Alberta Agriculture and Rural Development

Case Study:

Lean in Primary Production Operations

Alberta Agriculture and Rural Development

With the assistance of Mountainview Poultry, Okotoks.

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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 at a poultry farm in Alberta over a period of 6 months with 10 on site education visits. The approach was to teach and do (learn something, and then immediately apply what was learnt).

The farm approached to participate was open to lean thinking because they felt lean thinking was consistent with their current thinking. The family had embarked on a succession plan and wanted to embrace a culture of continuous improvement and be "cutting edge" in the future.

The family benefitted greatly from the communication, accountability tools and methods that lean employs. Metrics for the success of the farm as a business having been put in place were seen as a significant gain from the project that had never been in place before.

The family indicated 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. They were particularly impressed with the immediate benefits of 5-S workplace organization.

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

At the outset, the family was eager to learn, and as the project continued, it was apparent that the family became restless insomuch as there were so many opportunities uncovered. At the conclusion of the project, that restlessness turned to confidence in that they had been given some tools and guidance to set priorities, and embrace continuous improvement and lean thinking.

Existing Situation

The farm operation rears close to one million birds annually for an on-site processing operation. The farm runs six production cycles per year with 150,000 chicks per cycle. Each production cycle requires roughly eight weeks to complete.

Large family involvement in both operational and ownership activities were seen as key impacts on the future direction of the business, often with conflicting viewpoints.

The family had started succession planning that involved individual one on ones with 14 family stakeholders to develop an effective rollout plan.

There was no on-farm feed production at the time of the study, although discussions had been ongoing to determine the feasibility of manufacturing their own feed products.

From a marketing standpoint, there are two major retail customers with the remaining sold to private butcher shops. Peak demand is during spring and summer, with a history of a significant drop during the winter months. The operation has tried to offset this by reducing the number of birds in barns during winter or by carrying birds to larger weights and going into other markets.

The family felt that there was a need to improve customer service, and look at new markets such as antibiotic free.

There had been limited discussions about lean and was a basic effort towards efficiency in business practices to minimize costs. They indicated that they wanted more control over input costs for feed and bird acquisition, possibly through on-farm feed manufacturing and bird hatching.

The family was open to lean coaching and saw it as an opportunity to bridge communication on the farm and to improve the quality of the birds. The family was quoted as seeing positive attitude, better communication, being proactive, and forward movement in the organization as key issues from the outset that lead them to believe that lean thinking would benefit them.

Approach used to applying lean

An onsite visit with the senior management team (brothers) and the next generation farmers confirmed engagement in lean thinking. Lean thinking means creating a culture of continuous improvement and eliminating non-value added activities (waste) while adding value to the customer (both internal and external). The introductory lean education session reviewed the wastes, the basic lean principles, included a tour to review the current state of the operation, and development of a plan to participate in up to 10 additional education sessions in order to make significant changes to the organization and implement a lean strategic plan.

A key component to developing a plan was to understand more about the farm as a business. To support that, a SWOT analysis was done. This involves getting feedback on the strengths, weaknesses, opportunities for growth, and threats to the business. The following was the summary of the SWOT analysis:

Strengths:	**Weaknesses:**
• Self contained • Limited local competition • Reliable employees • Better than industry quality • Few customer complaints • Skilled	• Lack of communication • Better equipment needed • Better training needed • Multicultural communication • Process doesn't match actual • Energy consumption • No individual metrics • Marketing/sales
Opportunities:	**Threats:**
• Increase private sales • Hatchery • Expand • New barn • Renewable energy	• Family • Water system • Regulation • Paperwork

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

- Defining roles and responsibilities for efficiency.
- Determining input costs to make decision whether to produce own feed.
- Strategic planning to pull together the family vision for the farm and ensure alignment.
- Value stream mapping of the farm processing to identify opportunities for improvement
- 5-S and visual management to improve communication and safety
- Tools for root cause analysis and problem solving such as A3
- Procedural review for accuracy and suitability as many processes documented do not match actual
- Energy costs (exceptionally high during the winter months)

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.

It was imperative to get buy-in from the senior family members, as they were instrumental in putting the go forward plan together for lean implementation. For continuity, the main contact throughout the project was the farm manager (son) who was the next generation farmer taking over through the deployment of the succession plan. Family members were encouraged to participate through the entire project.

The approach was simple – learn and do. The family would be introduced to a lean tool or concept, and then given real life examples and opportunity to implement. At the beginning of each visit, there was a review of lessons learned and challenges from materials or methods introduced at the previous session.

Realized and Expected Results

From the initial visit, the following expected results were agreed upon goals for the project:

- Provide tools for the teams to address problems and determine root cause and effective solutions that are sustainable in building a culture of continuous improvement and understanding of A3 approach to problem solving
- Use of A3 for setting goals and enhancing communication
- Use of value stream mapping for process improvement
- Clear definition of roles and responsibilities
- 5-S, Workplace Organization applied to the farm
- A development of a plan to move forward on the lean journey
- Positive, tangible productivity gains

The results realized touched on each of the expected results through a series of education sessions. As it takes 3 to 7 years to effectively change culture, the efforts of the case study were significant contributors to starting that change, and building a strong foundation.

Value stream mapping the process starting with allocation from the Board, and ending at the barn being prepped for the next flock was one of the first lean tools employed. From this process, we identified that there was 3.25 hours of value added time, combined with 27.25 hours of non-value added time (waste). Because of the nature of farming chicks, and flock arrivals, we noted that there was 71 days of waiting in the process.

The team brainstormed a list of about 30 potential “waste savers”, and in the end, decided to look at the following in further detail as potential changes:

- Updating the scheduling spreadsheet
- Revamp flock information sheet
- Pilot preventative maintenance program
- Review the method/time taken to clean the barns
- Bulk shavings

From the changes implemented, there has been a reduction in time for scheduling and recording information. Barn cleaning between flocks was reviewed for efficiency gains. It was agreed that switching to bulk shavings would save considerable time and money as well.

The family was then introduced to lean and green outlining the 7 “green” wastes: energy, water, materials, garbage, transportation, emissions, and biodiversity. A general discussion around how to see and measure the wastes the family focused on energy wastes. From the workshop, the farm was able to identify some quick hits, as well as some that would take investigation.

Quick hits:

- Insulation leaks
- Metering study
- Phantom power
- Keep thermostat at bird level

Prioritize:

- Lights
- Height of ceiling
- Air compressor leaks
- Paint south facing walls black

Investigate:

- Recapturing heat from hot water
- Solar hot water
- Water cooled compressor
- High efficiency furnaces

5-S education was provided and applied in the barn. 5-S is workplace organization and standardization. It involves removing items that are not needed for regular process operation in the immediate workspace. Benefits include saving time, space, and increasing consistency of results. We targeted the barn to implement changes.

It was discussed with the family how metrics need to be aligned with a vision for the farm, and then used as decision points for strategic direction. It was evident there had been intermittent analysis and some data available, however, it was emphasized that it would be crucial moving forward to have these in place as the succession plan for the farm was being deployed. Time was spent determining metrics in four major categories: costs, performance, sales, and regulatory.

At the farm level, the following metrics were deemed important:

- Input cost per bird
- Input cost per kg
- Feed consumption
- Feed cost
- Chick cost

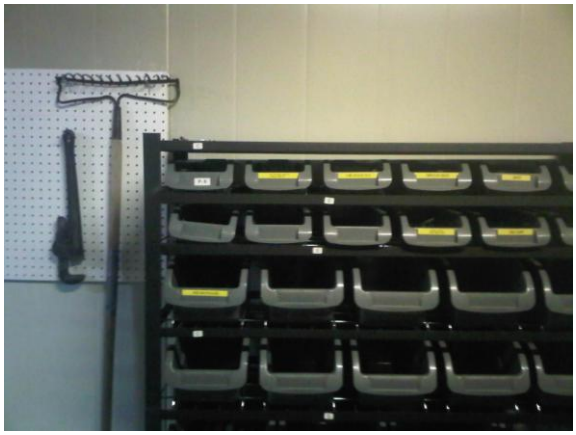
In the words of one of the family members, “these metrics will become focal points for upcoming regularly scheduled strategic meetings”. The metrics were seen as a necessity to:

- Know if we are better/worse
- Know where we stand
- Make informed decisions
- Try new things
- Evaluate customers, processes, and people
- Communicate

Perhaps the most significant outcome was the improvement in overall communication. By using lean thinking and metrics, the family was able to have business discussions with a common focus.

Productivity Improvements

The family was able to save significant time in repairs in and around the barn with the implementation of 5-S workplace organization. Tools and replacement parts were easily accessible, and no longer did it take 45 minutes to find all the things necessary to do a 5 minute repair.



From the value stream map, scheduling barns and recording necessary information on the flock sheets has experienced a time reduction. Also, reviewing the method of cleaning out a barn has some direct labour savings.

By switching to bulk shavings there is not only a cost savings, but savings in time and distance travelled to prepare a barn for an upcoming flock. There are significant savings in time transporting and spreading the shavings, as well as the green aspect of reducing the plastic bags for the bags of shavings.

The upgrade to the preventative maintenance program will ensure that equipment is ready when needed and not cause delays.

Managing with metrics will ensure that the strategic efforts are discussed and in alignment with the overall vision for the farm. The family agreed that productivity gains would be an effective way to positively affect net profit.

It was determined that improvements made during the time of the project would save a minimum of 350 labour hours in the upcoming year. This was accomplished while spending less than $200 for an estimated savings close to $8000 annually.

Recommended Next Steps

The culture shift has started at the farm with the endorsement of the family. There needs to be continued support and focus on the lean efforts to build on the substantial foundations:

- Continue with the 5-S efforts and make a schedule and owner for moving forward in other areas
- Follow through on action items derived at Lean & Green education
- Continue to use the tools such as value stream mapping to involve process owners and look for continuous improvement
- Post the agreed upon metrics and ensure regular strategic meetings to review and most importantly, take action upon them.
- Identify clear roles and responsibilities on the farm. This will support the succession plan
- Implement the preventative maintenance program.
- Implement the use of A3 thinking for key strategic issues as determined by the strategic meetings.

When asked about the experience with lean, the family all agreed that the experience had improved communication. Comments included:

- “helped us to see other’s views”
- “seen some change”
- “understand the importance of internal customers”
- “5-S is fantastic”
- “lean is consistent with current thinking”

And the farm manager quoted:

“Through the lean educational sessions our company has been offered some extremely valuable tools that will help us continue to be even more efficient and competitive during these unstable economic times. During these sessions we were able to review our current processes and find ways to improve and remove unnecessary waste. One of the major issues in the world today is the impact that business is having on the environment. Through the lean and green session we were able to identify many ways in which we could save money as well as have a positive impact on the environment. Overall our experience with lean has been extremely beneficial and through the educational sessions a foundation has been laid for creating a culture of continuous improvement.”