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Europe's ambitious pesticide policy and its impact on agriculture and food systems

Webinar: The EU vision on sustainability in agriculture. April 28, 2025

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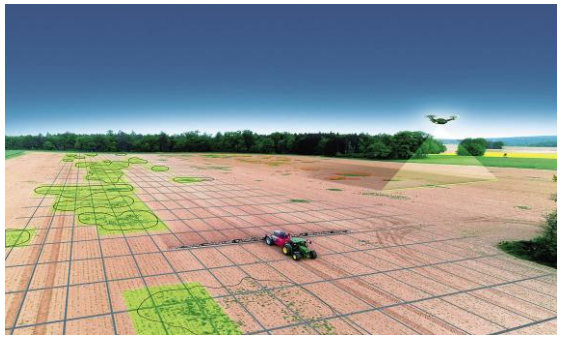
AECP

Pesticide risk reduction requires system change

- Crop protection crucial for food security and economic viability (Möhring et al. 2020, Savary et al. 2019)
- Pesticide use has negative impacts on the environment, biodiversity and human health (Kim et al. 2017, Tang et al. 2021)

→ Policy targets (Finger 2021, Schneider et al. 2023)

→ Fundamental changes along the **efficiency-substitution-redesign** gradient required (Finger 2024)



Efficiency, e.g. precision farming

Substitution, e.g. mechanical weed control

Substitution, e.g. diversification of landscapes and use of resistant varieties (example Lenz, Switzerland)

Finger, R. (2021). No pesticide free Switzerland. *Nature Plants* 7, 1324–1325
Finger, R., 2023. Digital innovations for sustainable and resilient agricultural systems. *European Review of Agricultural Economics*, *50*(4), pp.1277-1309.
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Möhring, N., Ingold, K., Kudsk, P., Martin-Laurent, F., Niggli, U., Siegrist, M., Studer, B., Walter, A. and Finger, R., 2020. Pathways for advancing pesticide policies. *Nature Food*, *1*(9), pp.535-540.
Schneider, K., Barreiro-Hurle, J., & Rodriguez-Cerezo, E. (2023). Pesticide reduction amidst food and feed security concerns in Europe. *Nature Food*, *4*(9), 746-750.
Savary, S., Willocquet, L., Pethybridge, S. J., Esker, P., McRoberts, N., & Nelson, A. (2019). The global burden of pathogens and pests on major food crops. *Nature ecology & evolution*, *3*(3), 430.
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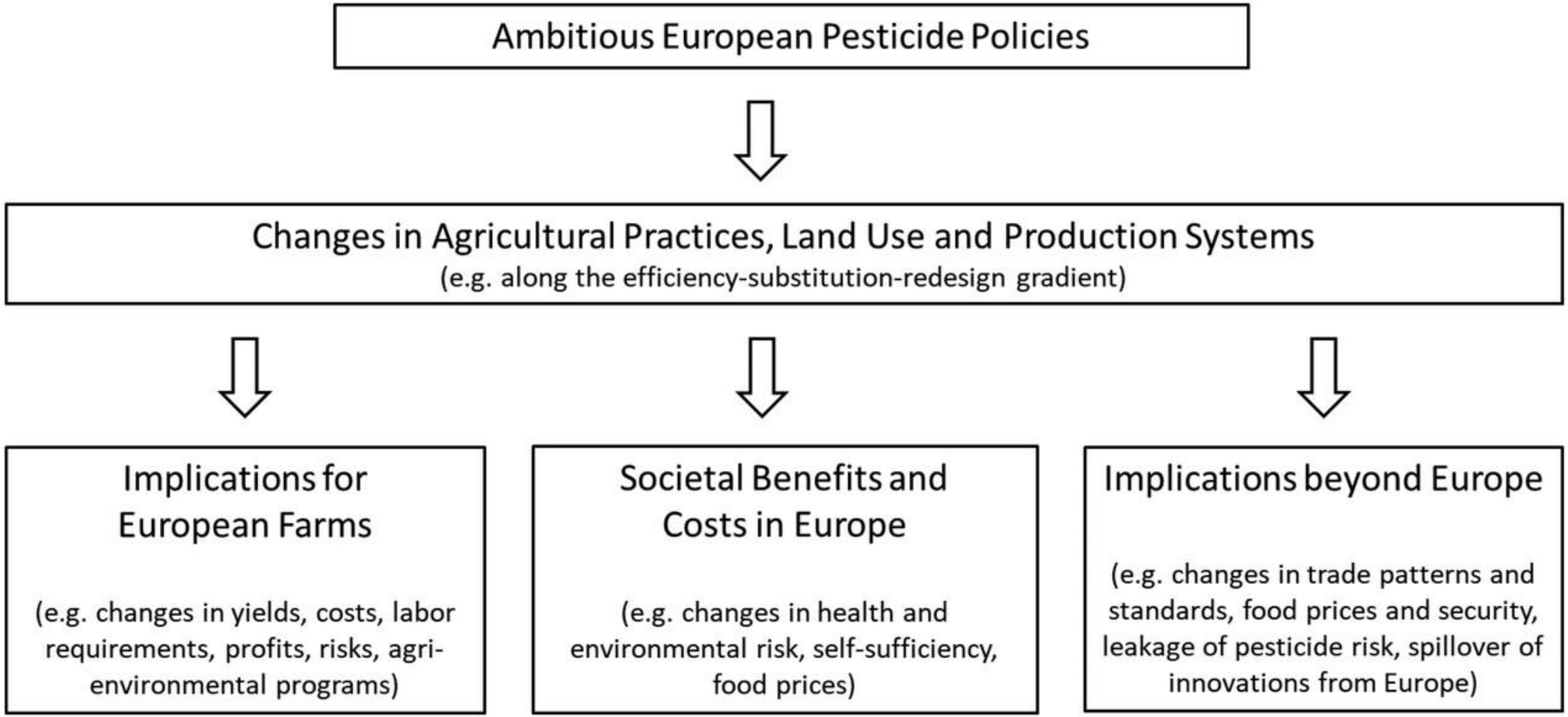
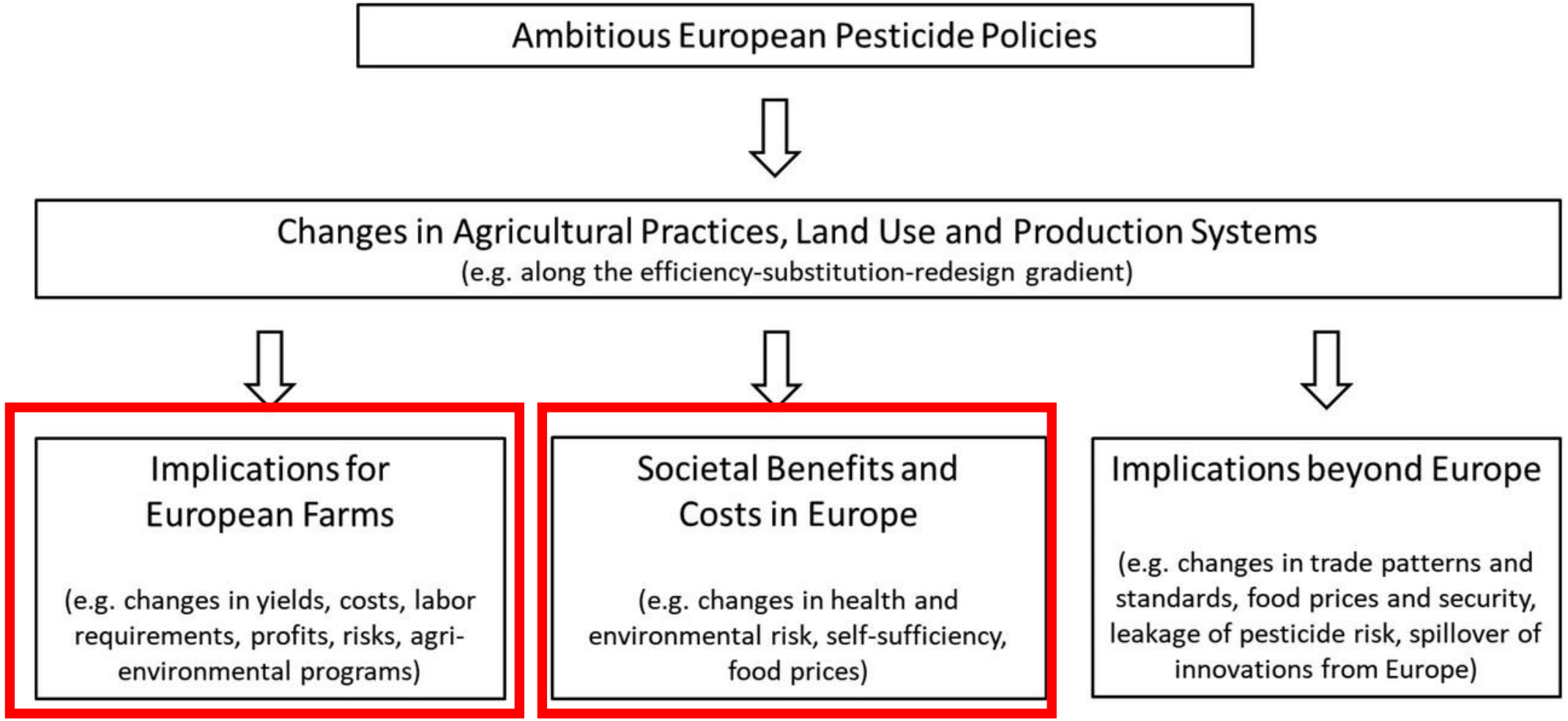


Finger, R., 2024. Europe's ambitious pesticide policy and its impact on agriculture and food systems. *Agricultural Economics*, *55*(2), pp.265-269.



Finger, R., 2024. Europe's ambitious pesticide policy and its impact on agriculture and food systems. *Agricultural Economics*, *55*(2), pp.265-269.

Stricter polices bring societal benefits and costs

- Reduced external costs (environment, human health)
  - Possible negative effects (e.g. less soil conservation)

- Reduced food production
  - Barreiro-Hurle et al. (2021): EU pesticide targets would imply -10% yields
  - Bremmer et al. (2021): losses between 0% (e.g., for cereals in Finland) to up to 30% (e.g., for grapes and olives in France and Italy)

- Effects on food prices
  - Possible lower extrinsic quality (e.g. visual appeal, Zachmann et al. 2024)
  - Higher intrinsic quality (Grebitus and Van Loo, 2022)

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Barreiro Hurle, J., et al. 2021. *Modelling environmental and climate ambition in the agricultural sector with the CAPRI model* (No. JRC121368). Joint Research Centre.
Bremmer, et al. 2021. *Impact assessment of EC 2030 Green Deal Targets for sustainable crop production* (No. 2021-150). Wageningen Economic Research.
Grebitus, C., Van Loo, E.J., 2022. Relationship between cognitive and affective processes, and willingness to pay for pesticide-free and GMO-free labeling. *Agricultural Economics*, *53*(3), 407-421.
Zachmann, L., McCallum, C. and Finger, R., 2024. Spraying for the beauty: Pesticide use for visual appearance in apple production. *Agricultural Economics*, *55*(4), pp.621-638.

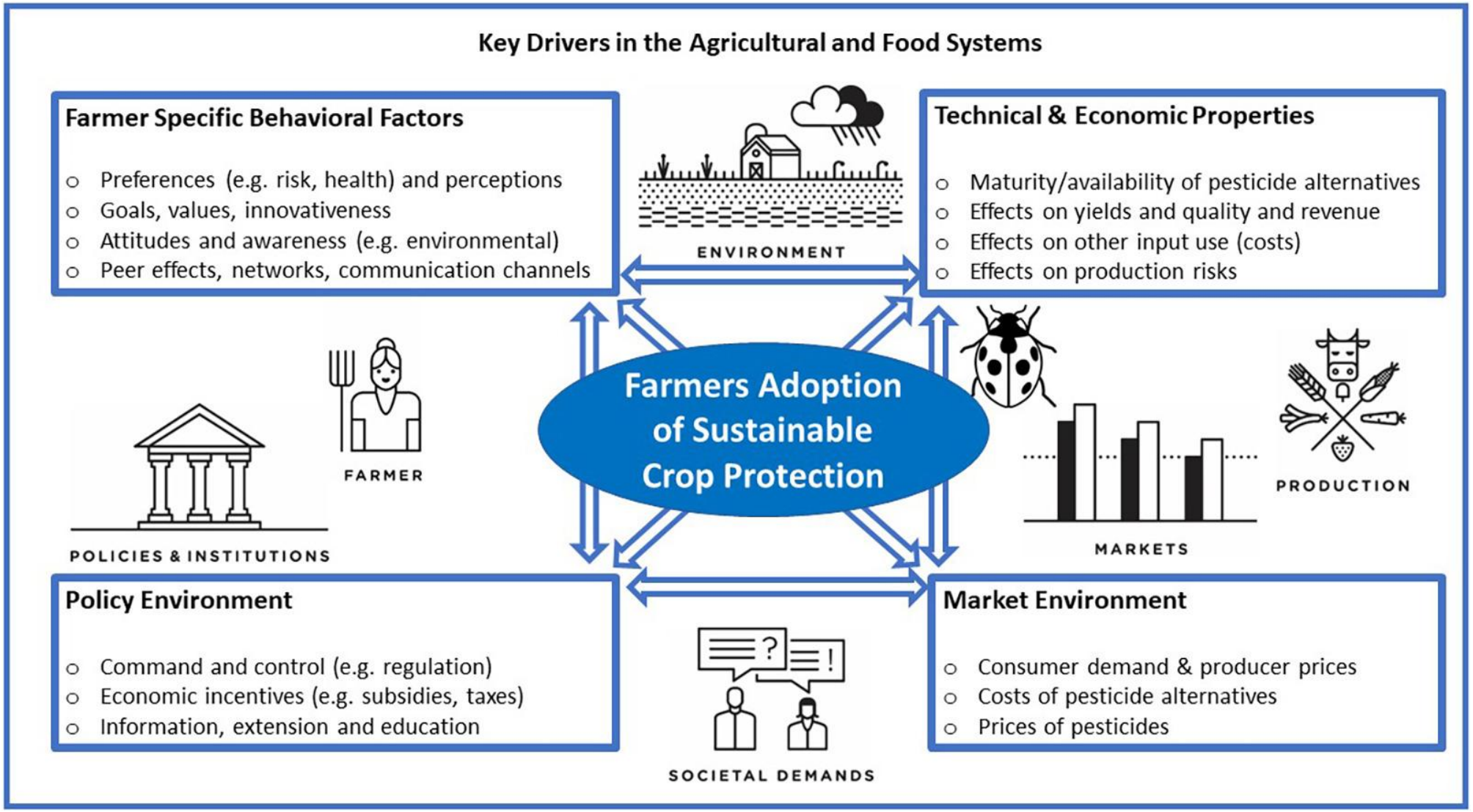
Stricter polices are affecting farms

- Lower and more volatile yields and higher costs reduce economic viability
- Impact on farm labor: changing the quantity (e.g., no herbicides require more labor) and skills required (e.g., if new technologies are used)
- Possible public and private compensation for farmers
  - Agri-environmental schemes for reducing or avoiding pesticide use (e.g. CH and GER, Mack et al., 2023; Runge et al., 2022).
  - Price markups and label programs (e.g. Finger and Möhring 2024)
  - Question on scalability

Signalling of pesticide-free production systems at the farm and product levels in Switzerland and Germany (Finger and Möhring 2024)

Finger, R. and Möhring, N., 2024. The emergence of pesticide-free crop production systems in Europe. *Nature Plants*, *10*(3), pp.360-366.
Mack, G., Finger, R., Ammann, J. and El Benni, N., 2023. Modelling policies towards pesticide-free agricultural production systems. *Agricultural Systems*, *207*, p.103642.
Runge, T., et al.., 2022. Implementation of eco-schemes in fifteen European Union Member States. *EuroChoices*, *21*(2), pp.19-27.

Various factors enabling/limiting sustainable crop protection by farmers



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Finger, R., et al. (2024). Towards sustainable crop protection in agriculture: A framework for research and policy. *Agricultural Systems*, *219*, 104037.

Thank you!

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