



Determinants of vulnerability in mixed-crop-livestock farming systems - a 14 years retrospective A focus on results

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INTERNATIONAL CONFERENCE
Coping with risks in agriculture: What challenges and prospects?

**Determinants of vulnerability in mixed-crop-livestock
farming systems - a 14 years retrospective**
A focus on results

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Objective

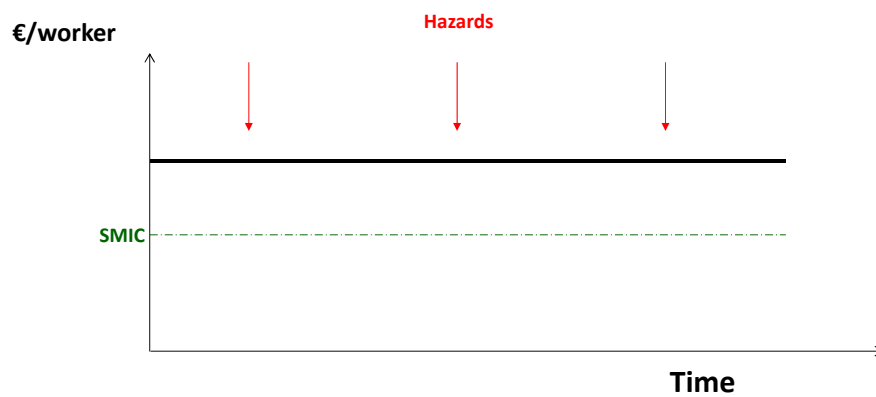
To reduce economic vulnerability of farming systems

→ Define & measure vulnerability

→ Identify the explaining factors

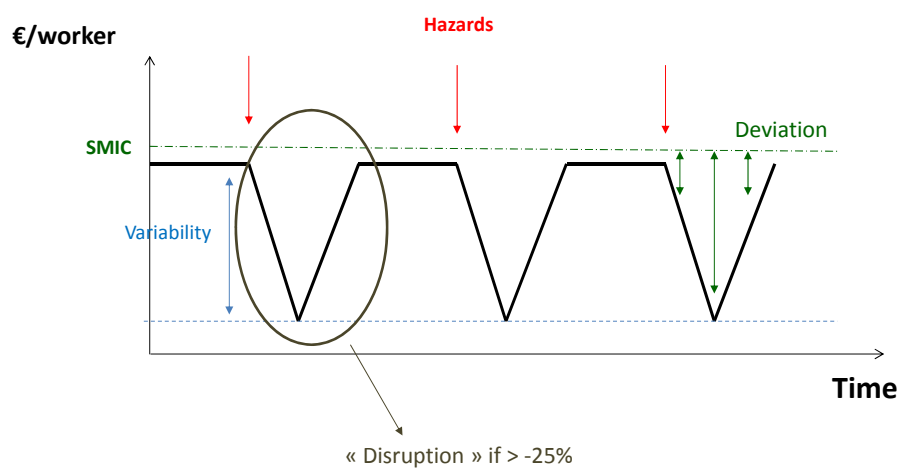
Definition

Example of non-vulnerable system



Definition

Example of vulnerable system



Definition

€/worker	Variability	Comparison with SMIC	Number of disruptions
LOW VULNERABILITY	Low	>>	Low (±3)
MODERATE VULNERABILITY	Intermediate	>	High (±5)
HIGH VULNERABILITY	High	<<	High (±5)

5

Data

Constant sample of 104 mixed crop-livestock farms containing

- structural,
- economic and
- organizational data

for a **14-year period** (2001-2014)



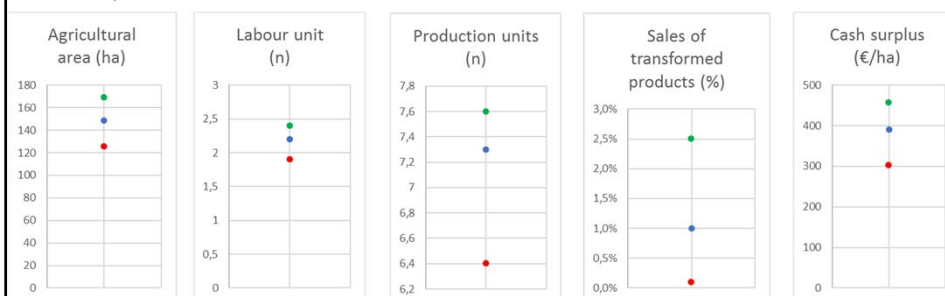
DATA Sources Farm Accountancy Data Network (FADN); Agreste.

Results : How to move toward less vulnerability?

1. Insights from farmers' decisions analysis



More diversification on a larger area, implying more labour units



Low vulnerable systems [n = 420]

Moderate vulnerable systems [n = 952]

High vulnerable systems [n = 84]

Results : How to move toward less vulnerability?

1. Insights from farmers' decisions analysis

Low and moderate vulnerability may also be distinguished by the management of their intermediate consumptions



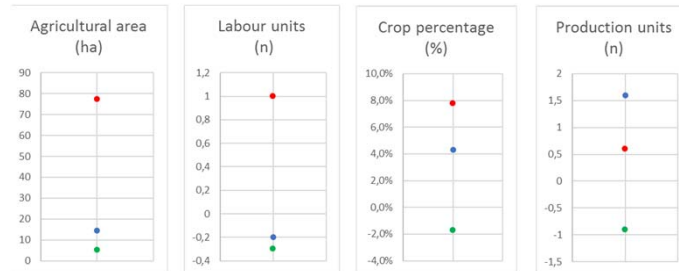
A lower vulnerability goes hand in hand with
lower energy, irrigation water and feed concentrates consumptions

Through a lower stocking rate
despite a higher flock size

Results : How to move toward less vulnerability?

2. Insights from production strategy evolution

Identification of three profiles “No evolution”, “Moderate evolution”, “High evolution”



Results : How to move toward less vulnerability?

2. Insights from production strategy evolution

- 54% of low vulnerable systems were already “adapted”
⇒ Low vulnerable farming systems with the profiles “No evolution”
- 24% of the most vulnerable systems have shown adaptive capacity but not sufficiently to be considered as « low vulnerable » farming systems
⇒ Vulnerable farming systems with the profiles “Moderate evolution”, “High evolution”



Production strategy evolution is not obligatory to be low vulnerable across years, BUT may be obligatory for some non-adapted systems

Results : How to move toward less vulnerability?

3. Insights from tactical adjustments analysis

Tactical adjustments : Identification of five profiles

- Of which 4 with tactical adjustments, based on
 - Self-consumption
 - Stocking rate & irrigation
 - Fertilizers and seeds consumption
 - Feed concentrates consumption
 - Of which 1 without tactical adjustments
- « Flexible » farming systems
 61.7% have a moderate to high vulnerability level
- « Rigid » farming systems
 67.2% have a moderate to high vulnerability level



Low vulnerable farming systems apply to both “rigid” and “flexible” farming systems

Discussion & Conclusion

→ Method : Perspectives for research and operational projects (farm advisers, etc.)

- **Not focused** on one specific external stressor, but on all hazards that occurred during a given period of time
- **Focused** on economic vulnerability, considering the farming system as a whole
- Consideration of “static” and “dynamic” factors

→ To be tested on other farming systems (specialized farms, etc.)