Final Report

AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

Smallstock Traceability Pilot

Smallstock Traceability Pilot Studies

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1.0 Executive Summary

This project was undertaken with funding from AMPC to pilot traceability at the processing level in sheep. Gundagai Meat Processors had an additional aim within this project, to pair individual animal EID information back to the individual carcase feedback produced. The installation of the hardware supplied by Allflex and software integration by Triton was undertaken over a period between April 2022 and February 2023. A range of system tests were undertaken to validate the system, and due to low numbers of EID tags coming through the plant, test tags were attached to pegs to clip onto the ears of carcases within the bleed tunnel. A range of issues were overcome throughout this project, from read rate issues, to hardware failures, to software integration issues. Industry should be advised of the following three major learnings.

1. Embedding traceability technology into processing plants could take 12-18 months to achieve.
2. A staff member within the plant should be assigned to the project to ensure that issues are taken care of in a timely manner when they arise.
3. A process will need to be introduced into each plant to ensure validation can occur when low rates of EID tags are currently moving through plants outside of Victoria.

At the time of submitting this report, Gundagai Meat Processors were still validating their system and had not achieved completion of this project. Gundagai Meat Processors are confident the system will be validated within the coming months.

2.0 Introduction

AMIC has received funding from the Australian Government, through the Traceability Grants Program. The Grant has been successfully leveraged by industry co-funding from Australian Meat Processor Corporation (AMPC). AMIC and AMPC allocated funding to GMP (and other meat processing facilities) to finance a series of pilot studies.

- The purpose of this project is to determine the benefits of electronic Radio Frequency Identification Device (RFID) at Gundagai Meat Processors. The use of this information when linked back to an individual carcase will give Gundagai Lamb the ability to feed this information back to producers to ensure carcases continue to meet market specifications and for improvements to grid compliance.
- The installation of Radio Frequency Identification Devices (RFID) has been legislated in Victoria with success. The use of RFID tags in other states is low, however, there is a need to determine the cost, barriers, and success of installing systems within other states in Australia to ensure the industry can comply with traceability requirements that may be introduced in future.
- To overall outcomes aimed for in this project were to determine the cost, barriers, challenges, and successes in relation to installing RFID reader hardware and software into a lamb processing plant in New South Wales.

3.0 Project Objectives

The project objectives as outlined with in the research agreement included the following.

- Through-plant traceability through full carcase tracking.
- Accurate live data, ID and grades of individual carcases in chillers.

- Accurate live data and ID of individual carcases in boning room.
- Track carcase yield data for producers and markets.
- Improved efficiency or tracking retained stock on slaughter floor.
- Ability to remove carcase tickets, saving material and labour.

4.0 Methodology

The project methodology for this project involved three major sections, each crucial to the completion of this project.

1. Software requirements
2. Hardware requirements
3. Testing requirements

Software requirements included the upgrade of software to allow for electronic identification numbers to flow through the software structure to be paired against individual carcases. Software provider Triton, undertook changes which included adding an RFID queue to the weight grade 7 subserver, and allowing for the association of the EID scanned at the panel reader site, to the grambrel up hook RFID number. Additionally, Triton implemented the weigh grade 7 upstream module as part of the project to ensure that the EID numbers flowing through the system were able to be paired to individual bodies through the hook tracking system already installed at GMP.

Hardware requirements were sought from both Triton and Allflex. The installation of hardware included the purchase and installation of a panel reader, including a stainless steel box with LED indicators (NX System). A hook and body sensor kit was installed including 2 hook sensors, and 1 body sensor, and reader upgrades. Additionally, a handheld reader (the stocky) with 500mm wand was included in the hardware funding to ensure that testing would be possible during stage 3. A data box with colour touchscreen, serial, WiFi, BT, USB, and power, serial and Rnet cables were included in the hardware requirements. Additionally, the supply of a single serial D89 to network converter was supplied by Triton.

The testing phase of this project was undertaken in two ways. The first was undertaken to determine whether the sensor was picking up on each carcase, the panel reader was scanning 100% of tags, and whether the data was entering into the plant software system as expected. Due to a low number of EID tags processed, this was undertaken by attaching EID tags to pegs and attaching these onto the ears of lambs moving through the bleed tunnel and past the panel reader. The test consisted of pegging an RFID tag to the first carcase, counting a total of 20 carcases without EID tags, and pegging a further 4 EID tags to the last 4 carcases. This test indicated that the panel reader output reflected the testing regime with all tags read by the panel reader and all carcases picked up by the sensor. Further, the output that was sent to the software system also reflected the testing regime. An issue was found in the plant software system which indicated one of the EID tags did not show up in the output (was shown as a no read). This indicated there was an issue in the translation of information between the panel reader output and how this information is reflected in the plant software system. Further testing occurred when known lots of lambs were consigned to Gundagai Lamb that had EID tags present. Gundagai Lamb undertook testing by using a handheld wand to read the EID tags and compare this output to the panel reader output and the plant software output. In this case it was found that only 68% of tags were read by the panel reader, and the EID numbers that did translate into the plant software were assigned randomly rather than the order in which they read. It was determined that the voltage on the panel reader had dropped below 100 watt, when it was found to be on 200 watt the fortnight prior. The overall outcome of this finding resulted in a further visit from Allflex, and the installation of a new antenna (panel reader), and cabling which resolved the issue. The below section outlines all of the issues that were determine through the this project.

Overview – Timeline of Events

- April 7th 2022; Inception meeting with AMPC. Meeting minutes available.
- May 16th 2022; EID reader installed by Allflex.
- June 16th 2022; Waiting on part (Moxa) to connect hardware and software systems.
- July 22nd 2022; Poor read rates (1%), so sensor was shifted closer to gambrels by GMP maintenance team.
- September 1st 2022; Checks undertaken to ensure that Triton (software) was interpreting the data from the Allflex reader correctly. 70% read rate as compared to the manual scanner at this stage.
- September 29th 2022; Read rate now 20%. “Information thread” between hardware and software still incorrect.
- October; several failed attempts to connect Triton and Allflex.
- 2nd November 2023; Timing videos sent to Allflex in efforts to increase the read rate.
- Jan 26th 2023; Allflex onsite to service and tweak timing.
- March 2nd 2023; Allflex revisited to tweak sensors and tested using 5 test tags. System was deemed to be working correctly. Data not yet flowing into Triton.
- March 13th 2023; declining read rates. Major differences between wand reader, panel reader and Triton system
- March 29th 2023; Low volts detected on antenna
- April 6th 2023; decision made to replace panel.
- April 20th 2023; New panel did not resolve issue, it was found to be a faulty cable.
- May 2nd 2023; New cable installed. Found that yet another cable was missing.
- May 10th 2023; Second cable installed.
- May 17th 2023; ordered a db9-USB adaptor and downloaded PuTTy to validate dataflow between the Allflex system and Triton system.
- May 22nd 2023: Validated data flow between Allflex and Triton Systems PuTTy. Began communications with Triton to get the EID data flowing through against individual body listing.

At submission of this report the system had not been validated and read rate was found to be around 60%, within ongoing work required to troubleshoot the low read rate and to validate the system.

5.0 Project Outcomes

At the time of submitting this final report, the panel reader installed at GMP was not fully up and running due to read rate issues that were still being troubleshooted with Allflex and Triton. The initial steps of this project were to determine the software and hardware requirements for this project. Triton, the production software provider for GMP, were engaged to determine the pathway to be taken to achieve a body list output within the Triton system that would match EID number to carcase body number, and therefore, be able to match EID number to the range of carcase information collected along the chain. The cost to implement a system that would be able to achieve this was requested from Triton. Allflex were engaged to provide a quote for the hardware system that would be able to read EID tags and also determine when there was a carcase present and no tag and no carcase present to ensure information could be matched up the chain. The hardware was installed April 2022, Triton undertook the work to move the information provided by the Allflex system in February 2023. There was a time lag for Triton to undertake their piece of work to ensure that Allflex had the panel reader system up and running.

At the conclusion of this project the following achievements had been made.

1. The hardware from Allflex had been installed.
2. The software changes through Triton had been undertaken, with a listing of EID number appearing in a Triton report.

Moving forward, GMP are confident that the system will be up and running after undertaking a substantial amount of testing of the system to validate read rate and data quality. Testing the system will be ongoing using test tags attached to pegs. This will continue to be undertaken to ensure the sequencing is correct and the panel reader is picking up on each tag that moves past. Additionally, the testing will ensure the Triton system is translating the information moving from the panel reader into Triton.

6.0 Conclusions / Recommendations

In conclusion, this project was not complete by the time this final report was submitted. There were ongoing issues with the hardware installed, and with the software interpreting the information coming through from the hardware. Additionally, it was challenging to test the system when EID tags were not coming through the plant on a regular basis, which forced GMP to determine a way to test the system with test tags on pegs, that could be attached the ears as they moved past the panel reader.

Gundagai Meat Processors took the approach of assigning a staff member to the project to ensure the project was continually driven and issues were sorted out in as timely manner as possible. It takes time for traceability systems to be embedded within a processing plant, a lot of patience and persistence. GMP are confident that the system will be embedded within the plant within the coming months.