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Focus Site Project Review

B & B Jones
Nant Goch
Penybont
Oswestry
Shropshire
SY10 9JG

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1.0 Summary

1.1 Farm details

Nant Goch, Penybont, Oswestry is a 1,035 acre holding in the Tanat valley at 600 feet above sea level. 70 acres of the farm are owned, with a further 180 acres on a 38 year tenancy, a further 220 acres (neighbouring holding) on a 12 year tenancy with the remaining 565 acres on short term tenancies on land within five mile of the holding. Overall stocking rate amounts to 1 acre per cow.

The farm stocks a herd of 760 Holstein Friesian dairy cows calving in an all year round system, with breeding policy being that of combination of black and white and dairy semen being used with AI. Dairy replacements (460 head) are also reared to calve down at two years of age, whilst a small proportion of dairy replacements are also contract reared on a nearby holding.

Housing for the milking herd consists of 720 cubicles with sand being used as the bedding source, with the remaining cows being loose housed.

Bulling heifers are housed in cubicles with yoke feed barriers at Nant Goch, with purpose built housing for calves and young heifers. A further 321 cubicles and loose housing exist at the second holding where the remaining heifers and dry cows.

Cows are milked three times per day through a 50 point Dairymaster rotary parlour and 320 cow collecting yard with automatic sorting gates and footbathing facilities.

The farm operates a full intensive breeding policy through chalking cows to identify signs of bulling.

Business Objectives:

- Create surplus profits to allow continual re-investment, asset growth and technical performance
- Reduce debt levels
- Herd size to remain at 800 cows
- Get used to managing sand
- Increase herd yields to 11,000 litres per cow whilst retaining milk quality

1.2 Project key objectives

Mastitis is typically one of the biggest health factors on dairy farms.

Research by the University of Reading in the 1960s resulted in the creation of a five point plan which was aimed at the control of mastitis spread between cows during milking.

Huge progress in mastitis control was made by the industry with incidence rates across the country falling from more than 150 cases per 100 cows per year in some herds to 40 cases per 100 cows per year between 1967 and 1982. National average bulk milk somatic cell

counts also reduced from over 600,000 cells/ml to 400,000 cells/ml.

More recent work carried out in 2004 - 2005 showed a higher incidence of clinical mastitis in UK herds than was previously thought, with some farms reporting over 100 cases per 100 cows per year. This in turn raised questions as to whether or not all risk factors on farms were being investigated fully.

DairyCo (now AHDB Dairy) funded research to develop the DairyCo Mastitis Control Plan in 2004 on herds with an increased incidence of clinical mastitis, with initial results showing that a structured plan could have significant benefits for mastitis control. As a result, the DairyCo Mastitis Control Plan was rolled out nationally in 2009.

The key objective was to introduce the farm business to the AHDB Dairy National Mastitis Control Plan. The initial business assessment would aim to highlight the biggest risk areas for mastitis within the milking herd, with a control strategy then being drawn up and implemented with the aim being to reduce new clinical mastitis cases and subsequent antibiotic use across the milking herd.

1.3 Project achievements

The project has been a great success for the holding resulting in the delivery of £57,000 of savings per year through the reduction of mastitis cases and subsequent antibiotic usage. At the outset of the project, the herds rate of mastitis was 70 cases per 100 cows each year, resulting in a cost of £120,000 to the herd. The initial aim was to try and halve the level of mastitis cases to 35 cases per 100 cows. However, this has been beaten with the herd currently running at 28 cases per 100 cows per year.

1.4 KPi changes

Herd performance metrics amount to:

	Year ending April 2013	Year ending April 2017
Cows in Herd (head)	649	768
% herd calved in 12 months	76	80
Culling rate (%)	33	28
Yield per cow (litres)	9,998	10,581
Butterfat (%)	3.85	3.83
Protein (%)	3.15	3.30
Somatic cell count (,000's)	226	154
Bactoscan	35	48

Source: Kite Consulting MilkMonitor costings

Although herd yields and herd size has increased during the period, somatic cell count has

reduced significantly.

The business monitors health incidences and reasons for culling. The performance changes are detailed below:

	Year ending April 2013	Year ending April 2013	Year ending April 2017	Year ending April 2013
	Nant Goch	Group average	Nant Goch	Group average
Mastitis levels (cases/100 cows)	88	42	28	38
% cows culled for Mastitis/SCC/Udder issues	8.6	6.1	2.7	6.0

Source: Kite Consulting Health & Culling Monitor. **NOTE: Figures in the above table are different to that as detailed at point 1.3 due to different time periods being covered.**

Not only has the business been successful in significantly reducing mastitis cases, the proportion of cows culled due to mastitis/SCC/udder issues has also significantly improved resulting in the business being better than the comparative group average.

1.5 Farmer commentary

Bryn Jones commented Three years ago we were experiencing a very high rate of clinical mastitis with lots of recurrent cows, costing us money we could ill afford. A member of our local foot group was already using James Breen to help tackle mastitis and Neil Blackburn from Kite encouraged us to do the same. Through several visits from Dr. James Breen which were part funded by Farming Connect alongside records analysis and the subsequent integration of a specific farm mastitis plan we were able to target the mastitis cycle on our holding, as well as then monitor success levels. We were using less and less mastitis tubes, so I knew cases were coming down. Even so, I was staggered when I saw that we'd cut our costs in half. It shows that if you put the Mastitis Control Plan in place and follow it through, you'll see the benefit.

2 Business Review

2.1 Comparable farm data

Herd performance metrics amount to:

	Year ending April 2013	Year ending April 2017
Cows in Herd (head)	649	768
% herd calved in 12 months	76	80
Culling rate (%)	33	28
Yield per cow (litres)	9,998	10,581
Butterfat (%)	3.85	3.83
Protein (%)	3.15	3.30
Somatic cell count (,000's)	226	154
Bactoscan	35	48

Source: Kite Consulting MilkMonitor costings

The herd yield and size are higher than that of the Welsh Dairy industry.

The business monitors health incidences and reasons for culling. The performance changes are detailed below. The group is a member of a farm benchmarking group, and the group comparison has been used to highlight the difference between Nant Goch and the group.

	Year ending April 2013	Year ending April 2013	Year ending April 2017	Year ending April 2013
	Nant Goch	Group average	Nant Goch	Group average
Mastitis levels (cases/100 cows)	88	42	28	38
% cows culled for Mastitis/SCC/Udder issues	8.6	6.1	2.7	6.0

Source: Kite Consulting Health & Culling Monitor. NOTE: Figures in the above table are different to that as detailed at 1.3 due to different time periods being covered.

The level of mastitis that the business was facing at the start of the program was significant, resulting in a significant drain on overall health and farm profitability. The results to date are staggering, resulting in the business now being in the Top 10% for mastitis level and cull rates for mastitis, which is a fantastic achievement.

2.2 Test Results

Dr. James Breen audited the holding and after completing the initial investigation and analysis of farm records highlighted that the main issues for Nant Goch were in the dry cow period. As a result, the following policies were targeted:

1. **Improve drying off procedures** – Pre dip all cows prior to drying off, and clean teats before drug infusion with cotton wool and surgical spirit.
2. **Modify transition cow environment** – Fill in the existing slatted floor, scrape out slurry daily, instal deep sand beds, add in clean sand 2x per week
3. **Modify calving cow environment** – Reduce overall stocking rate, clean out bedding every 2-3 weeks, add clean bedding straw daily

2.3 KPIs

The initial targets at the outset were to reduce the level of mastitis cases on the holding by 50%

2.4 Potential impact of the project on business

If successful, reducing mastitis incidence levels will:

1. Reduce herd health costs resulting in increased milk sales (as a result of discarding less milk for milk withdrawal).
2. Improve animal welfare by having a healthier herd
3. Increase staff morale by having to treat less animals as well as free up staff time
4. Reduce antibiotic usage as a result of less animals needing treatment for mastitis
5. Reduce the levels of animals having to be culled for mastitis
6. Increase overall business profitability as a result of reduced health costs resulting in the business being more competitive

3 Project Review

3.1 SWOT analysis

STRENGTHS	<ul style="list-style-type: none">• Good data recording of health incidences over years• Treatment protocols in place for staff members• Recording with Milk Recording Organisation allowing data to be analysed on a per cow basis
WEAKNESSES	<ul style="list-style-type: none">• Mastitis levels and subsequent costs higher than industry average• Blanket treatment approach to cows with mastitis rather than targeting specific areas• Although data recording health incidences available, interrogation of data not taking place• Communication challenges of staff numbers on different shifts to ensure all members of the team following protocols and recording data• Increased workload for staff as a result of levels of treatment
OPPORTUNITIES	<ul style="list-style-type: none">• Significant financial benefits if successful• Reductions in labour requirements due to potential reduced treatment numbers allowing staff to work on other tasks• Less disease risk to the milking herd by reducing mastitis incidence• Potential further income streams by either increasing cull cow value (less sick cows), or allowing cull rates to reduce• Reductions in antibiotic usage and types of antibiotics resulting in reduced risk of antibiotic resistance, lower drug expenditure, increased milk sales by reducing the amount of milk having to be excluded
THREATS	<ul style="list-style-type: none">• Milk price – albeit, benefits of reducing mastitis levels still are obtained, just at a lower rate• Legislation on antibiotic usage of certain drugs meaning that potentially some of the current treatment options become unavailable• Greater risk of milk failure due to the higher level of mastitis resulting in greater risk of milk contamination with antibiotics

3.2 Benefits for other Welsh dairy businesses

The success of the implementation of the AHDB Dairy Mastitis Control Plan has proven to be of significant benefit to Nant Goch with results mirroring that of previous scientific studies, and observational studies from other farms that have created control plans.

3.3 Alignment with dairy sectors strategic goals

This work contributes to the Welsh Dairy Sector's strategic objectives; specifically in relation to ***Strategic aim 3 - To improve the business performance of producers and processors in response to changing market conditions, environmental requirements Climate Change and consumer demands.***

The success of the project has resulted in the business being more profitable due to reduced health and culling costs alongside reducing the carbon footprint through increasing herd output as well as meeting consumer demands in improving animal welfare whilst also reducing overall antibiotic usage.

4 Impact on the industry

4.1 Impact on individual business

In 2013, the overall clinical mastitis rate at Nant Goch averaged nearly 70 cases per 100 cows/year across the 700-cow herd. When the Mastitis Control Plan was implemented in 2014-15, mastitis was costing the business an estimated £117,927 a year. By reducing the mastitis by 50%, in 2015-16 the cost amounted to £62,894.

As a result, the farm has also used 1,536 fewer mastitis tubes.

	2014-2015	2015-2016
Mastitis rate (cases/100 cows/year)	57.7	30.8
Total cost*	£120,000	£63,000

* Estimated cost using farm-specific figures for the cost of a clinical case of mastitis, including milk price, feed and fertiliser cost, treatment cost, herdperson time, reduction in milk yield, proportion of mastitis cases that are severe, and cows culled from the herd due to mastitis

4.2 Impact on wider industry

The average cost of a case of mastitis is £275 (AHDB Dairy Mastitis Control Plan), with the range being from £60/cow for a mild case to the cost of the loss of a cow for a severe case.

If the Welsh Dairy industry were able to reduce mastitis cases by 10 cases per 100 cows per year for every dairy farm in Wales, the benefit to the industry would be £6.8 million, or on average £3,905 per dairy farm or 0.3ppl.

Further benefits would also accrue through the reduction in the use of antibiotics on dairy farms.

Although each AHDB Dairy Mastitis Control Plan is farm specific, with the methods of control typically being different for each holding, the project successfully shows the benefit of implementing and following the plan.

However, for the plan to be utilised fully, it relies on good data recording of mastitis rates and treatment methods to enable highest level of success to be achieved. Some farms may need to record in greater detail to obtain the same level of benefits as Nant Goch.

4.3 Impact on Welsh Government's cross cutting and priority themes

Climate change

The UK government is legally required to reduce greenhouse gas emissions across agriculture by 80% of the 1990 levels, by 2050 (there is also an interim reduction target of 11% by 2020). Agriculture has to play a key role in achieving these reductions. Through better animal health, increased milk output and reduced culling rates, Nant Goch has been able to reduce its carbon footprint by 10g CO₂e per litre of milk (<https://alltech.eco2project.com/Dairy/>). This amounts to a reduction of 81t of carbon per year.

Animal Health and Welfare (AHW)

Through a reduction in the use of antibiotics (through less infection) as well as improved animal health, overall levels of herd welfare have improved which has resulted in reduced culling levels. This is of benefit to the industry and consumers through highlighting ways farms are utilising research to benefit herd welfare and reduce antibiotic usage.

Future Generations

By being able to reduce levels of mastitis in the dairy herd, the resulting financial benefit increases overall farm profit levels. This not only reduces cost of production but retains more money within the business to allow businesses to cope with milk price volatility. This in turn ensures that the business is more viable in the long-term.

The Natural Environment

The reduction in usage of antibiotics per farm not only reduces the level of milk withdrawal, but also reduces risk of antibiotic failures as well as any antibiotic residues.

Tackling Poverty

By farms being more profitable, typically the additional monies are then reinvested back into the business. This results in more money being spent in the locality with suppliers to the business, resulting in continuation of job retention in local communities.

Health & Safety

By improving overall herd health resulting in the reduced need for udder treatments, risk to staff of being hurt or kicked by cows reduces due to there being a reduced number of cow interactions.

5 Project Team

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Matthew Jones, Nant Goch

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Farming Connect