An attempt to provide the elements when measuring livestock efficiency

The Agenda, Focus Area 1 meeting

Claus Deblitz
Thünen Institute of Farm Economics

Braunschweig
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Contents

Why does it need intervention?

Can‘t the market signals provide incentives for

– more efficiency

– sustainable grassland use?

– less environmental burden?

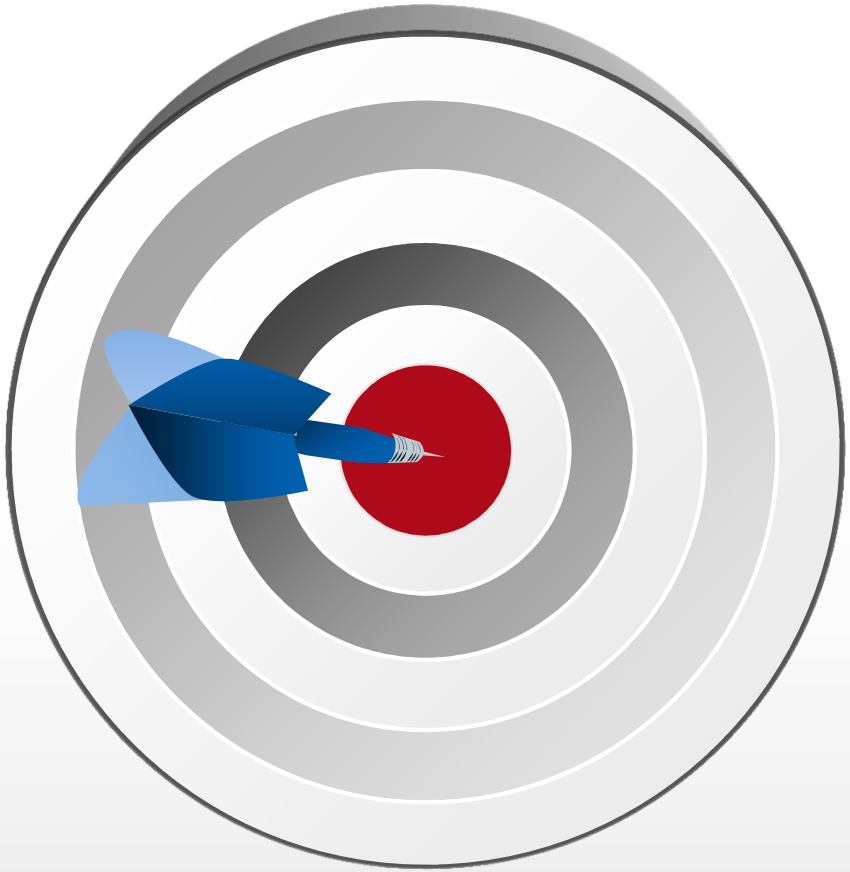
Apparently not **>>>** market failure?

– Public goods (environment) and pricing missing or too low

– Lack of information / know-how on technology / systems

– Asymmetric price information

Definitions



Intensity – measures the relation between two production factors

- N-fertiliser per ha
- Hectares per cow, stocking rate

Productivity – measures output related to input

- Labour productivity: kg beef produced per hour labour input

Effectiveness

- Ability to reach an objective to the highest degree

Economic efficiency

- To reach a given output with minimum cost
- To maximise output at a given cost

Is the feedlot a low intensity system?

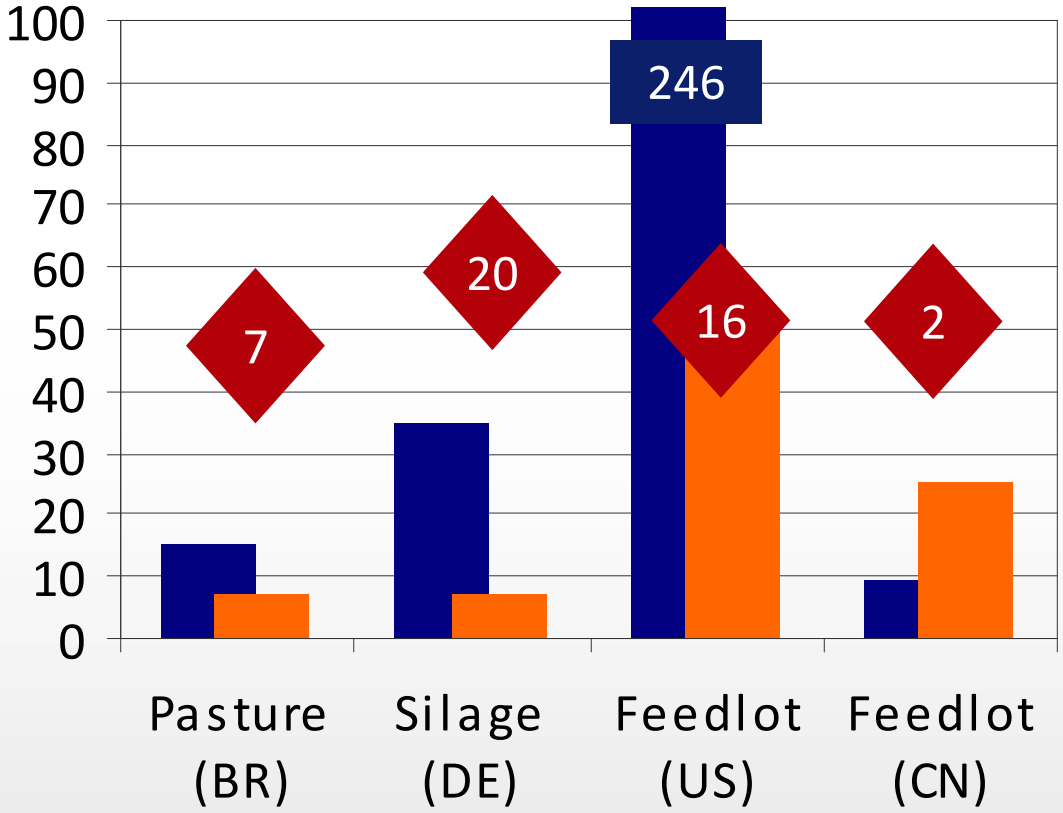
Indicator	Unit	BR 140	DE 280	US 75,000
Land intensity	Hectares per head	High	Medium	Low
Labour intensity	Hours per head	Medium	Medium	Low
Capital intensity	USD per head	Medium	High	Low
Land productivity	kg beef per ha	130	2.765	nr
Labour productivity	kg beef per hour	11	35	247
Capital productivity	kg beef per 1,000 USD	165	185	6.064

Conclusion: the focus should be on productivity

Labour productivity in beef finishing farms

Physical / economic labour productivity

kg CW per hour[1)] USD returns per USD labour cost[2)]

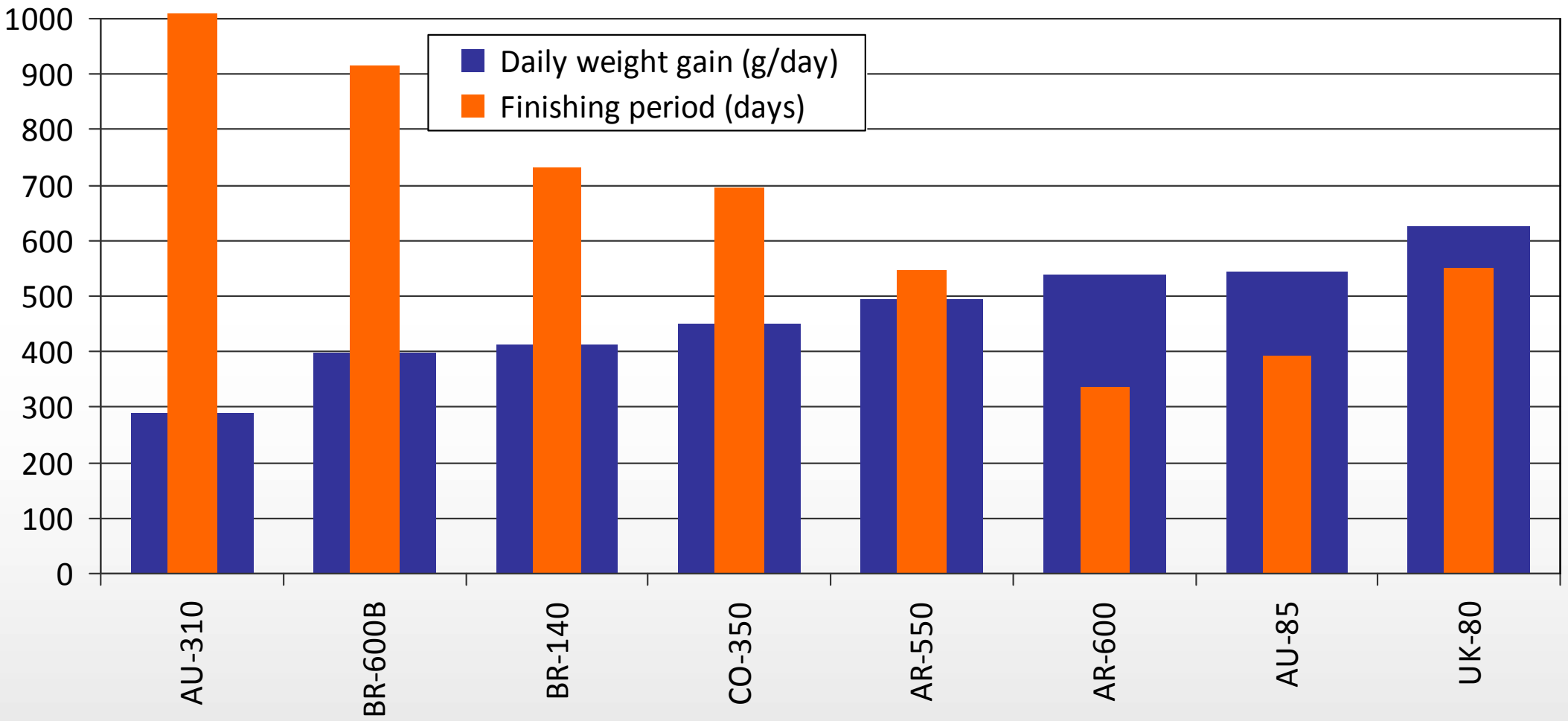


Physical labour productivity:
Carcass weight (CW) sold
Total hours worked

Economic labour productivity:
USD returns per kg CW
USD labour costs per kg CW

7 **Regional wage level**

Increasing peformance in the pasture system



Measuring efficiency – possible indicators

Production systems

Livestock performance

Forage production

Animal feeding

Animal health

Animal welfare

Economic results

Environment

… more levels …

… also taking into account ideas from institutions who cannot participate in this workshop (PBL/Wageningen, TAFS-Forum)

… and output from previous FA1 workshops

Measuring efficiency – possible indicators

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Environment

FAO
Grazing, mixed, industrial

agri benchmark
Pasture, Silage, Feedlot,
Cut & Carry

Others

>>> Homogeneous and unequivocal classification required

Measuring efficiency – possible indicators

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Environment

Reproductive animals

- Inter-'birth' intervals (calving interval)
- 'Birth' percentage, mortality, weaning percentage
- Weaning weights
- Livestock and breeding prices

Fattening / finishing animals

- Daily weight gains
- Final weights
- Carcass yields / dressing percentage
- Meat prices

Measuring efficiency – possible indicators

Production systems

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Economic results

Environment

Land use and yields

- Land tenure
- Crop rotation
- Number of harvests, double use
- Per ha yields
- Feed contents: dry matter, protein, energy, fibre etc.

Inputs and prices / costs

- Seeds, fertiliser, plant protection, fuel, depreciation machinery, contractor work, own labour, irrigation, other
- Crop and forage prices

Measuring efficiency – possible indicators

Production systems

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Animal health

Animal welfare

Economic results

Environment

Feed types and quantities

- Type of homegrown feed including byproducts and stubble
- Type of purchased feed
- Feed rations by animal category and feeding period (winter/summer, pre-finishing, finishing)

Feed productivity, prices, costs

- Digestibility
- Feed conversion (kg feed per kg gain or kg product)
- Feed prices and costs including valuating byproducts, stubble

Measuring efficiency – possible indicators

Production systems

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Animal health

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Economic results

Environment

Endemic diseases within a region

- Prevalence percentage
- Number of outbreaks
- % reduction of outbreaks
- Diseases free areas
- % of vaccination coverage

Herd performance

- Mortality rate by categories (age)

Diseases affecting specifically fertility

- Abortion rate

Measuring efficiency – possible indicators

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Animal welfare

Economic results

Environment

Action-oriented indicators

- Type of housing
- Space available for animals
- Straw bedding
- Toys to play with

Result-oriented indicators

- Animal aspect / look
- Bruises / damages
- Lameness
- Carcass damages
- Animal behaviour
- Body temperature

Measuring efficiency – possible indicators

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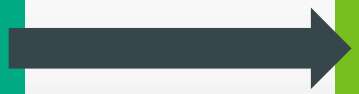

Revenues / returns

- Whole farm / enterprise market and subsidy returns
- Off-farm income

Costs

- Labour, land, capital costs (factor costs)
- Non-factor costs

Profitability

- Short-, mid, long-term profitability
- Whole farm vs. enterprise

Measuring efficiency – possible indicators

Production systems

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Animal welfare

Economic results

Environment

Nutrients

- Stocking rate
- Manure system
- N and other nutrients (balance)

Emissions

- Enteric fermentation
- Manure storage and handling
- Feed production (incl. purchase)
- Carbon sequestration

Energy use

- Fuel consumption
- Heating and cooling

Measuring efficiency – possible indicators

Basic

Production systems

Livestock performance

Forage production

Animal feeding

Economic results

Environment

… others?

Complementary, but necessary

Animal health

Animal welfare

…others?

Next steps

Agree on the levels presented

Add further levels

Prioritise levels for FA1 work

Thank you for your interest in *agri benchmark*

Dr. Claus Deblitz
Coordinator of ***agri benchmark***
Beef and Sheep Network

Thünen Institute of Farm Economics
Bundesallee 50, 38116 Braunschweig
phone.: +49-531-596-5141
fax: +49-531-596-5199
e-mail: claus.deblitz@ti.bund.de
internet: www.agribenchmark.org
www.ti.bund.de

agri benchmark
- passionate about facts

Identifying gaps – first examples

Cow-calf and grazing

Finishing South America grassland fertility rates

Sheep overgrazing / desertification

Identifying gaps – cow-calf & grazing

State of the art technology **vs.** What is really done at farm level

Cash Crops

Poultry

Pork

Feedlots

Cow-calf

Grazing systems

Technology adoption

Management skills key to improving productivity

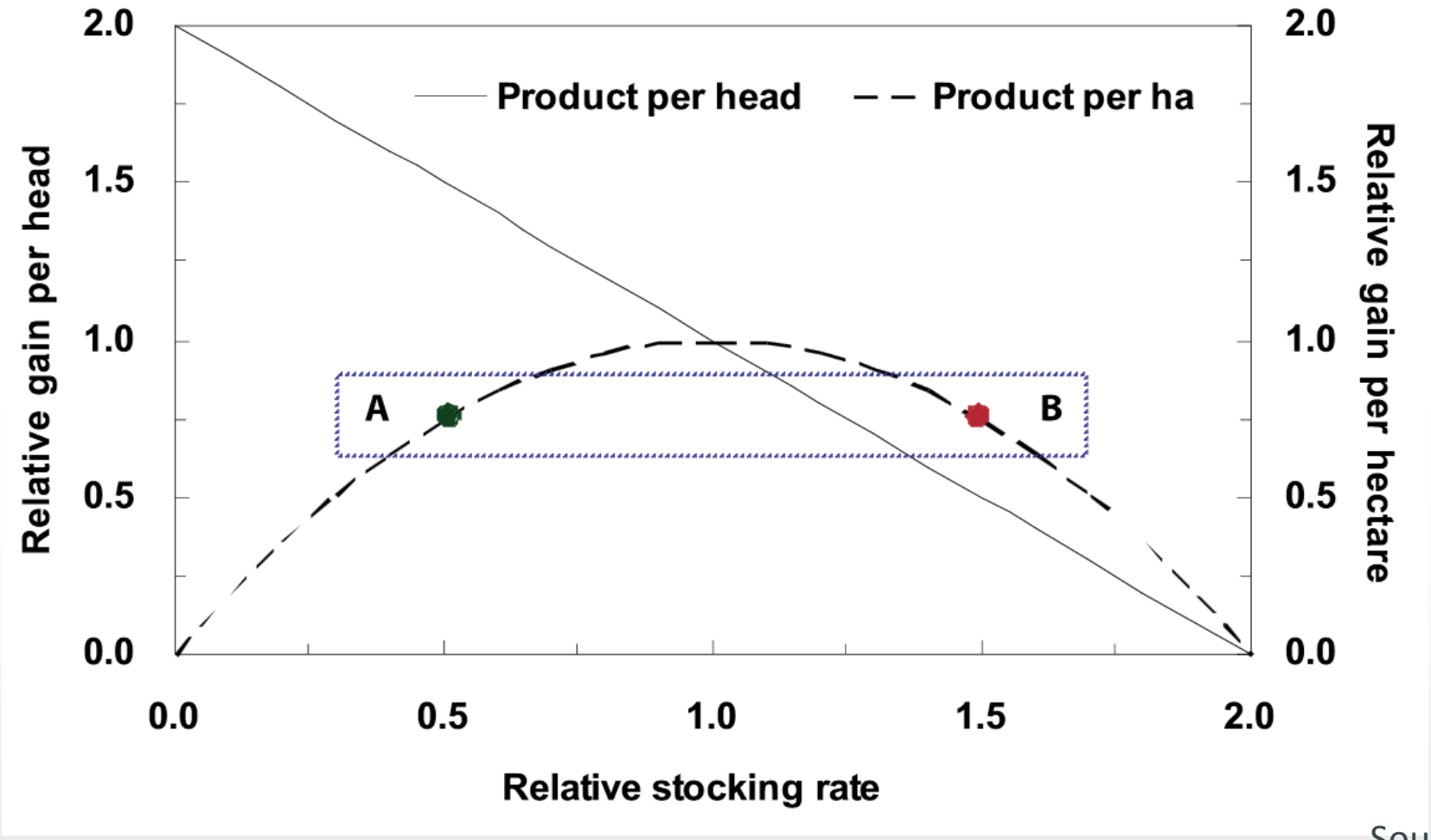
Identifying gaps – cow-calf & grazing

Management is the key to unlocking the potential

- Extension programs are disappearing around the globe (US, CA, BR, AR) or do not exist…
- Where will the money come from? (RU, SA, KZ)
- Institutions, Machinery sales connected to training,

Countries with the most potential of future intensification (RU, SA, BR, AR)

Basic relationships between animal production per head and per hectare for grazing livestock



Source: Kemp et al. (2008)