**S-1061 Response to reviewer comments**

**S-1061 responses collated/summarized/incorporated**

**M.D. Lindemann**

**Reviewer – Hostetler**

Thank you for the kind comments. No changes suggested; no changes made.

**Reviewer – Bradley**

1. Reviewer states, “to clearly understand the potential benefits of survival or longevity within herds, the institutions are limited on their ability to have multiparous protocols”. We agree and, though limited in our capabilities by the size of our swine units and other commitments (e.g., teaching), we have always tried to do multi-parous studies. That is why we have the statement in our methodologies that “Females completing at least one parity will be considered in the statistical analysis of the data; however, stations will be encouraged to retain each female in a study for at least 2 parities” (page 9, item #3).
2. Reviewer comments about unclear language in commerce/industry related to phytogenic feed additives and encourages “intensive literature review and discussion around key active substances when choosing the appropriate product”. We agree that it is more valuable to investigate a clearly defined product rather than a blended product for which the supplier is unwilling to provide a complete description of the product. The phytogenic additive objective is being carried over from the existing S-1061 project. We have already begun data collection on a clearly described product - Chios Mastiha essential oil. As we proceed to additional products, we will require clarity in product description also.
3. Reviewer comments “I would like this grant to consider different AA and energy changes versus just a “bump” in feed intake to further propel the industry into investing in more precise feeding systems and programs for sows.” There are several observations and/or changes related to this reviewer comment; they are:
   1. Our own review of the literature (presented mostly on page 7) agrees with this comment.
   2. Now, the term “bump” feeding is removed from the description of Objective 3 and the focus is on altered gestational feeding with concentration on energy to amino acid ratios. We still retain the possibility of a “bump” feeding control depending on the specific research question(s) addressed by the objective participants.
   3. A search for the word “bump” was made in the proposal. The word was removed and the description of the objective changed on pages 6, 8, and 10. Now the only occurrence of the word “bump” is the two occurrences on page 7 where previous work is reviewed.
   4. In summation, the objective has been refined based on the reviewer comment.

**Reviewer – Friesen**

1. Boron
   1. Reviewer states, “I would recommend that the committee consider following subsequent litter performance to determine if the improvement in insulin sensitivity results in further improvements in non-productive days, conception rate, farrowing rate and subsequent litter size. This adds to the length of the studies, but it will give a more complete analyses of the opportunity.” We fully agree and this is the reason we attempt to continue sows on their respective dietary treatments for as many parities as possible. In fact, it was already stated that “Parity” is a term in our statistical models. However, in reviewing our description of methods it was noted that an interaction term was omitted from our description of the statistical models and we have now added the “Diet by Parity interaction” term to our description as a part of what we routinely assess. We appreciate the comment indirectly highlighting this omission.
   2. Reviewer states “Care should be taken to assure that the diets are similar between stations and the differences limited to environmental conditions from state to state and genetics. Blocking factors should be taken into consideration for seasonality for these studies so that the study is not biased by seasonality. Care should be taken to evenly distribute parity between the sites”. We agree and all of this is described in our routine methodology.
   3. Reviewer states “limitations to gilt litters if possible”. We agree this would be ideal but we are not able to do that with the research units that we have in the university system. Our limited numbers of observations due to the relatively small herd sizes at universities (which is a primary basis for our collaborative efforts in this multi-state project) would be even further reduced if we could only start studies with gilts. However, we do recognize that the reproductive parity of the female is an important factor and that is why we analyze the data in a variety of ways as we attempt to get as much information from the data as possible. Specifically, we assess the data in two ways with regard to parity and potential interactions with parity. We analyze the data for the “actual parity” of the female (this describes her biological and reproductive age) and we analyze the data for the “parity on test” (this describes the length of time the female has been exposed to the dietary treatment. As an example, a gilt starting the study would be on her biological (actual) parity equal to 1 and her parity on test equal to 1. A female that had already had two litters that started the study would be on her biological (actual) parity equal to 3 and her parity on test equal to 1. Over the past 20-30 years that our group has been collaborating and pooling data, we have found this distinction to be important in some studies but not in other studies. Thus, we recognize its importance but also that it is not always of meaning biologically. Having all females available for the studies actually expands our observations/numbers and adds to the potential information that we can generate. We will continue to assess these parity differences in our experimental conduct and in our analysis.
   4. Reviewer states “Cross fostering needs to be limited within treatments and stopped after 2 to 3 days if possible.” We agree that it must be done within dietary treatment and that is described in our methodology. However, we do not know what the reviewer means about stopping it after 2-3 days. If the reviewer means that it should not be done with pigs that are older than 2-3 days of age, we agree. If it means that pigs that have been cross-fostered should be changed (“stopped”) and go back to their pre-foster situation, that is not possible to do as it will result in mortality. We believe the reviewer means the former. This concept was already embodied in item #8 of our General Methods but we have now been more explicit in our stating of this fact.
   5. We appreciate the kind words of commendation. We do believe that a part of our responsibility in our collaboration is to generate some information in some “off-the-radar” areas of nutrition.
2. Phytogenic additives
   1. Reviewer suggests “some serology work to understand the health status of the sows at each station.” This is a good point and will be discussed by the committee at its next scheduled meeting. We routinely describe station differences in genetics, housing, and other factors when we publish joint research so that readers can draw inferences that they may desire. Adding serology would be additional station-specific information that readers may value.
   2. Reviewer suggests, “adding measures on things like abortion rates, still births, and mummies as indicators of health status”. We already gather that information, some of it directly and some indirectly. The incidence of abortion is too small to draw any conclusion in our studies. The still birth incidence is sometimes stated as such and other times is simply calculated by the reader as the difference between total pigs in a litter and the number of live pigs in a litter (both of which we always report). We will take more care in the clarity of our presentation of data.
   3. Reviewer states “Feed intake needs be measured in the sows to determine if the phytogenic improved feed intake as most of these compounds are registered as such.” We always measure the feed intake because it is critical to productivity. It is currently listed in our general methodology as an item to be recorded.
3. “Bump” feeding
   1. Reviewer comments about differing opinions in the industry about this concept. Our methods for this objective have been altered based on the review comments of Dr. Bradley.

**Reviewer – Haydon**

We appreciate the kind comments. Our objectives seem relevant to the discussions and interactions that Dr. Haydon gets. Dr. Haydon highlights the need for greater clarity in the issue of phase feeding versus bump feeding. As stated already, the comments being received have refined this objective substantially.

**Reviewer – Kerr**

Reviewer states, “Given that objective 2 deals with reducing oxidative stress, I wonder if the committee could add a key measure of such into the project plan.” This suggestion has resulted in alteration item #3 in the Specific Objectives for the phytogenic feed additive evaluation (page 10).

**Reviewer – Nimmo**

1. Boron
   1. Reviewer discusses adequate sow numbers and diets being as close as possible across stations. Both of these methodology considerations are a part of our routine experimental conduct. The issue of adequate sow numbers is the reason that we are working collaboratively and are pooling our results. The issue of standardizing as many aspects of the methodology as possible is addressed in the General Procedures of the Methods section (page 8, items #1 and 2).
2. Phytogenic feed additives
   1. Reviewer highlights the need for investigation of alternatives to antibiotics. We absolutely agree and appreciate the affirmation of our research interest.
3. Bump feeding
   1. Reviewer highlights the issues with feeding sows differently in a commercial setting and some of the means whereby producers try to accomplish what is difficult to accomplish. We believe this illustrates the importance of the objective area and emphasizes the need for thorough discussion before the final decisions are made on the specific treatments to be addressed in the research when there are enough participants to begin the objective.