

Farmers' biodiversity-related decision-making: Explaining stakeholder roles by means of a Perception Matrix

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Introduction


Implementing more biodiversity-friendly farm management practices can contribute ...

... to reduce the ongoing loss of biodiversity [1]. To steer farmers towards the voluntary implementation of more biodiversity-friendly management practices through pro-biodiversity initiatives, a profound knowledge of their decision-making is required. Private, public and community stakeholders such as input suppliers, advisory services or neighbours are shown to influence farmers' decisions, e.g. on the level of fertilizer/pesticide input [2, 3] or adaption of sustainable soil innovations [4]. Still, little is known on the role of these stakeholders in farmers' decision-making regarding biodiversity management ("biodivDM").

Research aims

Our goal is to understand and compare stakeholders' roles in biodivDM in our study area ...

- ... by eliciting farmers' **general and biodiversity-related perceptions** towards multiple private, public and community stakeholders.
- ... by exploring how farmers assess these **stakeholders' effect** on their biodivDM.
- ... overall aiming to **identify highly influential stakeholders** who, when involved, might help to improve future pro-biodiversity initiative design.



**Study area:
Experimental Biodiversity Areas in 9 countries**
Sweden, Estonia, Spain, Portugal, United Kingdom, Switzerland, Romania, the Netherlands, Hungary
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EuroGeographics for the administrative boundaries.

Methods

We applied mixed methods ...

- ... to collect primary data through **45 farmer interviews:**
 - **Perception Matrix** to elicit farmers' perceptions: adapted from Moon et al. [5] via multi-actor approach; 12 generic *stakeholders* to be quantitatively rated against 8 *perception statements* worded as 5-point scales
 - **Likert Scale** to explore intensity & direction (+/-) of effect
 - **qualitative follow-up questions** for context
- ... to analyse collected data:
 - descriptive statistics, randomization test, content analysis
 - **differences/similarities** of perception & effect ratings bw. stakeholders and groups of farmers (clustered nationally/socio-demographically)
 - **correlations** bw. perception & effect ratings
 - **qualitative connection** of findings

Perception statements as 5-point scales
(SH₁₋₁₂ stands for the 12 stakeholders included, see below) © The authors, 2022.

ID	1-point end (negative)	SH ₁₋₁₂	5-point end (positive)
B1	biodiversity protection in agriculture is not their goal at all	...	biodiversity protection in agriculture is a major goal
B2	doesn't/don't take on responsibility with regards to biodiversity	...	takes(s) on responsibility with regards to biodiversity
B3	isn't/aren't objective about biodiversity	...	is/are objective about biodiversity
B4	doesn't/don't treat me as a partner with regards to biodiversity	...	treat(s) me as a partner with regards to biodiversity
G1	doesn't/don't understand farmers' reality	...	understand(s) farmers' reality
G2	isn't/aren't trustworthy	...	is/are trustworthy
G3	hinder(s) me from farming in a future-proof way	...	enable(s) me to farm in a future-proof way
G4	isn't/aren't reliable with regards to their medium- and/or long-term behaviour	...	is/are reliable with regards to their medium- and/or long-term behaviour

Preliminary results & conclusions

We found ...

... first significant **differences** bw. certain stakeholders in both effect and perception ratings. However, the group of farm input suppliers was broadly rated **similarly**.

- ➔ Different stakeholder (groups) have different roles in biodivDM.
- ... only **positive** sign. correlations bw. perception & effect ratings.
- Well-perceived stakeholders might have stronger effects on biodivDM. Data will be clustered for further analysis to test this first conclusion, identify well-perceived stakeholders for different farmer groups & consider national variation in stakeholders' functions.
- ➔ ... that correlations bw. effect & perception ratings **depend** on the stakeholder in question.
- Different stakeholders could affect biodivDM for different reasons. Additional qualitative & quantitative analysis will be run to explore these reasons.

Average perception and effect ratings across countries
1=lowest, 5=highest score // green=highest/red=lowest rating per column, B1-G4 refer to perception statements (see above) © The authors, 2022.

Stakeholders ₁₋₁₂	Perceptions (Perception Matrix)			Effects Likert scale
	biodiversity-related statements (B1-B4)	general statements (G1-G4)	overall statements (B1-G4)	
Government	2.62	2.47	2.54	3.64
Researchers	3.94	3.74	3.84	4.23
Agr. advisors	3.12	3.90	3.51	4
Other farmers	2.85	3.85	3.45	3.65
Prod. organizations	3.27	3.95	3.61	3.81
Fertilizer suppliers	2.20	3.37	2.77	3.08
Crop protection suppliers	2.36	3.32	2.82	3.11
Machinery suppliers	2.23	3.41	2.82	3.24
Bulk buyers	2.96	3.20	3.08	3.59
End-consumers	3.21	3.27	3.24	3.98
People in general	2.71	2.91	2.81	3.68
Soc. environment	3.44	3.82	3.63	3.89

