

# **PROTEIN AND NITROGEN: A KEY CHALLENGE FOR SUSTAINABLE BIOECONOMY AND CLIMATE CHANGE**

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The overall worldwide analysis of nitrogen use and protein production shows its complexity, the openness of this nutriment cycle and the numerous sources of environmental impacts as well as the various levers to improve the situation.

The presentation will more particularly investigate:

- the possibilities provided by recoupling plant and animal productions;
- the possible modifications of plant productions, with the role of forage and grain legumes, the opportunities offered by crop mixtures and relay-cropping and also the options of living mulchs and companion crops. Incidences on plant genetics, agronomy and biocontrol will be discussed. The options for further improving the Land Equivalent Ratio will be discussed as well as the relationship between crop diversification, reduction of pesticide use and positive impact on biodiversity;
- the transition in human diets with lower share of animal proteins and their consequences on the global equilibrium;
- the possibility to relieve the strong lock-in situations of the agri-food systems. Lessons provided by Living Labs and open innovation will be discussed as options for transformation of agri-food systems.