose expertise align with the student's research area of interest, and submit these documents to the Graduate School.

## V. Committees

- A. Master of Science in Agriculture Program Steering Committee  
Based on consensus, provides policy and program decisions that are implemented by the Director of the Master of Science in Agriculture Program if one has been appointed or the Associate Dean of Academic Programs. The Academic Program Coordinator shall record and distribute minutes of each meeting to the Graduate Faculty and maintain an electronic copy in SharePoint site.

1. The Master of Science in Agriculture Program Steering Committee shall be composed of the 11 Chairs and Directors of departments, schools or centers participating in the Master of Science in Agriculture Program (see section III above).
2. Each Master of Science in Agriculture Program Steering Committee member will seek input and consider viewpoints of participating Graduate Faculty from their department, program or centers during the decision making process.
3. Members of the Master of Science in Agriculture Program Steering Committee will serve for the duration of their appointment as chair or director of a participating department, school or center.
4. Areas in which the Master of Science in Agriculture Program Steering Committee shall provide oversight:
  - a. Review, develop and update long-range goals for the Master of Science in Agriculture Program and develop action plans and timelines for attaining these goals. These goals shall be presented and reviewed at least once annually during a meeting with all Graduate Faculty.
  - b. Serve as a sounding board for the Director or Associate Dean concerning new ideas, changes, etc., in academic or administrative issues recommended by the Graduate Faculty.
  - c. Provide guidance and adjustments to more effectively administer the program.
  - d. Identify members for service on other committees related to the Master of Science in Agriculture Program.
  - e. Assist with curriculum development and assessment processes for the Master of Science in Agriculture Program.
  - f. Review all student applications and, in conjunction with the Director, Associated Dean and/or the Academic Coordinator, after consultation with appropriate Graduate Faculty, and in a timely manner, determine the disposition of applications as to acceptance or rejection.
  - g. Participate in reviewing and approving programs of study for students engaged in research activities associated with their disciplines.
- B. Master of Science in Agriculture Program Curriculum Committee  
 Coordinate curriculum review, program of study review, and recruitment and retention activities for the Master of Science in Agriculture Program as requested by the Master of Science in Agriculture Program Steering Committee and/or the Director or Associate Dean.
  1. The Master of Science in Agriculture Program Curriculum Committee consists of one member (7-11) from each participating department, school or center. The departmental and center representative may be the same person if that person is located at a Research & Extension Center. Participants are selected by the Chair or Director of each participating department, school or center.
  2. Members of the Master of Science in Agriculture Program Curriculum Committee shall serve 3-year terms. At the end of each term, contributions shall be reviewed by their Chair and/or Director. Based on successful performance and level of contribution to the Master of Science in Agriculture Program, members may be reappointed.

3. Based on the recommendation of the Master of Science in Agriculture Program Steering Committee, the Director or Associate Dean shall call and preside over meetings. The Academic Program Coordinator shall take minutes, which will be posted on the SharePoint site.
4. Recruitment:
  - a. Work with the Director or Associate Dean and/or Academic Coordinator to develop and maintain recruitment materials as needed.
  - b. Participate in recruitment efforts as requested.
- C. Other Committees  
Other ad hoc committees may be appointed by the Master of Science in Agriculture Program Steering Committee, Associate Dean and/or Director. Addition of new, or changes to the existing, standing committees must be approved by amendment of bylaws.

## **VI. Graduate Student Committees**

- A. The graduate committee of each student shall have a minimum of three members. The majority of members of each committee shall be active Master of Science in Agriculture Graduate Faculty members.
- B. The initial selection, or subsequent changes, of a graduate student's committee shall be determined jointly by the student and the student's advisor. A major advisor shall be identified among committee members based on mutual agreement between the student and the committee if an advisor has not been identified prior to the first committee meeting.
- C. Committee meetings will be held as needed, but at least once per year.
- D. A program of study with a course enrollment timeline and a research objective and brief overview shall be submitted for review by the Master of Science in Agriculture Program Steering Committee within six months of a student's acceptance into the program. An array of science-based, graduate level courses must be included in the program of study to gain approval by the Director or Associate Dean and members of the Master of Science in Agriculture Program Steering Committee. Continual enrollment is recommended to ensure timely graduation.
- E. As specified in the Graduate School's Policies and Procedures, the performance of each graduate student shall be reviewed annually.

## **VII. Student Representatives**

At the discretion of the Master of Science in Agriculture Steering Committee, Director or Associate Dean and/or the Graduate Faculty, student representation may be added or deleted from any committee structure. In accordance with the Policies and Procedures of the Graduate School at WSU, graduate students are not permitted to serve on the committees of other graduate students.

## **VIII. Graduate Faculty Meetings**

- A. The Master of Science in Agriculture Program Steering Committee and/or the Director or Associate Dean shall call Graduate Faculty meetings as needed and at least once per academic year with a minimum of one week notice. All attempts shall be made to provide a written agenda in advance.
- B. Other meetings may be called at the discretion of the Director, Associate Dean or the Master of Science in Agriculture Program Steering Committee.
- C. A special meeting of Master of Science in Agriculture Graduate Faculty may be called by petition of 5 or more Graduate Faculty members.
- D. Efforts will be made to communicate items of interest, including notification of a faculty meeting, via e-mail. All public documents will be made available to the Master of Science in Agriculture Program Steering Committee Members and Graduate Faculty through the SharePoint site, which will be maintained by the Academic Program Coordinator.
- E. Faculty not present on the Pullman campus at the time of a general Master of Science in Agriculture Graduate Faculty meeting may participate by telephone conference call or other electronic means.

## **IX. Quorum**

- A. For all general graduate faculty meetings and votes unless otherwise indicated, a quorum shall be defined as a minimum of 50 percent of the Program membership.
- B. For programmatic committees to conduct a business meeting, a quorum shall be defined as a minimum of 50 percent of the committee membership.
- C. Unless otherwise indicated, a simple majority of the total number of ballots cast are required to pass a motion.
- D. In the event of a tie vote in which the entire graduate faculty is eligible to vote, the Master of Science in Agriculture Program Director or Associate Dean will decide the outcome of the vote. For tie votes that occur within programmatic committees, the Director or committee chair will decide the outcome of the vote.

## **X. Amendments to Program Bylaws**

- A. The Program Bylaws document shall be reviewed every fifth year by the Master of Science in Agriculture Program Steering Committee and annually by the Director or Associate Dean.

- B. Amendments to the Bylaws may originate from any eligible Master of Science in Agriculture Graduate Faculty member. Proposed amendments must be forwarded to the Master of Science in Agriculture Steering Committee and Director or Associate Dean. After discussion, amendments shall be forwarded to the Graduate Faculty electronically at least 2 weeks prior to the faculty meeting at which the amendments will be discussed. After discussion, a minimum 2 week period will follow the faculty meeting prior to vote. Votes on amendments may occur at a faculty meeting or electronically. Amendments to the Master of Science in Agriculture Program Bylaws require a positive vote from the majority of all active Master of Science in Agriculture Graduate Faculty and consensus based approval by the Master of Science in Agriculture Program Steering Committee.
- C. All amendments and revisions must be submitted to the Graduate Studies Committee and Faculty Senate for review and final approval.

## **XI. List of Graduate Faculty Participants**

- A. List of Master of Science in Agriculture Program Graduate Faculty Participants:

**Dr. Preston Andrews**, Associate Professor  
**Department of Horticulture**  
Johnson Hall 155E, (509) 335-3603  
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**Mr. JD Baser**, Instructor  
**Department of Crop and Soil Sciences**  
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**Mr. Chris Benedict**, Extension  
**Whatcom County Extension**  
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[chrisbenedict@wsu.edu](mailto:chrisbenedict@wsu.edu)

**Dr. Margaret Benson**, Professor/Chair  
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