The U.S. Department of Agriculture's Gold Standard Science Implementation Plan

Based on Executive Order No. 14303 "Restoring Gold Standard Science" August 22, 2025

Overview

Since its inception, the U.S. Department of Agriculture (USDA, Department) has been called upon to serve the American people with a strong commitment to the highest level of integrity in all aspects of the Department's engagement in scientific and technological activities, and the use of scientific information in policymaking. This commitment is critical to maintaining the trust of the American people and instilling confidence in government decisions.

This report implements provisions of President Trump's Executive Order (EO) 14303[1], *Restoring Gold Standard Science*, issued on May 23, 2025. The EO is "committed to restoring a gold standard for science to ensure that federally funded research is transparent, rigorous, and impactful, and that Federal decisions are informed by the most credible, reliable, and impartial scientific evidence available." This EO, and subsequent *Agency Guidance for Implementing Gold Standard Science in the Conduct & Management of Scientific Activities*[2] set forth by the Executive Office of the President Office of Science Technology and Policy (OSTP) on June 23, 2025, directed USDA to develop an implementation plan to adhere to EO 14303's tenets of Gold Standard Science (GSS) and to update applicable USDA agency policies governing the production and use of scientific information including scientific integrity policies.

This report outlines USDA's history with and plan to further GSS in the following areas:

1. **Furthering USDA Adherence to the Tenets of GSS:** As outlined in EO 14303, GSS means science conducted in a manner that is (i) reproducible, (ii) transparent, (iii) communicative of error and uncertainty, (iv) collaborative and interdisciplinary, (v) skeptical of its findings and assumptions, (vi) structured for falsifiability of hypotheses, (vii) subject to unbiased peer review, (viii) accepting of negative results as positive outcomes, and (ix) without conflicts of interest.
2. **Development of Standardized Metrics and Evaluation Mechanisms:** To assess adherence to the GSS tenets and their impact on scientific quality.

[1] Executive Order (EO) 14303, *Restoring Gold Standard Science*, issued on May 23, 2025. https://www.federalregister.gov/documents/2025/05/29/2025-09802/restoring-gold-standard-science

[2] OSTP, GSS guidance memorandum *Agency Guidance for Implementing Gold Standard Science in the Conduct & Management of Scientific Activities* on June 23, 2025. https://www.whitehouse.gov/wp-content/uploads/2025/03/OSTP-Guidance-for-GSS-June-2025.pdf

3. **Providing Trainings and Resources:** To ensure USDA agency personnel understand and adhere to the tenets.
4. **Leveraging Technology for Implementing GSS:** To implement GSS, by utilizing, where possible, existing departmental resources, expertise, and technologies to implement this plan.
5. **Challenges to the Implementation of GSS at USDA:** Including how USDA can overcome such challenges.

Secretary's Memorandum 1078-013[1], issued on June 30, 2025, *Responding to and Implementing Gold Standard Science at the U.S. Department of Agriculture,* provides guidance to the Department on Section 4 of the EO regarding Improving the Use, Interpretation, and Communication of Scientific Data. This plan is intended to complement this Secretarial Directive.

This implementation plan illustrates how USDA currently promotes high-quality scientific inquiry and scientific integrity across the Department. These current practices will serve as a foundation from which USDA can adhere to the tenets of GSS as outlined in the President's Executive Order. This plan also describes USDA's existing approach to monitoring and evaluating scientific quality and integrity, employee training, and leveraging available resources and technologies to advance these tenets.

Building from this implementation plan, USDA will work to identify additional opportunities to further embed each tenet of GSS into USDA's culture and operations.

1. Furthering USDA Adherence to the Tenets of GSS

The Department is committed to upholding the tenets of GSS. While USDA intends to identify gaps and areas for improvement, these foundational principles are deeply embedded in the Department's culture, funding opportunities, award selection process, budget and resource allocations, rule-making process, and reporting mechanisms, as well as other actions which are critical to the conduct and management of scientific activities. By further integrating GSS tenets into the culture of USDA, the Department will ensure the highest standards of scientific research and integrity. This commitment to GSS tenets not only advances scientific knowledge but also fosters public trust and confidence in USDA science.

Departmental regulations guide USDA staff on the conduct and performance of science, with many of these regulations reflecting GSS tenets. For example, the USDA *Scientific Integrity* policy (Departmental Regulation (DR) 1074-001)[2] mandates objectivity and transparency in scientific reporting. This policy requires that hypotheses, methods, data and results be well-documented, ensuring that every step of the research process is transparent.

Additionally, the USDA Code of Scientific Ethics—part of the *Scientific Integrity* policy—provides employees with clear direction about ethical behavior, including the necessity to disclose potential conflicts of interest

[1] USDA Secretary's Memorandum 1078-013, issued on June 30, 2025, *Responding to and Implementing Gold Standard Science at the U.S. Department of Agriculture*. https://www.usda.gov/sites/default/files/documents/sm-1078-013.pdf
[2] Departmental Regulation *Scientific Integrity*, DR 1074-001, May 2, 2024. https://www.usda.gov/directives/dr-1074-001

and actions necessary to perform GSS. By requiring adherence to this policy, USDA maintains high standards of scientific integrity, fostering confidence in the validity and reliability of its research.

The Department also follows many policies, statutes, regulations, and other guidance that require analyses supporting policy decisions to adhere to GSS tenets. For example, when supporting regulation development, USDA analysts strive to ensure that analyses to inform regulation are science-based, and the utilized data meet the requirements of the relevant guidance promulgated by the Executive Office of the President (EOP). This guidance includes:

- Executive Order 12866, as amended[1],
- Office of Management and Budget (OMB) Circular A-4[2],
- *Information Quality Act*[3] (IQA) and *Information Quality Act* Guidance[4] including M-19-15[5]
- OMB *Final Information Quality Bulletin for Peer Review*[6]
- *Good Guidance* (for Guidance Subject to 12866)[7]

The USDA Office of Ethics (OE) assists USDA employees in navigating federal ethics laws and regulations. Especially relevant to the integrity of scientific activities, 18 USC 208[8] is the criminal conflict of interest statute, and 5 CFR 2635.502[9] is the impartiality regulation. Those two authorities, in addition to the representational restrictions imposed by 18 USC 203 and 205, are pertinent to the scientific activities and are the underpinning for all OE guidance related to interactions of employees with outside entities. One example of guidance is

[1] Executive Order 12866, *ENSURING LAWFUL GOVERNANCE AND IMPLEMENTING THE PRESIDENT'S "DEPARTMENT OF GOVERNMENT EFFICIENCY" DEREGULATORY INITIATIVE*, on Feb 19, 2025 https://www.whitehouse.gov/presidential-actions/2025/02/ensuring-lawful-governance-and-implementing-the-presidents-department-of-government-efficiency-regulatory-initiative/

[2] OMB Circular A-4, *Regulatory Analysis*, Sept 17, 2003. https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf

[3] Section 515 of Public Law 106-554, Dec 21, 2000. https://www.govinfo.gov/content/pkg/PLAW-106publ554/pdf/PLAW-106publ554.pdf

[4] https://www.usda.gov/about-usda/general-information/staff-offices/office-chief-information-officer/guidelines-and-compliance-resources/information-quality-activities

[5] OMB memorandum, *Improving Implementation of the Information Quality Act*, of April 24, 2019. https://trumpwhitehouse.archives.gov/wp-content/uploads/2019/04/M-19-15.pdf

[6] OMB Bulletin, *Final Information Quality Bulletin for Peer Review* of Jan 14, 2005. https://www.govinfo.gov/content/pkg/FR-2005-01-14/pdf/05-769.pdf

[7] OMB Bulletin 07-02, *Final Bulletin for Agency Good Guidance Practices*, of Jan 18, 2007. https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/memoranda/2007/m07-07.pdf

[8] 18 USC 208: *Acts affecting a personal financial interest*. https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title18-section208&num=0&edition=prelim

[9] 5 CFR 2635.502, *Personal and business relationships*. https://www.ecfr.gov/current/title-5/chapter-XVI/subchapter-B/part-2635/subpart-E/section-2635.502

Ethics Issuance 09-1[1] *Ethics Issues Related to USDA Scientists*, which applies ethics rules to situations facing scientists. Another example is the recently issued training video on *Ethics Illustrated: How to Avoid Conflicts of Interest*[2] for federal employees in their official roles.

The Departmental Regulation on *Public Access to Scholarly Publications and Digital Scientific Research Data* (DR 1020-006)[3] plays a critical role in promoting transparency. This regulation mandates the public release, to the extent allowed by law, of data sets underlying publications, allowing for independent verification and fostering an environment of openness. By making data accessible, USDA encourages the scientific community to engage in rigorous analysis and replication of studies, thereby strengthening the reliability of research findings.

Moreover, the Departmental Regulation on *Publication Review and Clearance Policy* (DR 1410-001)[4] outlines the interagency and departmental clearance process for USDA-issued reports after peer review. This regulation ensures that all reports undergo a thorough review process, incorporating feedback from various agencies and staff offices before they are finalized. Such a comprehensive review mechanism enhances the accuracy and credibility of USDA-disseminated information and strengthens public trust in its publications.

The National Agricultural Library (NAL) also contributes to transparency and reproducibility in USDA-funded science. By providing public access to research outputs, the library ensures that scientific knowledge and discoveries are widely shared. This availability not only promotes further research and innovation but also enables the public to stay informed about advancements in agricultural science.

At the agency level, USDA has policies and procedures to ensure the quality, credibility, integrity, and clarity of scientific information and publications. Many USDA agencies have specific policies in place to ensure that the review of science is unbiased, transparent, and of high quality.

For example, USDA's federal statistical agencies, including two of the thirteen principal federal statistical agencies covered by the OMB Statistical Policy Directives now codified as *RESPONSIBILITIES OF RECOGNIZED STATISTICAL AGENCIES AND UNITS* (5 CFR 1321)[5], are responsible for ensuring the quality, objectivity, and transparency of statistical information. These efforts are guided by the OMB Statistical Policy Directives and 5 CFR 1321, which are complementary to the tenets of GSS, and USDA agency-specific policies that require unbiased peer review and transparency of data usage. These agencies must also adhere to principles of

[1] Ethics Issuance 09-1 *Ethics Issues Related to USDA Scientists.* https://www.usda.gov/oe/rules-road/ethics-issuances/09-1-ethics-issues-related

[2] USDA Office of Ethics video entitled *Ethics Illustrated: How to Avoid Conflicts of Interest*. https://www.youtube.com/watch?v=UH5r3EoM9cc

[3] Departmental Regulation on *Public Access to Scholarly Publications and Digital Scientific Research Data*, DR 1020-006, July 20, 2022. https://www.usda.gov/sites/default/files/documents/dr-1020-006.pdf

[4] Departmental Regulation *Publications Review and Clearance Policy*, DR-1410-001, Jan 14, 2021. https://www.usda.gov/directives/dr-1410-001

[5] 5 CFR 1321 *RESPONSIBILITIES OF RECOGNIZED STATISTICAL AGENCIES AND UNITS* Oct 11, 2024. https://www.ecfr.gov/current/title-5/chapter-III/subchapter-B/part-1321

scientific integrity, including relevance, credibility, trust, independence, and continuous improvement, as outlined in guidance documents like "Principles and Practices for a Federal Statistical Agency".

Peer review is vital for quality assurance, involving both internal and external technical experts, often with publicly accessible peer review plans. Many USDA intramural research programs undergo rigorous peer review and safety protocol checks to ensure scientific rigor and relevance, with strict conflict of interest protocols for unbiased peer reviews. Other USDA agencies ensure transparency by posting peer review agendas and public use data files, using panels of expert reviewers to maintain scientific rigor in contracted research, and conducting high-quality reviews and analyses, addressing all GSS tenets and committing to continuous quality improvement.

USDA agencies support GSS tenets through their planning process, fostering a culture of objective data analysis, collaboration, and acceptance of negative results. Many employ statistical support, including artificial intelligence (AI) and machine learning, to validate research outcomes. Gene banks and repositories support the quality of genetic research in agriculture while preserving crop diversity.

Thorough and unbiased scientific reviews support evidence-based decision-making activities. Quality assurance plans and quality management systems help ensure adherence to GSS tenets. These plans and systems emphasize quality assurance and scientific integrity by incorporating requirements into plans, which ensure data is scientifically sound and thoroughly documented.

The Department invests in extramural grants and contracts to support agricultural research, education, and extension, which address national challenges. Grantees and contractors must meet the highest standards of integrity in their funded activities. The Department has reporting systems that capture and publish research project data, ensuring transparency of federally funded agricultural research to ensure transparency. USDA agencies collaborate with the NAL to enable public access to extramural federally funded research articles across multiple disciplines through platforms like PubAg, promoting transparency and the broad dissemination of agricultural science across diverse fields. USDA agencies select expert panelists for impartial and high-quality peer review processes and apply strict rules to avoid conflicts of interest during the peer review process. Funding opportunities at USDA are accessible through the agency websites and Grants.gov.

2. Development of Standardized Metrics and Evaluation Mechanisms

To assess adherence to the tenets of GSS, USDA plans to further its use of standardized metrics and evaluation mechanisms—both quantitative and qualitative measures—that assess adherence to GSS tenets. The Department aims to incorporate technology, such as data analytics and machine learning, to facilitate the efficient collection, analysis, and reporting of these metrics. These tools are intended to provide real-time insights into the progress and adherence to GSS tenets, enabling timely interventions and continuous improvement.

Many USDA agencies already collect metrics or have key performance indicators that are used to assess adherence to some GSS tenets and their impact on scientific quality. These may have the potential to be adapted for broader departmental use. Some examples of existing metrics and evaluation measures relevant to GSS tenets include:

- Some testing laboratories have quality management systems that emphasize quality assurance, and these systems may have measurable aspects to reflect adherence to the tenets, including **reproducibility**.
- Measures of collaborations between USDA researchers and external partners, along with the disciplines represented, indicate adherence to the tenet of **collaborative and interdisciplinary science**. Collaborations include intramural research programs that involve partnerships with public sector companies and groups, land-grant universities, and other federal departments and agencies.
- The number of "highly influential scientific assessments" and "influential scientific assessments" that are peer reviewed annually under the IQA guidance can be used as one measure of the Department's use of **unbiased peer review** to ensure that its scientific products meet the most rigorous scientific standards.
- The number of publicly accessible data sets in USDA publications may serve as a metric for **transparency**.
- In some cases, USDA agencies have existing metrics and measures that track **adherence to multiple GSS tenets**. For example, USDA extramural grant funding and contracting agencies have evaluation plans, performance metrics, and key performance indicators (such as scientific outputs including publications, inventions, and patents) that evaluate projects against multiple GSS tenets.

3. Providing Training and Resources

The Department has existing training programs in Scientific Integrity that incorporate many of the GSS tenets. All employees have participated in Awareness training—part of the onboarding process—that provides an overview of the USDA's commitment to integrity, the definition of Scientific Integrity, whistleblower protections, and reporting mechanisms.

Agencies also have required specialized scientific integrity and ethical behavior training for scientists, communicators, policymakers, and others who create, communicate about, or use science in policymaking. Additionally, there are regularly required training programs such as Information Security Awareness Training, *Confidential Information Protection and Statistical Efficiency Act*[1] (CIPSEA) training, Research Security Training, and Records Management training through AgLearn, which is USDA's enterprise training and workforce development system. The USDA Office of Ethics (OE) requires annual refresher training in Ethics as well as providing a series of helpful reminders about ethics requirements throughout the year in the form of Ethics one-pagers (highlighting a specific topic) and their Ethics mobile phone app, which has training videos (including a recent video on conflict of interest).

[1] OMB implementation guidance on *The Confidential Information Protection and Statistical Efficiency Act of 2002* (CIPSEA), Title V of the E-Government Act of 2002 (Pub. L. No. 107-347), October 2006. https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/proposed_cispea_guidance.pdf

Agencies routinely provide supplementary training to reinforce USDA's commitment to the highest standards in all of their scientific activities. This training often focuses on specific topics that are relevant to their mission. Many USDA agencies have training on scientific methods that align with GSS tenets (including reproducibility, hypothesis-driven research, transparency, analysis of error rates, reporting uncertainty, and peer review). Several USDA agencies have annual refresher training on specific aspects of scientific integrity (such as professional development as an editor or publishing as a federal employee) coupled with the OE ethics presentation on a related topic (allowable outside activities or personal vs official capacity), which changes topics annually.

Some USDA agencies provide training on Project Management to improve oversight of extramural grants and contracts. Others offer training to staff, peer review panelists, and panel chairs, which include GSS tenets, to ensure unbiased peer review. Some USDA agencies have had training on IQA requirements (presented by the Office of Information and Regulatory Affairs (OIRA) at OMB) to help clarify when scientific products are considered "influential" or "highly influential" and may require OMB IQA peer review. These USDA agency-level training programs and others, including technical, operational, and quality system topics, can be leveraged to support adherence to GSS tenets.

4. Leveraging Technology for Implementing GSS

Technology can play a crucial role in the implementation of GSS at the USDA. The Department already leverages advanced technologies, such as data analytics and machine learning, and is exploring AI to enhance the quality and efficiency of scientific research processes. The Department may explore how technology could further enable the automation of data collection, analysis, and reporting processes, reducing the potential for human error and bias. Additionally, technology facilitates collaboration and data sharing, which can improve the transparency and reproducibility of science. While these new technological tools need adequate safeguards, further integration into research activities will help USDA remain at the forefront of scientific innovation and excellence.

The USDA Ethics App has been recognized for its technological innovation and as a leading example of how government departments and agencies can leverage technology to promote ethics and integrity among employees. The NAL's Ag Data Commons is a catalog and repository for scientific research data with machine-readable descriptive metadata that are associated with publications produced through USDA-funded research. The Department's grant funding agencies are working with NAL on implementing an application programming interface (API) that centers on Digital Object Identifiers (DOIs), a type of digital Persistent Identifier (PID), to enable precise, automated tracking and retrieval of USDA-funded peer-reviewed research outputs by the public. The NAL leverages PIDs to publications (CrossRef), data (DataCite), and researcher profiles (ORCID). These PIDs are globally unique, machine-readable, and long-lasting digital identifiers used to identify unambiguously and associate entities in collections of research outputs. They are essential for ensuring that research outputs, contributors, and institutions are findable and accessible while providing a meaningful way to assess compliance with disclosure requirements.

Several USDA agencies maintain websites that align with the tenets of GSS by ensuring that science is transparent and accessible to the public. These sites include posting protocols, research plans, soliciting

public comments, hosting public meetings, sharing draft materials, and final reports and data. The NAL supports USDA agencies through its Evidence-Based Review Service, which helps establish the weight of scientific evidence. This service utilizes workflow management software to streamline the evidence-based review process, automating many labor-intensive tasks and saving time while ensuring that literature information is accurate, comprehensive, and up to date.

The Department's grant funding agencies are part of the Grants Modernization Initiative (GMI) in partnership with the National Institutes of Health (NIH), which exemplifies the strategic use of technology by standardizing and modernizing the grants life cycle. Some USDA agencies are also participating in the department-wide pilot of AI tools to see how, and how effectively, these tools may be used within USDA's research and analysis processes.

5. Challenges to the Implementation of GSS at USDA

While USDA is committed to implementing GSS, challenges to be overcome include:

- **Identification of metrics** that have broad applicability is a key challenge in developing ways to assess adherence to GSS tenets.
- The **integration of new technologies** requires significant investment and training, which may present a barrier to access for some technologies.
- **Ensuring consistency** in adherence across the federal government is an ongoing challenge, which necessitates continuous monitoring, evaluation, and improvement.
- The **need to strengthen collaboration** with extramural partners to further GSS adoption.

Next Steps in Furthering Gold Standard Science in USDA

The Department intends to identify any gaps in USDA's adherence to GSS tenets, the development and use of metrics, and training and resources. The Department will also identify opportunities to leverage resources and technology. The Department intends to implement solutions using streamlined approaches that achieve the goals of GSS while minimizing administrative burdens, avoiding excessive bureaucratic requirements that can divert resources and impede the scientific process. Finally, USDA will update applicable agency policies governing the production and use of scientific information, including scientific integrity policies. The Office of the Chief Scientist (OCS), together with the Office of the Secretary will coordinate efforts across the USDA, and support annual reporting to OSTP.

The Department remains committed to overcoming challenges and further advancing GSS tenets with high standards of scientific integrity and excellence.