Key findings-Phase Two-B National Applied Research By-Pass Software for RFID Systems

The last segment of the multi-phase research project that started in September of 2009 took place from September to December 2011 at six auction markets located in three Canadian provinces. Phase One was a proof of concept of RFID hardware, results were documented in report in June of 2010; 144,197 head of cattle were scanned in 31,376 groups. Phase Two advanced the evaluation of RFID systems by integrating the tag collection and reporting software with the enterprise software; 393,474 head of cattle were scanned in 107,423 groups.

- Phase Two-B further evaluated the efficiency and effectiveness of low cost software that by passed management systems and stood alone for tag collection and reporting within intervention by site personnel.
- RFID hardware from Phase One and Two was utilized.
- Software that by-passes management systems does not need to reside on network servers so it was installed on laptops and office computers.
- Phase Two-B did not scan cattle in individual groups by consigner or buyer. Cattle moved through the RFID systems over a 24 hour period and the reports were generated on the entire group over that time.
- 118,200 head of cattle were scanned over fifteen weeks.

Two software packages were used; Stockman Software by Integrated Traceability Solutions and Manifest Manager by Viewtrak Technologies. Both had good functionality with a high ease of use at a cost under $2,000 versus $4,000 for software modules that link with enterprise systems.

Impact on speed of commerce:

- There was no impact on speed of commerce as cattle were scanned over a 24 hour period, eliminating the need to record the individual consigner or buyer lot.
- Cattle movement at receiving did not stop for data entry.

Labor requirement:

- Software installed on office computers was more effective as the office staff always turned on the systems and ensured reporting was done on time.
- When the laptop was at receiving, there were a few scanning days when the yard staff forgot to turn on the computer so the reporting was not as thorough. Further, this location requires that the laptop be moved to the office to report the data to the Canadian Livestock Tracking System (CLTS).
- Ease of use eliminated the need for extensive training which reduced the demands on labor.
- The elimination of data entry by group greatly reduced the labor component to a few minutes per day.

Read Accuracy:

- The variance in read accuracy from Phase One to Two-B was balanced with half the sites showing increases and half remaining the same or increasing. The software used in Phase One was not linked to enterprise systems and was operated by a project employee entering each group individually. Other factors that affected read accuracy increases from Phase One to Two-B were:
    i. Reduced electrical interference due to a site review
    ii. Read accuracy affected by days when the computer was turned on half way through a scanning day, so there were only a few cattle scanned for the day. .
    iii. A change in the hardware from Phase One to Two, which both increased and decreased reads.

Auction Market	Phase Two-B		Phase One	Change Phase One-Two B		Phase Two	Change Phase Two-Two-B
Gladstone Auction Mart	93%		93%	0%		86%	7%
Ontario Stockyards	91%		94%	-3%		89%	2%
Saskatoon Livestock	58%		93%	-35%		96%	-38%
Spiritwood Stockyards	96%		91%	5%		89%	7%
Ste Rose Auction Mart	83%		97%	-14%		84%	-1%
Winnipeg Auction Mart	92%		90%	2%		88%	4%

- The variance is most significant from Phase Two to Two-B, with four facilities showing increased read accuracy, one facility having a dramatically lower rate (due to a hardware/software failure) and one other not having a material difference.

- Eliminating the data set from the system failure at Saskatoon Livestock, the by-pass system generally out-performed the integrated systems from Phase Two with regards to read accuracy. Additional benefits are: low labor requirement, efficient reporting and low cost.

Conclusion

- The factor that was substantiated once again was that having a dedicated project person who is trained in the operation of the hardware and software, accountable for ensuring that both are operating at the highest levels of performance, that errors are corrected in a timely fashion, and that all cattle are moved through an operating system on scanning day, is critical to success.

- There is no one solution that will work in every facility, but this test indicates that by-pass software will work efficiently for tag collection and reporting. In relation to Phase Two it is very cost effective. Stand alone by-pass software a low labor requirement as the software component for an RFID system.

- The impact on business process, cost and speed of commerce will be directly proportional to the level of detail required in reporting and the level of integration of the systems.

- Even with cost effective by-pass software, the cost of full installation of RFID systems including hardware and installation is still high in relation to the read accuracy achieved and the level of information collected and reported.

Agriculture and Agri-Food Canada, through the Growing Forward Program, funded this multi-phase study in support of animal movement reporting for traceability. A total of 655,871 cattle were scanned through the three phases of the project.