

REQUEST FOR PROPOSAL (RFP)

RFP TITLE: PERFORMANCE EVALUATION OF TILAPIA FED SOYBEAN MEALS PRODUCED FROM UNITED STATES AND BRAZIL ORIGIN

RFP CONTACT:

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PROPOSAL DEADLINE: 5:00 PM CST, APRIL 24, 2019

INTRODUCTION:

Consistent market availability, high protein digestibility, and good amino acid balance combine to make soybean meal an attractive source of protein in diets for aquatic species. Herbivorous and omnivorous fish species have a particularly high tolerance for the indigestible carbohydrates in dehulled, solvent extracted soybean meal (SBM). Diets containing as much as 50% SBM have been shown to efficiently support maximum growth rates in several species of Asian carp and tilapia.

Studies comparing the nutrient composition and quality characteristics of SBM from the United States (U.S.), Brazil, Argentina, and India have shown U.S. meals to have higher protein digestibility, and lower levels of fiber. Feeding trials conducted with terrestrial animals, mainly poultry and swine, have demonstrated superior performance of U.S. soybean meal as a result of higher levels of available lysine, methionine, cysteine, threonine, and tryptophan. However, no studies have been conducted to determine whether the performance differences among soybean meals have been the result of differences in meal processing procedures, or the origin of beans, or both. In a “bean market” it is critically important to link meal performance to the origin of the bean.

In 2017, USSEC provided funding and technical support to the China Academy of Agricultural Sciences (CAAS) to conduct an 8-week study comparing the performance of common carp (*Cyprinus carpio*) fed 2 soy-based diets containing meals produced by the same soybean crusher, using the same processing parameters, but with beans from either the U.S or Brazil. In this short study, major performance indicators trended toward better performance of SBM produced from U.S. beans, but observed differences were not statistically significant.

A second study was conducted at CAAS in 2018 with juvenile tilapia (*Oreochromis aureus*). The same 2 soy-based diets used in the 2017 were fed to tilapia for 10 weeks. Results of this trial showed that SBM produced from U.S. beans supported significantly better growth rate, feed efficiency, and survival. Protein retention and fat retention ratios were also found to be significantly higher in fish fed the diet containing meal produced from U.S. beans.

PURPOSE of RFP:

The purpose of this RFP is to seek proposals to conduct feeding trials to confirm results from the 2018 study, and to determine possible reason(s) for the observed differences in fish performance.

TARGET AUDIENCE:

Soybean processors, aquatic animal nutritionists, and aquafeed producers

SCOPE (SERVICES) OF WORK:

The scope of work to be addressed in this RFP requires 2 separate trials.

1. The first one should be a long-term (min. 10 weeks) feed trial with juvenile tilapia, using the same test protocol followed in the 2018. This trial would be conducted to confirm the results in the 2018 study, and to:
 - test for the presence of antigens (proteins) in Brazilian soy that may be causing inflammation of the intestinal tissues, and
 - test for the presence of oligosaccharides (carbohydrates) in Brazilian soy that may be affecting the composition of intestinal flora, causing inflammation of the intestinal tissues.
2. The second would be a short-term (4 week) trial to determine *in vivo* digestibility of major nutrients, using an inert marker in the test diets. Emphasis would be on determining digestible energy, digestible protein, and available amino acids in soybean meals produced from U.S. and Brazilian beans.

DELIVERABLES:

Completion Date	Description of Deliverables
June 2019 through August 2019	Perform the long-term feeding trial to confirm 2018 results, and test for presence of antigens or carbohydrates that may cause intestinal tissue inflammation.
August 1, through August 31, 2019	Conduct <i>in vivo</i> digestibility trials on the 2 soybean meals, and determine digestible energy, digestible protein, and levels of digestible lysine, methionine, cysteine, threonine, and tryptophan.
September 30, 2018	Submit a complete report of work performed and trial results to the USSEC Aquaculture Director and Aquaculture Project Manager.
Ongoing	Submit invoices for all work/hours completed, including supporting documents, for payment to USSEC Accounts Payable at ap@ussec.org, with a copy to USSEC Project Manager at A.Moody@ussec.org.

PROJECT TIMELINE:

USSEC's expectation is for the feeding trials and research to last from June 2019 through September 2019. The Project Proposal should include details about what the proposed timeline and scope will be.

RFP TIMELINE:

- **RFP Distribution:** April 5, 2019
- **Last Day to Submit Questions:** April 16, 2019 by 5:00PM Central Time
- **Project Proposals Due:** April 24, 2019 by 5:00PM Central Standard Time
- **Selections Made By:** May 3, 2019
- **Prospective Contractors Notified By:** May 6, 2019

INSTRUCTIONS:

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

1. A description of the Prospective Contractor's capabilities, resources and experience. Emphasis should be placed on experience related to this RFP.
2. Resumes for each of the Prospective Contractor's personnel assigned to work directly on the implementation of the contract.
3. Provide a minimum of two names and contact information for other similarly sized clients for reference purposes.
4. Detailed Budget, including details of how the fee was derived, including but not limited to a breakdown of hourly rate and the amount of effort anticipated to complete the work.
5. Proposals should be no longer than **10 pages** (8 ½" x 11") and submitted no later than February 15, 2019 by 5:00PM Central Standard Time.

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.
- 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.

SUPPLEMENTAL INFORMATION AND BACKGROUND

The following references should be helpful in understanding the current general knowledge on the differences in composition and quality of SBM and raw soybeans from the major soybean producing countries; and preliminary results of trials feeding carp and tilapia with diets containing SBM produced from U.S. and Brazilian beans:

1. Karr-Lilienthal LK, Mershen NR, Grieshop CM, Flahaven MA, Mahan DC, Fastinger ND, Watts M, Fahey GC Jr (2004) Ileal Amino Acid Digestibilities by Pigs Fed Soybean Meals from Five Major Soybean-Producing Countries. *J Anim Sci* 82:3198–3209
2. Grieshop CM, Fahey GC Jr (2001) Comparison of quality Characteristics of Soybeans from Brazil, China and the United States. *J Agric Food Chem* 49:2669–2673
3. Thakur M, Hurburgh CR (2007) Quality of US Soybean Meal compared to Quality of Soybean Meal from Other Origins. *J. Am. Oil Chem. Soc.* 84:835-843
4. USSEC information publication: All Soybean Meals are not Created Equal. USSEC website
5. USSEC information publication: Nutritional Value of U.S. Soybean Meal. USSEC website
6. Xue M. (2017) Preliminary Study Between U.S. and Brazilian Soybean-Based Diet for Common Carp (*Cyprinus carpio*). Project Report to USSEC
7. Xue M. (2018) Preliminary Study Between U.S. and Brazilian Soybean-Based Diet for Tilapia (*Oreochromis aureus*). Project Report to USSEC