

University of Wisconsin Madison Combined Research and Extension Plan of Work 2020-2024

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I. Plan Overview

1. Executive Summary

Operating Philosophy/ Program Overview:

The Wisconsin Agricultural Experiment Station (WAES) and University of Wisconsin-Madison Division of Extension* are partners in an effort to generate new research-based knowledge and applying that knowledge through educational efforts in order to help Wisconsin's residents and communities address challenges and take advantage of new opportunities.

Priorities are aligned with input from stakeholders with interests in traditional and non-traditional agriculture, natural resources, human health, and community wellbeing. We receive input from these stakeholders through conversations and correspondences, public meetings such as field days at Agricultural Research Stations, and through other Extension events including collaboration with issue-based teams comprised of Extension faculty and county-based educators.

This input informs decisions about the types of research to conduct as well as the design of educational initiatives conducted by Extension in partnership with local, state, tribal and regional organizations, farmers, consumers, business owners and entrepreneurs, support services, coalitions, decision makers, and public and tribal government agencies.

*Extension is now formally part of the University of Wisconsin-Madison rather than a separate Institution, now referred to as the Division of Extension.

How we allocate capacity funds:

The success of our statewide educational efforts is founded on the generation of new, relevant knowledge through peer-reviewed, investigator-driven research supported by capacity grant funding. We seek to allocate these funds in a manner that best addresses the needs of our stakeholders.

The WAES's general approach is to allocate capacity funds to support specific, peer-reviewed projects rather than to distribute block grants to departments. Our capacity-funded research program consists of a number of projects, each reported and reviewed individually. While the program itself may extend for multiple years, the projects that comprise the program includes those that can be quickly redirected as new needs arise. We use capacity funds to support approximately 130 projects each year, covering the cost of personnel (mainly graduate students), supplies, student hourly administrative support, and travel for engaging stakeholders. To distribute funds for capital equipment, we use a different approach; in this case, departments set the priorities and logistics, allowing several projects to share capital equipment. We cover the costs of travel to multistate research meetings (for two representatives per project) out of a central pool of funds in order to engage in and contribute to rigorous scholarly practices that advance the work of WAES.

Continually re-examining our research portfolio in order to address short-, intermediate-, and long-term issues ensures that we invest in projects that are relevant to NIFA national goals and emphasis areas and focus on current state research needs. We may fund a small number of new projects at mid-year as new faculty members are hired or to address emerging problems that require immediate attention. These mid-year projects are funded at the discretion of the Associate Dean and Assistant Dean for research in the College of Agricultural and Life Sciences (CALs), of which WAES is a part.

In Extension, capacity funds are managed by Associate Deans and Institute Directors, who oversee programming efforts in a way that considers local needs along with state and national priorities. Extension's capacity-funded programs are organized within and across program Institutes to address issues important to agriculture, businesses, communities, families and youth across the state. Local needs are communicated to these decision makers through Area Extension Directors who lead our 22 local administrative areas and via educators through needs assessment and annual work planning processes. These funds are invested in campus and county-based faculty and staff to provide capacity for growing applied research programs and expanding access to educational programs for the people of Wisconsin. Our approach mirrors the integrated research, Extension and multi-state expectations of USDA NIFA.

How we measure research success:

WAES uses several indicators to assess whether impact and outcomes of a research project are reached. Specifically, we rely on peer-reviewed publications to confirm the rigor of our work, distribution of information for application among diverse stakeholder groups, the number and types of patent disclosures, and highly trained graduate students which ensures the fidelity of educational efforts. In the future, the list may be expanded to include other indicators that will enable us to set future capacity grant funding priorities. Publications in refereed journals, books, and extension bulletins have reported on projects using the annual reports in the new REEport system. CALs published research is ranked first among peer institutions in terms of the Scientific Impact Factor. Formula funding plays a major role in this achievement because of the success of our capacity-funded projects as well as formula grants help our researchers attract significant funding from other sources to expand benefits to Wisconsin residents and communities. CALs also ranks very high in extramural funding awarded to land-grant universities and public institutions as well as private universities.

How Extension educational initiatives are structured:

Extension's interdisciplinary statewide teams are often co-chaired by campus-based specialists and community-based educators. Structuring team leadership in this manner is intentional, building relationships and linkages among communities of research interest, communities of practice, and communities of locale. Teams develop plans focused on interests that cut across these communities. They do so from the point of issue identification and priority setting, to resource commitment, plan implementation, and evaluation. This same approach applies to multi-state and joint research and extension activities.

How we measure Extension's success:

Regular evaluations conducted with our participants, county funding partners, academic departments, and campus partners ensure accountability for delivering high-quality, research-based and relevant Extension programming throughout the State. Extension has a multi-layered approach to assess the impact and outcomes of the overall Extension investment. At the local level, we work with our participants, program partners, and county funding partners to ensure that our educational programs are meeting local priorities and helping people transform lives, organizations and communities. At the campus level, leadership works collaboratively with WAES to ensure that our investments are resulting in high quality applied and evidence-based research important to our educational programming. At the institutional level, we are focusing

on outcomes and impact indicators associated with our four educational priorities (i.e. Stronger Economies; Food Safety, Food Security, and Health; Resilient and Productive Environments; and Thriving Youth, Families, Organizations, and Communities). Specifically, we are refining common indicators at the state level that align with our current programming and we have several statewide program development initiatives where evaluation tools and systems compliment the work on common indicators.

Meeting National Priorities

This FY20 Institutional Profile combines Research and Extension to describe how statewide interdisciplinary campus and county faculty, staff, and colleagues provide research-based education and assistance to sustain and grow the state's vital agricultural economy and well-being of residents across national priorities:

1. Global Food Security Food Availability: Crops and Agronomic Plants

The WAES and Extension collaboration among campus, county and regional colleagues, Partners, and trained volunteers provides research-based education and assistance to improve food security by a.) strengthening local food markets and systems, b.) responding to growing consumer demand for sustainably produced local foods, c.) building community capacity to increase access to healthy foods for vulnerable populations, d.) increasing household access to healthy foods for those in need, and e.) providing education to assist with the succession of farm businesses and retaining on-farm jobs.

2. Global Food Security Food Availability: Livestock

The WAES research and Extension colleagues, partners, and trained volunteers provide timely research-based education and assistance to producers. We do this in order to develop food production systems that enhance animal health while increasing the production capacity, efficiency, and nutritional value of food. Research and professional education on grass-fed beef, poultry, and managing pastures for water quality continue to be just a few examples.

3. Global Food Security and Hunger: Food Accessibility

The WAES and Extension colleagues collaborate with campus, county, and regional colleagues, partners, and trained volunteers to provide research-based education and assistance to improve food security. We do this by a.) strengthening local food markets and systems, b.) responding to growing consumer demand for sustainably produced local foods, c.) building community capacity to increase access to healthy foods for vulnerable populations, and d.) increasing household access to healthy foods for those in need.

4. Climate Change and Energy Needs

Climate change and energy needs have a variety of impacts on communities, agriculture, natural resources, local economies, and human health. The WAES and Extension educators in the agriculture, natural resources and community, and economic development program areas are called upon to respond to concerns and needs for solutions about bioenergy and sustainable renewable energy. Professionals and community leaders need locally relevant, science-based climate change and energy needs information and strategies to incorporate into economic development and resource management planning processes.

5. Sustainable Use of Natural Resources

Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development. WAES and Extension incorporate the latest research into educational initiatives in order to advance forest production, weed management, and surface water quality, and to promote new, relevant farm-based practices. Extension campus and county faculty and staff are coordinating integrated research and extension programs to ensure capacity for scalable as well as sustainable energy among extension colleagues and communities.

6. Nutrition

The WAES and Extension research projects explore basic human nutrition and identify effective measures that guide individuals and families to make informed, science-based decisions to promote health and reduce malnutrition in high-risk populations. We provide effective research-based interventions that are practical to implement and sustain to support parents and others to help young children develop healthy behaviors.

7. Food Safety

As the U.S. becomes more urbanized, many youth and adults are becoming disconnected from a basic understanding of the science behind agricultural production and the technology it takes to make sure their food supply is safe and readily available. The WAES and Extension approach with campus and county faculty and staff, colleagues, partners, and trained volunteers provide the vital research-based support to reduce the incidence of food-borne illnesses. Our work also engages stakeholders on improving the safety of the food supply by educating consumers and food safety professionals as well as developing food processing technologies.

8. Education and Science Literacy

Education and Science Literacy reach beyond local communities to impact regional, national, and global communities. The WAES and Extension campus and county faculty and staff, colleagues, partners, and trained volunteers work with Wisconsin youth in educational events using STEM curriculum. In addition, Extension partners with the Wisconsin Alumni Association and Wisconsin Public Television to bridge our campus researchers to adult learners for life-long learning opportunities.

9. Rural Prosperity

Rural Prosperity depends on attracting, retaining, and informing youth through community development efforts that build upon a community's assets while improving agricultural development and marketing. Rural prosperity also requires us to support established and possibly aging rural property owners through education and outreach. Hence, the health, wellbeing, and quality of relationships among rural residents is also a priority. Our approach to advancing rural prosperity requires critical reflection on a variety of community economic development strategies. Hence, the WAES and Extension research inform decision-makers at multiple levels to ensure long-term support of youth and aging owners.

10. Wisconsin Competitive Program

Capacity funds are employed to address a number of state priority research activities that cannot be classified in the nine priority areas. We group these ongoing projects under the rubric of the "Wisconsin Competitive Research Program", but funds supporting these projects will be redirected to the new national priorities in the future. These projects contribute to

important state needs and are focused in several areas, including a.) water resource issues, b.) applied statistics in support of agricultural research, c.) policy analysis for use in land use planning and commodity programs, d.) management of invasive exotic organisms, and e.) bio-waste management.

2. FTE Estimates

Year	1862 Extension	1862 Research
2020	92.0	133.0
2021	92.0	133.0
2022	92.0	133.0
2023	92.0	133.0
2024	92.0	133.0

II. Merit / Peer Review Process

The merit review process consists of a combined external and internal university panel. A 10--person faculty Research Advisory Committee (RAC), appointed by the CALS Associate Director of the Agricultural Experiment Station, reviews proposals for capacity grant funding on the UW-Madison campus. Each proposal is reviewed by two RAC members (designated primary and secondary reviewers) and by two-non committee members, drawn from the Madison campus, other UW campuses, state agencies, non-governmental organizations and other states, who are established experts in the field. The reviewers are asked to consider a proposal's merit in terms of its relevance to program guidelines and to national goals and emphases areas, pertinence to state problems and priorities, relationship to multistate projects and inclusion of integrated activity. Some Wisconsin faculty members are cooperators in multistate committees in the North Central, North East, Southern, and Western Region as well as a few National (NRSP) projects. Each region has a review process with slight modifications.

Extension activities undergo review during annual and mid-year performance reviews. Extension faculty undergo faculty review within their Academic Department. Colleagues write annual plans of work that describe the specific needs they will address, target audiences, intended outcomes, action plan for how to achieve outcomes, and evaluation plan. These are reviewed by program leadership and by Area Extension Directors. In some cases, colleagues organize into teams to complete planned programs and those teams also write a plan of work with oversight from program leadership. Reviewer recommendations serve to improve program quality and relevance for the intended audience.

Extension curricula and publications are peer reviewed by research and extension faculty, government or industry colleagues and professionals as appropriate to the content, purpose and intended audience.

Translations and interpretations are managed by our nationally recognized Language Access team to ensure cultural appropriateness and effectiveness. Scholarly peer review and cultural review assure the quality and relevance of educational materials and outreach scholarship.

III. Stakeholder Input

1. Actions to Seek

We use several options to seek stakeholder input. Examples are:

- Public meetings and listening sessions, utilizing media to advertise
- Engaging the general public and more targeted stakeholder groups through outreach, needs assessment, and evaluation

Stakeholder identification and involvement are key components to the planning processes. The UW-Madison/WAES/CALS administrative leadership group maintains close relationships with leaders of the industries and advocacy groups interested in the disciplines we study. The CALS Administrative Leadership group holds sessions with agricultural industry leaders, heads of state agencies, our own Board of Visitors and specific commodity groups. In addition to these sessions, the Administrative Leadership group attends several field days at our 12 agricultural research stations located throughout the state. These field days and other public events allow for interaction with a variety of producers and growers representing the breadth of Wisconsin agriculture.

The Extension program development model provides the overall framework for seeking, analyzing, and utilizing stakeholder input. A major component of this model includes understanding context for programming, where educators conduct needs assessments and situational analysis through surveys, focus groups, interviews and conversations with stakeholders. Educators are also encouraged to seek and utilize stakeholder feedback in the setting of program outcomes, designing educational approaches and of course in program evaluation. In 2018, Extension undertook a major statewide needs assessment effort, called the Developmental Situational Analysis. All 22 Areas of the state formed work groups representative of different types of educators and led by their Area Extension Director. These work groups collectively reviewed over 500 sources of local data and consistently engaged county funding partners through interviews, surveys, and Nominal Group Technique facilitated process. In 2019, we continue that process with a second part led by our state program leadership which includes engaging specialists.

2. Methods to Identify

We use various methods to identify our stakeholders. Examples are:

- Advisory committees
- Focus groups
- Surveys
- Listening sessions
- Public events

The CALS and Extension leadership maintains a close relationship with leaders of the industries and advocacy groups that have an interest in disciplines we study. In addition, regularly attending field days, hosted at our 12 agricultural research stations, and other public events allow leaders to personally interact with a variety of producers and growers (offering advice to explore new stakeholders) representing the breadth of Wisconsin agriculture. We intentionally reach out to groups organized around new and expanding Wisconsin agricultural sectors.

In the 2018 Developmental Situational Analysis (Extension's statewide needs assessment), diverse county funding partners, including Administrators, Executives, Administrative Coordinators, and County Board Chairs, were identified because they were determined to be the local funding partners that know Extension best and could provide the most relevant input. Twenty-two Area Work Groups engaged those partners and made hard decisions of which local data resources to review, based on recommendations from program leadership but mainly based on their own local knowledge of which information was up-to-date, most relevant, most comprehensive and representative of the diversity of needs and perspectives in their communities.

Members of Extension's Board of Visitors were identified via leadership seeking out multiple perspectives and by asking Extension colleagues to make membership recommendations.

3. Methods to Collect

Stakeholders' input for the development and conduct of research relating to state needs are accomplished in a tiered system. Many departments, centers, and institutes maintain advisory committees that meet periodically with researchers in the units. Departments convey this input to the CALS Administrative Leadership Group.

A Board of Visitors advises CALS and meets with the Administrative Leadership Group twice year. That board includes accomplished and influential individuals representing a number of interest groups, including agriculture producers, industries, consumers, environmentalists, and state agencies. In addition to advising CALS on research and outreach

needs, the board provides a source of contacts of various constituencies. Extension's Board of Visitors meets with the Dean's Leadership Team.

Input has been gathered by Extension from diverse partners and stakeholders statewide through needs assessment led by individual educators and broader needs assessments done at administrative area levels and statewide levels. We also collect stakeholder input through program planning, implementation and evaluation efforts. Statewide team efforts accord with the local context, where all 72 Wisconsin county Extension offices have civil rights plans designed to increase access to traditionally under-served audiences.

4. How Considered

Stakeholder input is considered in various ways. Examples are:

- Budget process
- Identify emerging issues and in some cases desired outcomes related to those issues
- Action plans (e.g. developing and evaluating programs)
- Redirect Extension and Research program areas
- Hiring process

Results from stakeholder input allow us to identify priority issues and avenues for resolving those issues. Driven by such input, program planning and evaluation practices are ongoing and continue to produce evidence for driving decision-making on the priority issues. Decision-making unfolds in many ways, including the following: a.) incorporating input into WAES-Extension budget and staffing decisions through statewide Extension teams, b.) shaping team implementation and evaluation plans as well as statewide federal plans of work; c.) combining input with available research is used to refine program design, and d.) our workforce's expertise and ability to bring the right people and partners together to address a priority issue ensures continued input. Hence, stakeholder input is a critical cornerstone in the way that we develop all of our programming.

IV. Critical Issues

1 Sustainable Ag Systems and Production

Description:

WAES and Extension conduct research to develop sustainable food production systems that enhance soil, water, animal, and crop health while increasing productivity. The demand for goods and services will only increase in the future as the population grows, and it is our mission to find new ways to increase production while minimizing environmental impacts, such as greenhouse gas emissions and nutrient losses.

Term: Long

Science Emphasis Areas

Sustainable Agricultural Production Systems

2 Global Food Security: Livestock

Description:

The WAES research and Extension colleagues, partners, and trained volunteers provide timely research-based education and assistance to producers to develop food production systems that enhance animal health, while increasing the production capacity, efficiency and nutritional value of food. Research and professional education of such topics as grass-fed beef, pasture-raised poultry, and managing pastures for water quality continue to be just a few areas of focus.

Term: Long

Science Emphasis Areas

2 Food Accessibility, Safety and Nutrition

Description:

WAES and Extension provide research-based education and assistance to improve food security by increasing access to healthy foods for vulnerable populations and those in need; responding to growing consumer demands for sustainably produced local foods, strengthening local food markets and systems; and promoting healthy diets. Research also focuses on understanding and reducing food-borne illnesses, while developing and disseminating new technologies to improve food safety.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences
Food Safety
Human Nutrition
Youth Development

3 Energy and Sustainability of Natural Resources

Description:

WAES and Extension conduct research and outreach on climate change impacts and natural resources conservation to support communities, agriculture, local economies and human health. Projects seek to advance sustainable forest management, minimize pesticide use, improve water quality and quantity on working lands, and improve soil health.

Term: Long

Science Emphasis Areas

Agroclimate Science
Bioeconomy, Bioenergy, and Bioproducts
Environmental Systems
Youth Development

4 Urban and Rural Community Vitality

Description:

To promote community development, WAES and Extension help inform and teach decision-makers, community members, and farmers and their families of ways to promote success in farming and other economic sectors, in community organizing, and improve the overall quality of life.

Term: Long

Science Emphasis Areas

Education and Multicultural Alliances
Environmental Systems
Family & Consumer Sciences
Sustainable Agricultural Production Systems
Youth Development

5 Sustainable Use of Natural Resources

Description:

Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development. The WAES incorporates research to benefit forest production, weed management, surface water quality, and promote new farm based practices. Extension campus and county faculty and staff are conducting integrated research and extension programs, and building capacity for scalable, sustainable energy among extension colleagues and communities.

Term: Long

Science Emphasis Areas**5 Positive Youth Development****Description:**

Extension prepare the youth of today to become the effective, empathetic adults of tomorrow. Our research-based youth enrichment programs build youth and adult capacity and partnerships that help both sides grow. 4-H clubs, camps, and afterschool programs give young people the hands-on experiences they need to develop an understanding of themselves and the world.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences
Youth Development

6 Nutrition**Description:**

The WAES and Extension research projects explore basic human nutrition, and identify effective measures that guide individuals and families to make informed, science-based decisions to promote health and reduce malnutrition in high-risk populations. Effective research-based interventions that are practical to implement and sustain are needed to support parents and others to help young children develop healthy behaviors.

Term: Long

Science Emphasis Areas**7 Food Safety****Description:**

As the U.S. becomes more urban, youth and adults are becoming disconnected from a basic understanding of the science behind agricultural production and the technology it takes to make sure their food supply is safe and readily available. The WAES and Extension plan collaborations among campus and county faculty and staff, colleagues, partners and trained volunteers to provide research-based training and support to reduce the incidence of food-borne illnesses and to improve the safety of the food supply by educating consumers and food safety professionals and developing food processing technologies to improve food safety.

Term: Long

Science Emphasis Areas

7 Wisconsin Competitive Program

Description:

WAES addresses several state priority issues that cannot be classified in the above critical issues. These projects contribute to several areas such as the management of invasive exotic organisms.

Term: Long

Science Emphasis Areas

Agroclimate Science

Bioeconomy, Bioenergy, and Bioproducts

Environmental Systems

Family & Consumer Sciences

Food Safety

Human Nutrition

Sustainable Agricultural Production Systems