



Creating a Network of Knowledge for
biodiversity and ecosystem services

www.biodiversityknowledge.eu

Agriculture case

Coordinating knowledge on natural pest control

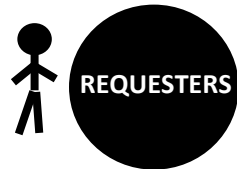
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The players



MINISTRY OF
AGRICULTURE
AUSTRIA



COLLABORATION FOR
ENVIRONMENTAL EVIDENCE



CAB Abstract, Web of Science

PRELIMINARY ASSESSMENT
OF AVAIL. KNOWLEDGE



Question from the “requesters”

Within the context of the reduction of the use of pesticides, we expect a positive feedback on return on biological control of pests resulting from a better preservation of functional biodiversity.

Is there any landscape management interventions that could sustain or improve this ecosystem service provided to agriculture?

Lack of availability of « requesters »
prevented us from narrowing the scope and
clarifying jargon (lost time/scoping)



Action plan out of the request // Scoping

FINALISED REQUEST

Which types of landscape management are effective at maintaining or increasing natural pest regulation in a context of decreased pesticides?

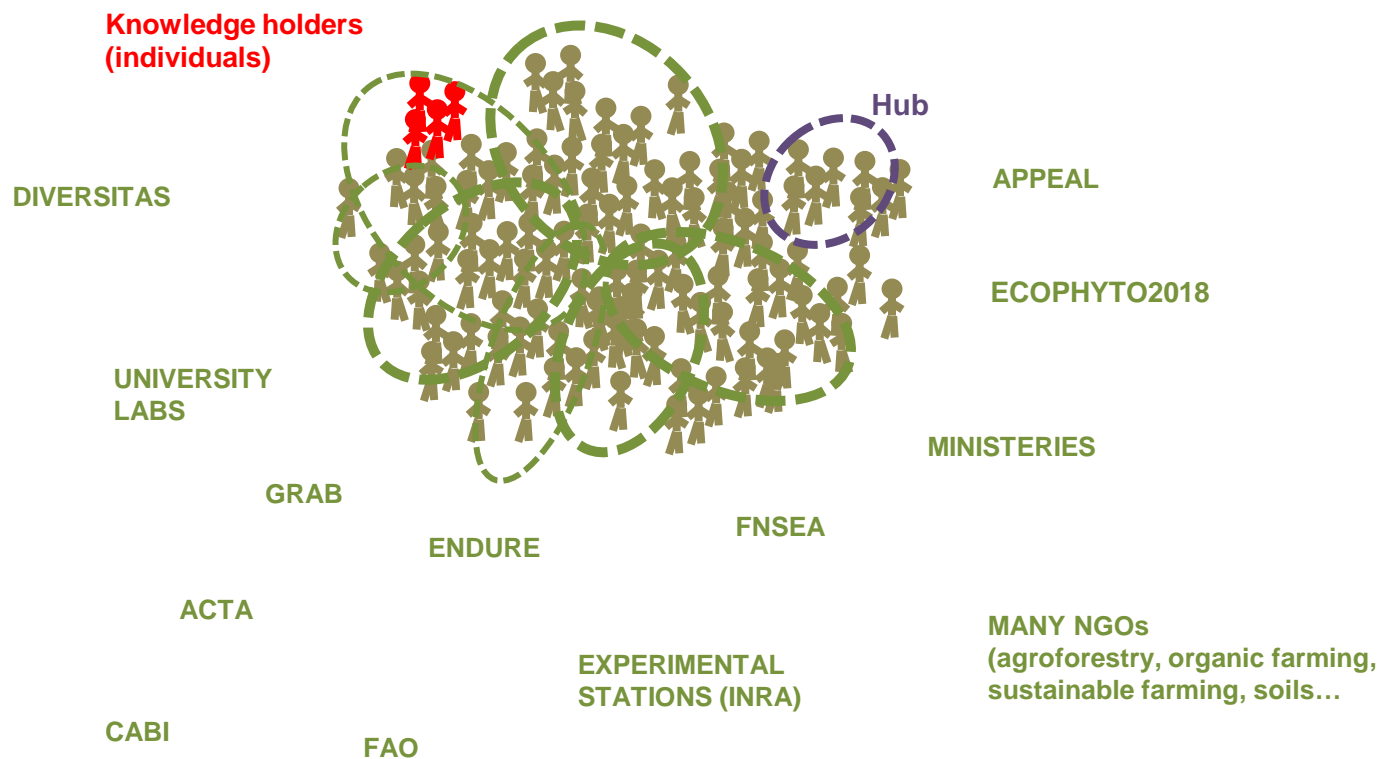
2 actions:

- List of all interventions (types of landscape/habitat management)
- Assessment of their effectiveness on natural pest control



LESSON LEARNT 1

So many knowledge holders, hubs and projects!



► **WHERE and HOW TO START?**

LESSON LEARNT 2

Mobilizing the community of knowledge holders... has been “difficult”



Call to the NoK *2 positive answers /1000*

Call to experts (individual experts) *better*

Flyer, survey, Linkedin... ?

Need a « lighthouse effect »

Need strong incentives and rewards

Scientists like meta-analyses but not synthesis



LESSON LEARNT 3

Ongoing programmes.... have not been foreseen



Articulate with them: dialogue

They had their own fixed standardised evidence-based approach

They had more resources (person/month; tools) than us

Collaboration on

- Bibliography (from FRB-INRA-EAA: 39000 ► 3939++)
- Prioritisation (Workshop Agri case study, Paris, 2013)
- Mapping (start)

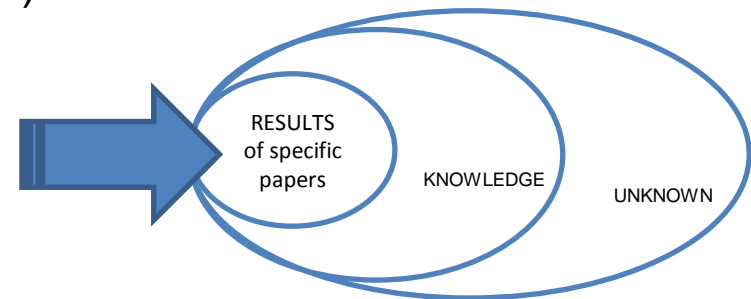


LESSON LEARNT 4

Some fast methodology are good for prelim. scoping...



- Stakeholder's consultation to get a preliminary list of interventions of interest
- Target results from highly cited papers by perusing titles of a few selected journals
- Select causal relationship between driver and response (correlative results are kept aside)



LESSON LEARNT 4

Interests vary...

Great interest for the topic

- decision-makers: want to have the whole range of options
- farmers: want to learn about interventions they do not know yet

LESSON LEARNT 5

Grey literature and local/technical knowledge...

- Difficult to collect because no (systematic) methodology
- And no easy access, low visibility
- Some knowledge holders afraid of responsibility endorsed when communicating their experience to others



Where are we now?

- Protocol reviewed
- List of interventions completed (92+)
- Relevant scientific references sorted out by intervention (3939+)
- Extraction of basic information for a subset of papers for prioritized interventions
- Synopsis of evidence ongoing (« map »)



online at <http://nercsustainablefood.com>

covers 22 of the 92 interventions we identified, including actions relating to reducing agri pollution, arable farming, perennial farming, livestock farming and farming systems in general.

covers so far 174 studies

exploring options to extend the work to cover more interventions and papers



The screenshot shows the NERC Sustainable Food Production website. At the top, there is a banner image of a golden field under a blue sky with clouds. On the left of the banner is a logo featuring a green tractor, a blue fish, and a green leaf. To the right of the logo, the text reads "NERC knowledge exchange programme" and "Sustainable Food Production". Below the banner is a navigation bar with links: Home, About, Browse Evidence, NERC Contribution, Research Programmes and Other Activities, and Publications.

On the left side of the page, there are several filter buttons: "Text", "Must contain economic info?", "Funder", "Production system", "Theme", "Action", "Synopsis", and "Country". Each button has a corresponding dropdown menu. The "Text" button is currently selected, showing a search box. The "Must contain economic info?" button has a "Yes" option selected. The "Funder" button has a dropdown menu with "Select a funder" and a downward arrow. The "Production system" button has a "More" link. The "Theme" button has a list of themes: "Agriculture & aquaculture (11)", "Invasive & other problematic (3) species & genes", and "Pollution (3)". The "Action" button has a list of actions: "Land/water management (11)", "Species management (1)", and "Livelihood, economic & other incentives (1)". The "Synopsis" button has a "Pest control (11)" option selected. The "Country" button is currently empty.

On the right side of the page, there is a list of interventions, each with a checkbox, a title, a subtitle, and a fly icon. The interventions are:

- ☐ Allow natural regeneration of ground cover beneath perennial crops
Based on: 7 studies
- ☐ Alter the timing of pesticide use
Based on: 4 studies
- ☐ Convert to organic farming
Based on: 19 studies
- ☐ Create beetle banks
Based on: 17 studies
- ☐ Delay mowing or first grazing date on grasslands
Based on: 10 studies
- ☐ Incorporate parasitism rates when setting thresholds for pesticide use
Based on: 1 study
- ☐ Leave part of the crop or pasture unharvested or uncut
Based on: 8 studies
- ☐ Plant species that compete with damaging weeds
Based on: 9 studies

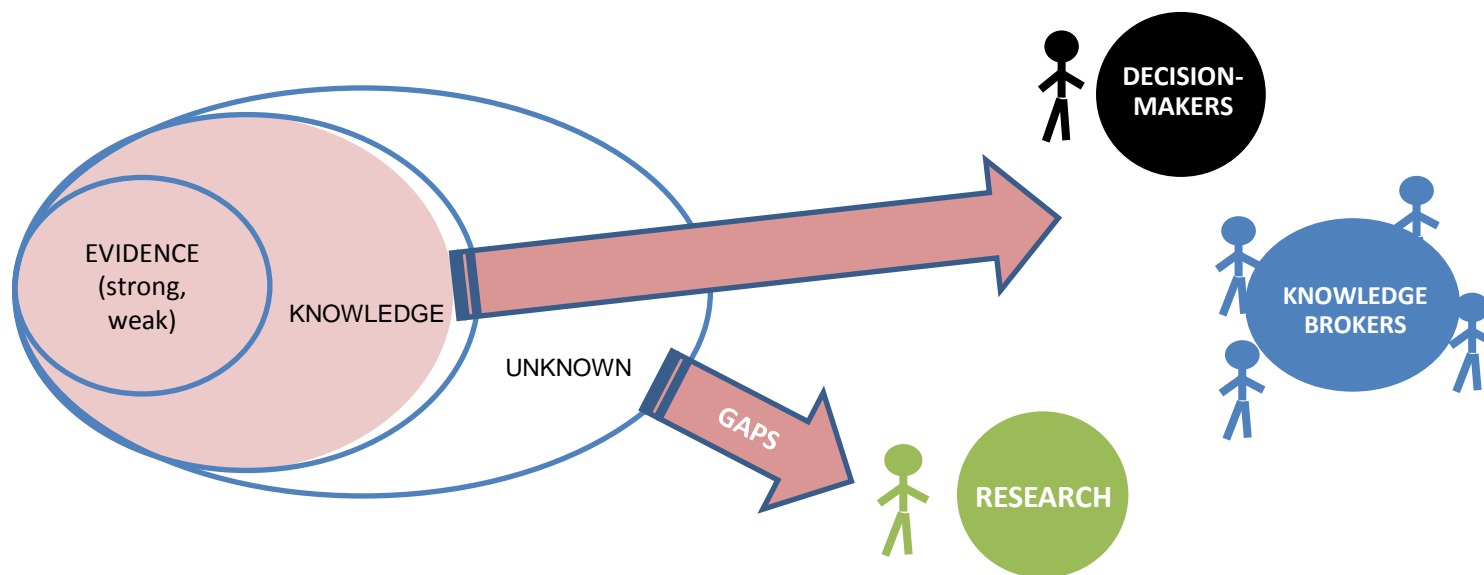
What should be done?

- Complement searches (comprehensiveness)
- Examine strength of evidence based on methodology
- Complete the SR for each intervention (narrative + quantitative)
- Gather evidence accross interventions (catalogue?)
- Highlight knowledge gaps and inform relevant bodies
- Consult holders of technical and local knowledge to see if agree or not with the outputs.

NEED A PROPER WORKING GROUP



What are the effect of methods to enhance natural pest control services in perennial tree crops?	
Beneficial	<ul style="list-style-type: none">• Change the timing of pesticide use
Likely to be beneficial	<ul style="list-style-type: none">• Allow naturally regenerated ground cover• Beetle banks
Tradeoffs between benefits and harms	<ul style="list-style-type: none">• Organic farming



A close-up photograph of a plant with several green, spiky flower heads. The flower heads are composed of many small, white, thread-like structures. The background shows long, thin, green leaves radiating from a central point, creating a starburst pattern. The text "THANK YOU FOR YOUR ATTENTION..." is written diagonally across the center of the image.

THANK YOU FOR YOUR ATTENTION...