



Feed Quality – European Stockfeed Manufacturers

Jeremy Harrison

An International Specialised Skills Fellowship

Sponsored by AgriFood Skills Australia



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Row 1 (left): Sheep Feed, **(right):** Dairy Feed
Row 2 (left): Pig Feeds, **(right):** Pellet Durability Testing Unit at Tekpro
Row 3 (left): Kahl Hardness Tester, **(right):** Mixed Barley Wheat and Sorghum Pellets

i. EXECUTIVE SUMMARY

The key aim of the Fellowship was to study pellet manufacture and feed quality at each feed mill visited identifying the key gaps between Australian and European practices and identify what needs to be implemented by way of equipment and skills to improve Australia stockfeed quality and performance.

The international experience element of the Fellowship was undertaken in Europe, providing a unique opportunity to visit plants which did operate in a different manner to Australian Feedmills. The Fellowship was a success and it gave some clarity on what the mills do when making stockfeed and how well they do it.

The Fellowship project went to plan and saw the Fellow visit six feed mills in the UK and one in Norway, with each varied in size and the amount of feed produced. Each visit required a large amount of time to be spent with both the Feedmills management and operational staff.

The Feedmills that were visited and interviewed, as part of this Fellowship, were a mixed group of mills and manufacturers of multiple types of feeds for differing species such as:

- Pig
- Poultry
- Dairy
- Beef
- Sheep
- Gamebird

Quite a few stockfeed mills in the United Kingdom and Norway were unique and had some processes and systems that can be adopted by the Australian industry.

All the feed samples gathered from the Feedmill visits were tested using a Holmen NHP200 testing unit and also put all feeds through a KAHL hardness test. After these samples had been tested the testing data was collated and a spreadsheet created.

There is a need to discuss the feed test findings with the SFMCA and establish if a pellet durability matrix guide could be established to give feed milling companies some indication of what contributes to a good pellet.

As a result of Fellowship learnings, the recommendation to the industry is that specifically designed pellet durability testing equipment be used as it will provide consistent results, and also have the equipment supplier support the SFMCA members of the ongoing calibration of these testing units to ensure their performance is maintained.

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ii. ACRONYMS, ABBREVIATIONS & DEFINITIONS

Abbreviations/Acronyms

GTA	Grain Trade Australia
GAFTA	Grain and Feed Trade Association
SFMCA	Stock Feed Manufacturers' Council of Australia
UFAS	Universal Feed Assurance Scheme
UK	United Kingdom

Definitions

Pellets

Are Compressed Compound meal rations that are formed into a cylindrical feed via a pelleting press that is suitable for animal consumption.

Throughput

Is the volume of pellets that can be produced through the pellet die over a defined period

By Products

Product that is left over from an existing food manufacturing process and can be used in stockfeed manufacture

Millrun / Pollard

By Product from Flour Manufacture

Canola Meal

By Product from Canola Oil Processing

Meatmeal

By product from animal carcasses from slaughter houses

iAudit

An application set up via an iPad that is used as an auditing tool for businesses.

1. ABOUT THE FELLOW

Name: Jeremy Harrison

Employment: Regional Quality Manager, Ridley Agriproducts

Qualifications:

- Business Sustainability (AgriFood Skills), University of Western Sydney, 2012
- Lead Auditor, Chisholm Institute, 2008
- Trade Certificate (Painting & Decorating), Melbourne Collage of Painting and Decorating, 1990

Memberships:

- Training Steering Committee, Stockfeed Manufacturers' Council of Australia (SFMCA)
- Food Standards Committee, Primary Skills Victoria
- Food Standing Committee, AgriFoods Skills (now disbanded)

Harrison has been employed with Ridley Agriproducts for over 20 years. Initially the Fellow started off as a Grain Intake Operator in 1995 at the Pakenham Feedmill and performed various tasks including forklift operation, premix preparation and batching of feeds.

After three years in the Feedmill and gaining a good understanding of what takes place from start to finish, in 1998 the Fellow became involved with the ISO 9000 Quality program. From this point the concept of a quality system and how it impacts on the final product was truly "as clear as crystal" to the Fellow.

The Fellow has been involved in research projects undertaken by Ridley Agriproducts. The Fellow has also worked in the area of training and is a member of the SFMCA Training Committee developing a training program for the Australian stockfeed industry.

The Fellow also sits on the Primary Skills Victoria committee looking at the industry training programs, networking with other food industries and understanding what they do to skill staff while also remaining competitive in the food manufacturing world.

2. AIM OF THE FELLOWSHIP PROGRAM

The objective of the Fellowship was to see first-hand, learn and to understand what other European Stockfeed businesses do to produce a good quality feed.

Quality of stockfeed pellets is important. Inconsistency with pellet quality can have a dramatic effect on animal performance. Broiler chickens are the most affected by poor pellet quality as the feed conversion process used by growers often links back to the feed used if growth rates are poor and the key step of quality control is final testing.

It is clear that feed manufacturers in Europe are doing an excellent job in manufacturing stock feeds, testing these feeds and capturing the key pellet quality and durability results.

The key aims of the overseas study were to:

1. Study pellet quality at each Feedmill visited
2. Identify the key gaps between Australian and European practices
3. Identify what needs to be implemented by way of equipment and skills to improve Australia Stockfeed quality and overall mill performance.

Other key elements of the Fellowship study included:

- To see what best practice processing systems are in operation
- Document what pellet quality testing equipment is available
- Assess the Universal Feed Assurance Scheme (UFAS) industry guideline and assess its application against the Stock Feed Manufacturers' Council of Australia (SFMCA) standards
- Review the current training structures that are in place to support quality pellet testing systems in European plants
- Connect with Tekpro (the key equipment supplier) and obtain any historical data to help support their equipment use.
- Assess overall customer satisfaction with pellet quality.

3. THE AUSTRALIAN CONTEXT

The livestock feeds required in Australia totals 13 million tons annually. The SFMCA has around 120 members manufacturing over 5.5 million tons of feed.

The chicken meat industry utilises 3 million tons of broiler feed each year. The introduction of the certain genetic line of chickens has resulted in greater emphasis being placed on pellet quality. In particular the feed that they consume is required to be durable in holding pellet structure and not breaking down to a fine powder during transport dispersing and feeding. If the feed has not been made to the customer's specifications, both feed intake and growth rates can be compromised.

By understanding how feeds are made in the United Kingdom market and assessing the overall pellet quality, we can then review the SFMCA standard and then implement a 'best practice' training package. At present the SFMCA is working with the University of Queensland in developing an on-line feed milling training program. This training includes feed pelleting and the factors affecting quality based on existing Australian knowledge

The 'Inspection of Finished Product' module, which forms part of the University of Queensland training program, is currently a generic one that covers all types of testing equipment and practices used to accommodate all members. This training module has the potential to be greatly improved with the inclusion of benchmarking information drawn from the outcomes of this Fellowship study in Europe.

A major positive outcome of the project work will be provision of information and data that companies can use to assess manufacturing improvement plans. For some manufacturing plants, this will provide greater direction in capital investment to adopt 'best practice' technology.

Strengths and Weaknesses of the Australian Industry

Strengths

- Access to good quality grains (i.e. wheat and barley).
- Good biosecurity control due to being an island nation.
- Can conduct transportation of raw materials and finished feeds over long distances without stringent border control.
- Can build Feedmills in remote locations so that distances between residences and plant is of a benefit to the community.
- SFMCA are currently building a very good training program.

Weaknesses

- Industry has a lot of older mills that run with out of date equipment.
- Many staff across the industry have not been exposed to new technology.
- 'Throughput' should override 'pellet quality' is often mentioned in the industry.
- Understanding the expectations of the customers and the needs of the animals they house.
- A lot of medications and additives have to be imported from overseas as they are not made locally.

4. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

The list of skills outlined below, and drawn from the European Fellowship study outcomes, have the potential to change the landscape in the Australian market. These include:

1. Closer scrutiny of the raw material quality standards used within the stockfeed manufacturing process.

- Identified and assessed the grains used and the % of moisture inclusion as it has an impact on pellet quality.
- Use of by-products and how they impact on the diets.
- Investigated the GAFTA grain industry standards and how ingredients are assessed on receiving them at site.

Action: Spent time at each mill with operators at the point of receiving, and stepped through the process of assessing raw materials to gain practical knowledge of how each ingredient is assessed for quality.

Action: Reviewed the raw material standards used in Europe and compared these against the Australian standards published by Grain Trade Australia (GTA). All potential improvements to the Australian standards will be directed to GTA via the SFMCA.

2. Observed the practice of grain grinding and the ideal particle size required to make a good quality pellet.

- Stepped through each mill's grinding system to see if hammermill, roller mill or disc mills are used.
- Worked with the mill staff to document the settings of milling equipment to get the ideal particle size.
- Conducted tests on some of the ground products to measure what micron size is being achieved. 10 ground feed samples were tested with an average of 60% – 70% of ground mash falling through a 1mm mesh sieve.



Action: Worked with the mill staff and conducted tests at some mills to determine the micron size, and when all tests were concluded then recorded the data.

Action: Obtained relevant the data from all mills in Europe visited as part of the Fellowship and assessed them against Australian mills. Identified recommendations for SFMCA members on desired grind size for each livestock species.

Typical Hammer Mill

3. Clarified the ideal pelleting conditioning temperature and moisture for feed mixes to create a good conditioned mix.

- Studied the way the mill supervisors set up the conditioners and determined the ideal temperatures and the steam pressure.

4. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

- Measured the dwell time feeds achieved whilst they are in the conditioner and also the paddle configuration that has been set up.
- Assessed whether binders used in the diets assist with the conditioning process and pellet quality.

Action: Recorded all relevant information and data via iAuditor all electronic interface. Compared differences between Feedmills visited and identified what was seen to be the best practice.

Action: Collated Australian data on pellet conditioning temperatures and compared them to European best practice results. Documented the best practices for both Europe and Australia and intend putting these forward for implementation in the Australian industry.

Typical Conditioner



4. Established the optimal pellet throughput (tons per hour) that can be achieved based on the durability of the feeds and diet configuration.

- Studied the way mill supervisors set up the pellet presses and assessed the practices that they follow to achieve optimum throughput whilst maintaining a good durable pellet that meets the set requirements.
- Measured the die depth and the core temperature that the pellet presses run at to gauge what temperature is achieved and the compression factor that the pellets are manufactured at.

Action: Recorded data for each of the sites visited, assessed results to determine the best press system and die thickness.

Action: Collated Australian data on optimal pelleting throughput and compared to European best practice results. Documented European best practices and intend putting recommendations forward to the Australian industry.

Typical Pellet Press



4. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

5. Clarified what was the best equipment that needs to be used to measure pellet quality, durability and hardness.

- Observed the final testing of all feeds during each mill site visit
- Recorded the data captured from the pellet durability testing units, hardness testing and any other pellet quality testing equipment.
- Determined the use of in-line testing equipment and identified whether there were benefits from use.

Action: Documented the equipment in use and pellet quality data for each sample collected at the mills visited.

Action: Gathered samples from each mill visited and assess the quality at the Tekpro workshop in Norwich, United Kingdom. Pellet quality was determined through:

1. Holmen NHP 200 unit for durability
2. KAHL testing device for hardness.

Action: Conducted a similar test protocol in the Australian industry and assessed all data to determine which stood out as the best quality testing equipment.

6. Understand how the European customers keep an eye on feed quality and what key trigger points they look for.

- Talked with plant managers about their key customers, who receive the feed from mills and discuss what their expectations are.
- Looked at the ways feed is delivered to the farm silos and what the unloading process does to the pellet quality.

Action: Obtained all comments from European customers via discussions with the mills and assessed their thoughts and beliefs against some of the Australian equivalent customers to determine what efficiencies can be implemented in the Australian market.

5. THE INTERNATIONAL EXPERIENCE

Destination: l'Anson Bros Ltd, The Mill, Thorpe Rd, Masham, Ripon, North Yorkshire HG4 4JB, United Kingdom

Contacts: Chris l'Anson - Chairman

Objectives

To visit the plant, sit down with l'Anson management and assess how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Chris l'Anson.

Appendix 1

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

Destination: Ian Mosey Black Dale Farm, Coulton Ln, York YO62 4NQ, United Kingdom

Contacts: Stephen Mosey, Operations Director

Objectives

To visit the plant, sit down with Ian Mosey management and assess how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Stephen Mosey.

Appendix 2

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

5. THE INTERNATIONAL EXPERIENCE

Destination: NFW Agriculture Ltd, Wardle, Nantwich, Cheshire CW5 6AQ, United Kingdom

Contacts: Warren Shickell – Operations Development Manager, Ian Carr – Engineering Manager

Objectives

To visit the plant, sit down with NFW management and assess how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Warren Shickell.

Appendix 3

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

Destination: GLW Feeds Ltd, Lindum Mill, Ashby Rd E, Shepshed, Loughborough, Leicestershire LE12 9BS, United Kingdom

Contacts: Martin Briggs – Technical Manager

Objectives

To visit the plant, sit down with GLW Feeds management and assess how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Martin Briggs.

Appendix 4

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

Destination: Fiskå Mølle, Fiskåvegen, 1010 N-4120, Tau, Norway

Contacts: Tanja Soyland – Quality and Safety Manager

Objectives

To visit the plant, sit down with Fiska Molle management and asses how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Tanja Soyland.

Appendix 5

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

Destination: WL Duffield & Sons Ltd, Saxlingham Thorpe Mills, Norwich NR15 1TY, United Kingdom

Contacts: Jason Dyer – Operations Manager

Objectives

To visit the plant, sit down with W L Duffield management and asses how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Jason Dyer.

Appendix 6

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

5. THE INTERNATIONAL EXPERIENCE

Destination: For Farmers, Tucks Mill, Burston, Diss Norfolk, United Kingdom

Contacts: Ketill Lord – Integration Manager, Gavin Keach – Production Manager

Objectives

To visit the plant, sit down with for feeds management and asses how it manufactures Stockfeed, record all questions using an iPad. After the desk top review gather some feed samples for further testing. After these samples have been tested collate the testing data.

Outcomes

The site visit was a success with the key plant information gathered and the feed test data being created. Plant visit took 6 hours in total as predicted and iAudit report approved by Gavin Keach.

Appendix 7

This Appendix provides the iAudit report and includes content covering: accreditation, mill hygiene and process monitoring; intake and grinding process; premix and batching process; conditioning and pelleting process; cooling and sieving process; outloading and packing process; product testing process; and, microbiological and environmental testing.

Destination: TekPro Limited, Willow Park, North Walsham, Norwich, United Kingdom

Contacts: Eamonn Neale – Sales Manager

Objectives

To visit the workshop, talk with the engineers, take all the feed samples gathered from the Feedmill visits and conduct a series of tests using a Holmen NHP200 testing unit and also putting all feeds trough a KAHL Hardness test. After these samples have been tested collate the testing data.

Outcomes

The workshop visit was a success with 38 feeds being tested using the NHP200 unit. The data has been compiled, feed results will be placed in a excel spreadsheet and be compared with the Australian feeds.

Concluding Remarks

The Fellowship in the UK and Europe was a unique opportunity and these plants operate in a different manner to Australian Feedmills. 'Tekpro' advised that the Fellowship will be more than helpful and it gave some clarity on what the mills do and how well they do it.

The project went to plan, visiting six Feedmills in the UK and one in Norway. Each visit required a large amount of time to be spent with both Feedmill managers and operational staff.

Key areas looked at and discussed during each visit included:

- Quality Assurance Program in place
- Material Intake
- Grinding
- Batching
- Conditioning
- Pelleting
- Cooling
- Sieving
- Product Testing
- Bio Security Protocol
- Walk through of the plant

This Fellowship provided a rare opportunity to spend time with people performing job functions equivalent to Australia. The Fellowship project provided a chance to learn about UK feed milling broadly and the pellet quality, more specifically, from hands-on feed milling employees.

6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

Based on what was observed during the Fellowship Feedmill visits it is clear that finished feed pellet quality can be influenced by several factors including:

- Raw materials selection
- Formulation of specific diets
- Level of grain inclusion
- Particle size of mix after grinding,
- Correcting mixing times,
- The right amount of steam,
- Diameter of the pellet, thickness of the die
- Pellets cut to the right length
- Cooling of the pellet
- Sieving of the pellet
- Use of appropriate testing equipment.

Long term members of the Australian Industry would be aware of these factors but need to look at each of these steps with an open mind so as to assess what can be done.

Based on the Fellowship visits, the steps of the feed manufacturing process impacted on product quality were:

- The use of wheat as it is a great source of natural starches and if the levels are right in a specific diet it helps bind the pellets. Having the wheat moisture levels at 14 per cent means that when feeds are being made less steam is required.
- It was clear that benefits can be gained by putting all bulk raw materials in one batch through the hammermill and a uniform particle size can be gained. From this process there is likely to have less fracture points in the pellets.
- Ensuring that regular dispersion tests are conducted on the mixers to ensure that the feeds are being mixed and made to the set specifications.
- During the plant visits it was clear that steam addition was different at each site using various combinations of conditioners, rippers, boa compactors and expanders. Feeds were being exposed to steam for a longer period and by the time it gets to pellet press it is better conditioned. Based on the feeds and data collated, product produced at 60oC – 75oC is suitable.
- Pellet press configurations did vary between plants but it was clear that considerations on pellet durability was always on the minds of the operators and press settings were based around this thinking. Pellet size varied from 2mm to 15mm in diameter with testing results showing that 6mm pellets appear to provide the best quality.
- Due to the cooler temperatures in the northern hemisphere all plants were able to get pellet temperatures back to ambient throughout most of the year. This is a huge benefit as feed can be delivered from a cool out loading bin to a cool silo on farm.
- Levels of fines were minimal at the sieving stage and if any fines were captured they were put back though the conditioner. One clear stand out at some mills was the use of a sieve at the out loading bins as a means of removing all fines from the finished pellets, so customers get good quality pellets with minimal fines delivery to farm.

6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

Some things that take place in the Australian Industry were of some interest to the Mills visited, quite a number of people who saw these took an interest in them and looked at adopting them within their plants.

The use of the SFMCA OnLine Training modules, all mills were shown the system in place via a PowerPoint presentation and could see that it benefits the Industry and helps all people understand what the Industry Standard is.

The use of Micro Tracer in the Mixer Cv / Dispersion testing to establish the levels of cross transference between batches.

The use of the iAudit application to audit sites using an iPad, including Mock Recalls, GMP and OHS Inspections and even Farm Safety Hazard assessments.

"Thanks Jeremy, I enjoyed our discussions and hope the day was of use to you, and thanks for the training information. We are looking into using the i-Audit tool already." (Chis l'Anson, Director, l'Ansons Quality Feeds)

"Thank you for your feedback and thank you for the very instructive visit and the information supplied." (Ketill Lord, Integration and Central Support, for Farmers)

"Thanks for iAudit report, it's interesting to see the variation in the hardness comparison. We've concentrated on the durability up to now but started looking at hardness last year on the sheep feed. I would say that most people push their coolers to the limit and so there can be residual heat in the pellet that comes out later. The biggest variable to everybody is the atmospheric conditions in temperature and humidity, controlling that would be the ultimate! Cereals do have a large influence but are only a part of the whole pellet quality debate." (Chis l'Anson, Director, l'Ansons Quality Feeds)

"I have just read through your report, it reads very well. I like the way the I-Auditor reports out your audit, we were so impressed that our H & S Manager has written his own and now uses it when he does site audits of our sister mills." (Jason Dyer, Operations Manager, Duffields)

"Many thanks for all the information you sent me, I am pleased to read through it all. It has been exciting and educational to have you on the visit, thank you for choosing Fiskå! Good luck with all your work, I like this kind of work style you do! Exchanging experiences with others is always helpful." (Tanja Søyland, Kvalitetsikring/ Quality Safety, Fiska Molle)

7. RECOMMENDATIONS

Through the course of the Fellowship and subsequent evaluation of learnings, the Fellow has identified a number of recommendations for the industry in Australia as well as education and training here. If considered or implemented, it is the Fellow's belief that the industry could be enhanced now and into the future.

Industry Recommendation:

Discuss the feed test findings with the SFMCA and establish a pellet durability matrix guide that could be used to give feed milling companies an indication of what contributes to a good pellet.

Encourage the use of particle size testing of ground feeds prior to pelleting, as it appears to be the most important step of the process. Consistent particle size ensures that the end product being made will have minimal fracture points and withstand the rigors of being transported to farms.

Recommend to the industry that specifically designed pellet durability testing equipment be used as it will provide consistent results, and also have the equipment supplier support the SFMCA members with ongoing calibration of these testing units to ensure their performance is maintained.

Education & Training:

Work with the SFMCA Training Committee in adding these key points of interest around feed manufacture and pellet testing into the draft training program being developed with the assistance of the University of Queensland – Gatton Campus.

8. REFERENCES

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9. ACKNOWLEDGEMENTS

The Fellow would like to thank the following individuals and organisations who generously gave their time and their expertise to assist, advise and guide them throughout the Fellowship program.

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The ISS Institute exists to foster an aspirational, skilled and smart Australia by cultivating the mastery and knowledge of talented Australians through international research Fellowships.

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- Recommending improvements to accredited educational courses
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9. ACKNOWLEDGEMENTS

About the Investor

AgriFoods Skills Australia is the Industry Skills Council for the AgriFoods Industry: the rural and related Industries, food processing (including beverages, wine and pharmaceuticals), meat, seafood, and racing. The Fellow would like to thank them for providing funding support for this Fellowship.

Personal Acknowledgements

The Fellow sincerely thanks the following individuals and organisations that have generously given their time and expertise to assist, advise and guide him throughout this Fellowship program.

Fellowship Investor:

- Agrifood Skills Australia International Fellowship

Employer and Industry:

- John Spragg, Executive Officer, Stock Feed Manufacturers' Council of Australia (SFMCA)
- Louise Edwards, Group Manager, Quality, R&D and Sustainability Ridley Agriproducts

Fellowship Supporters:

- Chris l'Anson, Chairman, l'Anson Bros Ltd
- Stephen Mosey, Operations Director, Ian Mosey Black Dale Farm
- Warren Shickell, Operations Development Manager, NFW Agriculture Ltd
- Ian Carr, Engineering Manager, NFW Agriculture Ltd
- Martin Briggs, Technical Manager, GLW Feeds Ltd
- Tanja Soyland, Quality and Safety Manager, Fiskå Mølle
- Jason Dyer, Operations Manager, WL Duffield & Sons Ltd
- Ketill Lord, Integration Manager, for farmers Tucks Mill
- Gavin Keach, Production Manager, for farmers Tucks Mill
- Eamonn Neale, Sales Manager, TekPro Limited (manufacturer of Pellet Durability testing equipment)

10. ATTACHMENTS

- Appendix 1:** iAudit – l’Anson Bros
- Appendix 2:** iAudit – I Mosey
- Appendix 3:** iAudit – NWF Agriculture
- Appendix 4:** iAudit – GLW Feeds
- Appendix 5:** iAudit – Fiskå Mølle
- Appendix 6:** iAudit – W L Duffield
- Appendix 7:** iAudit – for farmers
- Appendix 8:** Test Results - Fellowship Plants and Feeds

