July 30, 2020

The Honorable Sonny Perdue  
Secretary  
U.S. Department of Agriculture  
1400 Independence Ave., S.W.  
Washington, DC 20250

RE: Docket ID No. USDA–2020–0003 Solicitation of Input From Stakeholders on Agricultural Innovations

Dear Secretary Perdue:

The Association of Equipment Manufacturers (AEM) appreciates the opportunity to comment on USDA’s Agriculture Innovation Agenda priorities.

AEM is the U.S.-based international trade group representing off-road equipment manufacturers and suppliers, with more than 1,000 companies and more than 200 product lines across the agriculture, construction, forestry, mining, and utility-related industry sectors worldwide. Collectively, the equipment manufacturing industry in the United States supports 2.8 million jobs and contributes roughly $288 billion a year to the U.S. economy.

Our members are on the cutting-edge of equipment innovation, which will be vital to achieving USDA’s goal of increasing food production by forty percent while decreasing inputs by fifty percent. We look forward to any opportunities to further coordinate with USDA to improve the competitiveness and environmental stewardship of America’s farmers and ranchers.

We must note that the foundation of many of our suggestions below is the Global Positioning System (GPS). Precision agriculture is not possible without an extremely reliable and accurate GPS. We urge USDA to ensure nothing is allowed to interfere with the GPS signal our equipment depends on to help America’s farmers and ranchers continue their long history of producing more food with fewer resources.

Crop Protection and Nutrient Application Labels for Next Generation Sprayer Technologies

Objective: Provide datasets that allow advanced application technology to be fully utilized when applying plant protection products.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?

One of the opportunities in the next 10 to 30 years to increase productivity while decreasing the environmental footprint is in the area of application technologies for nutrients and plant protection products. Variable rate technologies have demonstrated that by placing the “right amount” at the “right place,” part of the 4R strategy, will lead to increases in yield and reduction of inputs.
Looking to the next 30 years, the placement of products to nurture and protect a crop will become more precise, down to the plant level. Technologies that utilize image processing and artificial intelligence will allow for identification and treatment at the plant/weed level. Such technologies can lead to reduced input cost for producers and reduced environmental loading by optimizing the effect of the products placed in the field.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?
Adoption of such technologies doesn’t come without some challenges. One specific challenge is how advanced technologies are incorporated into the regulatory framework for plant protection products. Producers are required to apply plant protection products per the product label and if there is uncertainty on how the technologies fit into application instructions this can slow the adoption of the technology. How application technologies incorporate in the plant protection products registration process will impact adoption. If the regulatory framework leads to requirements that every plant protection product must be tested to every brand of application technology, this will lead to administrative burden, reduce investment for development, lower adoption and limit choice for producers. Collaboration with EPA is needed to develop manageable procedures to incorporate future technologies into plant protection labels. Research on how innovation technologies impact the application are needed to support policies that allow for utilization of technology without having to test every combination. This type of macro system research would provide the basis for consensus standards development that could then be incorporated into the regulatory framework.

Acceptable Autonomy Risk Factors
Objective: Develop sound and credible datapoints behind realistic risk factors the government and public can and should allow for with the adoption of autonomous farm equipment while illustrating improved safety over human operators.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
Over the last 15 years, agriculture production has been enhanced by automation technologies. This trend will continue in agriculture. But agriculture is not alone. Most industries are adopting technology on a path towards autonomy. Automation in agriculture production has an impact on job quality, production capacity, human safety and enables site-specific production. Evaluating the comparative benefits of human and autonomous systems in other industries would benefit autonomous applications in agriculture production. The insights learned from this study can increase the national, state and local governments’ and general public’s awareness of the technology, and more so the benefit. These insights could lower the regulatory barriers to adoption.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?
There are very few autonomous vehicle standards or regulations that apply to agricultural equipment today. However, that is not likely to remain the case. The proposed study and report are intended to be a proactive approach to understanding how policy frameworks can facilitate the transition from human to autonomous systems in agriculture, and the potential benefits to be derived from autonomous agriculture applications.

Blockchain and Cloud Computing
Objective: Study the growth trend of information collected on farms for the purposes of improving “cab to cloud” transfer of data and sharing throughout the supply chain.
What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
The ability to align the supply and demand supply chains within agriculture. Sensors collect bytes of data. Large datasets from a multitude of sensors, when combined, generate insights that empower actionable results. The agriculture production supply and demand chains could benefit from enhanced speed and accuracy of technological concepts of blockchain. More specifically, a shared ledger of activities that connect producers to consumers could have a vast number of impactful outcomes that range from more efficient movement of agriculture goods leading to reduced waste, traceability of goods that improve knowledge of potential containment of contamination, and reducing the supply-side changes required to meet shifts on the demand-side.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?
Some of the specific research gaps, regulatory barriers, and hurdles that need to be addressed are the cost of sensor technology, data privacy regulations such as who owns the data and how the administration of read/writing privileges, and the data standards and protocols needed for implementation. There will likely be additional gaps, barriers, and hurdles that will become known as more research is conducted.

Carbon Sequestration and Water Conservation
Objective: Provide independent validation of the carbon sequestration and water conservation benefits of equipment usage as well as provide insight into how future generations of equipment can improve in these categories.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
Air quality is vital for survival of all living things. Green House Gasses (GHG) is a topic that continues to be researched. Living plants use photosynthesis to harvest carbon dioxide (CO2) from the atmosphere, combine it with water (H2O) to create glucose (C6H12O6) and oxygen (O2). Some plants store excess glucose in the form of starch in their root structure. Farming practices that don’t disturb the soil or minimally disturb the soil enable the capability to create an effective carbon sink, offsetting some of GHG emitted. US Agriculture exploring no-till or minimum tillage practices coupled with intensive inter-growing season crop rotation could result in carbon sequestration that is mutually beneficial for all living things. The potential impact ranges from increases in yields, reduced impacts on soils, improved air quality and improved human life.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?
The largest hurdle on this opportunity is the time required to prove the effect of carbon sequestration. There are a small number of initiatives or research projects that are tackling partial solutions, but US agriculture lacks a comprehensive study. The scope and time commitment required for a comprehensive study best fits a research entity that is properly funded, allowed to pivot based on early results, and unbiased to the outcomes or insights.

Closed In-field Water Systems
Objective: Study feasibility of tiled acres employing control gates for water retention.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
Clean water is a vital resource for all life. Agriculture production depends on access to this precious resource. In some parts of the US, agriculture production is limited by too much water, too little, or both at different times of the growing season. Some US farmers are installing subsurface drainage systems
and/or irrigation systems to overcome the challenges they face. An opportunity exists where a closed-loop water management system that collects water from the field is collected and then recirculated on the field using a system of perforated plastic tubes. Some of the potential advantages to this system include recycling water through sub-surface drainage lines to prevent “run-off” from entering US waterways, reducing irrigation water volume due to eliminating evapotranspiration, and yield improvements. The limited research that does exist demonstrates a significant impact on yield coupled with empowering farmers with increased impactful water management capabilities. For example, combining soil moisture sensors, drainage control gates and predictive weather models, a grower can decide to open or close the control gates based on data.

*What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?*

The largest hurdle on this opportunity is the investment cost required. There are a small number of research studies that exist. It is unclear at this time if drainage lines must be installed following the control of the land or if existing drainage systems installed below the soil can accommodate the system. The collection ponds present a number of concerns that include the amount of land required for collecting the water, the quality of the “run-off” and regulatory concerns from storage of the water (i.e. excess capacity needed for weather events and spill plan.)

**Agronomy Research on Best Methods to Manage Crops En Masse through Individual Plant Care**

**Objective:** Determine the most effective/efficient way to manage individual plants in a large population to maximize output while minimizing inputs.

*What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?*

To meet the needs of a growing world’s population, there is a need for US Agriculture to produce more food and fiber on less land and ideally with less inputs. Agriculture productivity has steadily increased over the past 100 years. The challenge is continuing this growth trajectory. The numerous innovations that are characterized by the term Precision Agriculture enable farmers to collect data, analyze data and make decisions on small areas or zones within a field. These innovations are responsible for a portion of increased agriculture productivities over the past 20 years. With developments in sensors that collect data, ubiquitous connectivity, and software programs that generate insights, US farmers should be enabled to manage site-specific plant needs. By managing decision at the plant level, inputs and outputs are optimized leads to broad positive impacts.

*What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?*

Lack of broadband connectivity, especially over croplands, is one of the largest hurdles of managing agronomic decisions at the plant level. It is recognized that rural broadband is a focus topic for other USDA committees. Looking past rural broadband, the vast scope of variables that make up what can be characterized as the “yield equation.” A general definition of the yield equation are the variables or factors that impact or influence the plant from planting, through the growing cycle, and include how the plant residue is managed after harvest. These factors are viewed as static or dynamic. The factors that are viewed as static, such as, but not limited to, soil type, soil slope and genetic potential of the seed. The dynamic variables include but are not limited to weather, precipitation, and soil compaction. Developing the datasets needs to address by static and dynamic factors represent a research scope that fit within an entity such as the USDA.

**Alternative Wireless Systems**

**Objective:** Identify innovative methods to connect farm equipment to enable the cost-effective flow of data.
What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?

Improved connectivity of agricultural operations has tremendous benefits as we continue to become more dependent on data-driven decisions.

The ability of that data to flow seamlessly across farms and ranches will ultimately dictate the amount of economic and environmental gains achieved from precision agricultural tools.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?

The vast majority of wireless research has been focused on addressing the demands of people for increasing connectivity - higher data rates and lower latency. Naturally, there is a tendency to focus on urban and suburban areas, since that is where most people live. Also, that is where the constraints of finite radio spectrum are most painfully acute.

The approaches that are used in urban environments do not meet the needs of rural environments. Methods such as small cells and heterogeneous networks do not fit well into an agricultural environment. Urban macro-cells, designed to provide service over several miles, are also designed to support tens of thousands of simultaneous users; this level of capacity is simply unnecessary and too expensive for rural communities.

Furthermore, recent advances in software defined radio technology are beginning to make it affordable to tailor existing wireless technology to the needs of rural applications.

The problems of wireless connectivity for agriculture can be loosely partitioned along the following lines:

- Connecting large agricultural equipment, such as harvesters and tractors, to resources in the cloud. Such machines tend to be large, and have ample power available. However, network connectivity is often not reliable.
- Connecting agricultural equipment together. Many use cases have shown they cannot tolerate the lack of reliability of the existing network infrastructure, and require agricultural machines to be directly connected. Examples include platooning of machines, and “docking” between a harvester and tender.
- In-Field sensors. No large machine or power source is available, but distances are great. Data rates are often low.

Current wireless system activities – LTE / 5G-NR under TV Whitespace Rules – The FCC’s TV Whitespace rules have been viewed as a potentially transformative approach to facilitating communication in rural areas, both for connecting communities and enabling precision agriculture. However, the TV whitespace rules simply allocate spectrum, they do not specify a wireless waveform that should be used in the spectrum.

Most TV whitespace deployments have used modified Wi-Fi signals. One reason for this is that early adopters have had access to router software for many years. However, Wi-Fi waveforms were designed for short distances. Although they can sometimes be made to work over longer distances, performance would be improved if a waveform were used that was designed for such scale.

Recently, there has been a movement to disaggregate cellular networks based on 4G (e.g. LTE) and 5G technology. This has been manifested in projects such as Telecom Infrastructure Project, initiated by Facebook and the O-RAN alliance, which has a membership of more than 20 major telecommunication operators. This movement has made accessible the same kind of tools for cellular networks that have long been available for Wi-Fi.
We note that cellular standards include parameter adaptations such as reducing the carrier bandwidth, that are seldom used in urban settings. Such adaptations would enable these waveforms to operate under the TV WhiteSpace rules. These standards are more suitable for mobility and for deployment at the scale of a rural community.

Furthermore, techniques such as those used in CAT M.1, where information is retransmitted in multiple resource blocks, provide increased range.

Wireless Coverage Mapping – It has recently become clear that we do not have accurate information regarding available wireless coverage in the United States. In urban areas, there are many choices, and this is not a problem. However, in rural areas, publicly available coverage maps provided by carriers are often wildly inaccurate. Only after signing up for service does a customer discover that he or she does not have coverage over their fields.

Congress has tried to address this problem with the Broadband DATA Act, which was passed in March 2020. Also, the Farm Bill of 2018 created a Precision Agriculture Task Force, which includes a Broadband Mapping Working Group.

The problem of mapping broadband coverage over fields is quite difficult technically. One area where the USDA might fund research is developing a spectrum sensor based on software defined radio technology that could monitor a broad spectrum and determine which technologies (e.g. 2G / 3G / 4G / 5G, whitespace, Wi-Fi or proprietary) are available for public use.

Another potential area of research is “opportunistic sampling” of broadband coverage. It is impractical to send surveyors to measure coverage of broadband signals in the middle of large fields. It would be much better to sample the coverage from nearby access roads and make a reasonable estimate of in-field coverage based on propagation models.

Rural Propagation Models / Planning Tools – Cellular networks are planned using wireless propagation models. These describe how the signal fades due to effects such as tower height, rolling terrain, foliage and so forth. These propagation models are often empirically derived. The most common propagation model in rural environments is the Hata model.

However, current propagation models do not do a good job of accounting for seasonality or specifics of terrain. That is, current models do not consider that the leaves from trees absorb more radio energy in the summertime than the bare trees do in winter.

We suggest that USDA might fund practical research to address questions such as, “If I put a certain radio on this grain silo, how far would the signal reach?” Or similarly, “Given the rolling nature of the terrain in this location, how high would a tower need to be to cover my fields?”

Today, wireless networks in rural areas are typically planned using rules of thumb. Such rules of thumb carry the risk that the wireless network will either be overbuilt and cost too much, or not perform to expectations.

Cellular network providers and tower companies have access to specialty planning tools (for example, EDX), but these require a great deal of training to use. Furthermore, such tools tend to be focused on complex ray-tracing multi-path propagation models that are not required in the rural environment. Terrain and foliage features would be sufficient for most rural applications.
Farmers, ranchers and wireless ISPs would benefit from a simplified planning experience that enables them to know with confidence that once they deploy wireless equipment, it will meet their expectations. Ideally, a planning tool that automatically imports topography information and estimates the coverage available from existing structures, or tells the farmer how tall a new tower must be to meet their needs.

Research adopting a Vehicle-to-Vehicle Networking Standard – One of the challenges in rural areas is lack of wireless infrastructure. It is simply not economical to deploy all the towers necessary to ensure reliable coverage. Two competing standards-based technologies have emerged to handle direct vehicle-to-vehicle networking in the absence of wireless infrastructure: DSRC and C-V2X. DSRC is based on 802.11p (a variant of Wi-Fi). In Europe, the counterpart to DSRC is ETSI-G5 - the two are nearly identical. By contrast, C-V2X is an entirely different standard based on LTE cellular standards.

Agricultural equipment vendors see vehicle-to-vehicle networks as necessary to improve productivity and enable technologies such as autonomous agricultural vehicles. However, another significant benefit is also improving safety between agricultural equipment and passenger vehicles on highways. The Agricultural Industry Electronics Foundation (AEF) has selected 802.11p-based standards (DSRC and ETSI G5) as the basis of its vehicle-to-vehicle networking.

There is currently a great deal of uncertainty on whether passenger vehicles in the United States will standardize on 802.11p or C-V2X. There is no clear consensus on which is better from a technical standpoint. The US-DOT has taken the position that it will not impose either as a standard, but rather will let the market select the winner. The situation is reminiscent of the VHS vs. Betamax debate.

Therefore, we propose research that enables C-V2X and DSRC to simultaneously interoperate. This is technically possible, but no vendor is currently doing it. The Israeli semiconductor vendor Autotalks has chips that can operate with either DSRC or C-V2X, but not simultaneously. Simultaneous operation could be achieved using Software Defined Radio (SDR) technology with broadband front-ends, for example.

Scaling up of Vertical Farming
Objective: Study feasibility of large-scale vertical farms and what the equipment needs would be for such operations to be economically successful.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
Vertical farming provides opportunities for research and development, breeding, and seed propagation. The greatest potential impact is the implementation of technology in agriculture, partly due to new possibilities with data analysis. Vertical farms have a multitude of sensors measuring many parameters, from temperature, to nutrient levels. The plants are analyzed with cameras and sensors which monitor plant health in real time. As a result, vertical farms are hiring data engineers and sensor specialists as a significant percentage of their workforce. Artificial Intelligence already plays a key role in many vertical farm operations. As sensors continue to get cheaper and more capable, the opportunities for farms increases considerably.

Farmers will embrace technology – like developing new methods for drip irrigation, better grazing systems that lock up soil carbon and ways of recycling on-farm nutrients. Organic farming and high-precision agriculture are doing promising things, like the use of artificial intelligence for detecting disease, sensor-activated irrigation systems and GPS-controlled self-driving tractors.

Some of the obvious benefits of vertical farming is year-round vegetable production, consistent quality, and predictable output. Vertical farming holds other environmental benefits, as it allows for highly
efficient use of fertilizer. Vertical farm technology allows for faster growth cycles and quicker harvests, meaning more food can be grown every year, in a much smaller space than on a conventional farm.

One of the highest-yielding farms grows over 350 times more food per square yard than a conventional farm. And weatherproofing means complete control of incoming contaminants and pests, completely eliminating the need for the use of chemical pesticides. These farms can produce enormous amounts of food, with one of the biggest facilities producing 30,000 heads of vegetables a day.

*What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?*

Economics are a major obstacle for further rollout of vertical farming. Plant factories are not the solution to feeding the world's increasing population. Large-scale production of crops that compete with crops grown in traditional systems is not economically viable in the coming years. Plants - and not just growers - need to adapt to these new urban growing solutions, too. There is a need for new genetics designed specifically for vertical farm production that address five traits of interest: easy and uniform fruiting; rapid biomass and multi-harvest capable crops; photoinduced quality; auto-harvest friendly traits; and dwarf plants with yield efficiency.

According to the global agriculture report, eighty percent or more of the emissions for agriculture happens on the farm—not in the processing, not in the transportation. Real reductions in greenhouse gases will come from managing the soils, managing the crops on the land, the types of mechanization that’s used, and the types of fertilizer. Urban gardening and vertical systems have many benefits, but lack the scale needed to meet food demand or deliver significant environmental impact on a massive scale.”

Proponents of vertical farms often say that they can offset the enormous sums of electricity they use, by powering them with renewable energy — especially solar panels — to make the whole thing carbon neutral. But just stop and think about this for a second. These indoor “farms” would use solar panels to harvest naturally occurring sunlight, and convert it into electricity, so that they can power…artificial sunlight? In other words, they’re trying to use the sun to replace the sun. For example, with current technology, it makes no sense to grow food staples, such as wheat, indoors. A Cornell professor calculated that if you grew wheat indoors, just the electricity cost per loaf of bread made from that wheat would be $11. Or, if solar photovoltaics were used entirely to power the electric lights, the requirement would be 5.4 acres of solar panels to provide one acre of sunlight equivalent.

Even if a vertical farm boom were to ensue, the output would only be a small percentage of the vegetables and fruits grown on traditional farms and none of the wheat, corn, soy, or rice, at least not in the foreseeable future. Neither will vertical farms raise livestock or grow oil palms, which are mainly what people are clearing hardwood forests to make room for.

**Equipment’s Role in Improving Animal Welfare**

Objective: Quantify modern equipment’s cost-effective ethical treatment of animals and how that increases their productivity.

*What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?*

Health sensor technology for allowing preventative/proactive treatment to cows showing signs of illness so that the level of illness does not get to a point of major stress on the cow. This will lead to longevity of the dairy cow therefore a longer productive life.

Milking robotics will continue to improve in technology that will make the milking experience enjoyable for the cow as well as additional sensor points for milk analysis that will give the farmer more data to
make better management decisions. A relaxed environment of a milking robot barn allows for cows to freely move from eating, laying down and milking in the robot. This too many has been an ethical way to care for cows as the stress factor is low with these cows and farmers can see that the cows are enjoying their overall experience of these barns. We can bring more information regarding numbers of days in production is longer in robot facilities.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?

Milking or sensor technology that has been researched and approved in other countries that can be confirmed by USDA earlier instead of doing their own research that can delay implementation of the product to the marketplace. One product in particular evaluates the quality of the cow’s milk on a per milking basis has been operation in Canada for 11 years now but still waiting for product launch in the US. We also see delays from state to state as well that takes time and effort from our end to get our products approved for use where we could be using that time for preparing the farmers in that state for using the technology for the overall efficiencies that they can expect on their farm.

Swarm Intelligence System Model for Aerial and Ground
Objective: Research would explore possible efficiencies of farming systems employing several small pieces of equipment as well as what traditional practices and regulations need to be modified for such a paradigm shift to be successful.

What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach)?
As the agriculture industry, continues to adopt automation leading toward autonomy and self-directed operation. A few trends for underpinning technologies become evident and eventually recognized as fundamental and necessary building blocks, Swarm Technology or Swarm Intelligence is one such cornerstone technology.

Swarm intelligence (SI) is the collective behavior of decentralized, self-organized systems, natural or artificial. With this technology the agents follow very simple rules, and although there is no centralized control structure dictating how individual agents should behave, local and to a certain degree random, interactions between such agents lead to the emergence of "intelligent" global behavior, unknown to the individual agents. Examples of swarm intelligence in natural systems include ant colonies, bird flocking, hawks hunting, animal herding, bacterial growth, fish schooling and microbial intelligence.

The workflow of agriculture is composed of a series of relatively simple and repetitive tasks, often physically demanding and performed most frequently outdoors subject to the external environment. As such, it is particularly well suited to benefit from advances in Swarm Technology as machine and automation are increasing employed to accomplish such task become connected and then coordinated in their approach to work. Most of the examples cited in the definition include lower level animals interacting with aspects of their environment and responding to natural systems. Advances in SI applied to growing crops and animals will certainly deliver concepts or systems that are more efficient both ergonomically and economically as well as safer for workers and sustainable in nature. The agriculture industry will benefit from increased yields coupled with a reduction in inputs resulting from consistent and repetitive production processes that are optimized toward specific task or sub-sets of the ordered workflow. Society will realize benefits through increased consistent, repeatable and risk reduced production processes with improved transparency and traceability, much like has been experienced with adoption of factory automation for manufactured goods that fuel an economy.

What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed?
As this field of study began in 1989, opportunities for SI focused at the challenges of sustainable production of food, fiber, fuel and fauna will be significant for an ordered regenerative process. Aspects of research gaps will be filled by individual crop and geographic specific projects. Elements of overarching system architecture and the focused interaction toward artificial intelligence systems interacting with natural and biological systems to impact biological or grown outputs is significant. From such research, society will benefit in many ways through study and development of a biological systems approach for regenerative production of necessities for a growing world population.

**Conclusion**
American agriculture is experiencing a technological revolution. AEM is excited about the tremendous potential of equipment technologies on the horizon that will reshape how food is produced and we protect our natural resources. However, if this future is to be realized and America’s farmers and ranchers are to maintain their competitive edge, we need to ensure our nation makes sound investments in research and structure regulations to foster, not discourage, innovation.

AEM looks forward to working with USDA to see that the Ag Innovation Agenda achieves its goals. For further information please contact Nick Tindall, AEM’s Senior Director of Regulatory Affairs and Agriculture Policy at ntindall@aem.org or 202-701-4287.

Sincerely,

Dennis J. Slater
President