School of Food and Agriculture

2020-2021 Annual Report

(June 30, 2021. Prepared by Robert Causey)

Executive Summary

Pandemic
-brightspace, -online education, -hands-on at witter center Define tomorrow
-food systems major Nutrition Search
-appears successful Two faculty early tenure
-Juan and Jen Advising center
-relocation tom roger clapp Students recruitment and retention
-report numbers

1. We will support and grow Maine's economy through new discoveries and by building a workforce whose members are engaged in their communities and prepared for lifelong success.

1.1 We will welcome and support all learners and engage them in experiential learning.

TIM BOWDEN - STUDENTS IN LAB AQUACULTURE, NEW CLASS AVS 411/511 ADVANCED AQUACULTURE STEPHANIE BURNET - ADAPTED GREEN HOUSE TO COVIDi- PSE 109 online, FFA, earlycollege MARY ELLEN CAMIRE extensive teaching umaine gold, extensive graduate program, SUE ERICH Soils teaching - importance of it. ERIC GALLANDT sustainable ag teaching, UMaine Greens, organic farming CHARLENE GRAY - ecological landscape design teaching using native plants and efftive drainage. JAY HAO -Graduate Education SUE ISHAQ - New classes - Introduction to Animal Microbiomes and DNA sequencing laboratory while carrying Capstone. Advisor for 10 senior topics, co-chair for 5 and on committee for 1. PAULINE KAMATH Graduate and unbdergraduate course in wildlife, large class in Lab animal companion medicine, great success in promoting undergraduates in research DOROTHY KLIMIS-ZACAS - Classes in lipid metabolism, heart disease, and nutritional biochemistry and a strong graduate program ANNE LICHTENWALNER - Experiential learning and research in veterinary diagnostics. Capstone, Honors,and CUGR. JADE MCNAMARA Classes in community nutrition and behavior. I supervised a Maine Top Scholar, Ashley Reynolds. She completed a project that explores intuitive eating behavior in college students and had her abstract EILEEN MOLLOY - human nutrition and the communication of food and nutrition concepts for improved health Food preparation classes nationally accredited Didactic Program in Dietetics. Navigate to set up advising appointments for all continuing students. I use the commerical kitchen in Hitchner Hall and work with the Pilot Plant manager to make sure it is in good working condition. BRIAN PERKINS Teaches Brewing with Food Science. JENNIFER PERRY Classes in Microbiology, food safety, sanitation. BRYAN PETERSON propagation, evaluation, ecophysiology, and population genetics of woody plants for horticulture. JUAN ROMERO Classes Animal nutrition Forage Science and Range management Ruminant nutrition RACHEL SCHATTMAN coursework in sustainable food systems SUSAN SULLIVAN Together with a committee in the School of Food and Ag, prepared and submitted a Program Request to the Provost for a multicampus, multidisciplinary BS degree in Food Systems. Didactic program in dietetics. MONA THERRIEN - Dietetic internship,expertise in diabetes, nutrition support, chronic kidney disease, and nutrition for the

aging population. UMaine Gold Coordinator DENISE SKONBERG- Classes in food product development and utilization of aquatic food resources. JIM WEBER Classes in Reproductive physiology of domestic animals, including horses and ruminants.

1.2 We will create new knowledge and apply innovative research and scholarship to enrich lives.

TIM BOWDEN ACQUACULTURE STEPHANIE BURNETT -aeroponics, at home sensors LILY CALDERWOOD - blueberry research weeding, seacrop16, weather, climate change gall midge 100k in grants, articles scientific americvan and associated press MARY ELLEN CAMIRE - 200k extramural grants ROBERT CAUSEY - horse program students numbers and MYSQL records development SUE ERICH Preservation abd stabilization of organic matter in soil ERIC GALLANDT - Weed ecology and control through organic means. PI pn 3 continuing USDA grants JAY HAO Research to sustain the potato industry - potato diseases. Blackleg and soft rot pathogenesis, genetic resistance. Funding through the Maine Potato board, USDA and private sources SUE ISHAQ - CO-PI on 3 continuing grants, PI on $1.5 million extramural PAULINE KAMATH - PI of 3 continuing federal grants, and co-pi of additional 3 continuing federal grants. Received $800k of federal grants this year. DOROTHY KLIMIS-ZACAS Almost $300k in requested funding, prestigious book by Royal Society of Chemistry. ANNE LICHTENWALNER - Funding from MTAF and NSF - training grant JADE MCNAMARA relationship between nutrition and food literacy and dietary behaviors $177,676 USDA - Utilizing Community- Based Participatory Research to Increase Health Related Quality of Life in College Students

RENAE MORAN Tree fruit production and physiology Enhancing peach production through better variety selection, planting in low-risk sites and understanding cold hardiness. Reducing postharvest fruit losses of Honeycrisp. pruning techniques to increase consistency in yield of honeycrisp apples USDA and MDA current projects, Awarded $55K for Peach Variety Testing and Development for a Local Market TSUTOMU OHNO The investigation of how molecular structure of soil organic matter interacts with soil processes such as phosphorus bioavailability and carbon stabilization in natural and managed ecosystems. ultrahigh-resolution mass spectrometry chemical force spectroscopy atomic force microscopy computational chemistry BRIAN PERKINS Food Analytical Chemistry, specializing in the development of chromatographic techniques (LC GC). Detection of bio-active chemical metabolites in chaga and fermented products (kombucha, beer, fermented vegetables). JENNIFER PERRY Research in Microbiology, food product development, fermentation, food safety, sanitation. Invasive green crab and wild blueberries.PI on 7 current projects (3 federal 3 stakeholder) and co pi on 4 federal projects Received $40K federal grant Class Market development as mitigation strategy for ecosystem damage and predation by invasive green craband a co-pi on almost $1 million submitted in ther last year. BRYAN PETERSON serviceberries (Amelanchier spp.), edibe honeysuckle (Lonicera villosa) and other woody taxa that are indigenous to Maine, absent from the horticulture industry, and have potential for horticultural use. Investigation of invasive potential of nonnative honeysuckle (Lonicera caerulea) recently introduced to North America for berry production, and comparison to the native Lonicera villosa for horticultural attributes. Design and evaluation of a novel propagation systems for Maine's horticulture industry. Continuing support Submist to Propagate Nursery Crops by Stem Cuttings Horticultural Research Institute

GREG PORTER creates new potato varieties using conventional plant breeding techniques at our facilities in Orono and Presque Isle. Our goal is to develop new potato varieties that provide improved quality and marketing opportunities for potato growers, as well as to help solve pest management problems.

Caribou Russet's cash farm value to ME seed growers was $3.9 M during 2020 and the estimated

cash farm value when this seed crop is planted, grown and harvested in 2021 is $33.1M. It is also being evaluated and adopted in many other countries around the world. Hamlin Russet (tested as AF4124-7) was released by ME during 2020 for early fry processing and russet fresh market. It has moderate scab resistance. Certified seed acreage rose to 83 acres (78th in the US) during 2020.

PI on 9 continuing projects. Over $600K awarded this year. My research has shown that soil amendments and crop rotation can be used to build soil organic matter and supply nutrients to maintain high value potato crops.

JUAN ROMERO Dr. Romero aims to expand the understanding of the factors that affect forage quality and conservation in order to develop novel additives that will improve profitability of livestock producers. Specifically, his program focuses on the methodological use of fungal enzymes to solve specific issues in silage production and the development of biologically-based additives to enhance the stability of conserved forages. 3 continuing grants, 2 MFAC, one USDA Funded this year USDA $160K A multiregional approach to balancing milk and forage quality tradeoffs in organic dairies feeding highlegume diets

RACHEL SCHATTMAN agricultural resilience in a changing climate while simultaneously protecting natural resources. In pursuit of this goal, I work with specialty crop producers and agricultural advisors to identify and address production challenges, specifically through the lens of climate change adaptation. Received almost $240,000 for the following 3 projects:Climate change adaptation and mitigation research, outreach, and education for land managers in Maine and the Northeast; Enhancing adoption of regenerative agriculture practices in U.S. wheat farming system; The impact of the local food system and natural environment on rural food security and health outcomes during the COVID-19 pandemic

DENISE SKONBERG Specific focus areas include utilization of invasive green crab; seaweed quality assessment and product development; high pressure processing; characterization of functional properties of previously cooked crustacean meat; processing of high-value molluscan seafood.

JIM WEBER Mechanism of soft tissue and bone healing in mammalian models in response to additively manufactured metallic medical implant materials. Management of sheep flocks in northern climates for decreased parasite-related losses.

2. We will continue to provide accessible and affordable education, research and service through processes that ensure effectiveness, efficiency and quality.

2.1 We will grow and advance partnerships to catalyze the cultural, economic and civic future of Maine and beyond.

Stephanie Burnett editorships, reviews, memberships LILY CALDERWOOD - bluewave solar, wild blueberry commission, service MARY ELLEN CAMIRE - Keynote address American Heart Association, Aging ME and collaborations with Bowling Green State University, UColo, and Maine Business school.Professional memberships. SUE ISHAQ - organized the Microbes and Social Equity working group,leading the development of a journal special collection, and was guest editor on approved by mSystems in 2021 ANNE LICHTENWALNER Maine Vector-borne Disease Working Group, the Food Safety Working Group, the Poultry Health Advisory Committee and the Rabies Committee. JADE MCNAMARA Led a break-out session on how to use critical thinking in higher education nutrition course at the Society of Nutrition Education and Behavior annual meeting, with an attendance of 500+ nutrition professionals. EILEEN MOLLOY Academy of Nutrition and Dietetics Maine Academy of

Nutrition and Dietetics
RENAE MORAN Collaborations with UNH, Cornell, WSU TSUTOMU OHNO Collaborations with Penn and Princeton JENNIFER PERRY Collaborations with University of New England GREG PORTER My research on potato cropping systems, supplemental irrigation, and nutrient management has resulted in improved recommendations for potato producers and processors. Improved management practices and varieties help potato growers produce an affordable, high quality potato crop with as little environmental impact as possible. More profitable agricultural systems can help stimulate the rural economy and maintain open space. My research helps growers use inputs efficiently thus minimizing impact on the environment and conserving soil resources.
JUAN ROMERO Relationship with Lallemand, Sappi, BASF, U Delaware, Florida, NC State, UNH, Virginia Tech
RACHEL SCHATTMAN Results from the 2020 Maine Agriculture Drought Survey: I led a survey in the winter of 2020-2021, targeting Maine's biggest commodities (potatoes, wild blueberries) and other important agricultural sectors (diversified vegetable and small fruit, tree fruit, maple, hemp, livestock and dairy, nursery and greenhouse producers). The survey instrument was collaboratively developed by a team of agricultural advisors and service providers from the Maine Department of Agriculture, Conservation, and Forestry (MDACF), the University of Maine Extension, the University of Maine School of Food and Agriculture, and the Maine Organic Farmers and Gardeners Association (MOFGA) My research on drought impacts in the state of Maine has been used by the Maine Water Board to assess the impact of the 2020 drought on agriculture. The Board has been discussing advocating for funding to support farmers' ability to access water during periods of drought without degrading natural resources or ecosystems. The report offers key recommendations for how to accomplish this goal. More broadly, my work seeks to accelerate the rate of climate adaptation and mitigation in land use sectors. I predict that, without support or resources, many land managers will be ill prepared to contend with climate change challenges. By investing in research that (a) documents limitations to adaptation and mitigation, (b) supports land manager communities of practice around climate change adaptation and mitigation, and (c) integrates the best climate science with the place-based expertise of farmers and foresters, we can better prepare for the challenges ahead. By extension, this will support the long term viability of agriculture and forestry MONA THERRIEN Attended Food & Nutrition Conference and Expo's FNCE virtual Dietetic Internship Fair fall of 2020. This national conference allows Dietetic internship programs to recruit from over 2000 prospective students from all over the country

2.2 We will optimize management of our infrastructure and enhance it to support the realization of our vision.

STEPHANIE BURNETT chair or green house committee MARY ELLEN CAMIRE maintenance and reorganization of sensory testing laboratory. SUE ERICH Analytical Laboratory ROBERT CAUSEY Maintenance of Equine Herd and Chute Center CHARLENE GRAY Landscape Horticulture Studio SUE ISHAQ - Manages lab for molecular/microbiology, cell culture, and DNA sequence analysis DOROTHY KLIMIS-ZACAS Angiogenesis laboratory ANNE LICHTENWALNER Director, Maine Veterinary Diagnostic Laboratory RENAE MORAN - Highmoor Farm BRIAN PERKINS My research laboratory is a large (1200 square foot) space equipped with highly sought analytical instrumentation. I am currently working closely with twelve graduate and undergraduate students from our school (SFA) and other UMaine departments/schools. Current projects include analysis of biogenic amines in a number of novel fermented foods, method development for analysis of bioactive compounds in blueberries and

purification and identification of a naturallyoccurring plant compound to control ciliates in the seaweed industry. Training/supervising these students and maintaining these instruments is a time consuming activity. BRYAN PETERSON - Greenhouse JUAN ROMERO - Fistulated cow RACHELL SCHATTMAN I supervise the University of Maine Agroecology Lab, which is located in Deering Hall. I also manage research field plots at Rogers Farm, and conduct research at greenhouses located at the UMaine Extension Plant Diagnostic Lab. adaptation.

2.3 We will communicate effectively with all stakeholders.

STEPHANI BURNETT memberships and engagement LILY CALDERWOOD UMaine wild blue berry conference online, daily reports MARY ELLEN CAMIRE Portland press herald, Mainewomenmagazine, AHA news TIM UNDERGRADUATE COORDINATOR AND GRAD COORDINATOR. SERVICE to aquaculture MARY ELLEN CAMIRE extensive editor responsibilities ERIC GALLANDT associate editor of organic farming CHARLENE GRAY Undergraduate coordinator in SAG and ENH programs. Successful recruitment initiatives PAULINE KAMATH - teen science cafe DOROTHY KLIMAS-ZACAS Affiliatins with many countries, US, UK, Greece, Israel. ANNE LICHTENWALNER - Promoting sustainability by minimizing use of antimicrobials JADE MCNAMARA Interview with Fox 22 Bangor on current funded research grant EILEEN MOLLOY Maine Academy of Nutrition and Dietetics https://www.eatrightmaine.org/conference National Food and Nutrition Expo and Conference https://community.eatrightpro.org/events/event- May 7, 2021, WGME TV news crew (Dustin Bonk and cameraman) filmed a story at Highmoor Farm on peach breeding for cold hardiness.

3. The university will be a rewarding place to live, learn and work by sustaining an environment that is diverse and inclusive, and fosters the personal development of all its stakeholders.

3.1 We will be recognized as a great place to work in Maine.

CHARLENE GRAY Expanding your horizons workshop for girls, Divesrity. Sustainability - UMCE zoom confenerences, Maine Question Podcast SUE ISHAQ - Pod Coordinator for the Orono chapter of 500 Women Scientists DOROTHY KLIMIS-ZACAS Fulbright Scholarship program. ANNE LICHTENWALNER - Member of WiSTEMM JENNIFER PERRY - Acitive in WiSTEMM and in DEI training BRYAN PETERSON - Instructor, Master Gardener Core Competencies Lesson, UMaine Campus. September 2020. I was invited to deliver a one-day course, Plant Propagation, as part of a training series for Master Gardeners. RACHEL SCHATTMANLed a group of faculty/graduate student collaborators to assess needs and opportunities for a new, transdisciplinary graduate fellows' program to be housed at the George J. Mitchell Center. Assessment included surveys of graduate students, faculty, and collaborators outside of the university, and focus groups with Mitchell Center community members and graduate students (2021) DENISE SKONBERG - President's Council for Diversity Equity and Inclusion

3.2 Students will form a lifelong relationship with the university.

Summary

Goals for the next year

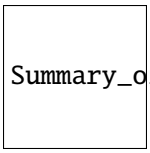
1: Green house
2:
3: Sheep club
4:

Appendix I

HERB_2019_Approval_letter-UMaine.pdf

Appendix II

Appendix III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