Michigan Alliance for Animal Agriculture
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George W. Smith
Associate Director of MSU AgBioResearch

Good morning. Thank you, Chairwoman Allor and members of the committee for the opportunity to share some information about the Michigan Alliance for Animal Agriculture.

My name is George Smith, and I'm the associate director of Michigan State University AgBioResearch and the associate dean for research in the MSU College of Agriculture and Natural Resources. I am on the leadership team for the Michigan Alliance for Animal Agriculture (M-AAA), a research and outreach initiative that operates on behalf of the animal agriculture industries in our state. Animal agriculture represents a crucial component of Michigan's economy. According to the Michigan Department of Agriculture and Rural Development (MDARD), livestock and dairy production annually generate more than $5 billion.

In 2014, animal agriculture and allied organizations banded together to form the Michigan Alliance for Animal Agriculture to help further strengthen the industry. MSU, through the College of Agriculture and Natural Resources, MSU AgBioResearch, MSU Extension and the College of Veterinary Medicine, were invited to lend our research and outreach expertise.

It's been a rewarding experience with significant impacts. One cornerstone is a competitive grants program that provides funding to MSU faculty and Extension educators to conduct applied research and educational programs that address the immediate needs of animal agriculture and its allied stakeholders in the state. All grant proposals (1-2 year projects) undergo thorough peer review by both academic and industry participants. Proposals must address stated priorities as identified by animal agriculture and allied partners in Michigan to ensure funded research and Extension projects are highly relevant and of significant direct impact to animal agriculture in Michigan.

Under this partnership, MSU scientists conduct relevant, timely research on behalf of producers in areas critical to the growth and sustainability of animal agriculture in the state. Through MSU Extension, research findings and recommended best practices are relayed to producers and processors. These efforts play a crucial role in keeping our food supply safe, secure and affordable and to help our animal agriculture industries not only survive, but thrive.

To expand the scope of the initiative, the state of Michigan provided much-needed funding in Fiscal Years 2017 through 2019 and then provided $3 million in this current Fiscal Year (2021) for the competitive grants program. While recurring funding at the $3 million level is needed to fully support research and Extension projects that enhance Michigan animal agriculture, we were glad to see the Governor recommend $1,747,000 in funding for M-AAA in her FY22 executive budget.

Research through M-AAA is broad in scope and delves into an array of challenges facing beef, sheep, swine, dairy, poultry and equine sectors, and meat processing relevant to productivity, and economic and environmental sustainability. Research and outreach programs are conducted at livestock and poultry facilities on the MSU campus and in partnership with farmers across the state. Such work

addresses immediate needs of Michigan animal agriculture, but also serves as a foundation for our faculty to leverage results into significant federal funding for continuation of critical research, further enhancing return on investment for state funding targeted to the program.

Select examples of impactful projects include work studying bovine leukemia virus (BLV), a disease that weakens the immune system of dairy and beef cattle and can lead to significant production problems. In Michigan alone, economic losses from BLV are estimated at approximately $14 million per year.

With M-AAA funding, Phil Durst, a senior MSU Extension educator, has examined the prevalence of BLV in Michigan dairy herds in an effort to bolster awareness of the disease and options for mitigating its effects. MSU found an 88% prevalence of BLV in a survey of 113 Michigan dairy herds. Of these operations, the average within herd-cow prevalence was 33 percent.

Alongside Durst, MSU researchers Paul Coussens and Paul Bartlett have conducted studies to uncover how BLV affects the immune system and susceptibility of cattle to other diseases. The promising results have leveraged additional federal grant funding, allowing MSU researchers to continue to gain insight and develop applicable on-farm management strategies, such as single-use needles and examination sleeves, to lessen the likelihood of disease transmission.

A recent example is the 2019 M-AAA funded study conducted by Tasia Taxis-Kendrick focused on identification of biomarkers of BLV infection that provided key foundational data (along with above described studies) for a $500,000 grant award in 2021 from USDA National Institute of Food and Agriculture (NIFA) to continue critical research on strategies for BLV eradication on Michigan dairy farms.

M-AAA funded research is also developing new strategies to improve swine health and welfare of sows and to facilitate adaptation to new group housing standards now in place statewide. The work of MSU researcher Madonna Benjamin focused on development of automated low cost, non-invasive technologies (automated computer algorithms to analyze video images) to facilitate assessment of fighting, lameness and health indicators in group housed sows to aid swine producers in management decisions about culling, feed allocation and treatment. Complementary work by Juan Steibel and Janice Siegford is focused on use of such indicators as a tool for genetic selection of swine less prone to fighting and hence more compatible with group sow housing. M-AAA research is directly addressing challenges faced by the Michigan swine industry. The work collectively integrates efforts of MSU investigators with expertise in swine production, health and welfare, along with expertise on campus in computer science and engineering, to address critical problems facing the swine industry with the goal to provide genetic and technological solutions to enhance animal health and welfare on Michigan swine farms. The M-AAA funded work of above investigators has been instrumental in recently securing a $1 million USDA NIFA grant award focused on precision livestock farming technologies in swine.

In terms of outreach pertaining to multiple species, MSU Extension Educator Elizabeth Ferry is using M-AAA funding to provide outreach and training on emergency response preparedness for livestock accidents and/or emergencies. First responders often don't have the training or equipment to handle livestock trailer accidents. This M-AAA funded project facilitated development of in-person trainings, a cost assessment of suitable trailers for use in emergency response, development of a county resource guide to address responding to accidents involving livestock and an ongoing online training course for Emergency Response to Accidents Involving Livestock.

Emergency response workshops conducted in Calhoun and Ingham counties drew 87 participants, 58 of which represented residents from 30 counties. Goals and outcomes of this training program have been shared broadly through various partners, including commodity organizations (Michigan Pork Producers Association, Michigan Meat Association), Michigan Farm Bureau, and the Michigan Association of Animal Control Officers. The training program was also highlighted on the Rural Free Delivery Television Network (RFDTV). Since program initiation, three trailers have been purchased and equipped for emergency responses in Branch, Jackson and Otsego counties. These opportunities will work to provide Michigan with a network of highly trained individuals, able to effectively respond to accidents involving livestock and resources available to assist in the response.

M-AAA funded research is impactful and has provided a significant return on investment. The USDA Economic Research Service estimates > $10 in economic return for every dollar invested in agricultural research. The above three examples illustrate a small subset of the highly impactful M-AAA funded research and Extension efforts tied directly to pressing needs within Michigan agriculture.

Our M-AAA supported research and Extension programs have already shown significant potential for economic return benefitting Michigan producers. For example, widely adopted nutrition programs integrating incorporation of supplemental feeding of specific fat types in dairy cow diets (work of Adam Lock) have been shown to increase milk fat content and potential revenues by over $50 per cow per month for dairy farmers (>3:1 return on investment after consideration of feed costs). Likewise, increased revenues of > $140 per cow per year are estimated for new dairy cow fertility programs being developed with M-AAA funding (work of Richard Pursley). This work has potential for industry wide impact of $42 million per year in Michigan. Both faculty members have recently leveraged these results into new grants from the USDA NIFA totaling $1.5 million. Development of programs designed to cost effectively increase revenues for Michigan dairy producers are now more important than ever, given historically prolonged suppression of milk prices in the prior decade and the acute severe downturn associated with the COVID-19 pandemic and supply chain disruption in 2020.

Funding for the M-AAA is also critical to provide tools and programs to respond to rapidly emerging challenges facing animal agriculture in the state. According to MDARD, 2019 was one of the worst growing seasons on record with disaster declarations made in 54 of Michigan's 83 counties. Wet weather in the spring and fall wreaked havoc for livestock producers in terms of planting and or harvest of feed necessary to maintain their operations. Limitations in terms of amount and quality of feed available were anticipated. A recently completed M-AAA funded study conducted by Adam Lock is directly relevant to this challenge. Locks' work looked at partial replacement of forage in dairy cow diets with a commonly available byproduct. His work showed that feeding of reduced forage versus conventional diets caused cows to eat less, but milk production was increased. Additional revenues of $1.80 per cow per day were realized with the low forage diet after consideration of feed costs. Results of this study provided a plausible cost-effective solution for dairy producers with limited forage availability due to extreme weather challenges faced in 2019.

The COVID-19 pandemic revealed new and unprecedented challenges for Michigan animal agriculture related to supply chain disruptions. To respond, M-AAA issued a special call for proposals addressing priority areas of COVID related impact as identified by our industry partners. Three proposals were funded) addressing issues related to the workforce, mass depopulation of animal facilities, and environmental impacts of carcass disposal. These projects will provide solutions to ongoing industry

challenges associated with the COVID pandemic and are also relevant to potential foreign animal disease outbreaks in the future.

Previous support from the state of Michigan for the Michigan Alliance for Animal Agriculture has significantly advanced animal agriculture in the state and translated into real life solutions to problems facing this key sector of the state's economy. Fully funding M-AAA in FY2022 and beyond will give Michigan State University the opportunity to work with our animal industry partners to provide solutions to ongoing challenges and emerging threats. Ongoing funding from the state of Michigan is critical for continuation of the M-AAA grants program and this strong partnership between Michigan State University and the animal agriculture industries in the state who depend on us.

Thank you very much for this opportunity to share some of the immense impacts M-AAA has had.