

Grain legumes

Chances of Protein Supply and Innovative Cropping Systems

Improving European Plant Protein Supplies European Parliament – Brussels

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Grain legumes

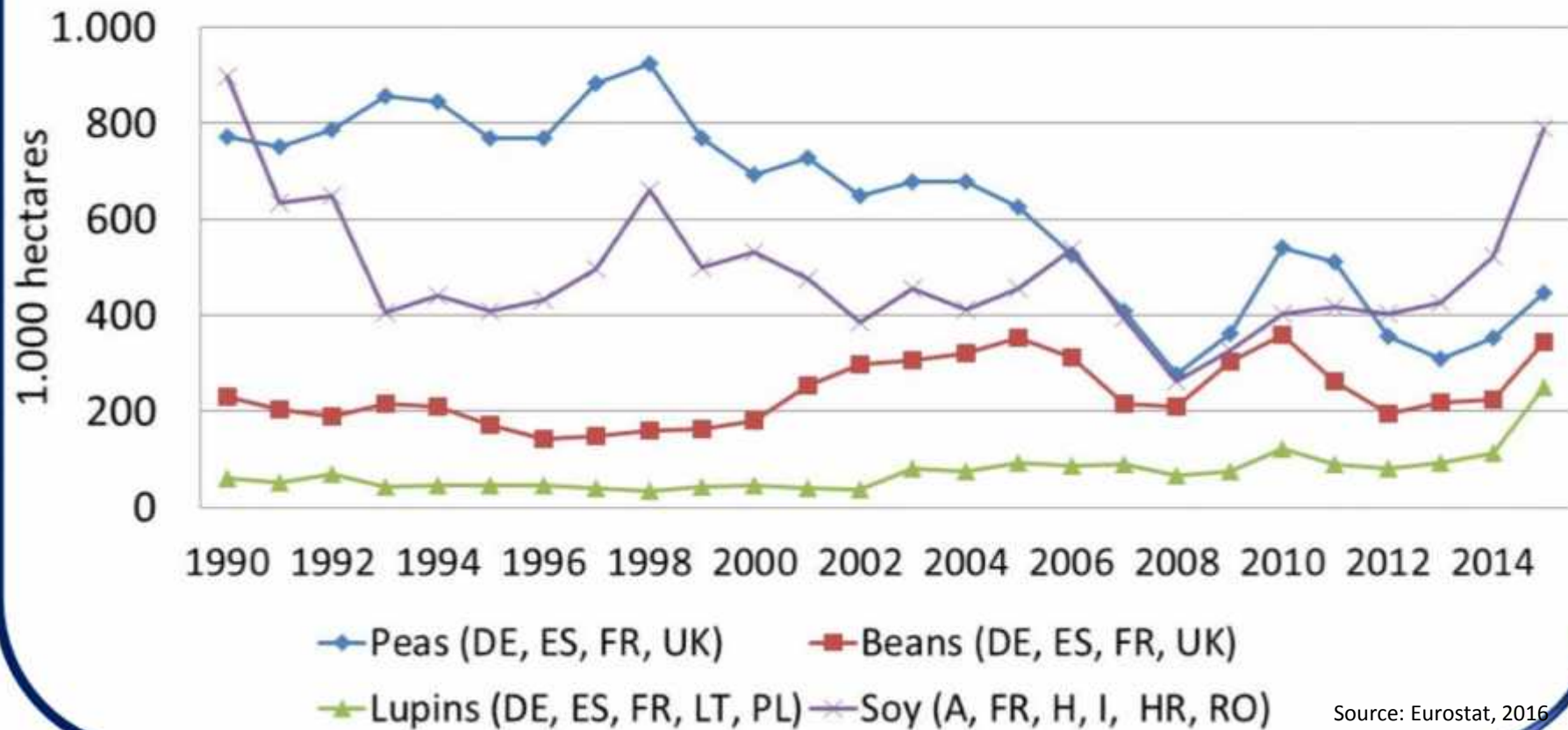
Chances of Protein Supply and Innovative Cropping Systems

Structure

1. Evolution of production areas
2. Benefits of legumes for food
3. Benefits of legumes in innovative cropping systems
4. Limitation: Registration of pesticides
5. Limitation: Market for conventional farming
6. Recommendation for EU policy

Evolution of production areas

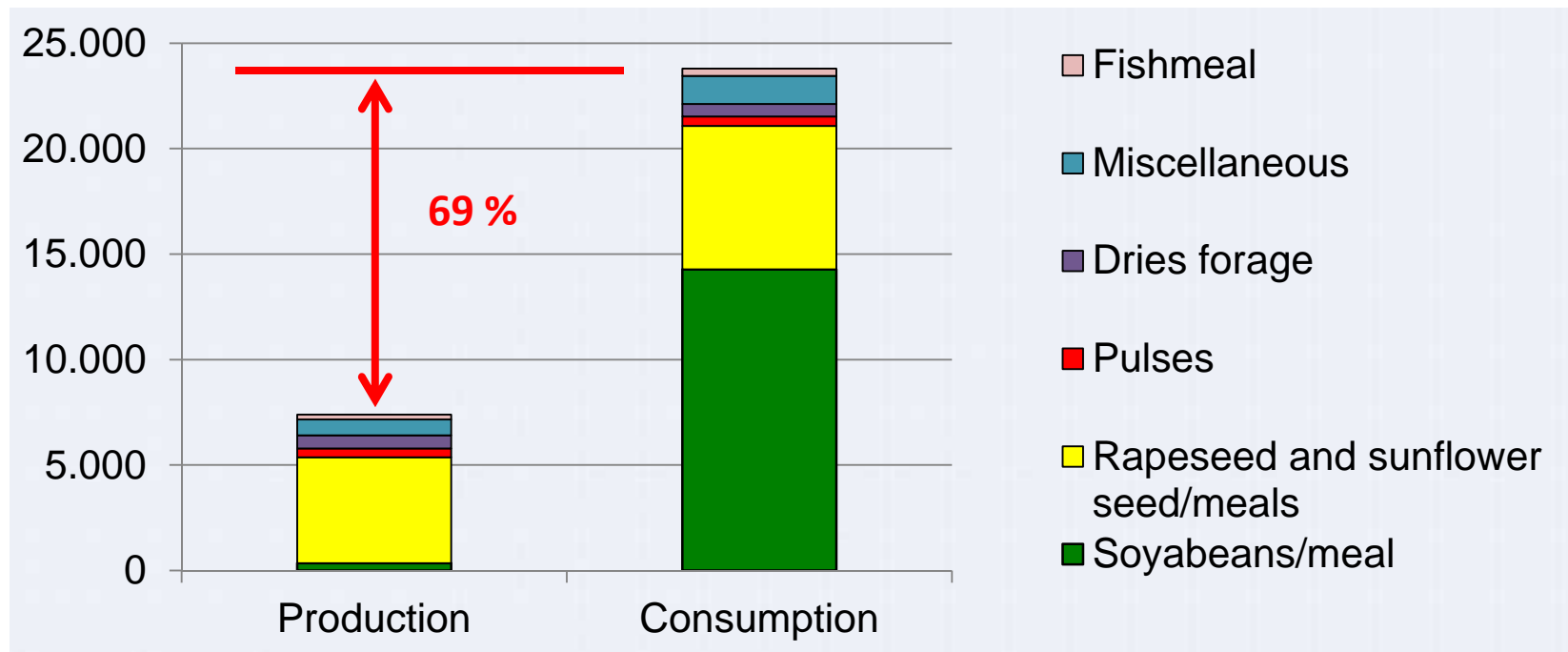
Production areas within selected EU-member states
Peas, Beans, Lupins and Soy



Source: Eurostat, 2016

Evolution of production areas

EU-27 Imbalance for protein rich feed materials 2012/2013
Demand of arable land outside the EU: 28-30 Mio ha



Quelle: Feed & Food Statistical Yearbook 2014

Evolution of production areas

- Slightly increasing cultivated area since CAP-reform in 2014 due to “Greening”
- Organic farmers usually have maximized the proportion of legumes in their crop rotations
- Therefore a significant additional growth of the production area can only be initiated by conventional farmers
- A higher weighting factor of nitrogen-fixing crops for the ecological focus area (1:1 instead of 0,7:1) would encourage farmers to grow more Grain Legumes
(1,0 m² legumes = 1 m² EFA)

Benefits of legumes for food

Health benefits for human nutrition become more and more popular:

- Promoting a feeling of satiety
- Lowering blood pressure
- Substitution of carbohydrate in cereal flour
- Reduction of cholesterol synthesis and cancer risk
- Relevant source for:
 - Magnesium (Mg)
 - Iron (Fe)
 - Zinc (Zn)
 - Vitamine B, E
 - Carotinoides

Conclusion:

Increasing market for innovative food with legume protein!

Benefits of legumes for food

Substitution of meat by legume proteins enhance water- und fuel- efficiency and reduce GHG emissions

Foodstuff	GHG emissions [kg CO ₂ e]	Water footprint [l/kg]	Fossil fuel input [MJ]
Beef	6.3-37	15,500	15-56
Pig meat	3.6-6.4	4,460-4,900	17-21,1
Poultry	1.1-4.6	2,390-4,500	12-25
soy beans	0,9	1,800	5.9
Wheat	0,3	1,300	2.1-2.8

Conclusion:

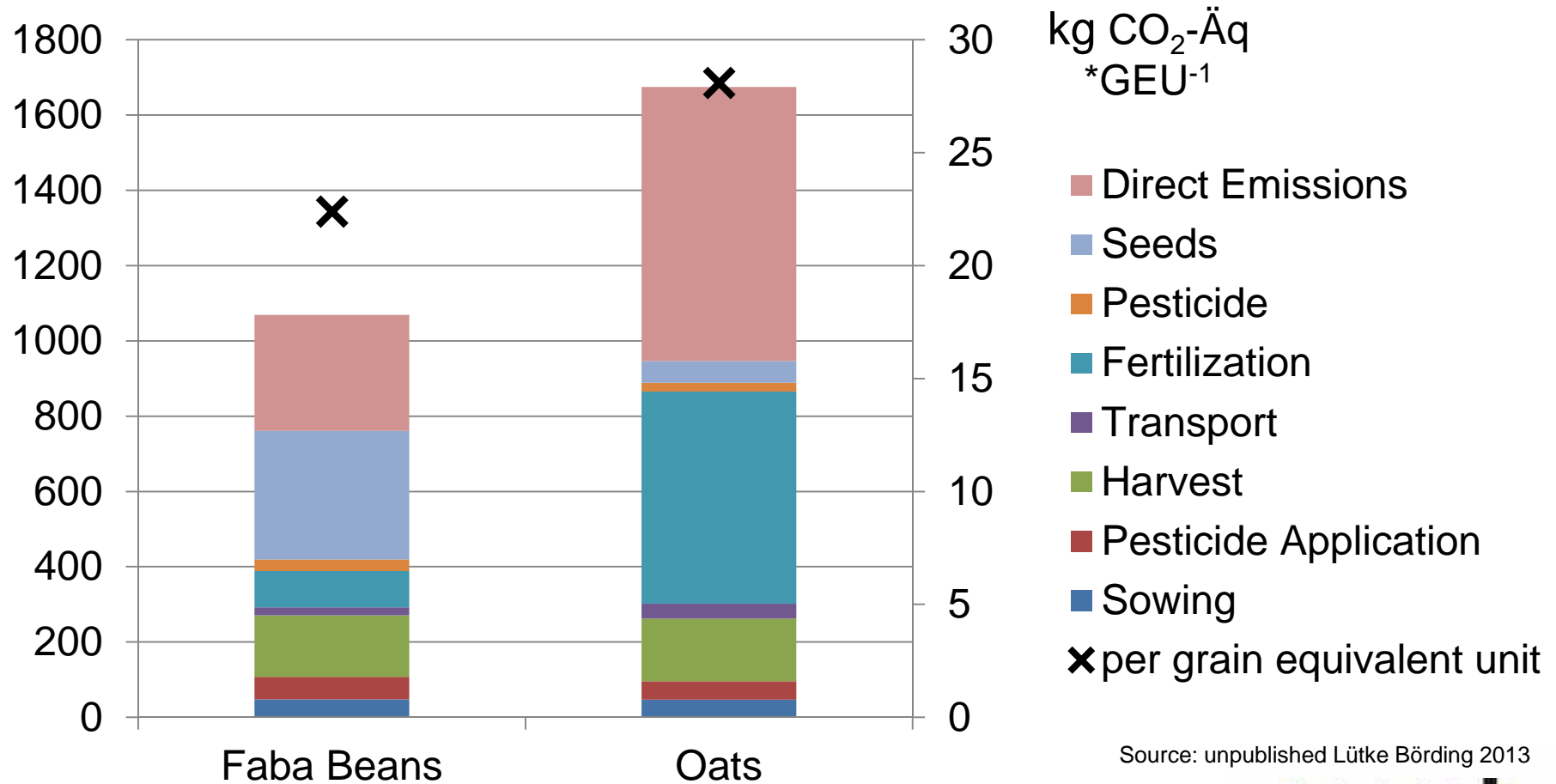
Grain Legumes support benefits and enhance sustainability of human nutrition

Source: EP, STOA 2009

Benefits of legumes in innovative cropping systems

kg CO₂-Äq*
ha⁻¹*a⁻¹

GHG-Potential by cultivating faba beans and oats
Trial-Farm Merklingsen (Soester Börde) 2013



Source: unpublished Lütke Börding 2013

Benefits of legumes in innovative cropping systems

- Reduction of input requirements:
 - fertilizer
 - pesticides
 - tillage

Reduction of energy costs → minimize greenhouse gas production
- Important element of breaking up crop rotations
- Yield enhancement of subsequent crops
- Improving soil structure and root growth → Support resource-saving measures like direct or mulch sowing
- Breaking of pest cycles
- Enhancement of Biodiversity
- Positive effects on earthworm population

Benefits of legumes in innovative cropping systems

- Conservation tillage
 - Widening of crop rotation
 - No ploughing necessary



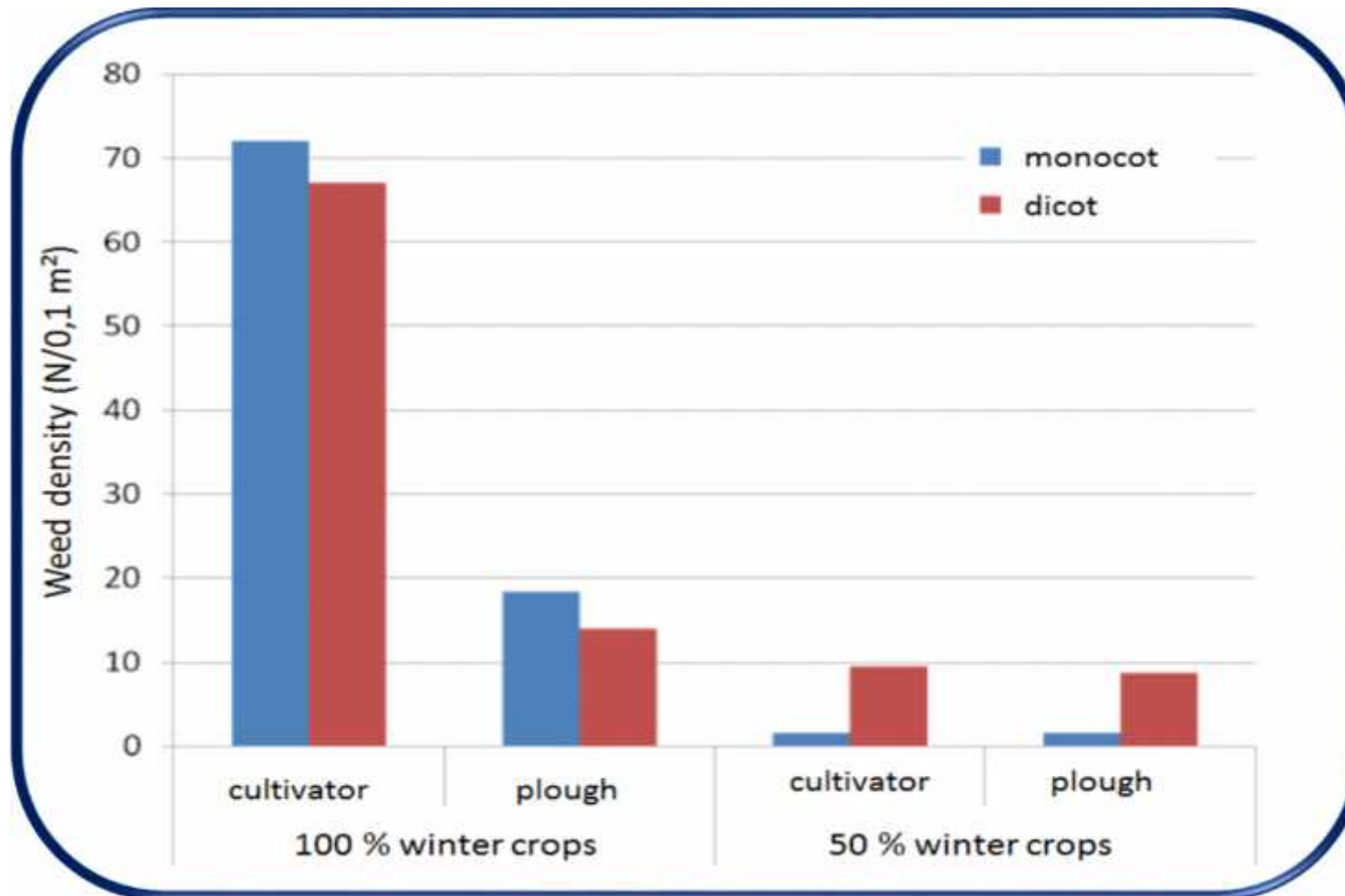
- Significant savings of pesticides compared to other crops
- Legumes can help to avoid increasing resistance problems with pesticides especially with weeds e.g. Black grass

Conclusion:

Grain Legumes enhance the sustainability of innovative cropping systems

Benefits of legumes in innovative cropping systems

Effects of different crop rotations and tillage on weed density



Limitation: Registration of pesticides

For example Germany:

- **Herbicides:** only a few herbicides against dicotyledonous weeds in peas and faba beans, in future no postemergence agents:
 - **Bentazon:** no reregistration
 - **Prosulfocarb, Pendimethalin, Aclonifen:** reregistration uncertain
 - **Clomazone:** registration with high restrictions

- **Insecticides:**
 - Pirimicarb:** no reregistration in Grain Legumes - no effective instrument to control *Aphis fabae* (Aphid) in faba beans

Limitation: market for conventional farming

- Weak competitiveness
- Low market prices (often below the feed value)
- No sufficient mass for special market segments
- Uncertain knowledge about application possibilities
- Soy is standard, quality is well known, good availability
- Missing or intransparent value chain

Recommendation for EU policy

1. Simplification and harmonisation of pesticide registration
2. Increase the weighting factor of ecological focus area for Grain Legumes up 1:1
3. Promotion of new value chains especially for innovative food
4. Incentivise the substitution of oversea soy by use of Grain Legumes from the EU

Thank you for your attention!

