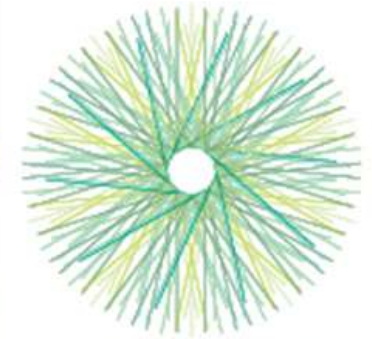


# Report on mini-paper EIP-FG Permanent grassland „Increase quality – quantity Functional Group diversification”

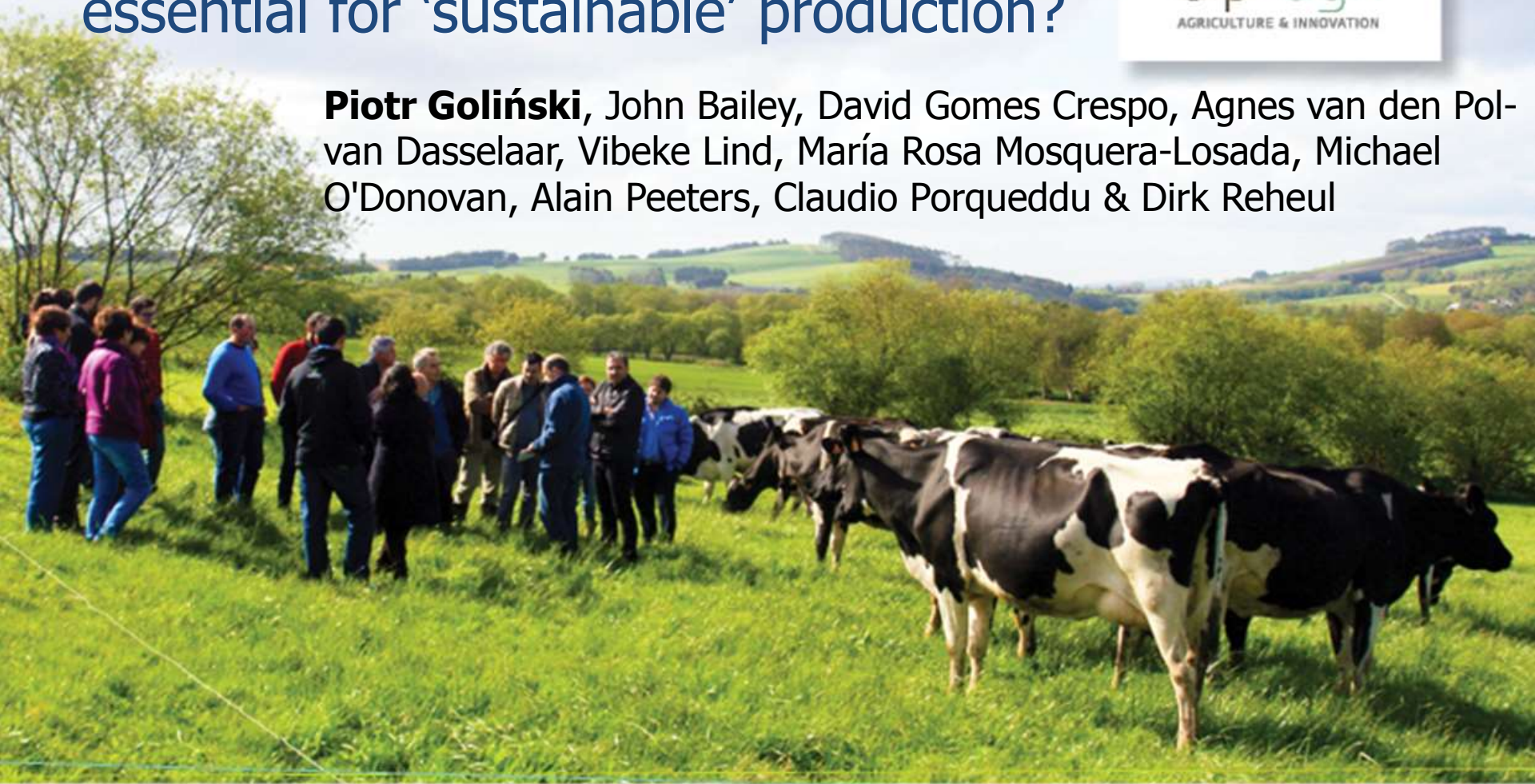
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Why increased functional group diversification within grassland is essential for 'sustainable' production?

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# Introduction



- Increased functional group diversity of sward correlates with increased stability and productivity of grassland
- Increasing functional diversity decreases the risk of invasion by undesired species
- Benefits concerning functional group diversity on grassland can be obtained by appropriate composition of grasses, legumes, some herbs and in silvopastoral vegetation - trees.
- Multi-species swards resulted potential higher spatial heterogeneity of biomass, sward quality and forage intake
- Grass-legume mixtures enhance yield of total nitrogen and uptake from symbiotic N<sub>2</sub> fixation

# Introduction



- In productive grassland systems the positive diversity effect could be obtained from a mixture of just a few species, well adapted to the environmental conditions; mixed pasture sward with legumes instead of monoculture of ryegrass increases both productivity per unit of hectare and extend the grazing season
- In pastoral farming systems of the Mediterranean basin the maintenance of a high level of inter and intra-specific diversity (e.g. BLRSPP) is essential to achieve satisfactory and persistent sward

# Research projects



- COST Action 852
- LINK Project LK0638
- Forbioben
- Multisward
- Permed
- Agforward

# Opportunities for uptake by farmers



- Use of multi-species mixtures for grassland establishment and renovation
- Use of high quality and/or phenologically different grass cultivars in seeds mixtures
- Use of effective and ecologically friendly methods of sward renovation
- Use of soil analysis to accurately determine the content of nutrients in the soil
- Optimum use of organic and mineral fertilizers
- Optimize the cutting or grazing time and regime in regard to forage quality improvement

# Potential innovative actions



- Knowledge transfer to farmers about grassland management focusing on increased functional group diversification by using innovative information tools
- Adopt a rational plan of soil fertilization/amendments according to soil nutrients content and dynamics to adequately supply nutrient to grasslands
- Provide the farmers with information about potential forage quality by means of user-friendly, low-cost, ICT-based tools

# Research needs



- Monitor forage status of grassland by remote sensing
- Compose of seed mixtures for each soil/climate condition by using functional groups principle
- Evaluate of entries of pasture plants for breeding and selection new genotypes
- Enhance N fixation and phosphate availability for grasslands by improvement of soil/plant microbiology (inoculants)
- Manage of legumes under grazing for its better persistence
- Develop simple tools to fertilize and amend of pasture
- Develop new solutions for mechanical weed control in grassland sward



# Grazing of dairy cows in Poland – good example

- Large-area farm Juchowo in middle part of Pomerania
- Biodynamic-organic system of feed production (multi-species sward with high share of legumes, no mineral fertilization)
- Rotation pasture, irrigated and regularly renewed every 3-4 years
- 360 dairy cows (HF „grazing type” and brown swiss) grazed the pasture sward from end of April to half of October and feeded by high quality hay in winter, addition a few concentrates from own sources)
- Average milk yield ca. 6500 kg per cow

# Multi-species pasture sward sown every 3-4 years





# Irrigation of the pasture according to water needs





# Grazing of the dairy cows on the pasture





# Supplementation of the grazed sward by hay





The grazing of dairy cows in Poland has not perished yet

