

A smiling man in a blue jacket is standing in a field of green plants. He is holding a wooden structure made of sticks and twine. The background shows a rural landscape with trees and a small structure in the distance.

Global Opportunities and Challenges to the Uptake of Biopesticides: An Evidence Map

Joint **CABI** and **FAO** evidence synthesis

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FAO – CABI Partnership

Strengthened collaboration recognised in 2023 with an MoU focused on:

- Evidence synthesis
- Extension advisory services
- Science communication

FAO partnership award for CABI in 2024 to recognise and reward the efforts of noteworthy and effective partnerships that contribute to achieving sustainable development.

Most recently, we agreed to develop a joint **evidence synthesis** to identify global **barriers and facilitators to the uptake of biopesticides**



Rationale

Status of the biopesticide market and prospects for new bioherbicides

Pamela G Marrone ¹

Affiliations + expand

PMID: 36765405 DOI: 10.1002/ps.7403

McKinsey
& Company

Agriculture Practice

Global Farmer Insights 2024

Farmers are increasingly prioritizing productivity. A shift toward operations-focused solutions underscores a broader trend in agriculture, where efficiency and sustainability are becoming paramount.



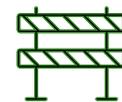
Food and Agriculture Organization of the United Nations **Pesticides use and trade** 1990–2022

Restoring functional integrity of the global production ecosystem through biological control

Kris A.G. Wyckhuys ^{a b c d} , Baogen Gu ^d, Ibtissem Ben Fekih ^e, Robert Finger ^f, Mark Kenis ^g, Yanhui Lu ^b, Sevgan Subramanian ^h, Fiona H.M. Tang ⁱ, Donald C. Weber ^j, Wei Zhang ^k, Buyung A.R. Hadi ^{d l}

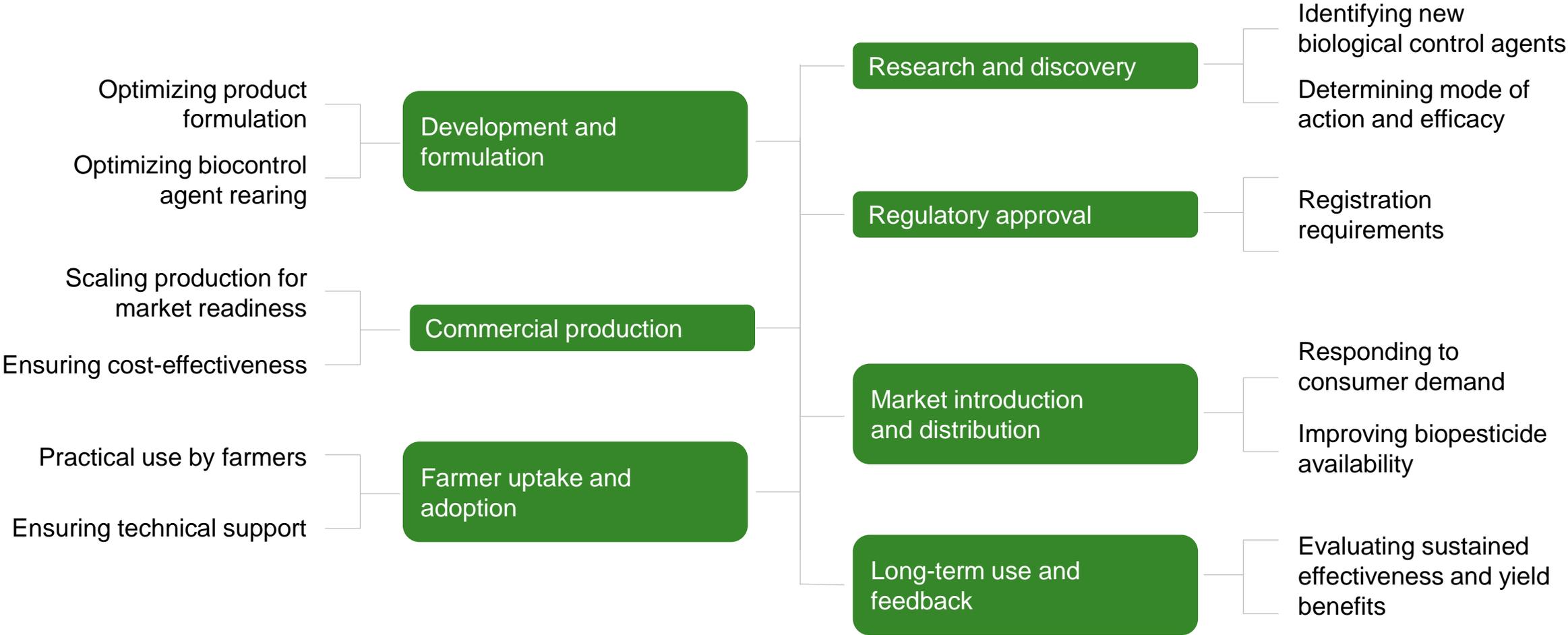


What research exists on **barriers** and **facilitators** to biopesticide uptake?



What are those **barriers** and **facilitators**?

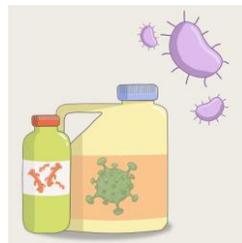
Biopesticide production and uptake pipeline





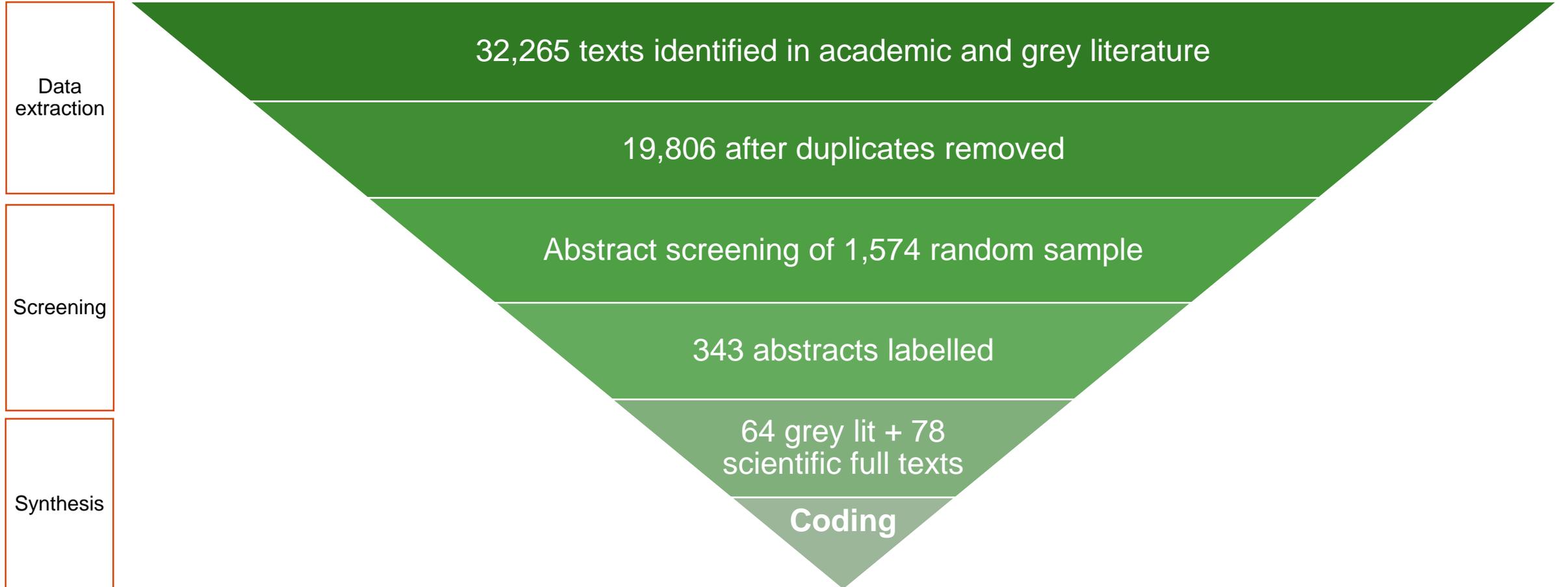
Scope of the study

- **Geographical scope:** Global
- **Timeframe:** 2016 – present; in line with the publication of the *FAO guidelines for the registration of microbial, botanical and semiochemical pest control agents* ([FAO and WHO 2017](#))
- **Population:** Biopesticides

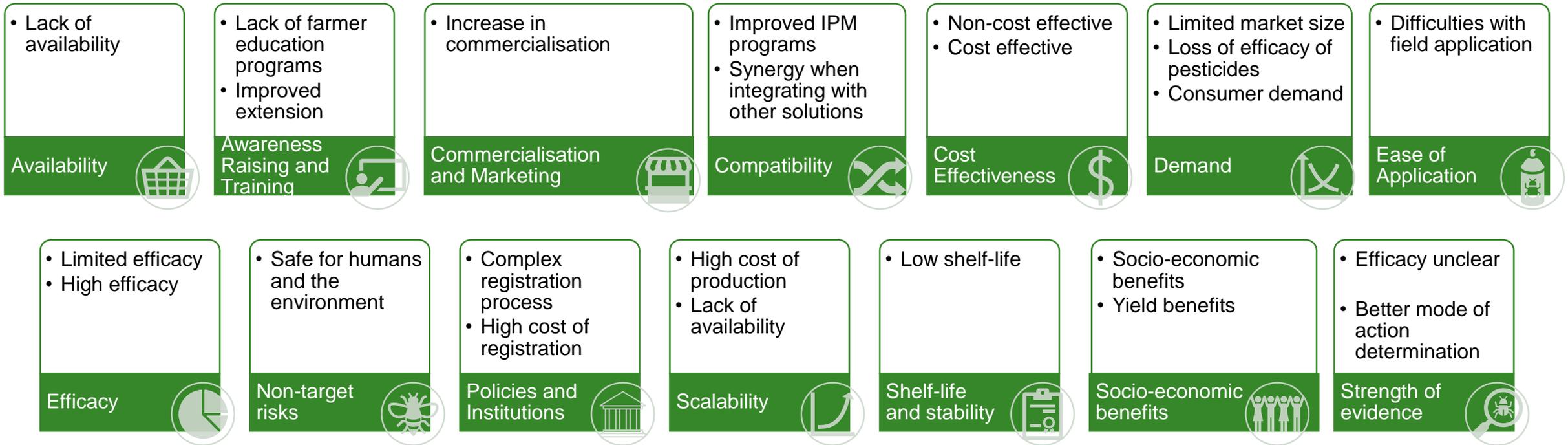


- **Phenomenon:** Contextual barriers and facilitators across stages
- **Literature type:** Academic and grey literature

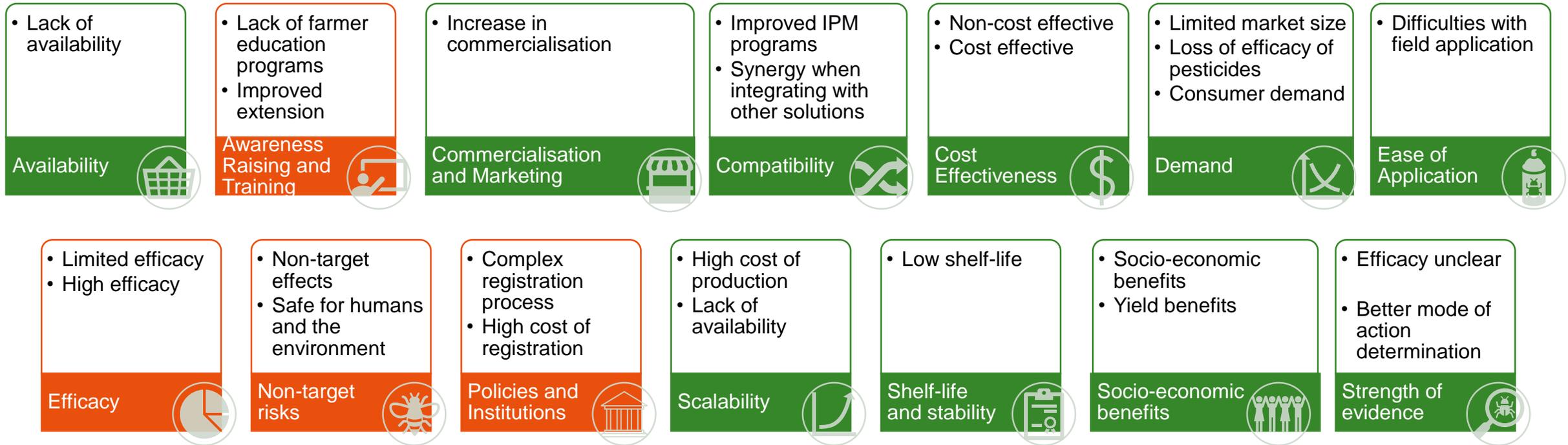
Scope and Screening



Results: Thematic classification



Results: Thematic classification



Prominent barriers and facilitators

- Lack of farmer education programs (26%)
- Lack of technical support (10%)
- Improved training and extension (24%)
- Improved farmer education programs (13%)

Awareness
Raising and
Training



- Limited efficacy (22%)
- High efficacy (39%)

Efficacy



- Non-target effects (6%)
- Safe for humans and the environment (91%)

Non-target risks



- Complex registration process (15%)
- High cost of registration (9%)
- Lack of regulatory guidelines (7%)
- Policy support and incentives (18%)

Policies and
Institutions



Take home messages

- The interplay of **barriers** and **facilitators**, shapes the biopesticide landscape and forms a **dynamic system** rather than a set of isolated challenges and opportunities
- The most prominent **facilitator** referred to biopesticides’ “**Safety for humans and the environment**”. Capitalizing on that through “**Policies and institutions**” may tip the scales of adoption
- This **evidence map** allows stakeholders to prioritize certain key barriers depending on the **geographical** and **institutional** perspective





CABI and FAO next steps

Evidence-based **policy brief** and scientific paper to provide recommendations that help:

- Develop contextual, regional **roadmaps** to guide **coordinated action**
- **Overcome** the barriers and
- **Capitalize** on identified facilitators

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