Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Te Aroha (ME84) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Te Aroha.

Silver Fern Farms Ltd Te Aroha originally reassessed its HACCP Plan in April 2003 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 are not a hazard reasonably likely to occur in beef meat from premises ME84.

Our facility ME84 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 45,153 cartons tested using the above outlined programme.

Over that timeframe there have been fifteen composite samples (two of 5 cartons and thirteen of 12) cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME84 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 45,153 cartons of boneless manufacturing beef tested to date at ME84, approx 0.37% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 15 positives within this sample size, the proportion rate at Te Aroha is 0.033%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME84 i.e. 45,153 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	45153	0	0.000%	0.0000%	0.008%
0.05	45153	1	0.002%	0.0001%	0.012%
0.05	45153	2	0.004%	0.0005%	0.016%
0.05	45153	3	0.007%	0.0014%	0.019%
0.05	45153	4	0.009%	0.0024%	0.023%
0.05	45153	5	0.011%	0.0036%	0.026%
0.05	45153	6	0.013%	0.0049%	0.029%
0.05	45153	7	0.016%	0.0062%	0.032%
0.05	45153	8	0.018%	0.0076%	0.035%
0.05	45153	9	0.020%	0.0091%	0.038%
0.05	45153	10	0.022%	0.0106%	0.041%
0.05	45153	11	0.024%	0.0122%	0.044%
0.05	45153	12	0.027%	0.0137%	0.046%
0.05	45153	13	0.029%	0.0153%	0.049%
0.05	45153	14	0.031%	0.0170%	0.052%
0.05	45153	15	0.033%	0.0186%	0.055%

This spreadsheet confirms that by having found 15 positive samples from 45,153 cartons tested, confidence limits at 95% is between 0.0186%-0.055%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME84 has been following the NMD programme since its inception in 1996 and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections.**

HACCP Implementation

In order to comply with the US HACCP legislation, the ME84 HACCP plan was originally recognised as valid on 2nd December 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME84 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughterfloor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME84 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Te Aroha (ME84) contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME84, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Te Aroha (ME84)** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME84 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Shannon Love
Market Access Manager
Silver Fern Farms Ltd
31st August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Pareora (ME34) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Pareora (ME34).

Silver Fern Farms Ltd Pareora ME34 originally reassessed its HACCP Plan in March 2002 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 STEC's are not a hazard reasonably likely to occur in beef meat from premises ME34.

Our facility ME34 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in March 2002, until August 2022 there have been 17516 cartons tested using the above outlined programme.

Over that timeframe there have been no samples of manufacturing beef tested positive for *Shiga Toxin-producing E.coli*.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME34 has been following the NMD programme since its inception in 1996, and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections**.

HACCP Implementation

In order to comply with the US HACCP legislation, the ME34 HACCP plan was originally recognised as March 2002. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME34 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughter floor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME34 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Pareora ME34 contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME34 and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's, are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 STEC's are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Paroera ME34** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME34 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Karen Parker

Market Access Co-ordinator
19th August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Pacific (ME52) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Pacific.

Silver Fern Farms Ltd Pacific originally reassessed its HACCP Plan in April 2003 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 are not a hazard reasonably likely to occur in beef meat from premises ME52.

Our facility ME52 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 56,431 cartons tested using the above outlined programme.

Over that timeframe there have been 13 composite samples (one of 5 cartons and twelve of 12) cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME52 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 53,143 cartons of boneless manufacturing beef tested to date at ME52, approx 0.26% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 13 positives within this sample size, the proportion rate at Pacific is 0.023%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME52 i.e. 56,431 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	56431	0	0.000%	0.0000%	0.007%
0.05	56431	1	0.002%	0.0000%	0.010%
0.05	56431	2	0.004%	0.0004%	0.013%
0.05	56431	3	0.005%	0.0011%	0.016%
0.05	56431	4	0.007%	0.0019%	0.018%
0.05	56431	5	0.009%	0.0029%	0.021%
0.05	56431	6	0.011%	0.0039%	0.023%
0.05	56431	7	0.012%	0.0050%	0.026%
0.05	56431	8	0.014%	0.0061%	0.028%
0.05	56431	9	0.016%	0.0073%	0.030%
0.05	56431	10	0.018%	0.0085%	0.033%
0.05	56431	11	0.019%	0.0097%	0.035%
0.05	56431	12	0.021%	0.0110%	0.037%
0.05	56431	13	0.023%	0.0123%	0.039%

This spreadsheet confirms that by having found 13 positive samples from 56,431 cartons tested, confidence limits at 95% is between 0.0123%-0.039%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME52 has been following the NMD programme since its inception in 1996 and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections.**

HACCP Implementation

In order to comply with the US HACCP legislation, the ME52 HACCP plan was originally recognised as valid on 5th 23rd December 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company

systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME52 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughterfloor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME52 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Pacific (ME52) contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME52, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Pacific (ME52)** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME52 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Shannon Love
Market Access Manager
Silver Fern Farms Ltd
31st August 2022

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Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Hokitika (PH206) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Hokitika.

Silver Fern Farms Ltd Hokitika originally reassessed its HACCP Plan to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 STEC's are not a hazard reasonably likely to occur in beef meat from premises PH206.

Our facility PH206, participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of Top 7 STEC sampling in April 2010, until August 2022 there have been 13,428 cartons tested using the above outlined programme.

Over that timeframe there have been no samples of manufacturing beef tested positive for *Shiga Toxin-producing E.coli*.

These results indicate that Top 7 STEC are reasonably unlikely to occur in beef exported to the United States or any other market from Silver Fern Farms Limited Hokitika.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

PH206 has been following the NMD programme since 2010, and has consistently performed well within the National profiles.

Since the commencement of NMD in 2010, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections**.

HACCP Implementation

In order to comply with the US HACCP legislation, the PH206 HACCP plan was originally recognised as valid in April 2010. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

PH206 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps

- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughter floor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for PH206 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Hokitika PH206 contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. PH206, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's, are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 STEC's are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Hokitika PH206** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service

proposed rule “Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products” (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC’s are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC’s as the organisms of concern. Should there be any adverse change in the *E.coli*, PH206 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Karen Parker
Market Access Co-ordinator
19th August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Hawera (ME9) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Hawera.

Silver Fern Farms Ltd Hawera originally reassessed its HACCP Plan in April 2003 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2021.

This assessment confirmed the Top 7 are not a hazard reasonably likely to occur in beef meat from premises ME9.

Our facility ME9 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 54,676 cartons tested using the above outlined programme.

Over that timeframe there have been 14 composite samples (one of 5 cartons and thirteen of 12) cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME9 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 54,676 cartons of boneless manufacturing beef tested to date at ME9, approx 0.29% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 14 positives within this sample size, the proportion rate at Hawera is 0.029%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME9 i.e. 54,676 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	54676	0	0.000%	0.0000%	0.007%
0.05	54676	1	0.002%	0.0000%	0.010%
0.05	54676	2	0.004%	0.0004%	0.013%
0.05	54676	3	0.005%	0.0011%	0.016%
0.05	54676	4	0.007%	0.0020%	0.019%
0.05	54676	5	0.009%	0.0030%	0.021%
0.05	54676	6	0.011%	0.0040%	0.024%
0.05	54676	7	0.013%	0.0051%	0.026%
0.05	54676	7	0.013%	0.0051%	0.026%
0.05	54676	8	0.015%	0.0063%	0.029%
0.05	54676	9	0.016%	0.0075%	0.031%
0.05	54676	10	0.018%	0.0088%	0.034%
0.05	54676	11	0.020%	0.0100%	0.036%
0.05	54676	12	0.022%	0.0113%	0.038%
0.05	54676	13	0.024%	0.0127%	0.041%
0.05	54676	14	0.026%	0.0140%	0.043%

This spreadsheet confirms that by having found 13 positive samples from 51,352 cartons tested, confidence limits at 95% is between 0.0140%-0.043%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME9 has been following the NMD programme since its inception in 1996 and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections.**

HACCP Implementation

In order to comply with the US HACCP legislation, the ME9 HACCP plan was originally recognised as valid on 5th November 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME9 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughterfloor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME9 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Hawera (ME9) contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME9, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Hawera (ME9)** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME9 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Shannon Love
Market Access Manager
Silver Fern Farms Ltd
31st August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited-Finegand (ME26) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Finegand

Silver Fern Farms Ltd Finegand originally reassessed its HACCP Plan in July 1998 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 STEC's are not a hazard reasonably likely to occur in beef meat from premises ME26.

Our facility ME26 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 43,313 cartons tested using the above outlined programme.

Over that timeframe there have been thirteen composite samples of 12 cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME26 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 43,313 cartons of boneless manufacturing beef tested to date at ME26, approx 0.36% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 13 positives within this sample size, the proportion rate at Finegand is 0.03%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME26 i.e. 43,313 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	43313	0	0.000%	0.0000%	0.009%
0.05	43313	1	0.002%	0.0001%	0.013%
0.05	43313	2	0.005%	0.0006%	0.017%
0.05	43313	3	0.007%	0.0014%	0.020%
0.05	43313	4	0.009%	0.0025%	0.024%
0.05	43313	5	0.012%	0.0037%	0.027%
0.05	43313	6	0.014%	0.0051%	0.030%
0.05	43313	7	0.016%	0.0065%	0.033%
0.05	43313	8	0.018%	0.0080%	0.036%
0.05	43313	9	0.021%	0.0095%	0.039%
0.05	43313	10	0.023%	0.0111%	0.042%
0.05	43313	11	0.025%	0.0127%	0.045%
0.05	43313	12	0.028%	0.0143%	0.048%
0.05	43313	13	0.030%	0.0160%	0.051%

This spreadsheet confirms that by having found 13 positive samples from 43,313 cartons tested, confidence limits at 95% is between 0.0160%-0.051%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME26 has been following the NMD programme since its inception in 1996 and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections**.

HACCP Implementation

In order to comply with the US HACCP legislation, the ME26 HACCP plan was originally recognised as valid on 5th November 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME26 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughterfloor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME26 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Finegand (ME26) contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME26, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7, are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 STEC's are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Finegand (ME26)** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME26 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Karen Parker
Market Access Co-ordinator
19th August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Dargaville (ME125) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Dargaville.

Silver Fern Farms Ltd Dargaville originally reassessed its HACCP Plan in April 2003 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2021.

This assessment confirmed the Top 7 are not a hazard reasonably likely to occur in beef meat from premises ME125.

Our facility ME125 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC prevalence Data

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 56,004 cartons tested using the above outlined programme.

Over that timeframe there have been seventeen composite samples of 12 cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME125 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 56,004 cartons of boneless manufacturing beef tested to date atME125, approx 0.36% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 17 positives within this sample size, the proportion rate at Dargaville is 0.030%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME125 i.e. 56,004 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	56004	0	0.000%	0.0000%	0.007%
0.05	56004	1	0.002%	0.0000%	0.010%
0.05	56004	2	0.004%	0.0004%	0.013%
0.05	56004	3	0.005%	0.0011%	0.016%
0.05	56004	4	0.007%	0.0019%	0.018%
0.05	56004	5	0.009%	0.0029%	0.021%
0.05	56004	6	0.011%	0.0039%	0.023%
0.05	56004	7	0.012%	0.0050%	0.026%
0.05	56004	8	0.014%	0.0062%	0.028%
0.05	56004	9	0.016%	0.0073%	0.031%
0.05	56004	10	0.018%	0.0086%	0.033%
0.05	56004	11	0.020%	0.0098%	0.035%
0.05	56004	12	0.021%	0.0111%	0.037%
0.05	56004	13	0.023%	0.0124%	0.040%
0.05	56004	14	0.025%	0.0137%	0.042%
0.05	56004	15	0.027%	0.0150%	0.044%
0.05	56004	16	0.029%	0.0163%	0.046%
0.05	56004	17	0.030%	0.0177%	0.049%

This spreadsheet confirms that by having found 17 positive samples from 56,004 cartons tested, confidence limits at 95% is between 0.0177%-0.049%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME125 has been following the NMD programme since its inception in 1996 and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections**.

HACCP Implementation

In order to comply with the US HACCP legislation, the ME125 HACCP plan was originally recognised as valid on 23rd December 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME125 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

Specific operations within the HACCP plan, have been designed to control and minimise the incidence of faecal material onto product, they include:

- Washing of cattle in the stockyards
- Washing of anal area post stun and before shackling
- Oesophageal clipping/tying to eliminate ingesta leakage
- Bagging and applying band to control faecal leakage during bunging operation
- Trimming of any identified faecal contamination immediately when it is identified at each operation.
- Use of steam vacuum on targeted regions of the carcase according to good operational practices
- Sterilisation of knives and equipment between carcasses.
- Highly trained operators.
- Strategically located trimming steps
- Application of a Zero Faecal Tolerance programme to effectively monitor and control faecal contamination during the slaughter and dressing operations
- Rapid product cooling by implementing validated refrigeration management processes

Monitoring of all the operations/procedures outlined above are undertaken throughout the processing day to ensure that they remain effective.

A key component of the HACCP Plan which enhances the Zero Faecal Tolerance Programme is the incorporation into the HACCP Plan of a System CCP consisting of PM Inspection / Detain Trimming / Reinspection. The System CCP is designed to control faecal/ingesta contamination which may contribute to mesophillic pathogens occurring on product.

To enhance the performance of the ZFT CCP pre-trim has been designated a control point. A pre-boning inspection is performed on all carcasses prior to the start of any cutting or boning, to ensure the removal of any visible contamination that might still be present on carcasses after leaving the slaughterfloor.

Monitoring of the System CCP is undertaken repeatedly throughout the day, with verification of all records regarding monitoring frequency, critical limit adherence, and any relevant corrective actions undertaken daily.

Product Disposition, Corrective and Preventative Action

Upon notification of the presumptive positive results, all manufacturing product destined for grinding from the affected days production was immediately retained, and the New Zealand Ministry for Primary Industries (NZMPI) notified.

A review was undertaken of all HACCP and associated processing records from the affected day's production, with no faulty elements identified that could have contributed to an increased incidence of faecal or ingesta contamination due to unhygienic processing

The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, Contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME125 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Dargaville (ME125) contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 STEC's are reasonably unlikely to occur in beef exported to the United States. ME125, and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Dargaville (ME125)** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME125 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Shannon Love
Market Access Manager
Silver Fern Farms Ltd
31st August 2022

Reassessment of the Top 7 STEC and HACCP Plan for Silver Fern Farms Limited- Belfast (ME15) for adult cattle

August 2022

United States regulation (9 CFR 417) regards a hazard that occurs and is not controlled by a CCP as being an unforeseen hazard. United States regulation requires the corrective actions to include a reassessment of the hazard analysis whenever an unforeseen hazard occurs. This document is a reassessment of the HACCP plan and Top 7 STEC (O157:H7, O26, O45, O103, O111, O121 and O145) prevalence to determine whether Top 7 STEC is a hazard considered likely to occur at Silver Fern Farms Limited Belfast.

Silver Fern Farms Ltd Belfast originally reassessed its HACCP Plan in July 1998 to determine whether or not Top 7 STECs are a hazard that is reasonably likely to occur in beef exported to the United States. This letter outlines reassessment of the HACCP Plan relevant for this site from then until August 2022.

This assessment confirmed the Top 7 STEC's are not a hazard reasonably likely to occur in beef meat from premises ME15.

Our facility ME15 participates in the national monitoring programme for STEC's for premises exporting beef to the United States (*E.coli* O157:H7 since June 1998, and the additional six other serogroups since June 2012). The current programme has been accepted by the FSIS as equivalent to US monitoring programmes. Twelve cartons (@27.2kg) of beef are randomly selected each day from each FSIS listed premise. A composite N60 sample is collected from multiple locations within the selected cartons, and composited (375g) for analysis. All analyses are carried out in laboratories approved and audited by the New Zealand government, and are certified to ISO Guide 17025. Analytical methods meet the requirements of FSIS Directive 10010.1, and include enrichment, screening with AOAC approved BioControl Assurance GDS kits, and isolation using immunomagnetic separation (IMS) procedures.

Plant STEC

Since the commencement of *E.coli* O157:H7 sampling in June 1998, until August 2022 there have been 48,897 cartons tested using the above outlined programme.

Over that timeframe there have been four composite samples of 12 cartons at screen, tested positive for *Shiga Toxin-producing E.coli*. These were confirmed by electrophoresis at ESR in Wellington. While the isolations are significant due to their rarity, we do not believe they are an indicator of inadequate plant performance for the following reasons:

1. ME15 was operating in accordance with the New Zealand regulatory requirements for slaughter and dressing (Code of Practice 5) and boning /refrigeration (Code of Practice 9). It has also complied with all US requirements.
2. Of the 48,897 cartons of boneless manufacturing beef tested to date at ME15, approx 0.098% have provided a positive result.

On the basis of this data using a direct arithmetic calculation on finding 4 positives within this sample size, the proportion rate at ME15 is 0.008%.

However in order to determine the true statistical significance of the results obtained, a comparison was made with the "USDA Table of Probabilities for use in Exploratory Sampling".

At a prevalence of 0.01%, 29,956 samples would be required to detect a single positive at the 95% confidence level. Given the sample size from ME15 i.e. 48,897 cartons, then at the 95% confidence level the expected prevalence is statistically less than 0.01%.

Further analysis of the data was undertaken by using a confidence level spreadsheet below originally designed by AgResearch.

Confidence Intervals: By Neil Cox, AgResearch, Hamilton (modified by Roger Cook 12/5/00)

Required signif level	Total	Num +ve	Proportion	95% Confidence Limits Lower	Upper
0.05	48897	0	0.000%	0.0000%	0.008%
0.05	48897	1	0.002%	0.0001%	0.011%
0.05	48897	2	0.004%	0.0005%	0.015%
0.05	48897	3	0.006%	0.0013%	0.018%
0.05	48897	4	0.008%	0.0022%	0.021%

This spreadsheet confirms that by having found 4 positive samples from 48,897 cartons tested, confidence limits at 95% is between 0.0022%-0.021%. This is an extremely low prevalence.

National Microbiological Database

New Zealand has in place a world leading national microbiological verification programme called the National Microbiological Database (NMD). In recognition of such in the New Zealand meat hygiene assurance programme, the USDA-FSIS have deemed the NMD programme to be equivalent to the *E. coli* and *Salmonella* testing requirements of the *US Pathogen Reduction /HACCP Final Rule*.

Accumulation by NZ MPI of the data from all premises has allowed development of national performance targets, monitoring of national performance and individual premises on an ongoing basis, and provision of scientific data to support design of HACCP plans.

The NMD national profile demonstrates that under New Zealand's processing conditions and regulatory controls, contamination with generic *E. coli* is low, and detection of *Salmonella* is rare.

ME15 has been following the NMD programme since its inception in 1996, and has consistently performed well within the National profiles.

Since the commencement of NMD in 1996, samples have been taken from carcases, primal cuts and bulk manufacturing meat for Salmonella analysis and there have been **no positive detections**.

HACCP Implementation

In order to comply with the US HACCP legislation, the ME15 HACCP plan was originally recognised as valid on 5th November 1998. Silver Fern Farms Ltd believes that the HACCP Plan is an integral part of the company systems delivering an acceptable level of food safety protection. The process is dynamic and under ongoing review.

The importance of mesophilic pathogens of enteric origin is highlighted in the raw material and hazard ID section of the HACCP Plan, where biological hazards associated with faecal and ingesta material from the gastrointestinal

tract and hide are identified. These hazards also form a significant part of the hazard analysis and CCP determination process.

ME15 operates a meat hygiene system that is consistent with the requirements of the Animal Products Act (1999). The slaughter and dressing standards are consistent with the requirements described in slaughter and dressing (Code of Practice 5). This is complemented by a validated HACCP plan that focuses on controlling pathogens of enteric origin. The focus of every processing step in the slaughtering operation is designed as an intervention measure to minimise contamination getting on the product.

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The records that were reviewed included Boning Room Process Control Sheets, Slaughter Floor Process Control Sheets, Pre trim control point records, contamination records (AsureQuality), CCP Records, ZFT records and Training records of Samplers. The records confirmed that the overall plant hygiene performance was meeting the New Zealand and US requirements.

As part of the process for ME15 ensuring ongoing system integrity, the HACCP plan is subjected to a full annual review by a suitably qualified person, as well as being subjected to ongoing verification from independent government veterinary officials.

Conclusion

Silver Fern Farms Ltd – Belfast ME15 contends that the analytical methods used in the monitoring programme are sufficiently contemporary and sensitive to enable detection of Top 7 STEC's when presented at a level that is unacceptable to the United States.

The evidence presented suggests that Top 7 are reasonably unlikely to occur in beef exported to the United States. ME15 and the results of the ongoing monitoring programme verify this suggestion. Results from the National Microbiological Database clearly indicate that contamination of meat and meat products with faecal material, hence faecal pathogens such as Salmonella and Top 7 STEC's , are minimal without the use of carcase interventions.

Only product that is compliant with the HACCP requirements and tested negative for Top 7 STEC's are shipped to the United States. This attestation is made to demonstrate that beef supplied to customers in the US from **Silver Fern Farms – Belfast ME15** meets the requirements of FSIS Notice "*E. coli* O157:H7 Contamination of Beef Products", 9 CFR Part 417, 7 October 2002 and US Department of Agriculture Food Safety Inspection Service proposed rule "Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products" (Federal Register Volume 76, Number 182, September 20, 2011) and provides the evidence that Top 7 STEC's are reasonably unlikely to occur in this product.

Silver Fern Farms Ltd. will continue to undertake daily verification of the effectiveness of the HACCP Plan especially with regards to targeting Top 7 STEC's as the organisms of concern. Should there be any adverse change in the *E.coli*, ME15 will immediately respond in terms of reviewing our systems and requiring further reassessment of our HACCP plan.

This reassessment letter is on-going and valid through until the end of August 2023.

Sincerely

Karen Parker
Market Access Co-ordinator
19th August 2022