Vol 1. #8

Good Morning. It is September 4th. This week' focus is on the application of electronic ear tags in production systems. The first part of the article is from Jim Kelly who is the Business Manager for Superior Video Auction and the second half is from Lindsey Wallace who recently graduated from Montana State University and conducted her research evaluating different ear tags and scanner systems.

Do the RFID Ear Tags and Scanners Work at the Speed of Commerce: Two Perspectives

There continues to be concern about the reliability of electronic ear tags when used in a commercial production setting. Jim Kelly from Superior Video Auction gives his perspective and then his comments are followed by a research summary from Montana State University.

Interview on August 31, 2007 between Cattlenetwork.com and Jim Kelly who is the Superior Livestock Auction Business Manager.

Q. Quite a few animals in the Steamboat Springs sale were source and age verified, a process that's supposed to add some value. With the number of cattle that Superior Livestock moved, you should have some solid data on how well they performed. Would you share some dollar figures with me?

A. Of the 250,000 calves sold at Steamboat over 75,000 head were source and age verified. For the past 11 years SLA in cooperation with Pfizer Animal Health and Colorado State University have compiled data on our summer auctions to come up with value added premiums that our various VAC preconditioning programs add to the value of these calves. Last summer, we added source and age verification to our study and based on that data the average premium for source and age verified calves were $1.77/cwt. Based on prices this summer it appears that those premiums may have increased to $2 or $3/cwt. The interest in source and age verified calves has tripled since last year among our consignors

Q. Thousands or cattlemen read Cattlenetwork.com. What would you like to say to them?

A. One final note: there continues to be lots of discussion about National Identification and movement of livestock. While I am not sure what the future holds for agriculture in that area it does concern me that we continue to talk about the use of low frequency radio technology given its inability to be used with any degree of accuracy and readability. There is currently cost effective high frequency technology available with 100% accuracy and dependability. Until we have technology that will allow us to conduct commerce without the sacrifice of speed or accuracy the industry will be hard pressed to accept it.

Response from Lindsey Wallace, former graduate student at Montana State University who did her MS research evaluating different ear tags and types of automatic scanners.

The key to the National Animal Identification System (NAIS) is rapid multi-animal RFID scanning systems that work automatically and non-invasively at auction markets and slaughter facilities. In addition such a system could facilitate the rapid transfer of valuable management and production information from farm to feedlot, packer, processor and consumer... However, the recent pushback from a mandatory program to a voluntary program at the national level due to lack of interest and funding has not changed the need for a reliable identification system. Before application can

occur in production settings, the technology must be tested to determine if scanning RFID tags at the speed of commerce (1m/sec) with 95% readability rates can be attained.

The objectives of this study were to: 1) compare the readability rates of three commercially available multi-antenna reader systems for their speed, accuracy and reliability in reading both half-duplex and full-duplex RFID tags; and 2) evaluate the readability rates of 13 different electronic ear tags.

Each animal was tagged with a prescanned (using a handheld wand reader) RFID tag. The RFID tags were either half-duplex (HDX) or full-duplex (FDX) ear tag technology. The tags were inserted in the left ear at the orientation suggested by the manufacturer. The test consisted of moving cattle from each tag-type lot through multi-panel RFID reader systems; Allflex Single-Lane, Allflex Dual-Lane, or Boontech Alley Master Multi-Animal.

Table 1. A summary of the three experiments comparing readability and flow rates of cattle tagged with eleven top performing RFID ear tags while moving through three different multi-panel reader systems.

		Reader Type/ Manufacturer		
Item		Allflex Single-Lane	Allflex Dual-Lane	Boontech Alley-Master
Avg readability of all tags (%)		99.4	99.5	99.7
Readability of tag type, (%)	HDX	100.0[g]	99.6	99.4
	FDX	99.0[ah]	99.3[a]	99.9[b]
Flow Rate (m/sec)		1.3[a]	2.1[b]	8.7[c]

[abc]Means in same row without common superscript differ (P<0.05).
[gh]Means in same column without common superscripts differ (P<0.05).

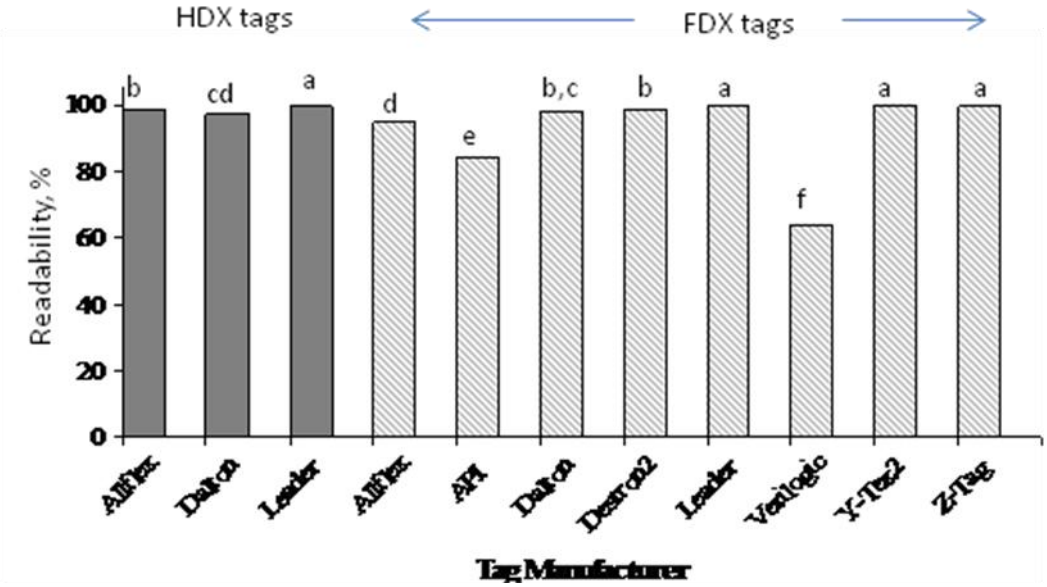

Figure 1. Average read rate of 11 commercially available RFID ear tags scanned by three RFID panel reader systems.

All reader systems, once tuned properly, had tag read rates of over 99%, and were able to withstand various environmental temperatures. These reader systems have the capability to work at the speed of commerce which is greater than 1 m/sec. The technology is getting much better and needs to be evaluated in more production settings. Currently we have readers in a MT auction market, a MT ranch and a MT feedlot. In the ranch and feedlot settings, read rates have been greater than 95%. Retention rates of the tags have been greater than 98% in numerous experiments.

Contact John Paterson, MSU Extension Beef Specialist at johnp@montana.edu or 406.994.5562