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SYNERGY: A model to assess the economic and environmental impacts of increasing regional protein self-sufficiency



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TERUnic Project

« Territory Economical, the Right Understanding »

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Introduction	Objective
<p>The European Union relies on imports to feed livestock</p> <p>➔ the 2014 CAP aims at improving protein self-sufficiency for feed by developing the production of legumes</p>	<p>To implement a bio-economic model assessing environmental and economic impacts of increased protein self-sufficiency through legume development</p>

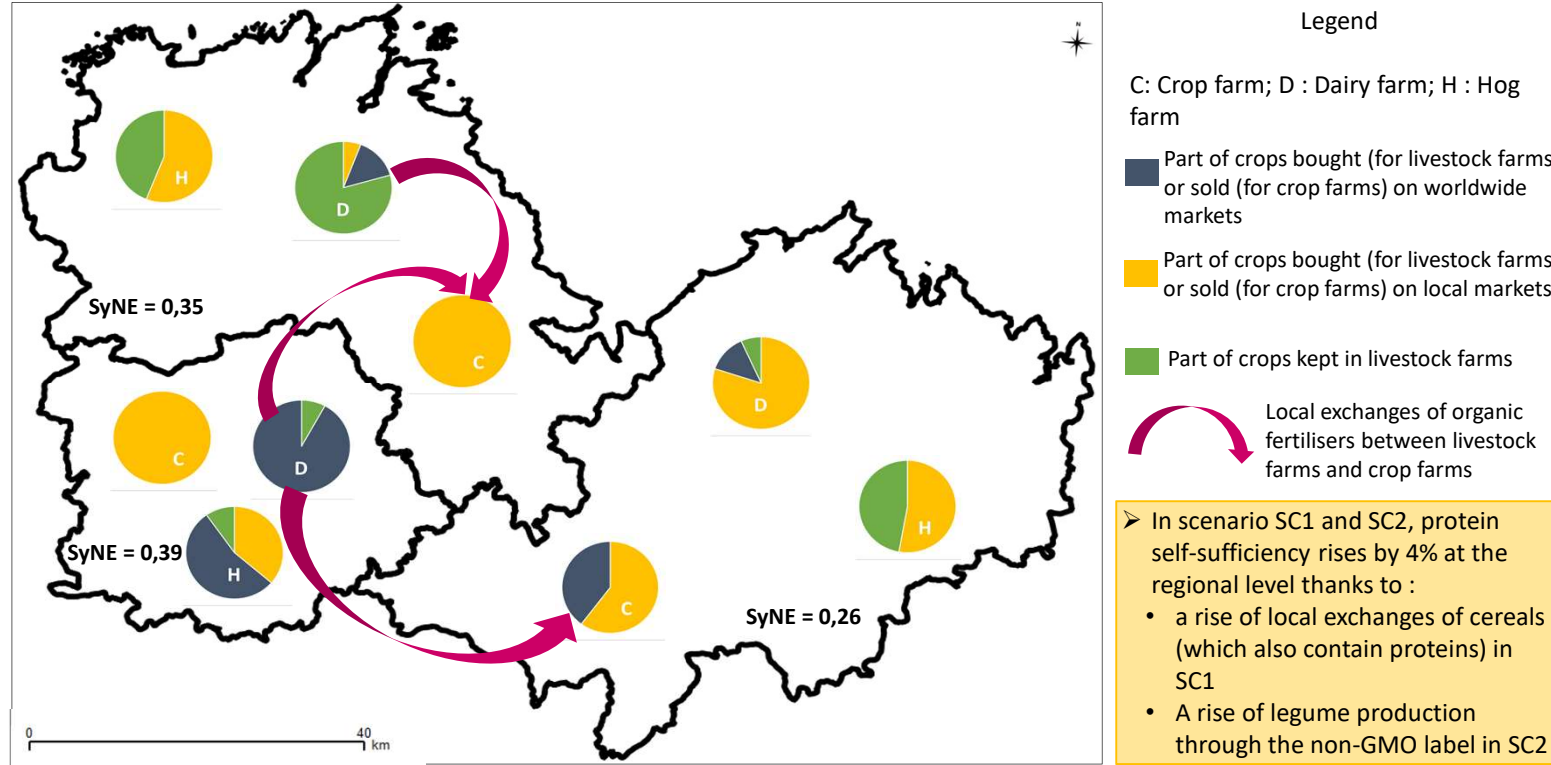
Main hypothesis

Complementarity among farms represents a lever to increase protein self-sufficiency at regional level through local exchanges

➔ Local exchanges of organic fertilisers and crops between farms ➔

Method : the bio-economic model SYNERGY	Distinctive features
	<ul style="list-style-type: none"> • Optimization model (maximizing regional income) • Different types of farms : dairy, hog and crop farms • Exchanges of crops and organic fertilisers • 3 types of outputs at farm and regional levels: <ul style="list-style-type: none"> ○ Assessment of protein self-sufficiency in feed ○ Economic assessment ○ Environmental assessment • 3 scenarios <ul style="list-style-type: none"> ○ Baseline (B) ○ With local exchanges (SC1) ○ With local exchanges and certification on GMO-free products (SC2) • N-related indicators based on (Godinot et al., 2014) <ul style="list-style-type: none"> ○ SyNE (System N Efficiency) ○ SyNB (System N Balance)
Data	
<p>Different types of data are used to build the model:</p> <p>Public statistics (2013-2017); Technical Institutes (IDELE, IFIP); Extension services in Brittany; COMIFER</p>	

Preliminary Results



Stylized representation of the outlets of crops (in tons) in farms simulated by SYNERGY in the scenario SC2 in a region of Western France (Côtes d'Armor). Exchanges between livestock farms are not represented