Farming with Alternative Pollinators (FAP) benefits pollinators, natural enemies, and yields, and offers transformative change to agriculture

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Agroecology as costly add-on is not scalable to LIC and MIC

State of the Art of pollinator protection:

mostly reward-based wildflower strips (WFS)

Conventional agriculture, slightly & costly enhanced for pollinators

Farmers are paid service providers only

Despite 4 decades of rewards for WFS: pollinator decline continues (Hallmann et al. 2017; Powney et al. 2019)

Photo: Nicolas Vereecken

world view

Credit: Farkhod Khamraev

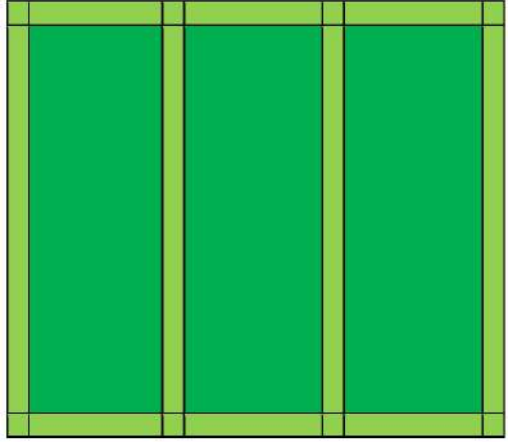
Pollinator protection strategies must be feasible for all nations

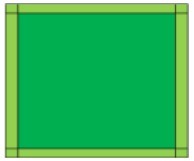
By focusing on farmers, policymakers and local communities, a new approach to protect pollinators can become scalable in low-income countries, argues Stefanie Christmann.

Nature E&E 2020

Farming with Alternative Pollinators (FAP)

Christmann and Aw-Hassan 2012; Christmann et al. 2017; Christmann 2019; Christmann et al. 2021





Target group: farmers

- Raise their knowledge on pollinators
- Motivate them for habitat enhancement by higher income

FAP fields

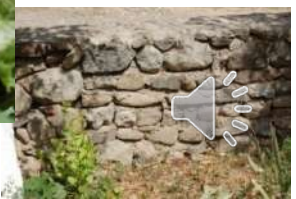
- Main crop on 75% of the field
- Habitat enhancement on 25% of the field
  - * Three-season-forage buffets by ***marketable*** habitat enhancement plants
  - * Shelter (wind, shadow) by crops
  - * Nesting support out of local materials
  - * Water

Control fields

Main crop on 100 % of the field

Assess:

- diversity and abundance of pollinators, natural enemies and pests
- Net income per surface



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Farming with Alternative Pollinators benefits pollinators, natural enemies, and yields, and offers transformative change to agriculture

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Based on 31 trials (2018-2019) in Morocco

- 4 agro-ecosystems
- 7 main crops
- 233 farmer fields

FAP impact on

- pollinator diversity (genus level, a, b)
- Diversity of natural enemies (c, d)
- Pest diversity (e, f)

Pest abundance reduced on average by 65%

→ FAP works as nature-positive preventive pest control! (‡ seeds coated with neonicotinoids)

→reduced need for pesticides

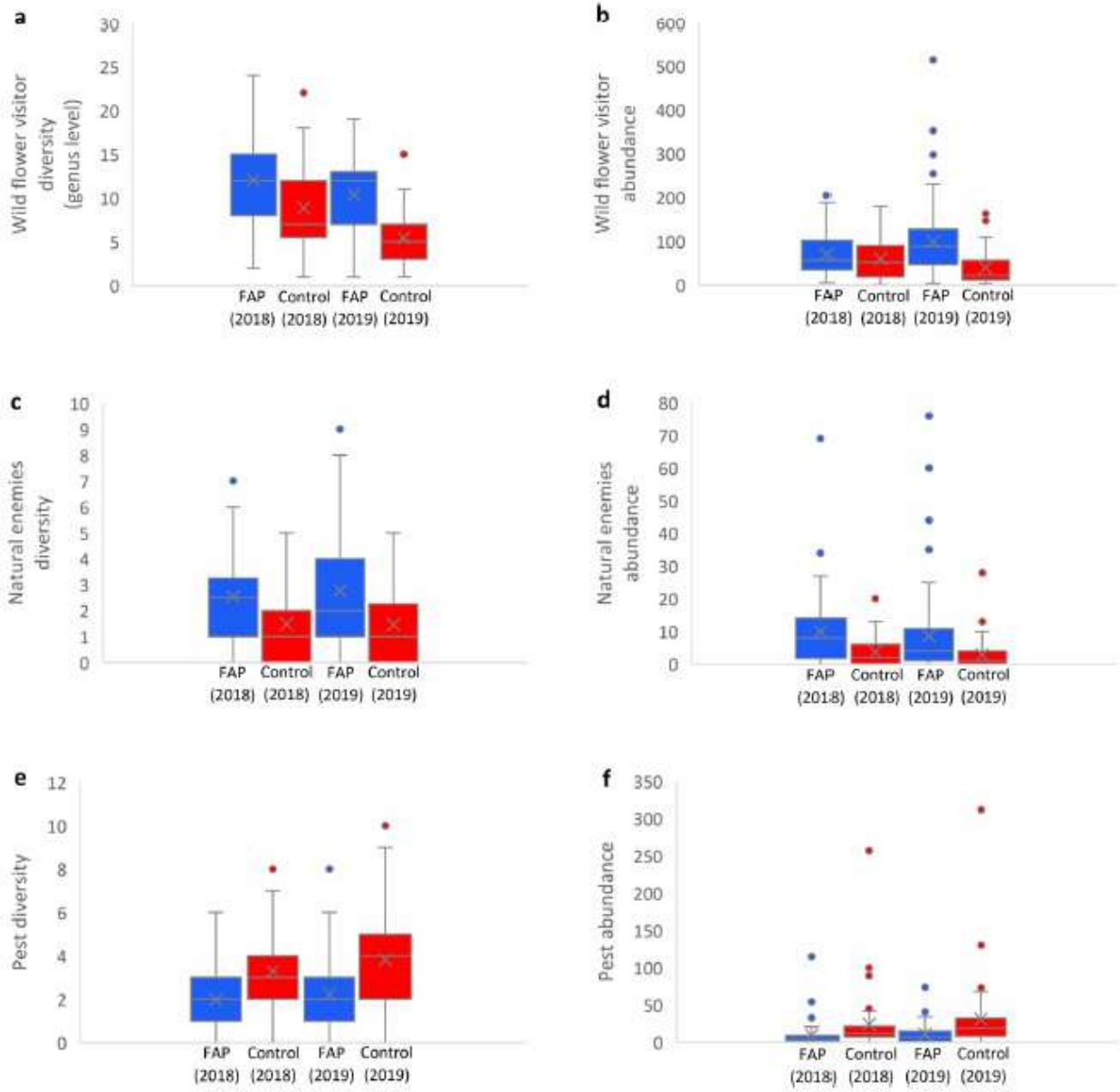
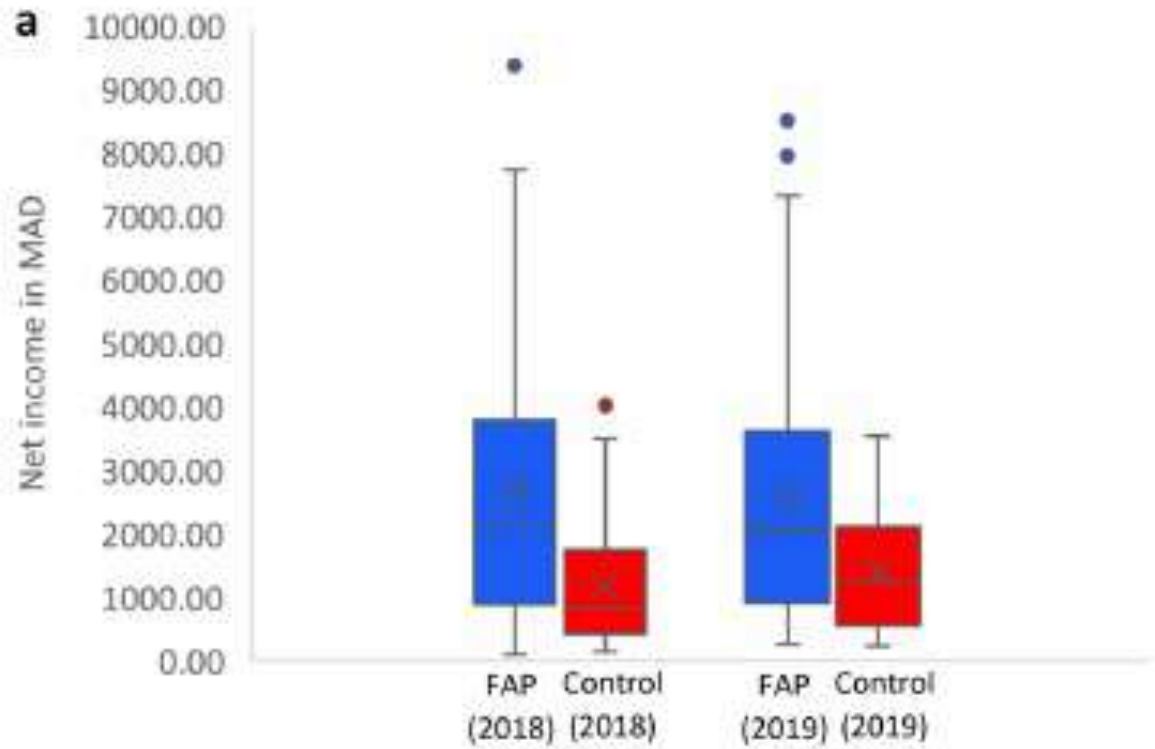


Figure 1. Average impact of Farming-with-Alternative-Pollinators on diversity and abundance of insects in 2018 and 2019; (**a**) diversity of wild flower visitors (genus level); (**b**) abundance of wild flower visitors; (**c**) diversity of natural enemies; (**d**) abundance of natural enemies; (**e**) pest diversity; (**f**) pest abundance.



Average net income increase through FAP: 121%

→ The incentive is method-inherent and performance-related

→ FAP has high potential for agri-ecological intensification and combat of malnutrition

Simulation of the potential of FAP for transformative change of agriculture (smallholders only)

Combat food insecurity by nature-friendly intensification

and

Reduce land-use change for food production

For centuries, land-use change decreases semi-natural lands and endangers biodiversity, it is overdue to bend this curve

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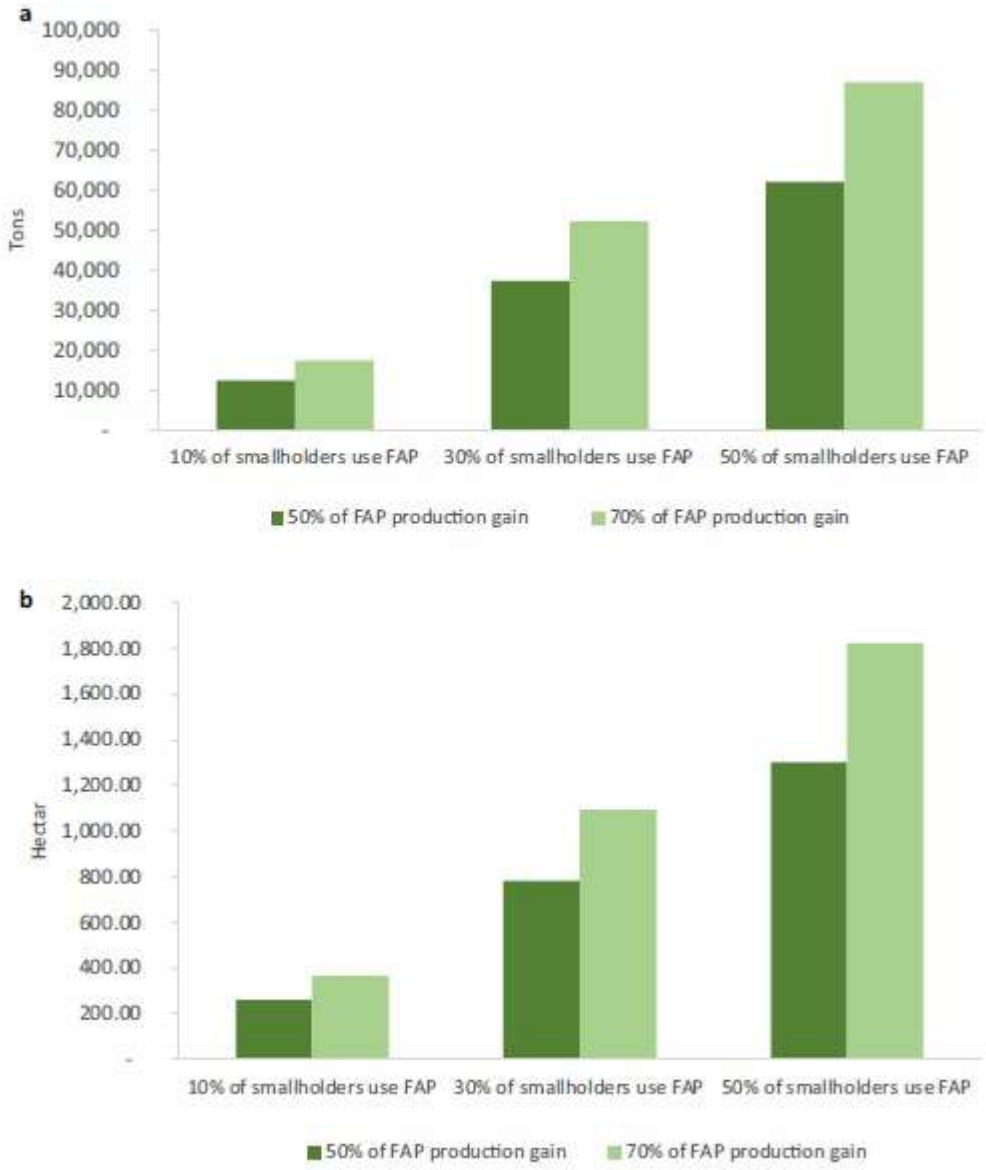

Figure 3. Simulation of potential impacts of Farming-Alternative Pollinators on food security and saving land for nature through smallholders based on 6 vegetables and Moroccan production data 2016–2017; (**a**) simulated potential increase of production; (**b**) simulated potential for land saving.

Farmer-driven pollinator protection and agroecology

Thank you!

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https://mel.cgiar.org/projects/iki-pollinators