

Functional agrobiodiversity (FAB) in apple pest management in Latvia: what do we know?

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Popularity of
FAB grows over
the world

to obtain
sustainable
ecosystem
services as for
example pest
management

BUT!

What do we really
know about FAB?



One of the aim of the CORE organic Plus project
«*Innovative design and management to boost functional biodiversity of organic orchards*» (ECOORCHARD)
(Core Organic Plus, ERA-NET, EU FP 7; 2015-2017):



To collect existing
information about FAB and
its management techniques



To improve and exchange
knowledge and practical
experience of FAB between
scientists, advisors and
owners of apple orchards

Partners in the project

Latvia



Denmark (2 partners)



Germany



France (2 partners)



Switzerland



Belgium



Poland



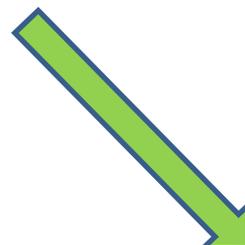
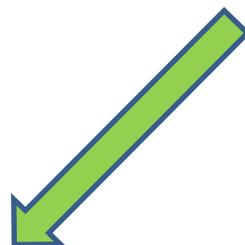
Sweden



Italy



FAB is a very wide topic, so in the project we look on FAB in context with:

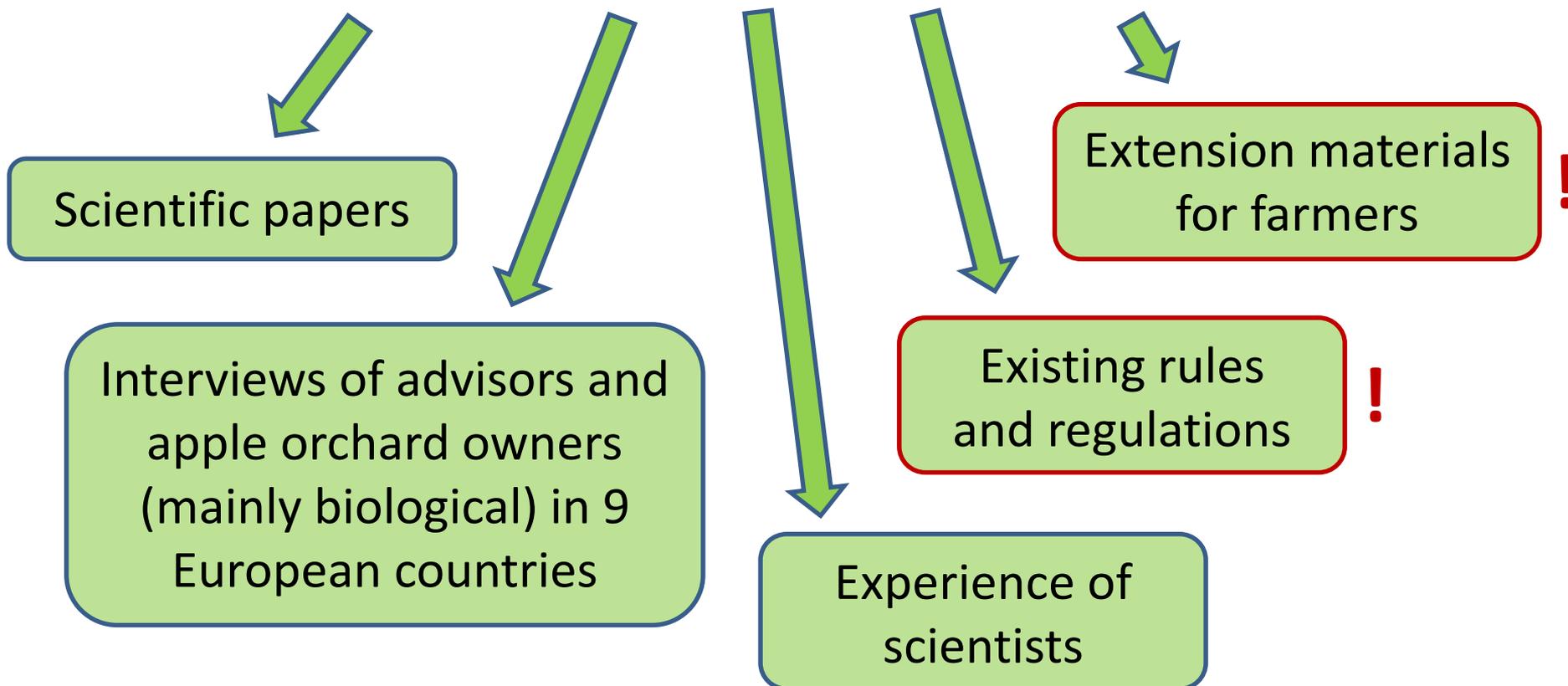


Perennial crops
(for field tests only
apple orchards)

Beneficials and apple
pests (for evaluation
methods of FAB
techniques)



Sources of information of FAB, it's techniques and evaluation methods:



Term FAB is new in Latvia!

Technique / practice demands in local laws and regulations in context with FAB for apple orchard owners in Latvia:

Technique / practice in local laws and regulations	In context with FAB
User keeps existing shelters to protect beneficial organisms and use practices to protect biological diversity.	+
If orchard is adjacent to state importance road user implements hedgerow in accordance with normative acts of roads and protective zones.	+
User implements bird houses or perches in hedgerows (at least 10 per one hectare).	+
In inter-rows user implements grass which occupy 1/2 - 2/3 of all orchard area. User mows grass several times per season so that it is not higher than 30 centimeters.	+ / -
User mulches soil around young trees till they reach 5 years. Weeds can not dominate in surrounding soil.	+ / -

FAB techniques / practices in apple orchards in Latvia (in view of farmers):

Technique / practice	Aim of implementation
To reduce tillage under trees	biodiversity
	reducing possible habitat for pests and diseases
Inter-row mowing	EU standards
	simply do this without any deeper purpose
	bio farming standards
	fertilizer
Tillage and between rows there were planted potatoes or strawberries	economic benefit
Sunflowers next to orchard	to attract pollinators; to diverse the number of plants

FAB techniques / practices in apple orchards in Latvia (in view of farmers):

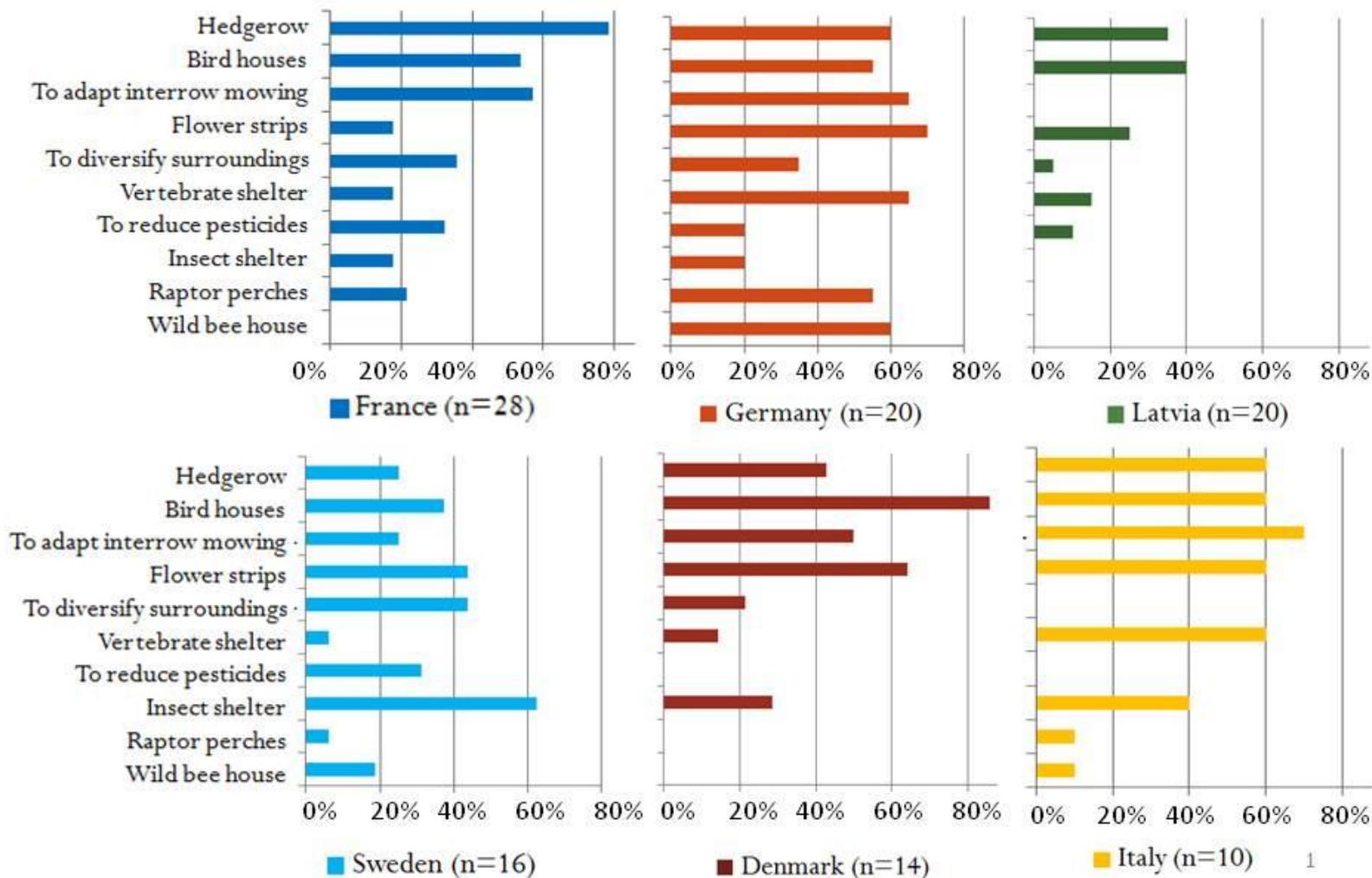
Technique / practice	Aim of implementation
<i>Trifolium repens</i> as a flower strip between rows	attract pollinators, nitrogen for soil, fertilizer
Planted <i>Picea glauca</i> around orchard	pest control
Fence from cutted branches	attract snails, birds
<i>Tilia cordata</i> hedgerow	attract birds to control pests
<i>Corylus avellana</i> hedgerow	attract predatory mites
	attract beneficial insects
<i>Betula pendula</i> alley	attract birds to control pests
Fermented manure with weeds	fertilizer
Fermented <i>Chelidonium majus</i>	pest control
<i>Valeriana officinalis</i> infusion	pest control
Ash	pest control

FAB techniques / practices in apple orchards in Latvia (in view of farmers):

Technique / practice	Aim of implementation
Cattle and bird breeding	meat production
Ducks	snail control
Body of water	have been there
Pile of stones	naturally have been there
	no anywhere else to put stones
	for rodents
Bird houses	attract birds for pest control
	in hope to reduce pests
10 bird houses on one hectare	attract birds for pest control
Roosts for bird landing	attract birds at the same time protect new apple branches
Tubes with inedible food for rodent reduction	to protect new apple trees from rodent damage

Unequal distribution among countries (TOP 10)

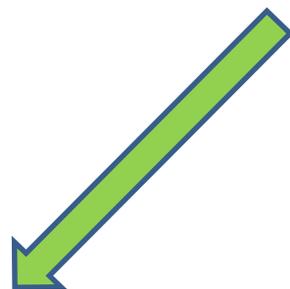
% of farmers interviewed who implement each technique



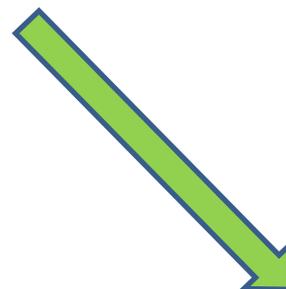
Do orchard owners and advisors in Latvia regularly monitor beneficial organisms in apple orchards (for FAB or other purposes)?



Photo: Baiba Ralle



Farmers: NO



Advisors: NO



Photo: Baiba Ralle



Photo: Baiba Ralle



Photo: Baiba Ralle

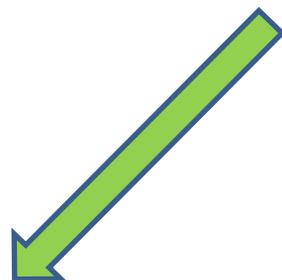


Photo: Baiba Ralle

Do orchard owners and advisors regularly monitor pests in apple orchards (for FAB or other purposes)?



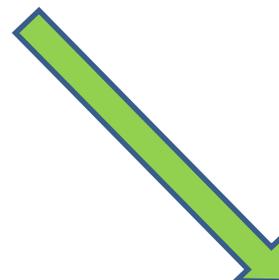
Photo: Baiba Ralle



Farmers: very rarely



Photo: Baiba Ralle



Advisors: very rarely



Photo: Baiba Ralle



Photo: Baiba Ralle

At the moment

Farmers and advisors do not evaluate the efficacy of different implemented techniques for FAB or any other purpose.

Farmers even do not acknowledge the fact that some techniques they use are FAB related.

One of the reasons: term FAB is new in Latvia and it is difficult to understand it for farmers, especially the difference between FAB and organic production. Also not all farmers understand the usefulness of FAB and its techniques. Many farmers want to get ready solution not to learn, monitor and test something themselves.

Most important tools and outcomes from ECOORCHARD project at the moment



Online stakeholder platform EBIO-Network «European biodiversity orchards network» (most of the information still need to be putted in):
<http://ebionetwork.jki.bund.de/>

Protocols for the establishment and monitoring of functional biodiversity elements (are in evaluation process)



During 2014

In each orchard, the following data are recorded:

Year	Month	Day	Time	Observer	Weather	Temperature	Humidity	Wind	Light	Soil	Plant	Animal								
2014	01	01	08:00																	
2014	01	02	08:00																	
2014	01	03	08:00																	
2014	01	04	08:00																	
2014	01	05	08:00																	
2014	01	06	08:00																	
2014	01	07	08:00																	
2014	01	08	08:00																	
2014	01	09	08:00																	
2014	01	10	08:00																	
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2014	01	23	08:00																	
2014	01	24	08:00																	
2014	01	25	08:00																	
2014	01	26	08:00																	
2014	01	27	08:00																	
2014	01	28	08:00																	
2014	01	29	08:00																	
2014	01	30	08:00																	
2014	01	31	08:00																	

During 2014

Checklist of the diversity of insects:

Year	Month	Day	Time	Observer	Weather	Temperature	Humidity	Wind	Light	Soil	Plant	Animal								
2014	01	01	08:00																	
2014	01	02	08:00																	
2014	01	03	08:00																	
2014	01	04	08:00																	
2014	01	05	08:00																	
2014	01	06	08:00																	
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2014	01	30	08:00																	
2014	01	31	08:00																	



The possible future of FAB in Latvian orchards

Farmers will become familiar with FAB. They will start to relate techniques they use also with FAB and think maybe there are more benefits of techniques they use not only the main purpose of technique implementation (usually not related with FAB at the moment).

Farmers will have an access to EBIO-Network where they will be able to share knowledge and practical experience of FAB with other farmers, advisors and scientists in Europe. The access to this information could improve the quality not only of organically grown apples but also the common knowledge of orchard owners.

The possible future of FAB in Latvian orchards

Maybe farmers will start to pay attention to pests and maybe also to beneficials. Maybe they will make monitoring of them to evaluate what is happening in their orchards.

FAB as a concept is appropriate for orchards in Latvia because we already have enough high diversity, especially in organic orchards. This fact will make difficult to evaluate effectiveness of any FAB technique farmer will implement (not already existing ones) and farmers could lose the belief that there is any benefit.

The FAB maybe will rise higher concern about organic production and reduction of pesticide use in integrated production.

Thank you for attention! Any questions?



Photo: Baiba Ralle

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