



# **Alberta Agriculture and Rural Development**

***Case Study:***

## ***Lean in Primary Production Operations***

***Alberta Agriculture and Rural Development***

**With the assistance of Mt. Sentinel Ranch, Nanton.**

***By Jay Warren  
Sustainability Coach  
High Performance Solutions Inc.***

***February 25, 2011  
Revision 1.4***

**This document is confidential and the property of Alberta Agriculture and Rural Development**

## Table of Contents

Executive Summary.....	3
Focus.....	4
Background.....	5
Approach .....	6
Results .....	8
Summary and Next Steps.....	10

## **Executive Summary**

Lean has been linked to manufacturing for many years, although recently been introduced to non-manufacturing industries such as hospitals, banks, tourism, and agri-processing.

The purpose of this case study is to illustrate that lean applies in primary production operations. The study was conducted over a period of a year with the opportunity to have six on-site visits to the ranch in Alberta. The idea of bringing lean thinking to primary production operation marks a breakthrough in Canada. Successful farming operations in the UK and Australia have been operating in a lean environment for years.

The ranch approached to participate was open to lean thinking because they wanted to simplify operations and improve organization. They felt it would be beneficial to have outside input to learn how to develop tools which would embrace continuous improvement in day to day operations.

The family benefitted greatly from the communication, accountability tools and methods that lean employs. A clear vision was set, entailing methods of measuring production costs, animal health and other key performance indicators. In addition, agreed upon strategies were put in place to ensure the success of the business for all stakeholders.

The family stated that the focus on teamwork and the introduction of effective time management tools through the lean approach would have a positive impact and continually improve the operation.

Recognizing that many ranchers are asset rich and cash flow challenged, lean is designed to reduce costs and increase profitability. Many lean improvements can be implemented with little or no cost.

Lean is about creating a culture of continuous improvement. The family helped to identify obvious opportunities for improvement to ranch operation and management. With the lean approach, we were able to address areas of significance, share effective tools, and lay the groundwork for future success.

It was clear the family benefited from the lean approach when they asked, “what’s next on our lean journey?”

# Focus

The focus of the case study was to determine whether the principles of lean thinking, that are aligned traditionally with manufacturing, are applicable in a primary production operation.

Lean has been linked to manufacturing facilities, in particular in the automotive industry dating back to Henry Ford, and since the Second World War, Toyota has been the world leader in implementing lean thinking.

Lean thinking is predicated on simple tools and a shift in thinking and has a textbook definition of identifying waste everywhere while adding value to the customer both internal and external. More so, lean is seen as a culture of continuous improvement.

The basic principles of lean are as follows:

1. Define value from the perspective of the customer
2. Map the value stream
3. Make the process flow
4. Pull from the customer
5. Strive for perfection

In defining value, lean addresses waste.

The nine main wastes used in this case study are:

1. Overproduction - producing more/sooner than the internal or external customer needs
2. Waiting – long periods of inactivity for people, information, machinery, or materials
3. Transportation – excessive movement of people, information, or materials
4. Inappropriate processing – using the wrong set of tools , procedures or systems
5. Unnecessary inventory – excessive storage and delay of information or product
6. Unnecessary motion – any motion that does not add value to the product or process
7. Defects – scrap, rework, repair
8. Interruptions
9. Untapped human potential – having the right people doing the right jobs

# Background

The operation was established in 1898 and is owned and operated by third generation ranchers. The fourth generation is now taking over the business. There are older siblings, who at the time of the initial contact had no interest in the ranch as a business, but do have a deep appreciation for the land.

The operation has approximately 300 mother cows. The calves from the first calf heifers are sold immediately after weaning, while the rest are kept over the winter on pasture/hay and sold as long yearlings off grass. They make most of their own hay but also rent hay land down the road, which they split with the owners.

The son in law also has a horse training business that fits well with the ranch, although he often is too busy with ranch work to do as much as he would like. It has always been their premise that the integrity of the land and grass is essential to their long-term survival as a sustainable family ranch.

The family is committed to this landscape and manages the grasslands with care through rotational grazing, which helps to ensure healthy pasture without the need of fertilizers or herbicides.

The family has been recognized as an eco-friendly leader in the province.

When introduced to lean thinking, the family embraced the thinking, focusing on four areas of opportunity:

- People: Lack of time to focus on marketing potential and initiatives due to day to day needs of the ranch. Need to make time for this because the ranch needs profitability in order to stay viable
- Process: Logistics of the best way to reach the customer
- Technology: No website. Technology can assist getting product to the customer
- Customer success: There is a feeling that the family unit has strong people skills and the passion and commitment to a high quality product, which is an asset.

# Approach

The visit started with an introduction to the family and a discussion of the “life cycle of livestock on the Ranch”. Discussions with the family around SWOT analysis (Strengths-Weaknesses-Opportunities-Threats) and vision helped to determine the succession planning and commitment to the Ranch as well as the sustainability of the land.

The following was the summary of the SWOT analysis:

<p><b><u>Strengths:</u></b></p> <ul style="list-style-type: none"> <li>• Low debt load</li> <li>• Long history</li> <li>• Self sustaining / renewing</li> <li>• Versatile</li> <li>• Supporting business</li> <li>• Organics</li> <li>• Self sufficient</li> <li>• Succession Plan</li> <li>• Natural watershed</li> </ul>	<p><b><u>Weaknesses:</u></b></p> <ul style="list-style-type: none"> <li>• Difficult to expand</li> <li>• Time demands</li> <li>• Skilled labour</li> <li>• Succession plan</li> <li>• Cost of production not known</li> </ul>
<p><b><u>Opportunities:</u></b></p> <ul style="list-style-type: none"> <li>• Horse business</li> <li>• Direct marketing</li> <li>• Tourism</li> <li>• Carbon Footprint</li> </ul>	<p><b><u>Threats:</u></b></p> <ul style="list-style-type: none"> <li>• Willow encroachment</li> <li>• US dollar</li> <li>• Processing costs / availability</li> <li>• Fire</li> <li>• Land values increase focus on subdivisions</li> <li>• Drought</li> <li>• Oil Exploration</li> </ul>
<p><b><u>3-5 Year Vision:</u></b></p> <ul style="list-style-type: none"> <li>• Make a living on cattle and sustain the ranch</li> <li>• Pipeline revenue set aside for projects (i.e. fence project)</li> <li>• Ranch can continue to run with key individuals away</li> <li>• Continue on and be viable</li> <li>• Stay organic</li> <li>• Maintain quality of life</li> <li>• Keep family involved and happy</li> <li>• Conservation</li> <li>• Grow horse operations and increase efficiency</li> </ul>	

During the introductory lean education session, specific areas of opportunity were identified that significantly reduce waste and reduce costs. They include

- Defining roles and responsibilities for efficiency.
- Making the hay-land more productive.
- File and documentation control in the office
- Utilizing software available to measure and evaluate cost of production

The lean approach in the coaching sessions provided:

- Tools for the family to address problems and determine root cause and effective solutions that are sustainable in building a culture of continuous improvement and understand the A3 approach to problem solving
- 5-S, Workplace Organization applied to the office for documentation control and efficiency improvements
- A development of a plan to move forward on the lean journey
- Clear definition of roles and responsibilities
- Determination of an agreed upon vision and metrics/measurables to guide strategic decision making
- Tools for effective communication

5-S is workplace organization and standardization. It involves removing items that are not needed for regular process operation in the immediate workspace. Then, items that are needed are put in a standard location and methods are standardized throughout the operation and sustained through audit and discipline. Benefits include saving time, space, and increasing consistency of results.

A3 is a problem solving methodology is based on a single piece of paper that tells a story clearly defining what the problem is, what the current conditions are, what are the root causes of the problem, and creating a measured action plan to resolve.

Value stream mapping is a tool used to look at a process with the process owners with the goal of identifying waste in the process and creating flow. It is an effective tool for communication of processes in a no-blame manner where the focus is on the process and not the person.

## Results

During the lean training, the ranch was introduced to value stream mapping of processes, 5-S workplace organization, and continuous improvement through teams.

Items identified in the in-depth training matrix, as part of the lean thinking education summary provided include actions outlined below:

Ranch mapped out the “life of a cow” to understand the processes (roles and responsibilities) and the roadblocks or challenges that are faced. Recognizing that any process consists of people, process, and technology – the right mix to meet the customer need is only determined from process owners. The ranch discovered that there were not only external customers that create cash flow, but as well, that internal customers play a critical role in the success and communication within the ranch.

In addition, training on 5-S workplace organization took place and the family embarked on a commitment to organize the office and documentation to improve efficiency and accuracy of information. There was enormous uptake in the value of standardization of training for part time help as well as for efficient succession. In addition, the education discussed was seen as valuable in the day to day operations at the ranch.

At this point, each shared lessons learned in previous training and echoed the message that “the thinking had changed”. What this meant is that there is an opportunity to share best practices and a shift in culture that was happening, despite the fact that the lean education was given in a short period of time. One of the family members indicated that “the lean thinking had taught an old rancher new tricks and forced them to look at day to day operations in a new light”. This included traceability, fencing preparation, and documentation levels including software applications.

The family acknowledged that exposure to lean thinking provided them with the tools and insight to look at how things are done on a daily basis with continuous improvement eyes. Day to day operations are being questioned with the identification of waste. 5-S in the ranch office got a significant start with the sort of items that are not necessary to the operation – there was energy and engagement in embracing the concepts

As part of 5S, tools were organized for fencing which saved time and space.

It was a comment from one of the family members on the ranch indicating that “using a spaghetti diagram to map how a process flows has been a real benefit in saving time”.

Finally, a clear vision and strategic goals and measures were agreed upon by the family so that decisions and discussions were business oriented, and respected the family input of all members. Key metrics around net profit per pound, input cost per animal and animal health were agreed upon as measures that will be the basis for the next strategic meeting.

Based on the metrics, several key strategic plans were identified, and will be managed through the A3 problem solving method of defining the problem, and developing a detailed plan with measurement to resolve. These issues were:

- Determine an accurate cost of production measure and a targeted improvement through regular review and root cause analysis
- Create a marketing plan for growth and financial optimization of the product
- Develop a working budget for the ranch that includes operational allocations that align with the overall vision to increase profitability through cost reduction while not adversely affecting quality
- Develop a maintenance program for equipment and facilities

## Summary and Next Steps

The family estimated a 10% reduction in setup times for a recent fencing project because of the organization of all the tools and equipment needed to do the task through the 5-S concept.

The following is a summary of the key results from the application of lean thinking at the ranch:

- The family embraced lean thinking and recognized that although the ranch had always been seen as a business, the introduction of visual accountability and metrics helped to guide decision making.
- The family believed the experience to be valuable and would recommend to others to participate
- The inherent succession plan was reviewed and shared to ensure in alignment with measures, actions, and communication plans were brought forth.
- Some of the basic lean tools of value stream mapping and root cause analysis allowed the family to shift thinking and take a look at what adds value, both to the internal and external customer and see the waste
- 5-S workplace organization was seen as a benefit in time. The life of a rancher is typically a long day, and time is of the essence.
- Standardization of activities is seen as key as the succession plan transfer of tribal knowledge. Since the initial sessions, one of the brothers and his wife has taken an interest in participating with the ranch operations. The clear definitions of roles and optimization of each individual will ensure meeting the agreed upon vision.

As next steps, the following actions are recommended:

- Schedule quarterly strategic planning meetings and use the A3 as the discussion point for managing resources and keeping to the agreed upon plan
- Create a visual schedule for feeding and communication board
- Create standardized procedures for key tasks such as feeding, branding, managing hunters, bookkeeping
- Leverage through sharing of best practices
- Look at lean and green and the 7 green wastes for environmental sustainability
- Continue to apply lean principles and tools to the ranch