



# Demonstrating PLF at Harper Adams University College

**Dr Tom Norton**

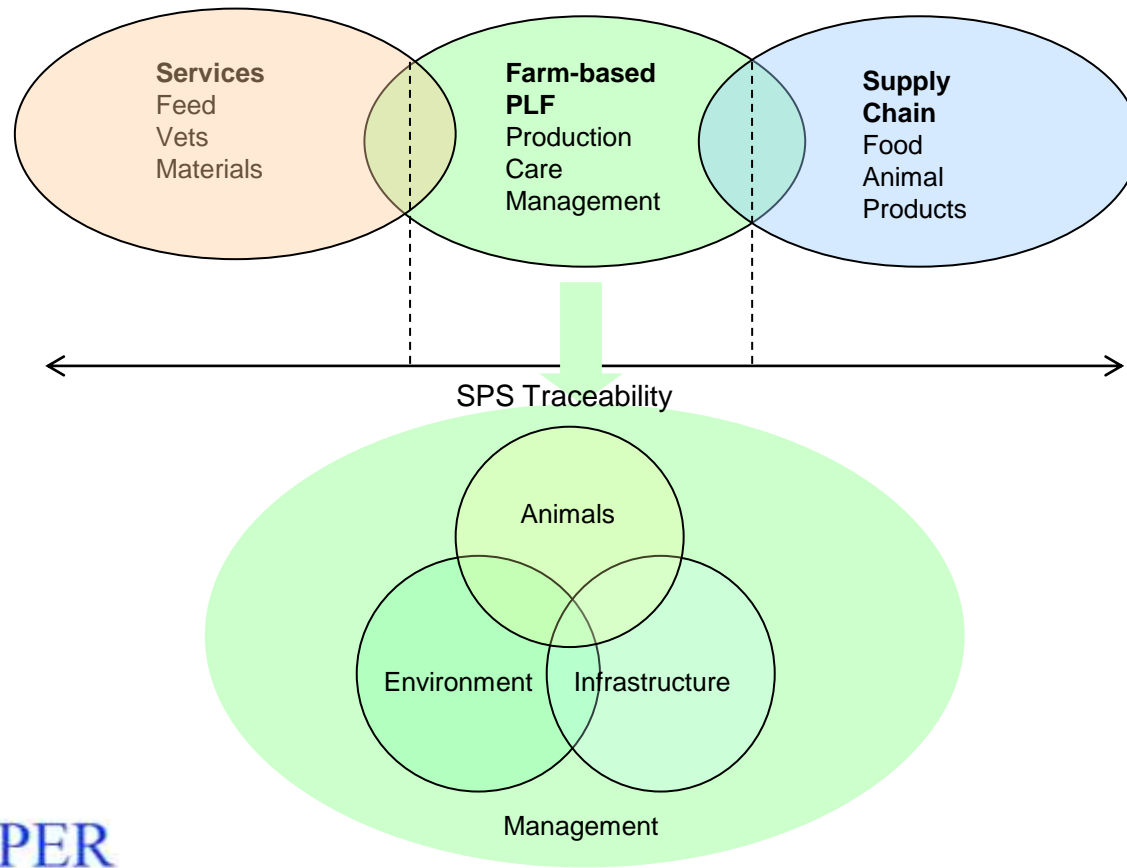
Engineering Department  
Harper Adams University College

[www.harper-adams.ac.uk](http://www.harper-adams.ac.uk)

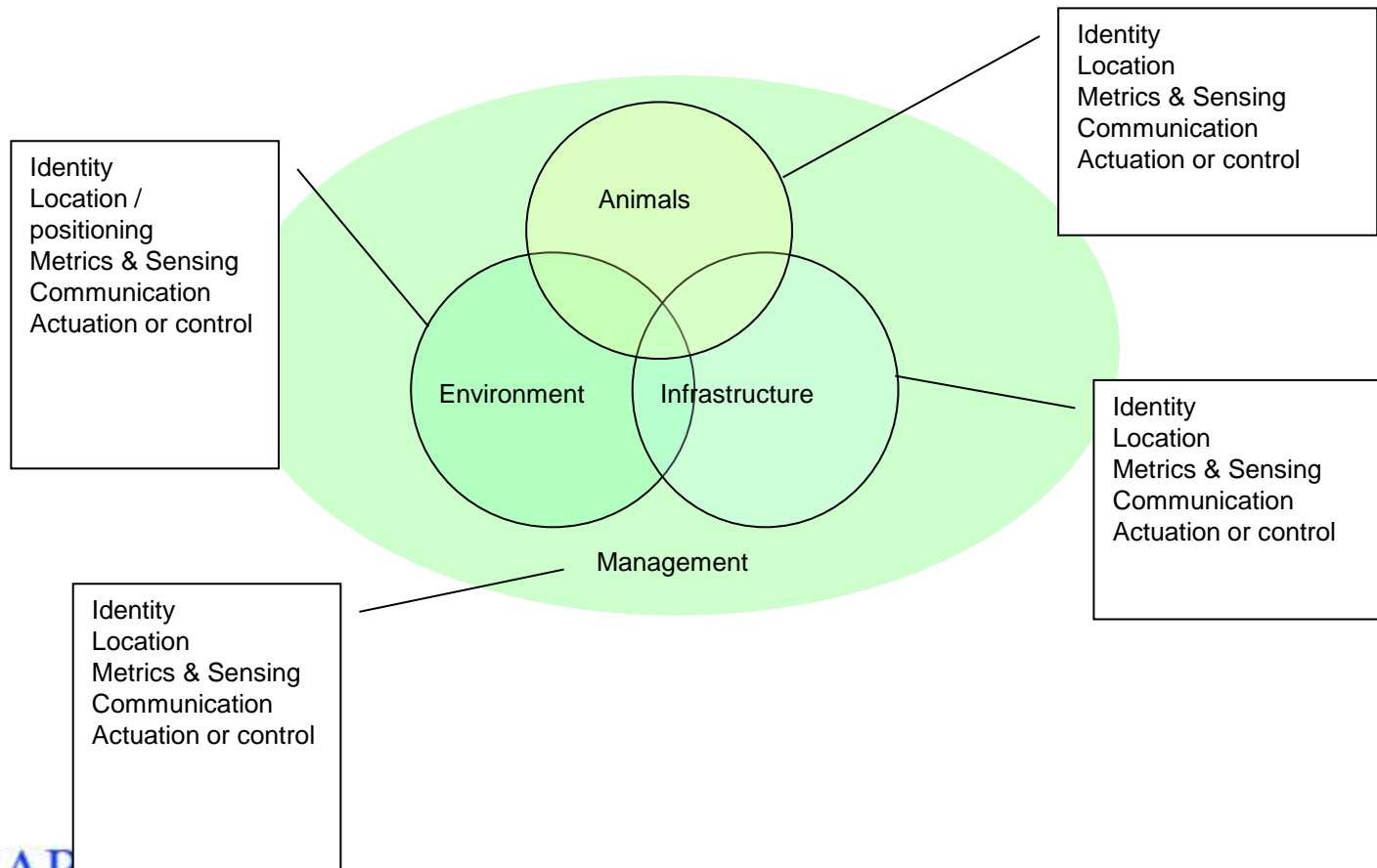
**Bright Animal Workshop**  
**Johannesburg, September 7 2010**



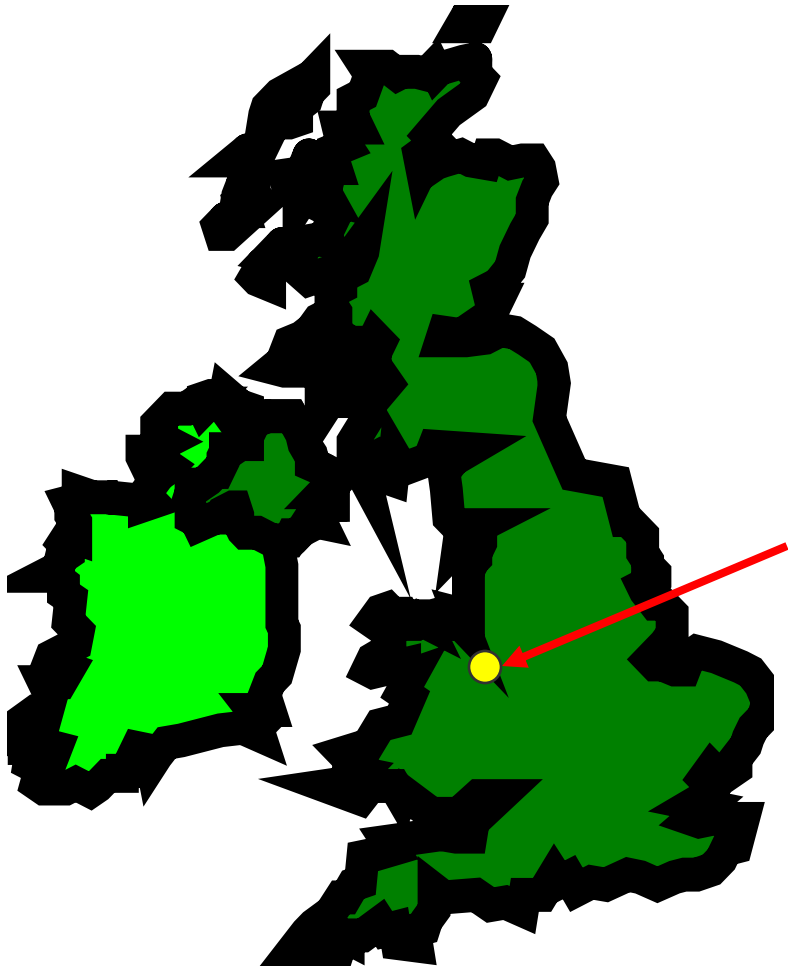
# Precision Livestock Demonstrator for Identification, Sensing and Data Capture



# Precision Livestock Demonstrator for Identification, Sensing and Data Capture



# About Harper Adams



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ADAMS**  
*University College*

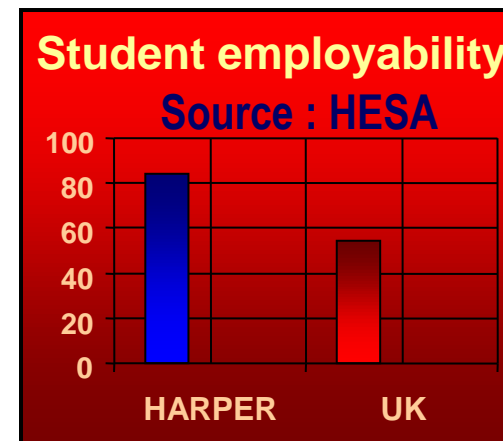
# Our credentials

## Recent awards

University College of the Year 2007,  
2008, 2009 in the Sunday Times  
University Guide

Times Higher Education Award for  
Outstanding Contribution to sustainable  
Development

Shortlisted for: Times Higher Education  
Awards for Outstanding Student Support,  
Cost Sector Catering Awards, Hotel and  
Caterer Awards, Farmers Weekly Awards  
(Pig Farmer of the Year)



## Recent achievements

In UK, 2<sup>nd</sup> for overall student satisfaction (National Student Survey)

In UK top ten for graduate employment

70% of our research is internationally recognized or internationally excellent (Research Assessment Exercise)



One of only three universities to be awarded significant funding for sustainable development projects from HEFCE

# Examples of ongoing research

## Animals

Dietary strategies to reduce ruminant methane production

The welfare implications of grazing high-yielding dairy cows

Effect of dietary protein supplements on the incidence of sub-clinical necrotic enteritis in broiler flocks

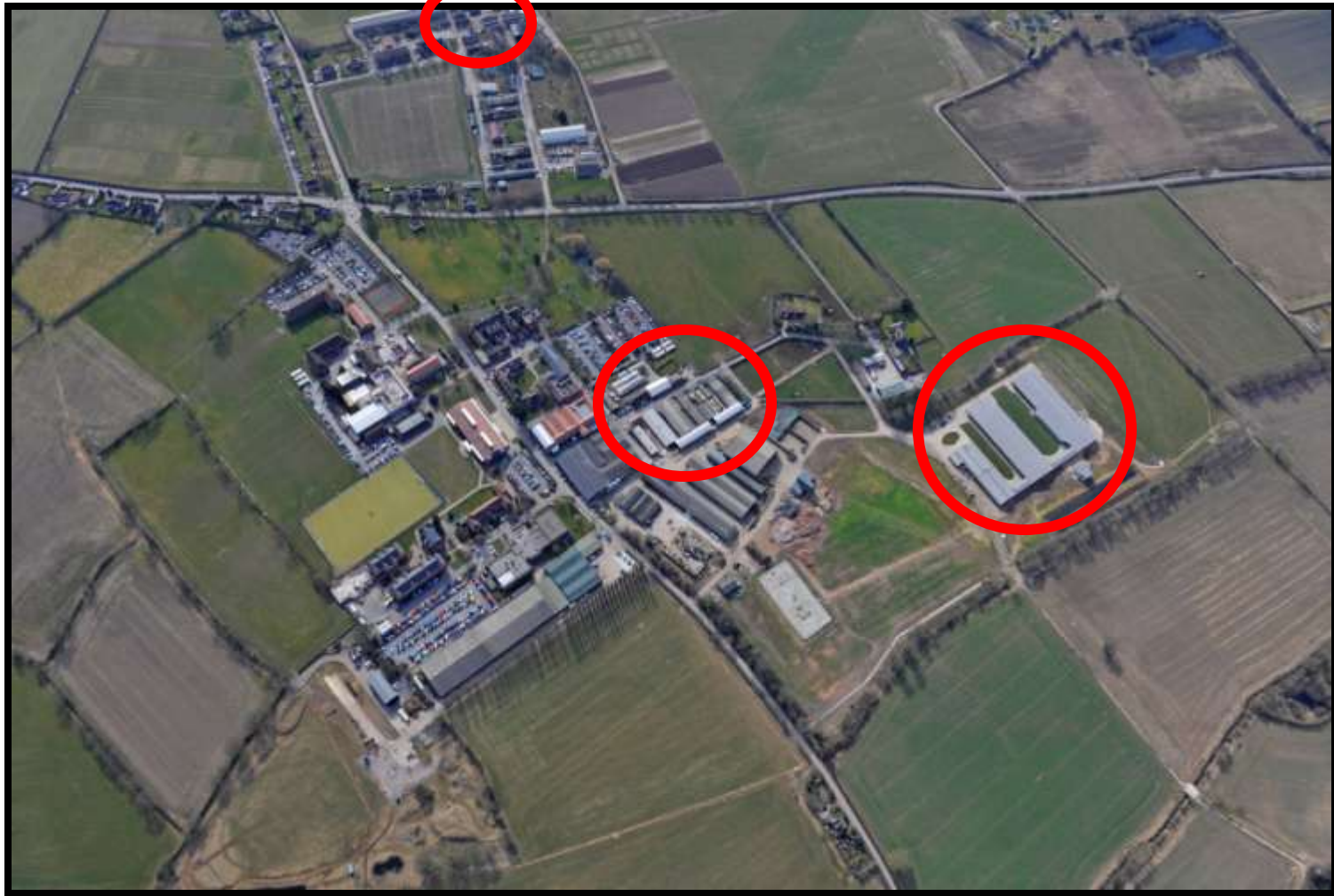
## Engineering

Use of active sensor to determine the Nitrogen application rates for a growing corn crop

Control of agricultural tractors carrying out draught cultivations

Control of torque, power and lead ratio in order to optimise chassis and transmission performance

# Recent developments



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# Existing PLF at Harper Adams

**Dairy**



**Pigs**



**Poultry**



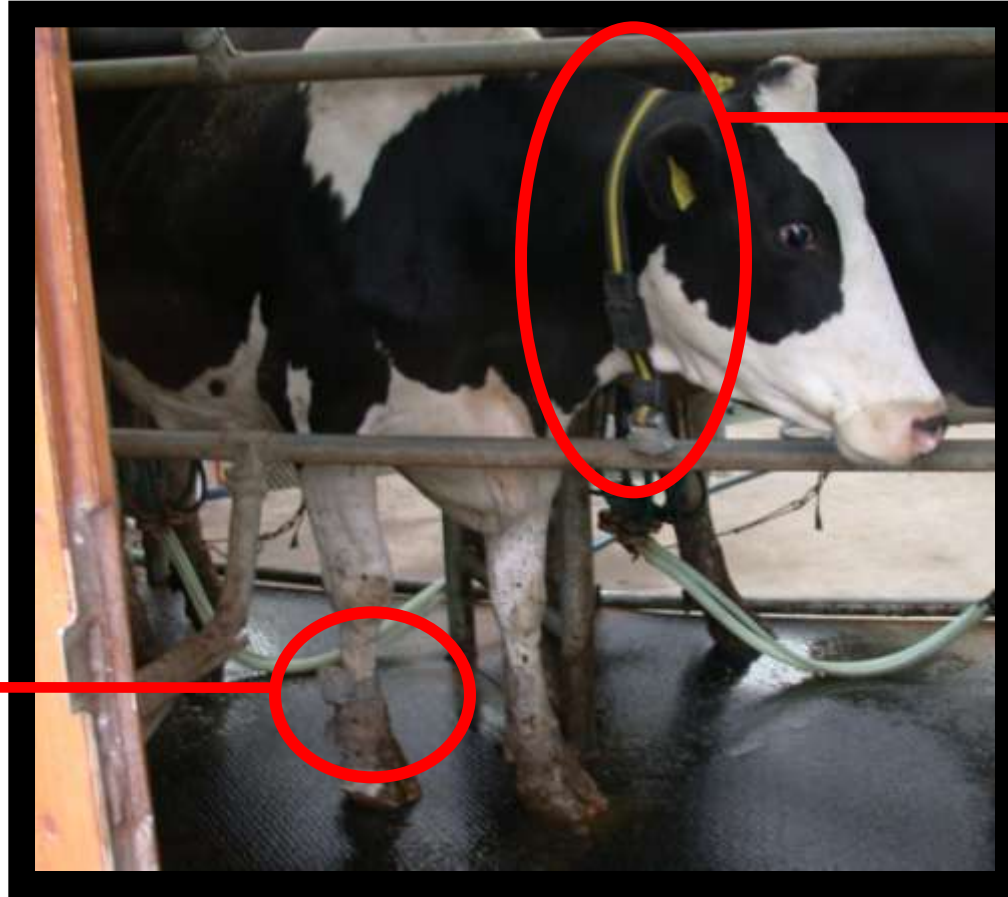
**Level of  
integrated  
PLF systems**

# Our Dairy Unit



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# Our instrumented cows



EID transponder  
and “HeatTime”  
Activity detector

EID  
transponder  
and  
pedometer

# PLF technology: outside the parlour



## 1. Mixing

# PLF technology: outside the parlour



## 2. Feeding forage

# PLF technology: outside the parlour



## 3. Feeding concentrates

# PLF technology: outside the parlour



## 4. Automatic “feed pushing”

# PLF technology: inside the parlour



1.



2.



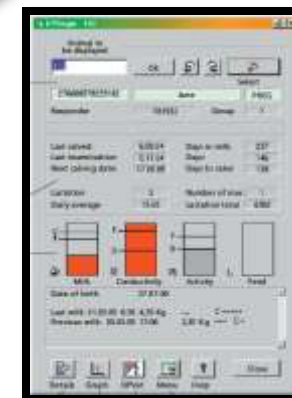
6.



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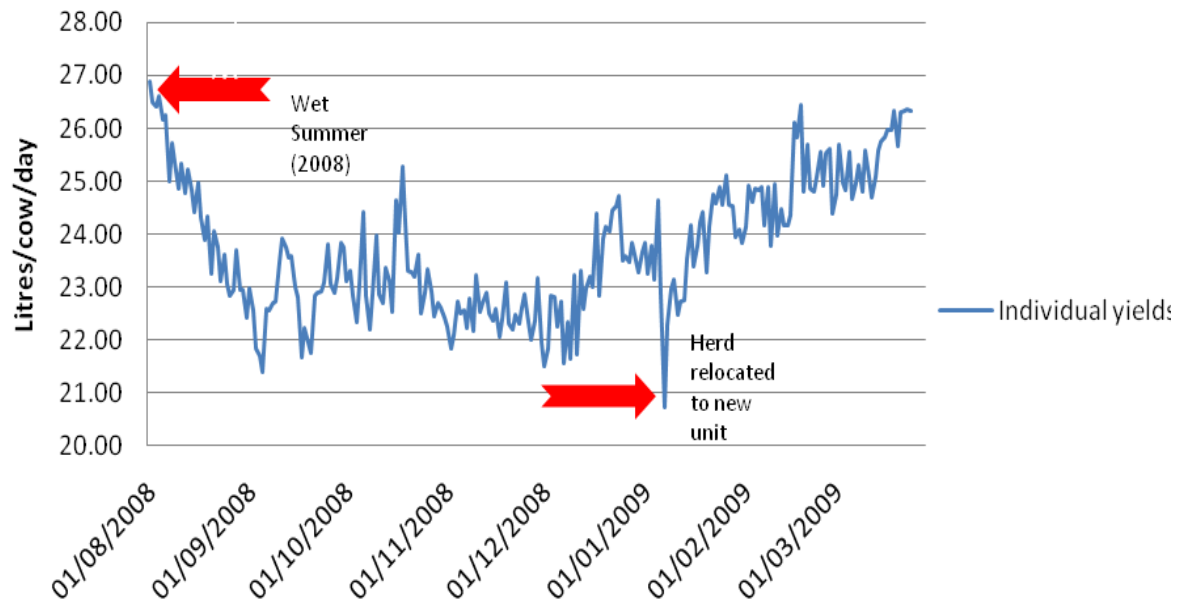
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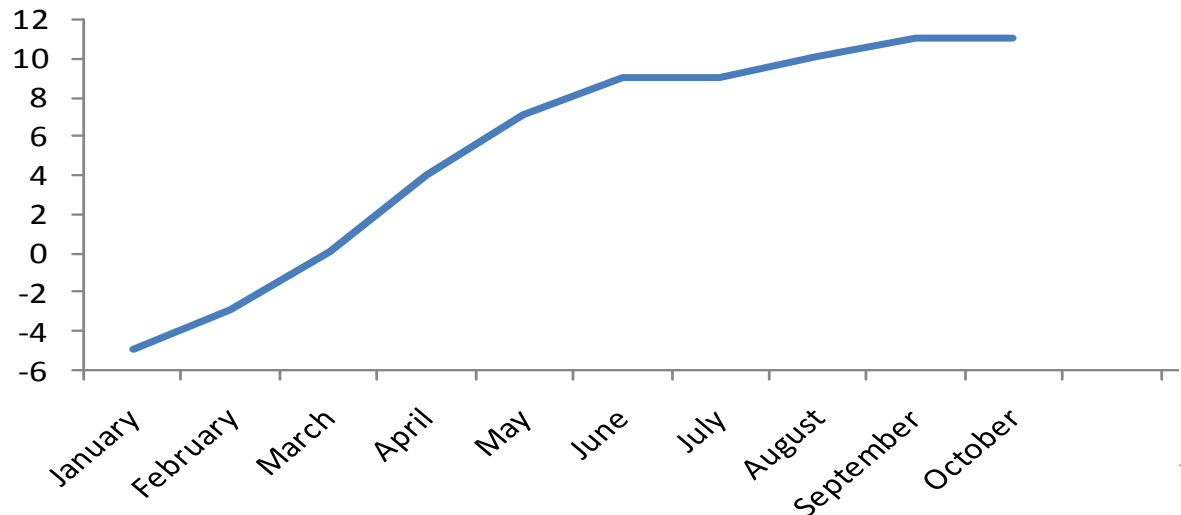
4.

# Performance of new dairy unit

Milk yield per cow



% difference in milk production performance compared to previous year



# Future of PLF at Harper Adams

Use of active RFID to detect sick or where/when animals are stressed

Use of technology to determine standing/lying behavior to identify sick cows or cows in oestrus

Use of technology for lameness detection and more precise feeding systems


Feasibility studies will be supported by final year (bachelor degree) student projects

# Demonstrating PLF at Harper Adams



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# Demonstrating PLF at Harper Adams



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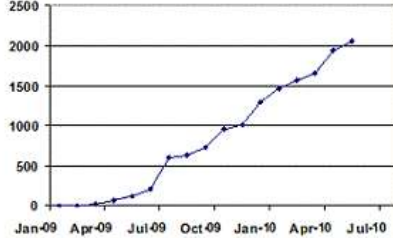
### Get involved in this National Initiative

Are you an organisation with publications to contribute?

Or a researcher with papers or abstracts to publish?

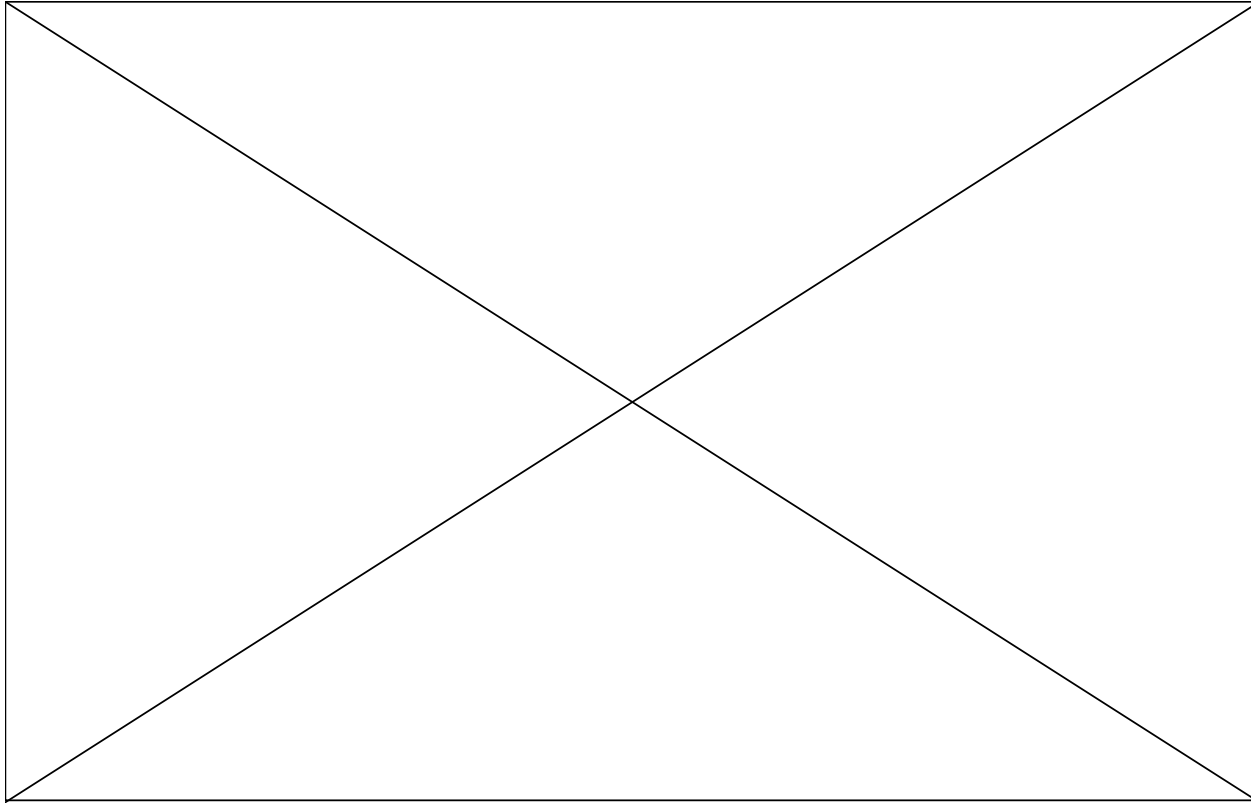
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# Conclusions

We're excited to be part of the BrightAnimal project

Enormous benefits from our unique mix of modern “technology-driven” farming and higher education

By combining expertise in the animals and engineering departments with the successful commercial practices, Harper Adams are aiming to play a role in the development of future PLF technologies

# Members of the PLF group at HAUC

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Thank you for listening