

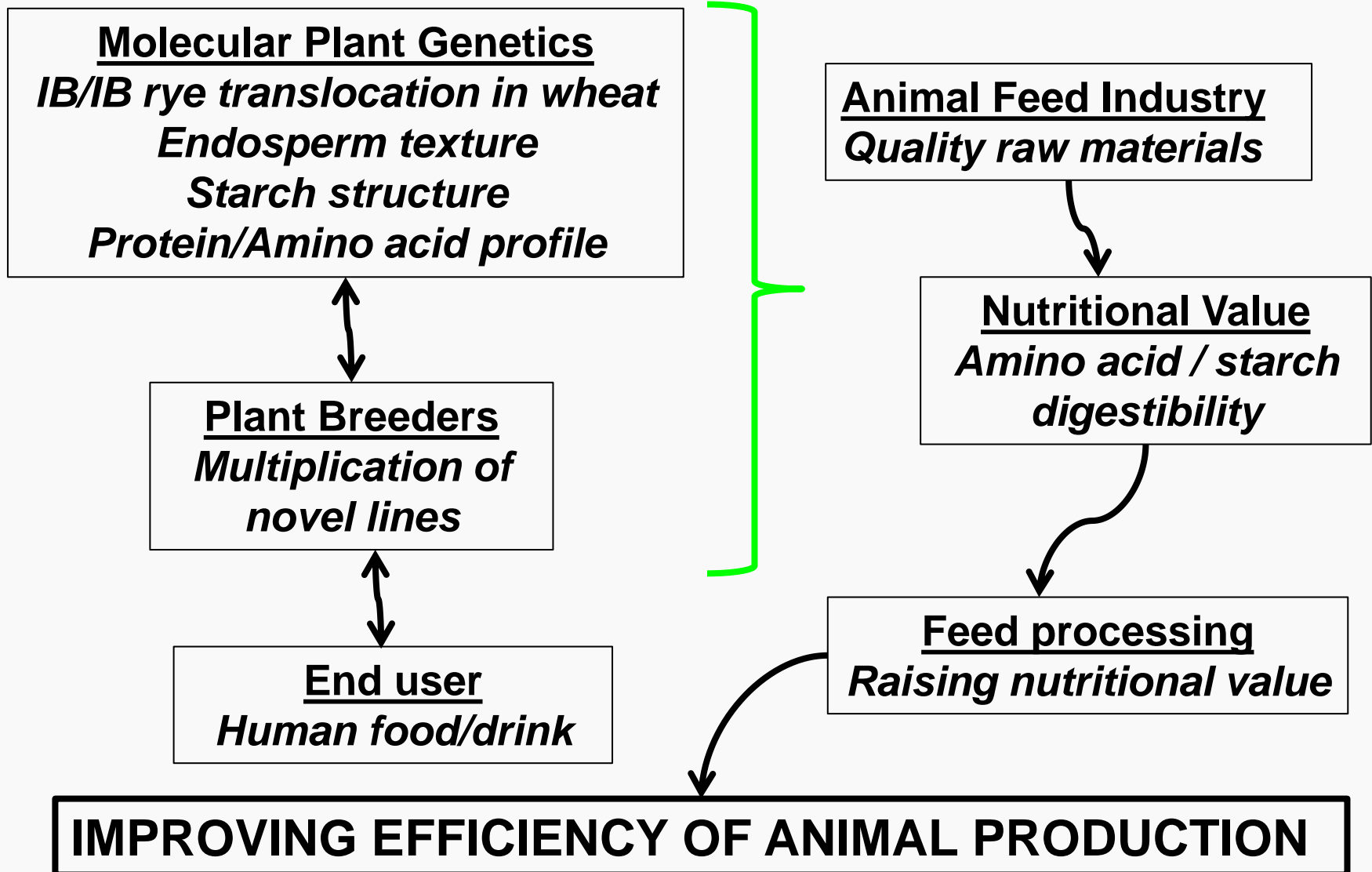
Science into Practice: Animal nutritional research and its impact on the commercial sector

Professor Julian Wiseman

What are the current drivers?

- **Human population growth**
 - Increase in consumption of animal products
- **Feeding animals**
 - Efficiency
- **Environmental impact / sustainability**
 - 26% reduction in UK Pig Industry greenhouse gas emissions.
 - **Biggest contributing factors:**
 - Reliance on imported soya
 - Greater interest in food and other co-products
 - » Not swill.....

Animals eat plants



Why does the EU import so much soya?

- The most important global protein crop accounting for some 56% of the total
- Highest quality protein crop
- Relatively constant supply and quality
 - Importance of controlled processing
- However, price volatility is an increasing problem
 - Usually prices are increasing

Alternatives to soya

- **Home grown proteins**
 - Peas, beans
 - Co-products from bioethanol and biodeisel production
 - **Wheat distillers, RSM**
 - **Good example of move to reduce reliance on primary raw materials**
- **BUT:**
 - **Significant decrease in EU protein crop production in past ten years.**
 - **EU protein crops currently only occupy 3% of arable land**
 - **Excluding fruit and vegetables**
 - **Variable quality of home-grown proteins**

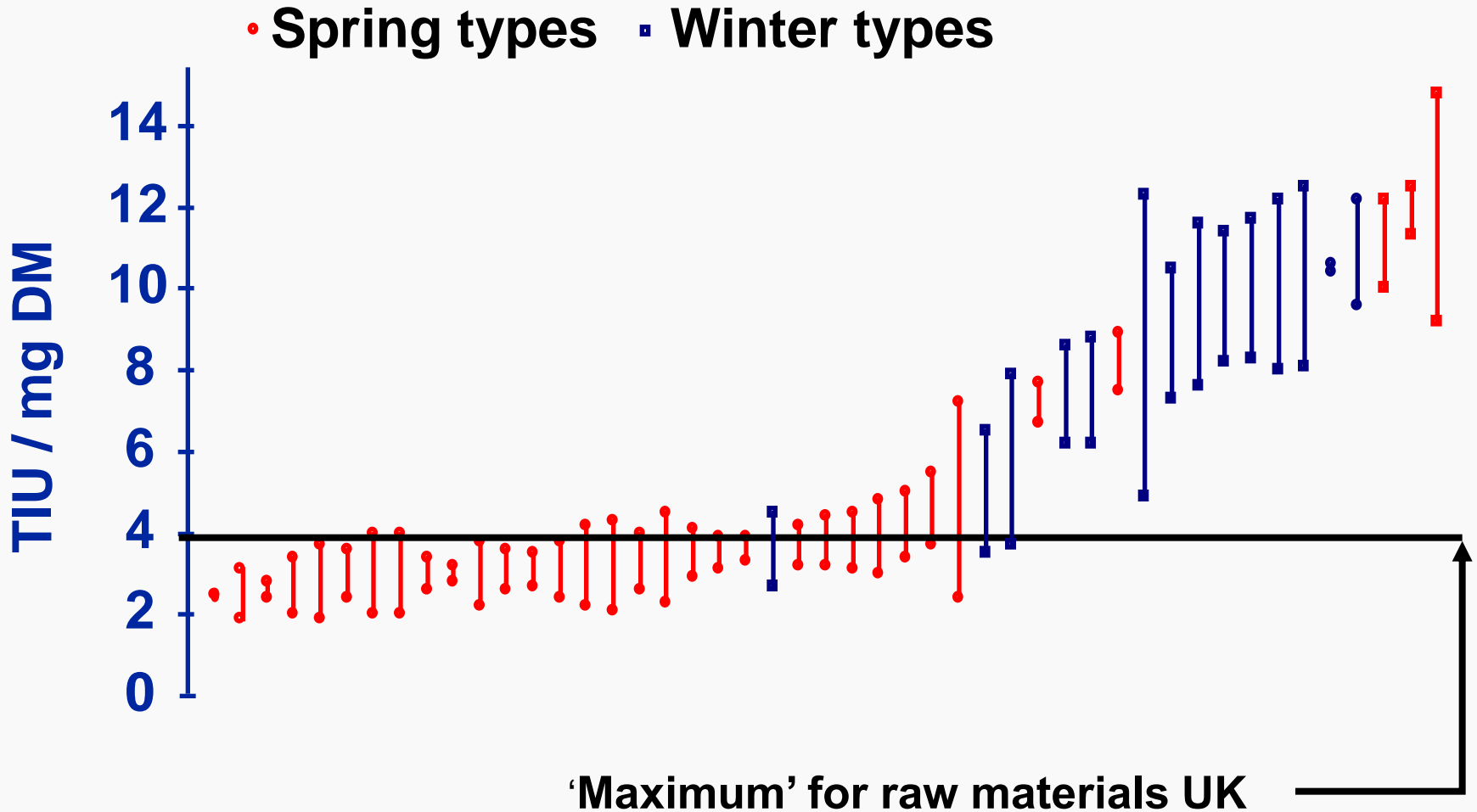
Recent / current research

- **Peas**
 - **Amino acid digestibility in novel new cultivars**
- **Peas / beans**
 - **Increasing confidence in their use in non-ruminant diets through nutritional evaluation**
- **W-DDGS / RSM**
 - **More accurate description of nutritional value across livestock species, both ruminants and non-ruminants.**

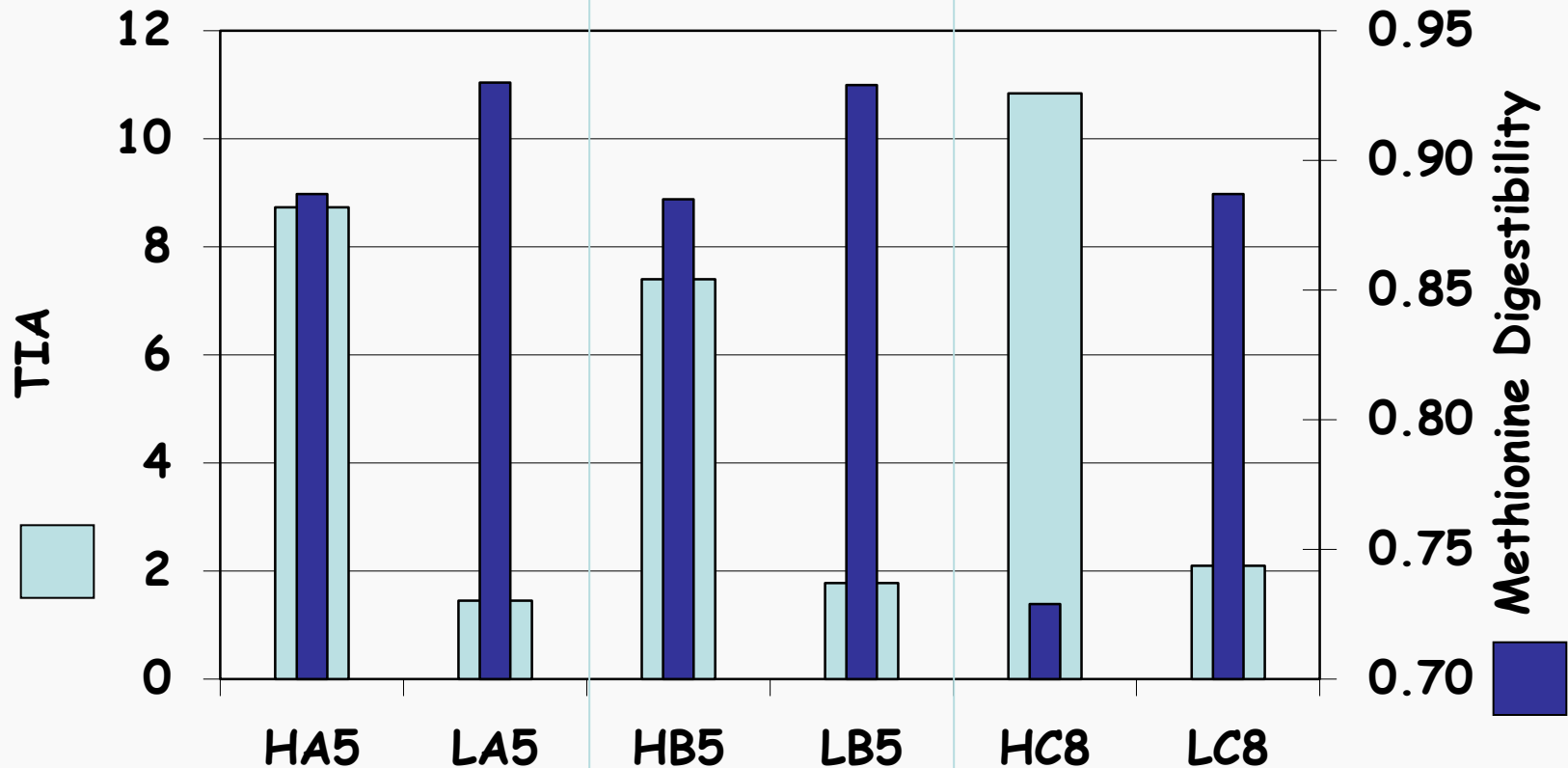
Trypsin Inhibitors

- **Naturally-occurring**
- **Several compounds present with anti-trypsin activity**
- **Interfere with protease activity**
 - **Reduction in protein / amino acid digestibility**
- **Selection for low TI?**
 - **TIs are themselves high in sulphur amino acids**

TIA of pea cultivars (mean \pm sd)



Near isogenic lines of peas



Lines LOW in TIA have HIGHER levels of Methionine Digestibility

Joint with BBSRC John Innes Institute

What about animal performance

- **Partial replacement of soya with peas or beans for pigs**
 - **In nutritionally BALANCED diets**
 - **No effect on performance or carcass quality**
 - **Outcomes:**
 - **Major UK pig producer has subsequently changed its feed raw materials purchasing policy as a direct result of this project, with much success.**
 - **Beans now key a component of arable rotation**

Animals eat plant co-products

The UK Renewable Energy Strategy

**15% of our energy from renewable sources
- by 2020**



~1m T co-product p.a.

From bioethanol production

W-DDGS

- **Reduce C footprint of livestock production**
- **Benefits of bio-refining cereals to optimise use of both energy and protein**
- **Reduce protein imports and increase security of supply**
- **Reduce uncertainty in feeding DDGS**
- **A unique project linking the arable and livestock sectors**

Collaborators

- **John Innes Centre**
- **Scottish Rural College**
- **Newcastle University**
- **ADAS**
- **Levy Boards**

- **A lot of commercial companies, through LINK projects.**

Nottingham Feed Conference

Recent Advances in Animal Nutrition 2013

P C Garnsworthy
J Wiseman



CONTEXT

Next one: 24th / 25th June
BBSRC ATP: ask for details
Thank you for your attention

