

NRSP Renewal Reviews

Peer Review 1

Comment

Well written and presented report. This is a much needed committee that is addressing important needs for advancing animal nutrition in the future. Documentation of how data is being used and the extent of its use was well done and important.

Response

Thank you. We have a diverse membership group with regard to their species interest, affiliation, age, geographical location, and other areas that contributes to our productivity. However, in another respect they are not diverse but are quite similar. They are very much alike in that they are all meaningful contributors and hardworking and that adds immeasurably to the output and impact of the program.

Comment

Grand Challenge 2 ...”costly mitigation strategies” – eludes to need for economic consideration. I did not see that addressed and perhaps outside scope – but important when addressing mitigation strategies.

Response

Absolutely agree. And that is a logical “next step” where we expect many of our stakeholders to go. If we have accurate and robust models that are based on sound science coupled with accurate inputs from the feedstuff database, then stakeholders such as extension professionals and industry tech service personnel can add the economics in real time (which obviously change daily depending on all the factors that affect markets for inputs and outputs). Further, sound whole-animal performance models coupled with accurate feedstuff inputs also allows extension of our efforts into waste management calculations.

No specific changes were made in the proposal in response to this reviewer comment. Our efforts and output will enable various stakeholders to accomplish these activities.

Comment

Goals rely heavily on a highly functioning web presence. Some glitches were found when reviewing and consideration of how to keep a current site for the long term and keep it funded is essential and would seem to be a challenge.

Response

[[Side note: All Reviewer comments relative to short-term or long-term goals would refer to those listings in the Implementation section. That section was totally rewritten based on advice from the Administrative Advisors. Therefore, in evaluating

the response to the Reviewer comments, that would be the section to evaluate relative to these responses.]]

During this past funding period, we totally redesigned the website and changed the web host with whom we work. This has improved things in several ways, but probably most important is that we have more control of the website and faster response time in making changes. As an example, within the past 6 months one of our members made some requested changes to the website on a smartphone as he waited for his next flight in the Atlanta airport. This obviously shows the wisdom of the decisions we made in our choice of a web service provider. One of the items we will aggressively pursue in the next funding period is to discuss the establishment of a nonprofit entity that can serve to receive industry funds and to serve administratively for the websites continuing availability and function in perpetuity.

Comment

Unique and valuable modeling database for future research.

Response

Thank you. It is a continuing goal that guides our efforts.

Comment

Long term goals 4: expand composition data base. I was disappointed to see only 102 feedstuffs in the database. I was expecting many, many more. I understand that with comprehensive data provided that can be a challenge and an expense – but it seems that if it to be useful to the stakeholders it needs to be much larger.

Response

The total number of available feeds is relatively finite and more feedstuffs will certainly be added, especially as we expand into different species (beginning to move into aquaculture and some discussion of the needs of exotic animals has occurred) and as new byproducts are developed in the feed industry. But, a reality of the feedstuffs that may not be present is that they constitute a relatively low volume of what is available to the marketplace. For example, we may add 10% more protein supplements in the future but they may represent only 1% of the volume of protein supplement available to be used for animals (soybean meal is the protein supplement that exceeds all other supplements by an extremely large amount); therefore, we do have the feedstuffs that represent in excess of 95% of what is being fed. The real value of all the analyses is actually the improvement in the precision of our understanding of what the feedstuffs actually are and what nutrient values they contain. This was clearly presented to some of our stakeholders at the 2019 symposium put on by the Feed Composition committee at the American Society of Animal Science meetings. One of the presentations discussed how, with a sufficiently large enough data base, it was discovered that what numerous commercial labs were all calling the same feedstuff used in the dairy industry (and

they were correct in that it fit the definition of that feedstuff) could be divided into three distinct populations. These three populations all differed slightly from each other in their crude protein content. Further, the error term (the SEM) associated the three crude protein means for the three subsets were all lower than the SEM for the crude protein mean of the entire data set. This reduction in the error term has a very large impact in formulation as “tighter” nutrient numbers allow less formulation overages needed to assure that blended premixes or diets meet the feed tag specs; this is an obvious cost savings. From a biological standpoint, the reduction of overages reduces unused (i.e., waste) nutrients in the animal excretion.

Part of the future efforts envisioned by the Feed Composition committee are to be able to sort the data based on things such as geographic location or particular cultivars but these, and other possible sortings, depend on a sufficiently large data set for each ingredient.

An additional item of information that would not be apparent from the proposal is that the Feed Composition committee has an extremely large amount of data ready to be loaded to the website from the beef and dairy nutrient requirement revision committees. That uploading is waiting on administrative decisions. When the uploading is accomplished there will be an immediate increase including, but not limited to, the number of total feedstuffs listed.

The revised Implementation section already is close to the character count limit and cannot accommodate added verbiage. However, two sections have been modified to incorporate a broader description of the value of increased feed samples as described in this response and in our response to the reviewer comment about Table 1 that is the third comment following the present comment. Those sections are in the Renewal Justification and the Leveraged Funding section of the Integration and Documentation of Research Support.

Comment

Long term goal 5: - suggest increasing use of societal meetings.

Response

This is already in process. In the past year the modeling committee added sessions at the Equine Science Society meeting and the Poultry Science Association meeting. In 2020 there will be an initial modeling session at an international aquaculture meeting in Korea. The frequency and level of instruction in the modeling meetings is increasing. Additionally, the largest professional segment attending these modeling sessions is that of 25-40-year-old nutritionists. Thus, the efforts and impact will shape our discipline for decades.

Comment

Proposal objective 4: expand multi-level training. Suggest to pursue a way to offer graduate credit modeling course on line?

Response

The multi-level training is a matter of discussion. We are debating how deep to go and whether to alternate the introductory (basic) and advanced sessions on alternate years within different societies. There are issues that we have to address. One issue is that a few people carry the load for much of this activity and we have to spread the burden while maintaining the quality.

The suggestion of graduate credit is one that we have not discussed and it is an interesting one. Ultimately that may depend on each university as some other efforts for graduate credit for a multistate educational effort have been stymied by university administration arguing over how they each would get tuition funds even when their faculty were not instructors. This concept may take time to develop but that discussion should begin and we will add it to items to discuss during our monthly conference calls.

Comment

Table 1. After reading 2.7 million samples and a value of \$82M - to have a data base of 102 feed ingredients seems unreasonable. I realize that some have hundreds of observations per feed ingredient (e.g. barley – 257) and that there are many components. I also realize that these are leveraged dollars – but at that rate – how can this be sustainable for the long term and develop into a complete enough database to be useful to the masses. Suggest consider addressing this in report.

Response

This is somewhat addressed by the response to a previous reviewer comment (two sections have been modified to incorporate a broader description of the value of increased feed samples; specifically, the Renewal Justification [page 10] and the Leveraged Funding section of the Integration and Documentation of Research Support [section begins on page 17 and the change is on page 19]). However, this comment does offer an opportunity to add more information of where the program is going. Contracts for continual data receipt from commercial labs are being drafted. The issues to be addressed are how to maintain confidentiality of who has submitted what data and how to provide value to the contributors for what has been received. Additionally, discussion with a commercial entity for specific access to the feedstuff database for their customers has commenced. This would be a fee-for-service arrangement that could be cancelled by either party at any time or continually renewed. The new website has been structured in such a way that the users would not have direct access to the data (where they could download it or alter it accidentally or on purpose) but would be able to generate answers to their queries through a third party (though it would seem like direct access to the user). This has been enabled by the web service provider that we have chosen. All of these questions by the reviewers and by our response should demonstrate that the issues are being discussed and the movement is toward long term sustainability that may have different usage access and usage fees depending on whether it was for commercial use or for research questions by academic colleagues.

Peer Review 2

Comment

This proposal covers a topic of extreme importance to the livestock industry and U.S., especially considering the increased concern over environmental issues. It is well written and comprehensive, and the team comprises a group of nationally and internationally known scientists.

Response

Thank you.

Comment

The budget is very reasonable considering the additional funds provided by cooperators.

Response

Thank you.

Comment

The development of a “common” feed data bank and uniformity in models will make it easier for teams to develop nutrient requirement publications for individual species.

Response

We see this as an absolute essentiality for easing the process of the NASEM nutrient requirement revision committees in the future, facilitating research by our academic colleagues, and improving the precision of animal feeding.

Comment

The planned addition of “big data” and “environmental” specialists will further strengthen the team(s). Would like to see USDA as a stakeholder/partner.

Response

Membership for the various committees will be addressed early in 2020. All of these items will be considered along with the continuing attention to diversity. Ultimate committee membership will depend on who expresses interest in response to our general calls and specific solicitations. We have had USDA/ARS scientists as members of project in the past.

With regard to the listing of USDA as stakeholders, they were implicitly included in the Stakeholder Identification section (bottom of page 8 and top of page 9) where reference to “research scientists” and “professionals in universities, government ...”

were presented. But now USDA is explicitly presented as a stakeholder in the first category of stakeholders presented on line 2 of the section.

Peer Review 3

Comment

This is a very compelling, high-impact project that links academics with producers at all levels. The goals of the project are clear and achievable with the excellent team that has been assembled in the project.

Response

Thank you.

Comment

Accomplishments of the project to date are significant and highly relevant to societal needs, both in the USA and globally. I strongly approve continued funding.

Response

Thank you, again. The accomplishments are a testament to the committee members but perhaps more so to having good postdocs that have had a short learning curve and have been able to take the vision of the academics and convert it to actual results and publications.

Peer Review 4

Comment

This is a very well organized and presented proposal. It certainly meets a significant need that is not otherwise being satisfied for animal agriculture.

Response

Thank you. We agree that the need “is not otherwise being satisfied”. Changes at the National Academies of Science in the past necessitated the establishment of NRSP9. Reductions in faculty numbers across the US have further reduced the attention to animal nutrition needs for research and for training of next generation scientists. This program has stepped into the gap of addressing a variety of animal nutrition-related issues. It is being viewed as such by numerous stakeholders and our membership is committed to maintaining the productive effort.

Comment

The objectives, which are the foundation of any successful project, are clearly presented and obviously based on careful consideration. The short- and long-term goals are concise and provide details on projected outcome.

Response

Thank you.

Comment

The three management committees make a great deal of sense and are structured in a manner which is consistent with the objectives and goals. The business plan is easy to follow and the budget is well justified. I was particularly impressed by the communication plan. Therefore, I have no hesitation in strongly recommending approval of this project.

Response

The structure has functioned well thus far. Our communication plans are evolving with greater discussion of proper and effective use of social media. We are in the process of receiving direction from a marketing firm about successful use of a variety of information-disseminating mechanisms.