



Call for Tender

Project: *Strengthening the AusScan Online Pig Digestible Energy NIR Calibration for Cereal Grains.*

Key objective

To conduct experiments to estimate digestible energy (DE) values, using faecal and ileal measurements, in grower pigs fed 15 test grain-based diets and to determine the differences between the grain samples and grain types in terms of ileal and faecal digestible energy.

The data from the experiment will be used in a combined analysis from previous experiments to provide additional information to enhance the accuracy of the predicted DE values for pigs that are currently used in the AusScan Online NIR calibrations.

Background

Near infrared spectrophotometry (NIR) calibrations were developed within the Premium Grains for Livestock Program (PGLP) and the Pork CRC for ileal DE and faecal DE (MJ/kg) of cereal grains for growing pigs. The DE calibrations for pigs contain a wide range of cereal grains including natural and artificially weather damaged grains, and at present the calibration only includes grains grown in Australia. In order to improve the robustness of the calibrations, samples of maize (corn) from overseas will need to be incorporated into the calibrations.

The Australasian Pork Research Institute Limited (APRIL) manages the license for the commercial use of the AusScan Online calibrations and is responsible for maintaining and upgrading the calibrations. Recently, APRIL upgraded the poultry AME calibrations by including high energy wheat varieties from Europe and Canada, which significantly enhanced the robustness of the calibrations and improved their validity for use outside of Australia.

APRIL is requiring a qualified research team (or teams) with access to suitable facilities to provide the required specialisations to upgrade the current AusScan Online Pig DE calibrations. The research project will use imported maize (corn) samples and a number of Australian-grown connectivity grains (grains from previous studies), all of which will provide additional data for the pig Ileal DE and faecal DE calibrations to improve the validity and suitability of AusScan Online.

Project requirements

The project has three areas of specialisation which may be tendered as one, or separately. These areas are:

1. Grain handling and diet preparation.
2. Chemical analysis and NIR measurements.
3. Measuring the energy value of cereal grains fed to pigs.

1. Grain handling and diet preparation.

The preparation and pelleting of the different grain diets will be in accordance to a partially replicated pelleting design which includes day of pelleting and order of pelleting. Diets are required to be cold-press pelleted using a 4mm die. Diets will be in small batches of approximately 100 kg. Each diet will be clearly labelled and bagged in 20 kg bags and transported to the designated research facility. There will be approximately 9 maize samples imported by APRIL and 6 linkage grain samples, which have been used in previous calibration experiments.



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2. Chemical analysis and NIR measurements

Proximate analysis for each treatment grain will include measurements of moisture, ash, crude protein, crude fat, crude fibre, neutral detergent fibre, acid detergent fibre, lignin and gross energy. Physical analysis on raw grain samples will include 1000 grain weight, specific weight and screening %. Spectral scan data using a FOSS NIR machine (wavelength range 1100-2500 nm range) will be required for each treatment grain for both whole and ground grain samples.

All treatment diets, faecal and ileal samples will be measured for dry matter, titanium oxide content and gross energy.

3. Measuring the energy value of cereal grains fed to pigs

The successful applicant(s) will have access to specialised facilities used for metabolism research as well as access to high health pigs of approximately 25 kg live weight. The facilities must allow for the feeding and collections of ileal digesta and faecal matter from individual pigs for the preparation of chemical analysis. The DE contents (both as fed and on a dry matter basis) of grains for pigs are required to be measured, and submissions should include evidence of surgical capability to fit ileal “T-piece” cannulas, details for feeding and digesta collection regimens, and animal measures required for feed intake and weight gain.

Project deliverables

1. A prepared data set suitable for statistical analysis of ileal and faecal DE for each individual grain used in the experiment.
2. All spectral data on individual whole and ground test grains for spectral analysis and addition to the current AusScan Online Pig DE calibrations.
3. A detailed final report within 30 days of study completion.

Evaluation criteria

All tender applications to APRIL will be assessed by the Chief Scientist/CEO and Manager, Commercialisation and Research Impact.

Assessment criteria:

1. The quality of the science being proposed.
2. Soundness and logic of rationale and methodologies.
3. The relevance of partnerships, and appropriateness of the collaboration and engagement strategies.
4. Track record, multi-disciplinary composition and capability of research team. Performance and outputs from previously held research grants may be taken into consideration, where appropriate.
5. Appropriateness of the budget, and overall value for money in regard to the contribution of this research to the upgrade of the AusScan Online calibrations.

Once tender applications are received, APRIL reserves the right to ask applicants to revise a proposal and (or) ask applicants to explore collaborations with other proposals.



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Timeline

Date	Activity
3 August 2020	Applications open
31 August 2020	Submissions close at 5pm
30 September 2020	Review submissions
31 October Sept 2020	Expected execution of contract/issue of Provider Agreement
30 Aug 2021	Expected project completion date

Submissions

How to make a submission:

Tender Application available from the APRIL website: www.april.org.au

Submissions close 5pm Monday 31 August 2020

Contact

If you are interested in submitting an application, and require more information please contact:

Dr Charles Rikard-Bell

Manager, Commercialisation and Research Impact

APRIL

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