# Top performers

The Alberta Lamb Traceability Pilot tested and evaluated a variety of RFID equipment, ear tags and software. Based on the experiences of three years of co-operator trial and error; of information and advice supplied by equipment and software companies; the equipment identified here was judged as superior by the project participants, as of January 1, 2011.

Top performing hardware, or equipment, is defined as reliable, practical to use on farm, and easy for non-technical people to learn. There is limited expertise with technology or technology support in rural Alberta.  Equipment has to work well on farms for farmers.  The definition of flock management software is defined in the same way.  Additionally software has to provide flock information that meets the requirements of national traceability (unique and auditable animal identification, premises and movement tracking).

All the equipment was found to provide some management benefit to co-operators such as fast, accurate data collection and improved animal handling. Flock software was found suitable for analysing animal performance and providing reports co-operators could use to make management decisions.

Another critically important criteria for electronic systems is the ability of various and different pieces of equipment to communicate with each other. All the pieces must form a working system.  No single piece is of much, or any, use by itself.  The transponder in an RFID ear tag needs a tag reader; the tag reader must be able transfer the RFID ear tag number into a flock management software program; the software needs both RFID ear tag and animal data.  Software also must be able to collect other detailed information (weight, date, location, etc) and then organize the information for storage or analysis.  If the pieces don't or can't communicate, or work together, there is no system and no management benefit beyond perhaps, faster animal handling.  That improvement in efficiency is likely not enough to offset the costs of equipment purchase, set up, maintenance and training.

The results of project co-operator experience with equipment and software, to date, has been compiled into a list of "top performers". There is no tag, equipment, software, or user that is perfect.  The technology is changing rapidly.  There will be additions and replacements to "top performers" as RFID technology evolves.  As 'hands on' experience in using the systems expands these benchmarks and definitions of what is a 'top performer' will also evolve.

## Basic Equipment

The basics of an RFID system are: ear tags, a handheld tag reader and a compatible software program for flock management.

### Tags

There are two Canadian Sheep Identification Program (CSIP) approved RFID tags for Canadian sheep. The Shearwell loop tag was chosen for the project, based on it's performance in the CSIP Tag Trial. It is a reliable RFID tag with superior retention.  It is lightweight for use on small lambs.  It is the most affordable RFID tag option at $1.65 / tag (Canadian Co-operative Woolgrowers, March 2011).

2009/2010 project statistics: 46,538 tags applied; 332 tags reported lost. Loss rate - 0.7%
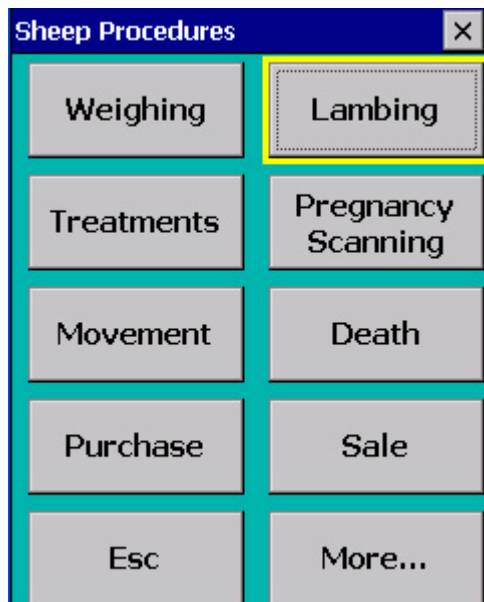
| Shearwell RFID tag | Proper placement of the Shearwell RFID tag |

## Tag reader

A number of different tag readers were evaluated.  All read tags.  The challenge was to find a reliable reader that linked, or could move data, to flock management software.  Over the past three years there have been new software applications developed that make some readers more useful in that it is simpler to download tag numbers into a spreadsheet program.  The project found that the Psion Workabout Pro with Stock Recorder software to be reliable and most useful for flock management.

[User Guide](#)

## Software

Three software packages were evaluated by the project for reliability, functionality and ease of use. FarmWorks by Shearwell Data Ltd was the top performer.  The EID component makes data collection easy, accurate and works seamlessly with the main software. The program contains more features and better reporting capability than the others we evaluated.  It also provides a reliable 'audit trail' for food safety and traceability programs.

These are some functional areas in the FarmWorks program:

Information storage:

- Flock inventory

- Individual animal details – sex, breed, age, weights

- Individual animal production history

- Pedigrees, genotyping

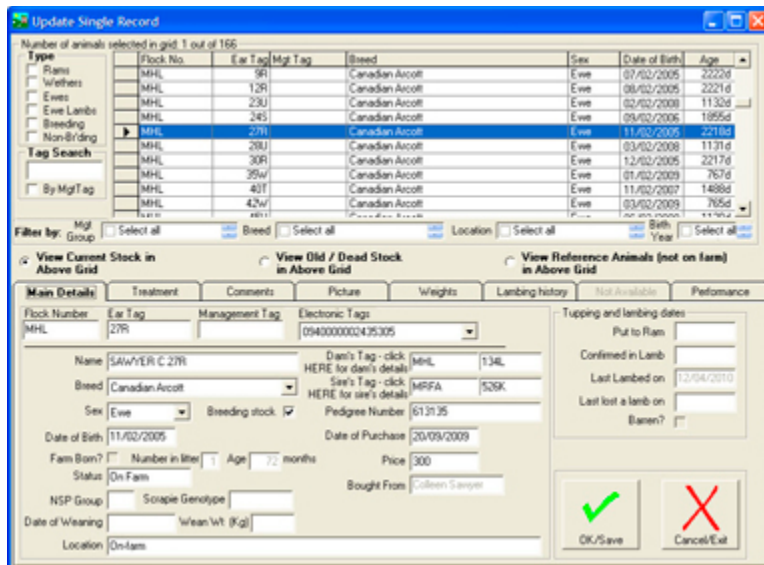- Medical records, treatment histories, drug withdrawals

Data collection:

- Record births and deaths

- Record breeding so that lamb parentage is known.

- Record sales and purchases, slaughter data, animal movements on and off the farm.

- Record medical treatments for individuals or groups of animals

Reporting:

- Able to be customized – lambing summary, average daily gain, etc.

- Allow comparisons between individuals and across management groups.

- Able to export to other programs and in other formats (csv, text, spreadsheet, pdf, etc)



Sample animal record



Sample lambing report

FarmWorks by Shearwell Data Ltd software User guide

Requirements for a computer to run FarmWorks by Shearwell Data Ltd.

- Windows XP (Service Pack 2 or above), Windows Vista, Windows 7
- A Pentium 350 MHz processor

- 32MB of RAM
- 100MB of free disk space
- A Graphics card capable of 800 x 600 screen resolution with 256 colours

*Note: These are minimum requirements. The program will run faster with a higher specification computer.*

## Supplementary Equipment

Supplementary equipment is just that.  It is equipment that supplements a basic RFID package.  It is not all essential for flock management, but it does make flock management easier. Of the listed supplementary equipment - electronic scales are most important.  The ability to accurately weigh animals is critical for flock management: shipping market lambs at the right weight, monitoring feeding program effectiveness, accurately dosing animals with veterinary products.  A stick reader extends the reach of the user, to read and transmit tag numbers into the Psion. Panel readers are most commonly used by large flocks and feedlots to speed animal handling but of lmiited benefit to smaller flocks due to their high cost.  Drafting and weigh crates can make up an efficient animal handling system.

The following are weighing, drafting or handling equipment that enhances data collection using RFID.

### Weigh scales

Tru-test XR3000 - This model can be linked via Bluetooth to a Psion running FarmWorks.

Reliable PR350  - This model can be linked via Bluetooth to a Psion running FarmWorks.

Gallagher SmartScale - The model SmartScale 500 can be linked via Bluetooth to a Psion running FarmWorks.

Instructions for linking these weigh scales to a Psion are found in the FarmWorks User Guide

### Stick reader

SDL400S - This is a simple, one-button stick reader designed to transmit tag numbers, via Bluetooth, into a Psion running Stock Recorder software.

### Panel readers

EDIT - This reader is an option on the Racewell handling system and can be connected with an external Bluetooth dongle to send tag numbers to a Psion running FarmWorks.

Shearwell  - The Shearwell panel reader is a component of the Shearwelll handling system and connects via internal Bluetooth to a Psion running FarmWorks.

### Drafting and handling

Two systems of sheep handling equipment are considered compatible with FarmWorks software and the Psion data recorder.  Both have a panel reader and weigh scale that send tag numbers and weights to the Psion.  They also have three-way drafting (sorting) gates. Both systems use 120V power and need air compressors to operate the gates. There are differences between the two products.  A preference for one or the other depends on the individual needs of the sheep operation and of the operator.

**Racewell weighing/handling system**

| Feature | Benefit | Comments |
|---|---|---|
| Clamps each animal in the crate | - *Easy vaccinating, drenching, tagging, etc* | - *Clamp can't be turned off for weighing* |
| | - *Tilt option for pregnancy scanning* | - *Can't process different sized animals in the same group (e.g. ewes with young lambs)* |
| Weigher - Tru-test scale | - *Built-in Bluetooth for best connection* | |
| EDIT Panel reader | - *Send RFID tag number to a Psion running FarmWorks* | - *Needs external Bluetooth dongle* |
| Three-way drafter | - *Sort animals by weight* | - *Can't sort on any other criteria besides weight* |

**Shearwell automatic weighing/drafting system**

| Feature | Benefit | Comments |
|---|---|---|
| Animal not restrained in the crate | - *Fast sheep movement through the system* | - *Controlling (slowing) animal speed is a challenge* |
| | - *Able to process any sized animals together in the same group* | - *Can't be used for tagging, treating, etc* |
| Weigher -Tru-test scale | - *Built-in Bluetooth for best connection* | |
| Shearwell panel reader | - *Saddle design has highest tag read rate, easy BT link to Psion* | - *Built-in Bluetooth* |
| Three-way drafter | - *Sort animals by any criteria - sex, breed, groups, etc* | - *Uses FarmWorks data to make groups (weaning, shipping,breeding, etc) for sorting* |

**Racewell handling system**                    **Racewell - front view**



*The Racewell 'clamps' (holds) each sheep as it enters the crate. The squeeze must be adjusted for the average size of animals being handled so uniform groups work best. The clamp is convenient for tagging, treating, etc. The system can be either set to run automatically or operated manually with a remote control. The Racwell can sort three ways based on weight.*

**Shearwell handling system**                    **Shearwell - front view**



*The Shearwell crate does not restrain the sheep so animals of any size can be handled in the same group. The system can be controlled automatically by the Psion data recorder, or manually with a remote control. The Shearwell can sort three ways based on any criteria (sex, breed, weight, etc) or any management groups (breeding, weaning, etc.) set up in FarmWorks. It is a fully functional system.*

http://www.omafra.gov.on.ca/english/livestock/sheep/facts/02-059.htm