

The Douglas Bomford Trust

Introduction

Presentation to

at.....

on.....

by

ALAN PLOM

Secretary to the Douglas Bomford Trust

The Douglas Bomford Trust
The only UK charity
focused on Engineering for
Agriculture.

Founded in 1972,
in the name of
Douglas Bomford
Agricultural Engineer,
Farmer, Innovator, Inventor,
Designer, Entrepreneur
by his family and the
Company



+ Additional donations
from the Howard Trust
and from BBSRC on the
closure of
Silsoe Research Institute
(in 2006).

The Trust's Aims

- *To support and advance the science, practice and profession of agricultural engineering (especially in UK), to achieve sustainable agricultural, food and biological systems for the benefit of the environment and mankind.*
- **By funding research, capital projects and enable capable and talented young engineers to realise their full potential, by supporting:**
 - ❖ **post-graduate study and research projects**
 - ❖ **undergraduate scholarships and prizes**
 - ❖ **“A” level students via the “Arkwright” scheme**
 - ❖ **travel , eg for conferences and training courses**
 - ❖ **student membership of IAgRE**
 - ❖ **special projects**

The Trust's Resources

- Capital invested by 3 Fund Management Services
- Income provides annual disbursement of ~£120-150k
- Part-time Secretary and Administrator
- Close association with IAgRE -share office at Cranfield
- Board of Trustees with a range of relevant experience



Some of the challenges

- Using funds to make the most effective contribution to (UK) agricultural engineering.
- Investing in the right people and projects.
- Monitoring progress and ensuring that the outcomes are delivered.
 - *Trustees act as mentors*



Achievements in the last decade

- Supported over 25 post graduate and engineering doctorate students.
- Many now have leading roles as lecturers, researchers, directors and consultants.
- Sponsored more than 170 study tours to international conferences, training courses, events and businesses.
- Awarded over 30 prizes to recognise and reward excellence.



Examples of activities – Special projects

Joint-sponsored:

- *A new agricultural engineering building at Harper Adams University - includes The Douglas Bomford Lecture Theatre*
- *A Chair in “Applied Farm Mechanisation and Management” at The Royal Agricultural University*
- *‘Feeding Tomorrow’ exhibit at the Science Museum (2019?)*

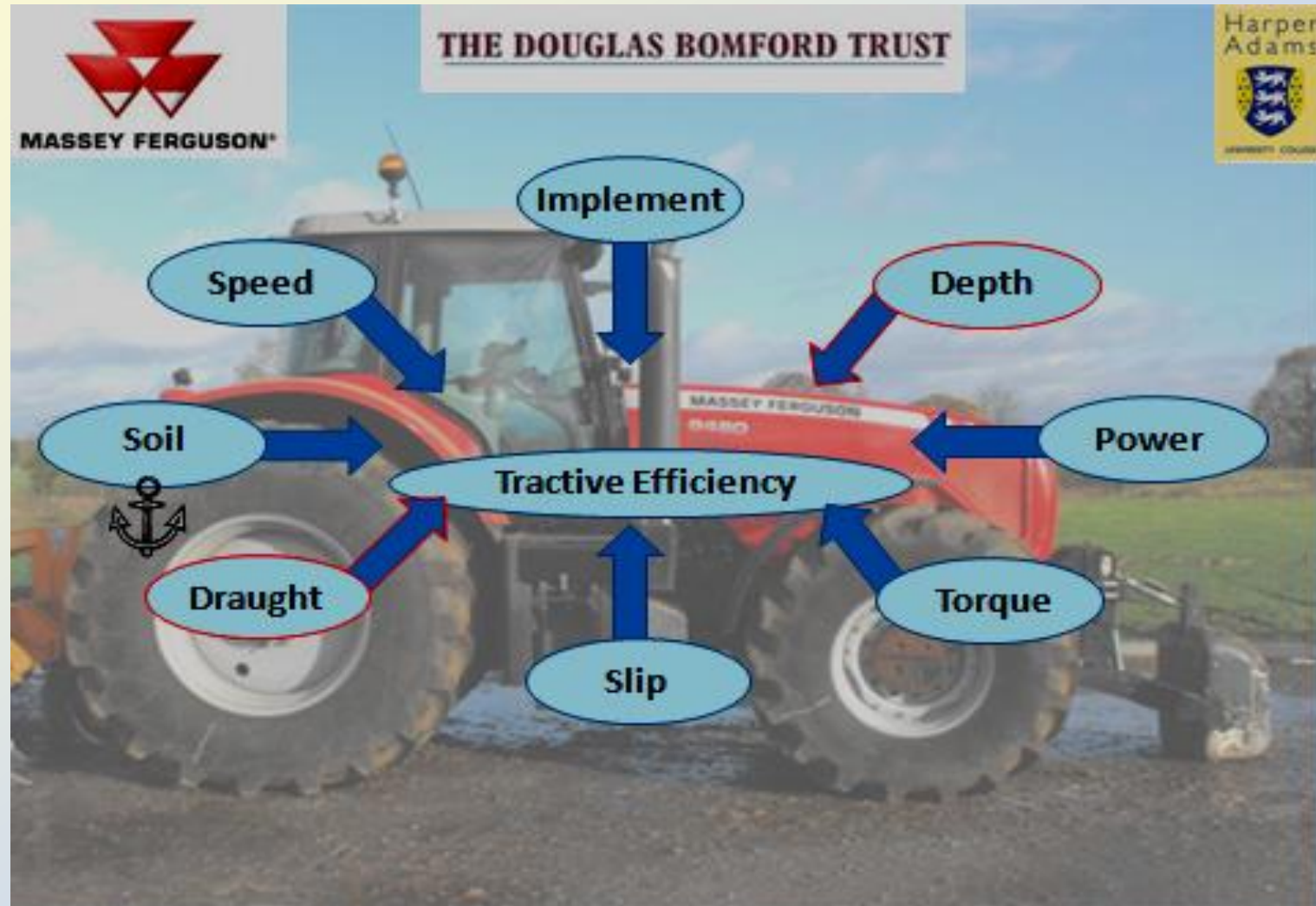


‘Smart Farming’ projects funded by DBT– Precision High Speed Mechanical Weeding



Tillett and Hague

PhD : Optimisation of tractor control



Automated Agrochemical Application PhD Project

- Controlled applicator filling
- Avoidance of agrochemical loading errors
- Add prescribed amounts
- Auto Record data
- Reduce total time for data transfer
- Food safety and environmental benefits



HAU Traffic & Tillage Projects (3x PhD)

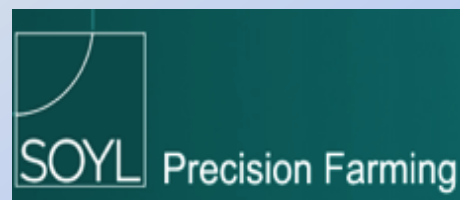


Harper Adams
University College



HAU Traffic & Tillage Project - Multiple sponsors

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Recent PhD and Research Projects #1

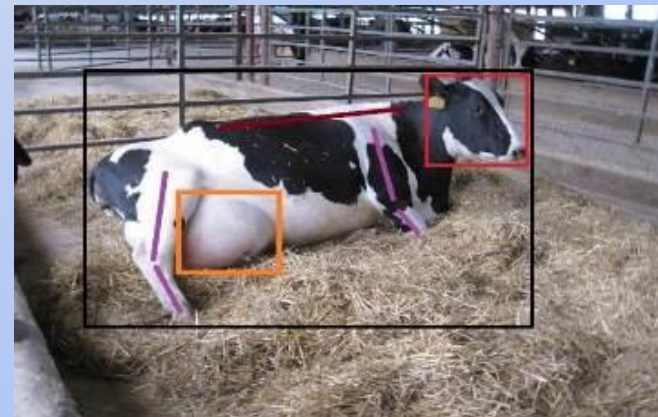
- **Design of a hybrid ventilation system for pig buildings (Harper Adams)**
- **Variable rate application of plant protection products – feasibility and potential cost-benefits (Cranfield)**
- **Accuracy and efficacy of a herbicide ejector for plant specific weed control by autonomous robot for field vegetables (Reading)**
- **Using spectral signatures of plant leaf biochemistry to understand and diagnose plant stress (Imperial College, University of London)**

Recent PhD and Research Projects #2

- **24/7 remote monitoring and control of grazing livestock (Liverpool John Moores University)**
- **UV-B radiation and variation in UV-absorbing area of flowers (Lincoln University)**
- **Developing an in-field diagnostic tool to measure available nitrogen to mitigate losses to the environment (Cranfield University)**
- **Using image capture technology to monitor health and predict parturition in dairy cows - 2 PhDs (Nottingham University)**

Image-driven monitoring solutions for dairy cows (2x PhD Projects - Nott Univ)

- Building on research in security/face recognition and gaming technology
- Improved awareness & knowledge of cow behaviour during parturition
- Automated real-time monitoring of individual animals + welfare benefits
- Improved management and labour utilisation with technology
- Commercial exploitation - equipment and software will be suitable for use on commercial farms *[IP issue]*



Supporting undergraduates Annual Scholarships

- At Harper Adams University and elsewhere



Supporting undergraduates – Prizes

- At HAU, Cranfield, & RAU



A level students – via Arkwright Scholarships

- Cash grant
- Prestigious awards ceremony
- Training days and events
- Interactions with sponsors, eg:
Technical visits, work experience
- Funded IAgRE Student Membership

Success! One ex-Scholar now at HAU.



Travel Grants & Projects – Individuals & Groups

eg HAU students to Agritechnica (Hanover), International Robotics event (Germany), ‘Big Bang’ Careers Fair (NEC)



‘Overseas’ projects

- **Individuals and Groups:**
- ***‘Engineers Without Borders’* eg:**
 - ❖ **Wind energy in Peru**
 - ❖ **Mechanical & Plumbing Engineering – Rwanda Institute of Conservation Agriculture building project**
- **Solar-powered desalination for irrigation - involving students from Jordan, Israel, Palestine & UK. (Aston)**
- **Nutrient Recovery from Waste Water in Malawi (Edin)**
- **3D Printing using recycled agricultural waste & mycelium**
- **App to assist crop intensification in Ghana (RAU)**
- **Briquetting machine for agri-wastes [in Zambia] (HAU)**



Working together (eg with AFCP) to make a difference for (UK) Agricultural Engineering



- **To achieve the best outcome means selecting the best applicants and the best proposals.**
- **Then to monitor performance and progress to ensure delivery.**
- **Finally, to deliver real benefits means ensuring that the best outcomes are carried through to practical application.**

AFCP's Vision:

To increase the impact of agri-food charities.

Mission:

To create opportunities to increase knowledge and expertise in the agri-food sector, through collaboration and innovation via a network of charities and other funders.



THE AFCP TEAM:

Chair - Graham Jellis

graham.jellis@gmail.com

CEO - Debbie Beaton

debbie_beaton@icloud.com

Company Sec - Elizabeth Stephens

Elizabeth@iagre.org



Harper Adams
University



The Douglas Bomford Trust

The Stapledon Memorial Trust



ROYAL NORFOLK
AGRICULTURAL
ASSOCIATION



Easton&OtleyCollege



- Founded Feb 2008, registered charity June 2015.
- Currently 30 'signed up' members + links to many more Agri-Food related charities (~150 support the sector).
- The Board, Directors & advisors represent a range of charities and organisations from across the UK.

Common goal: *Supporting a thriving and resilient British food and farming industry - equipped with the right skills, science and solutions to compete, and adapt, to an ever changing global market.*

Underpins AFCP's remit to provide Agri-Food charities with:

- a common purpose to collaborate with each other and industry, to deliver bigger impact;
- a conduit for collaboration to work together on shared goals, best practice, ideas and processes;
- a hub for individuals to find charitable funding for their career training, skills and research;
- a collective voice that supports & influences the whole industry;
- a facilitator seeking new ways of working, new funding and new partners, and
- a communicator of the successes of the members of the AFCP.

AFCP charities have a crucial role to play

- Although small [typically investing <£100k/yr], together they are significant.
- AFCP charities together invest a total of ~£3.5m/yr in new research, skills development and public education for UK Food and Farming.
- AFCP's website is an open access, search-based portal, to help individuals or charities find opportunities or funding partners.
- >126 organisations listed on website, averaging ~11 searches/day.

Other AFCP achievements include:

- **Collaboration:** eg East Anglia charities funding research (OSR & potatoes); AFCP/AHDB postgrad research (soil/cover crops at Camb Univ) + AHDB/BBSRC/Du Pont's research on OSR.
- **RASE Report:** "Status of soil & water management in England"
- **Annual Forums:** 8 held on key strategic industry issues, eg skills, careers, education and research strategy + Nov 2017: *'How Agri-Food charities can support UK food & farming post-Brexit'*.
- **Student Forums:** Biennial events to raise profile of their work and student-charities networking.
- **Education:** eg NFU-M Trust explored career pathways + teacher-led Royal Norfolk Agricultural Association educational initiative.
- + **Articles and presentations:** eg to Landex, Chadacre, AHDB + Agri-Tech East Smart-AKIS Workshop.

Applying for Funding – Key elements

- **Title & brief description of the project**
- **The problem/issue**
- **Relevance to industry**
- **Aim of project**
- **Key objectives**
- **Outline of activities**
- **Key outcomes**
- **Knowledge transfer**
- **Lead applicant**
- **Host institution(s)**
- **Project duration**
- **Proposed start date**
- **Total cost**
- **Potential co-funding /collaboration**
- **IP implications/term**
- **Monitoring**

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- *Web: www.dbt.org.uk*

