

REQUEST FOR PROPOSAL
SUBMISSION DEADLINE
5:00 PM CST, February 3, 2025

RFP TITLE: *In Vivo* Analysis of AME and AME in Broilers

RFP CONTACT:

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PROPOSAL DEADLINE: February 3, 2025

INTRODUCTION:

Through a global network of international offices and strong support in the U.S., the United States Soybean Export Council (USSEC) helps build a preference for U.S. soybeans and soybean products, advocate for the use of U.S. Soy in feed, aquaculture and human consumption, promote the benefits of soy use through education, and connect industry leaders through a robust membership program.

Soybean meal (SBM) is a primary product of focus for USSEC. Soybean meal is by far the most used source of protein in poultry diets worldwide, thanks to its unique nutritional profile, particularly its relatively high protein content and distinctive amino acid (AA) profile. Meanwhile, the contribution of Metabolizable Energy (ME) from SBM, which can reach as high as 25% in certain poultry diets, is becoming increasingly important in modern poultry nutrition.

It is known that not all soybean meals (SBM) are created equal, and SBM may vary from origin to origin due to various factors such as agronomic conditions, environment, and genetics. U.S. SBM has been found to be superior in Apparent Metabolizable Energy (AME) and Apparent Metabolizable Energy corrected for Nitrogen (AMEn) in many biological experiments comparing SBM from different origins (Ravindran et al., 2014), as well as in certain meta-analyses (Ibáñez et al., 2020). However, in almost all feed mills, various prediction equations are used to estimate the AMEn contents of ingredients, including SBM. Unfortunately, these equations do not accurately represent the true value, particularly the advantage held by SBM originated from US beans, which has been consistently demonstrated by biological experiments, highlighting certain inadequacies in the estimation process. Some of the deficiencies are attributed to the inaccurate use of digestibility coefficients for protein and carbohydrate fractions, especially sucrose of SBM. U.S. soy consistently has sucrose levels higher than those of other origins. Additionally, digestibility of protein is generally higher for the U.S. Soybean meal. However, current energy prediction equations do not take into account these benefits. Thus, a more accurate, up-to-date equation is under development by the Universidad Politécnica de Madrid

(UPM) research group (Fondevila et al, 2022; Aguirre et al., 2023). Results surrounding the accuracy of this equation must be replicated to ensure confidence across the industry.

References:

Aguirre, L., Cámara, L., Smith, A., Arroyo, J. J., de Juan, A. F., Fondevila, G., & Mateos, G. G. (2022). Chemical composition, protein quality indicators and in vitro protein digestibility of commercial soybean meals from different origins for use in poultry feeding. *Animal Feed Science and Technology*, 293, 115473.

Fondevila, G., Aguirre, L., Cámara, L., Fernández de Juan, Á., Mateos, G. (2021). Evaluation of the Energy Content of Soybean Meals for Poultry on their Chemical Composition: A Review of Currently Available Prediction Equations. In *Avances en Nutrición y Alimentación Animal* (pp 59-86). Fundación Española para el Desarrollo de la Nutrición Animal.

Ibáñez, M. A., De Blas, C., Cámara, L., & Mateos, G. G. (2020). Chemical composition, protein quality and nutritive value of commercial soybean meals produced from beans from different countries: A meta-analytical study. *Animal Feed Science and Technology*, 267, 114531.

Ravindran, V., Abdollahi, M. R., & Bootwalla, S. M. (2014). Nutrient analysis, metabolizable energy, and digestible amino acids of soybean meals of different origins for broilers. *Poultry science*, 93(10), 2567-2577.

PURPOSE OF RFP:

USSEC's standard practice is to RFP in an open and competitive manner. This type of cost analysis will assist in determining the fair market value for the work to be performed and allows USSEC the opportunity to evaluate various proposals and select the best contractor for the job based on experience, availability, expertise, approach, and cost

BACKGROUND & PURPOSE OF PROJECT:

The purpose of this project is to begin the replication of findings of previous *in vivo* experiments and further the research surrounding sucrose, digestibility of nutrients, and resulting energy in SBM of different origin.

The contractor is requested to first collect at least 27 soybean meal samples, with minimum, nine from U.S. beans, nine from Brazilian beans, and nine from Argentinian beans. The contractor may collaborate with other USSEC personnel or contractors to obtain the samples. The composition of these samples should be analyzed, with data collected for the following metrics:

1. Simple sugars, starch, oligosaccharides, and sucrose of the carbohydrate fraction
2. Neutral Detergent Fiber (NDF) and Acid Detergent Fiber (ADF)
3. Ether extract (EE) after HCl hydrolysis
4. Crude protein and amino acid profile

5. Protein quality indicators: urease activity, PDI, KOH, trypsin inhibitors, total lysine:CP ratio, digestible lysine:CP ratio

Next, an *in vivo* broiler feed study should be conducted to determine the AMEn and AME of samples of soybean meal from Argentina, Brazil, and U.S. The *in vivo* trial should have at least six replicates per treatment and should fit the methodology used at present time by most institutions, in relation to the age of the birds, the type of basal experimental diet used, excreta collection practices, and feeding period considered; alignment between contractor and USSEC on methodology will need to occur prior to project commencement.

Additional considerations for the *in vivo* study:

- Body weight, feed intake, and feed conversion ratio should be controlled for the 5 to 7 days used for the pre-experimental period.
- Comparisons should be made between AMEn and AME of the *in vivo* trial
- Comparisons should be made between the AMEn obtained *in vivo* vs AMEn obtained by prediction equations (WPSA, CVB, Brazilian Tables, UP Madrid)
- Examine correlations among *in vivo* AMEn of SBM with chemical composition and protein quality data (e.g., CP digestibility, TIA, KOH, PDI, etc.). In particular, conduct a statistical analysis (correlation, regression, etc.) of AMEn as a function of sucrose.
- Total tract apparent digestibility (using excreta CP content) should be conducted.
- Digestibility co-efficient of sugar fractions including sucrose at Ileal level must be determined

Results obtained will further the research surrounding energy prediction equations and the UPM equation under development.

Results must be published in a peer-reviewed journal. Additionally, results must be synthesized with those of similar energy studies and developed into a technical bulletin for USSEC use.

TARGET AUDIENCE:

The target audience for the technical bulletin includes USSEC global and regional teams, animal producers, nutritionists, feed millers, investors, soy crushing companies, and government representatives.

SCOPE (SERVICES) OF WORK:

- Collection of at least 27 SBM samples, from Argentina, Brazil, and U.S.
- Analysis of the samples for simple sugars, starch, oligosaccharides, sucrose of the carbohydrate fraction, neutral detergent fiber (NDF), acid detergent fiber (ADF), ether extract (EE) after HCl hydrolysis, crude protein and amino acid profile, protein quality indicators (urease activity, PDI, KOH, trypsin inhibitors, total lysine:CP ratio, digestible lysine:CP ratio)

- *In vivo* broiler feed study to determine the AMEn and AME of samples of soybean meal from Argentina, Brazil, and U.S., with at least six replicates per treatment and in line with the considerations listed in the “Background and Purpose of Project” section of this RFP
- Publication of results in a peer-reviewed journal
- Development of USSEC technical bulletin containing project results synthesized with findings from similar studies

DELIVERABLES:

Completion Date	Description of Deliverable
February 2025	Organization of the workplan and project kickoff meeting with USSEC team
February - July 2025	Collection and analysis of SBM samples and execution of <i>in vivo</i> broiler feed study
August 2025	Conduct animal trial and draft report of results to be submitted for review by USSEC
September, 2025	USSEC provides feedback on results report; contractor makes revisions as necessary. Final copy of report due to USSEC September 30, 2024

PROJECT TIMELINE:

The contract will run from February 2025 through September 30, 2025

RFP TIMELINE:

- **RFP Distribution:** December 13, 2024
- **Last Day to Submit Questions:** January 26, 2025
- **Project Proposals Due:** February 3, 2025
- **Selections Made By:** February 17, 2025
- **Prospective Contractors Notified By:** February 21, 2025

INSTRUCTIONS:

Proposals must contain at a minimum the specific criteria listed below:

1. Please email the proposal to mcheatham@ussec.org and kliliensiek@ussec.org by **5:00 Central Time** on February 3, 2025.
2. A description of Prospective Contractor’s capabilities, resources and experience. Emphasis should be placed on experience related to this RFP.
3. A thorough proposal outlining Prospective Contractors planned work, deliverables and timeline to complete the work.

3. Resumes for each of the Prospective Contractor's personnel assigned to work directly on the implementation of the contract.
4. Provide a minimum of two names and contact information for other similarly sized clients for reference purposes.
5. Detailed Budget
 - All bids for services must provide a breakout of how the fee was derived including but not limited to a breakdown of hourly rate and the amount of effort they anticipate to do the work.
6. Proposals should be no longer than **10 pages** (8 ½" x 11").

NOTES:

- Prospective Contractors are hereby notified that proposals will be duplicated for internal review only. Every effort will be made to maintain confidentiality of all information presented. The appropriate representatives from staff and legal counsel will review proposals. Proposals will not be returned.
- USSEC reserves the right to retain all proposals submitted. Submission of a proposal indicates acceptance by the submitter of the conditions contained in the request for proposal, unless clearly and specifically noted in the proposal submitted and confirmed in the contract between USSEC and the contractor selected.
- Confidentiality - Without USSEC's prior written consent, Prospective Contractors and its officers, employees, agents, representatives, affiliates, and subcontractors shall not disclose to any third party any documents, materials or information that the Prospective Contractors learns from or is provided in relation to the RFP request.
- During the evaluation process, USSEC reserves the right to request additional information or clarifications from proposers, or to allow corrections of errors and omissions.
- USSEC reserves the right to reject any proposal that is in any way inconsistent or irregular. USSEC also reserves the right to waive proposal defects or deficiencies, to request additional information, and/or to negotiate with the Prospective Contractor regarding the proposal.
- Prospective Contractor agrees that Fees are in lieu of any and all other benefits, including, but not limited to, repayment of any and all taxes related to contractor service fees, health and life insurance, administrative costs and vacation.
- Prospective Contractor agrees that any income taxes, value added taxes or any other form of direct or indirect taxes on compensation paid under the contract shall be paid by Contractor and not by USSEC or Funding Sources.

- Prior to any payment to a Contractor, a contractor must provide a W-9, W-8, or W-8BEN upon agreement signature
- Non-Competition. Contractor shall not act as agent or representative for any product or service directly or indirectly competitive with U.S. soybeans or soybean products for the length of the contract.
- USSEC and Prospective Contractor agrees to comply with the provisions of Equal Employment Opportunity (EEO). USSEC provides EEO to all employees and applicants for employment without regard to race, color, religion, gender, sexual orientation, gender identity or expression, national origin, age, disability, genetic information, marital status, amnesty, or status as a covered veteran in accordance with applicable federal, state and local laws.

Appendix: Technical Bulletin Style Guidelines

Paper:

Although this is flexible, USSEC would prefer technical bulletins to be “easily digestible” by the reader. The length should be only what is needed (comprehensive, yet succinct), and formatted to A4 pages of single-spaced text in 12-point font. Please include figures, tables and images as they increase value to the reader. Photos in particular must be captioned. All materials must be free from copyright restrictions (or specific written permission must be obtained and provided for use and attribution provided in the text).

- Shorter is preferable.
- Use clear understandable English. Simple is better.
- Please include important tables, figures and other information that will help inform the audience.
- Please email us the material (or USSEC can supply a link to an upload site) with text and table files in Microsoft Word. Figures and images included in the text should also be sent separately as well in high resolution .jpeg format.
- An example technical bulletin template may be provided. If any issues with correct formatting, then the material can be provided in technical paper format and USSEC will reformat the text to fit the desired technical bulletin style.

Content:

Please keep your paper and presentation as practical and understandable as possible. Make sound recommendations based on literature and/or experience. Highly scientific concepts are welcome if they are relevant to the industry and can be put into practice. USSEC in particular is interested in applied research, meaning information that can be of immediate benefit to commercial industry.

Nomenclature:

Please use standard metric units and convert where necessary. Materials are targeting a global audience that will not relate to bushels, pounds, acres, Fahrenheit, feet, ounces, inches, etc.

Energy:

- Please use kcal/kg when discussing energy content of feed. If the original paper is in megajoules (MJ), please indicate kcal/kg in parenthesis next to each number.

Nutrients and dry matter:

- Please indicate the dry matter basis for nutrients values mentioned. For soybean meal, 88% dry matter is typical. For feed 88% dry matter would be good to use. Corn may be 13 or 14% DM. Please indicate.

- Typically aquaculture feeds are fed on a 10% moisture level basis. If feeds are significantly different from this please indicate.

Screen sizes:

- Please use millimeter (mm) hole space. If original paper or data is in gauge or mesh, please indicate mm hole space in parenthesis next to each number.

Try to make your message as easy to understand as possible for the reader and audience. Non-technically inclined or commercial target audiences may read these papers, so do not assume that the reader will be familiar with research terms.

References:

You should include references to add credibility and give credit where due. Please follow the example below in citing references. The titles and page numbers of articles should be given.

Examples:

Anderson, J., Ramamurthy, S., Jeffay, K., "Real-Time Computing with Lock-Free Shared Objects," Proceedings of the 16th IEEE Real-Time Systems Symposium, IEEE Computer Society Press, December 1995, pp. 28-37.

Baruah, S., Howell, R., Rosier, L., "Algorithms and Complexity Concerning the Preemptively Scheduling of Periodic, Real-Time Tasks on One Processor," Real-Time Systems Journal, Vol. 2, 1990, pp. 301-324.

Goddard, S., Jeffay, K., "Analyzing the Real-Time Properties of a Dataflow Execution Paradigm using a Synthetic Aperture Radar Application," Proc. IEEE Real-Time Technology and Applications Symposium, June 1997, pp. 60-71.

SUPPLEMENTAL INFORMATION AND BACKGROUND

BUILDING A PREFERENCE FOR U.S. SOY

USSEC's strategy can be found here: <http://ussec.org/about-ussec/vision-mission/>

USB's Long Range Strategic Plan can be found here: <http://unitedsoybean.org/about-usb/strategic-planning/>

We are a dynamic partnership of key stakeholders representing soybean producers, commodity shippers, merchandisers, allied agribusiness and agricultural organizations.

Through a global network of international offices and strong support in the U.S., we help build a preference for U.S. soybeans and soybean products, advocate for the use of soy in feed, aquaculture and human consumption, promote the benefits of soy use through education and connect industry leaders through a robust membership program.

Our 15-member board of directors is comprised of four members from the American Soybean Association (ASA), four members from the United Soybean Board (USB), and seven members representing trade, allied industry, and state organizations.

New board members are seated annually. We are receiving funding from a variety of sources including soy producer checkoff dollars invested by the USB and various state soybean councils; cooperating industry; and the American Soybean Association's investment of cost-share funding provided by the United States Department of Agriculture's (USDA) Foreign Agriculture Service.

The United Soybean Board, created by the 1990 Farm Bill to manage and direct the National Soybean Checkoff, is dedicated to marketing and research for the soybean industry. USB is comprised of 73 volunteer soybean farmers representing the interests of fellow growers nationwide. Each board member is nominated by Qualified State Soybean Boards (QSSBs) and appointed by the U.S. Secretary of Agriculture.

Because of the limitations on administrative and salary costs established in the Act, USB outsources the majority of its program management responsibilities to USB's three primary contractors:

- SmithBucklin-St. Louis for domestic marketing, new uses, production research and Board initiative activities;
- Osborn & Barr Communications for communications/public relations activities and;
- U.S. Soybean Export Council (USSEC), Inc. for international marketing and global opportunities activities.

As one of these three primary contractors USSEC may also undertake initiative activities on behalf of USB. USB considers primary contractor staff (approximately 60 people) as core USB staff. These three primary contractors use a number of subcontractors and, together, these entities carry out approximately 450 projects each year for USB. USB also manages approximately 10 subcontractors.

Non-Discrimination Statement

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 {voice and TTY} or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

Civil Rights Clause

Contractor agrees that during the performance of this Agreement it will not discriminate against any employee or applicant for employment because of race, color, religion, gender, national origin, age, disability, political beliefs, sexual orientation, marital or family status, parental status or protected genetic information. Contractor further agrees that it will fully comply with any and all applicable Federal, State and local equal employment opportunity statutes, ordinances and regulations, including, without limitation, Title VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, the Age Discrimination in Employment Act of 1967, and the Equal Pay Act of 1963. Nothing in this section shall require Contractor to comply with or become liable under any law, ordinance, regulation or rule that does not otherwise apply to Contractor.