



DiverIMPACTS

Diversification through Rotation, Intercropping, Multiple cropping, Promoted with Actors and value-Chains Towards Sustainability

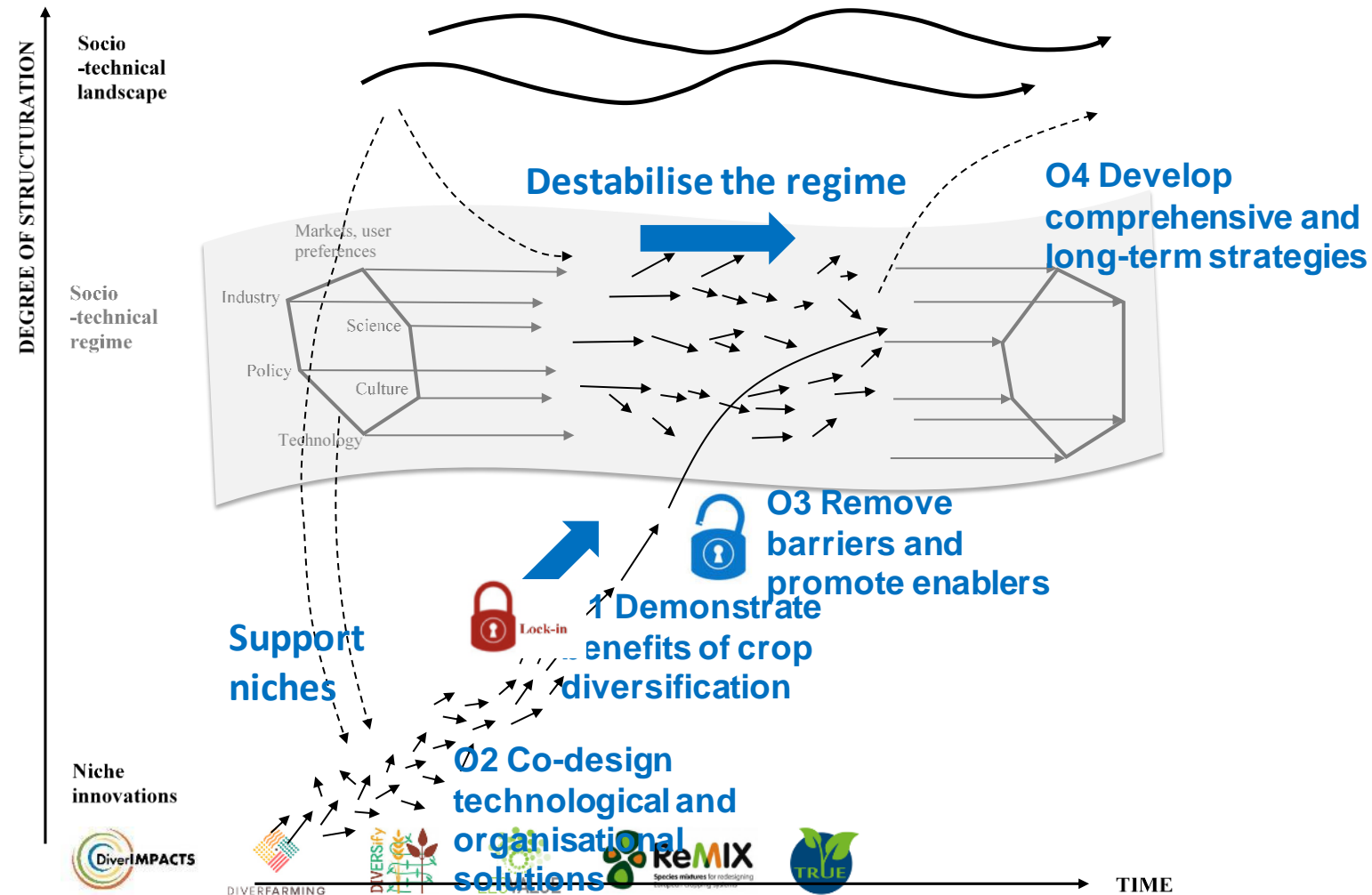
INRAE

ReMIX-DIVERSify Joint conference
Intercropping to boost agroecology in Europe

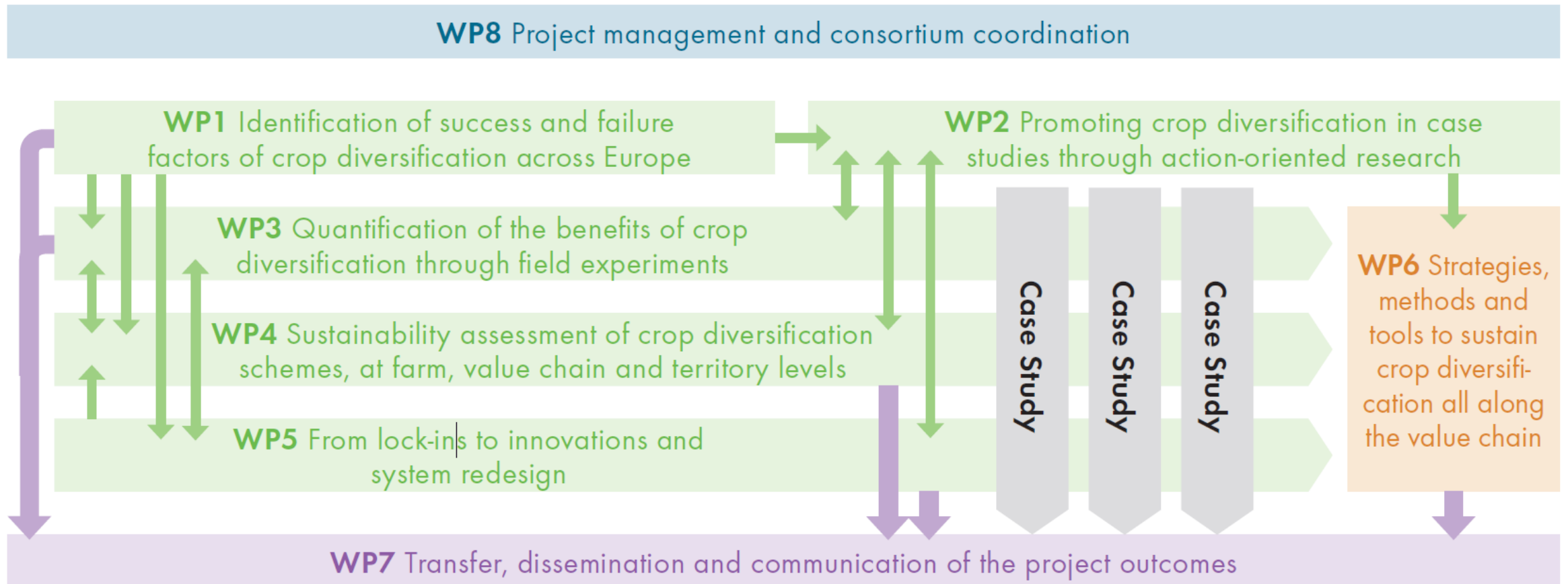


The projects in the crop diversification cluster have received funding from the European Union's Horizon 2020 research and innovation programme

Unlocking the potential of crop diversification to support sustainability transitions requires systemic changes

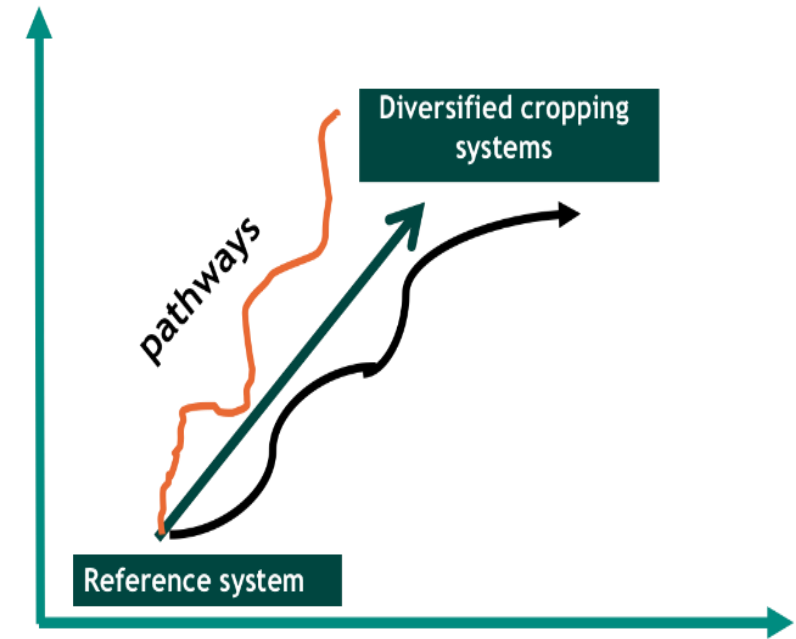


DiverIMPACTS project structure

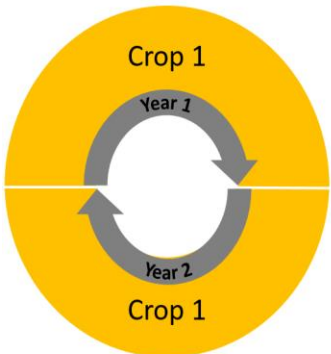


What is crop diversification ?

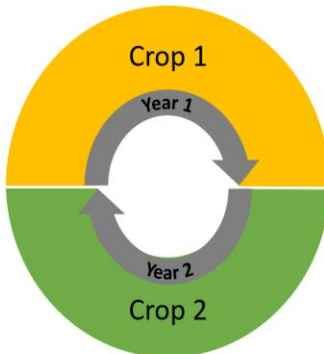
- Act or process of diversifying crop production
 - On the same land-area in successive growing seasons (crop rotation)
 - On the same land within a growing season (multiple cropping)
 - In proximity within the same field (e.g., row intercropping, strip cropping, mixed cropping, agroforestry)



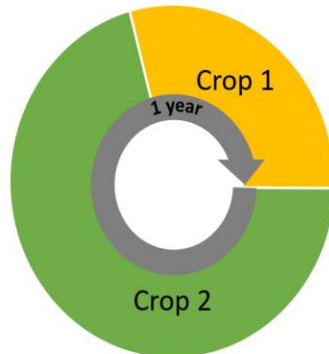
Monoculture:
continuously cultivating
the same crop



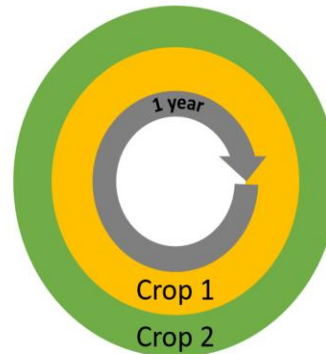
Longer rotations:
increasing the number
of crops that are grown
in successive years on
the same land-area



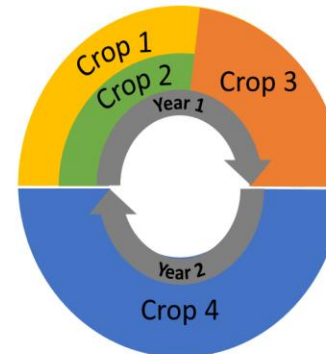
Multiple cropping:
increasing the number
of crops that are grown
on the same land-area
within a year



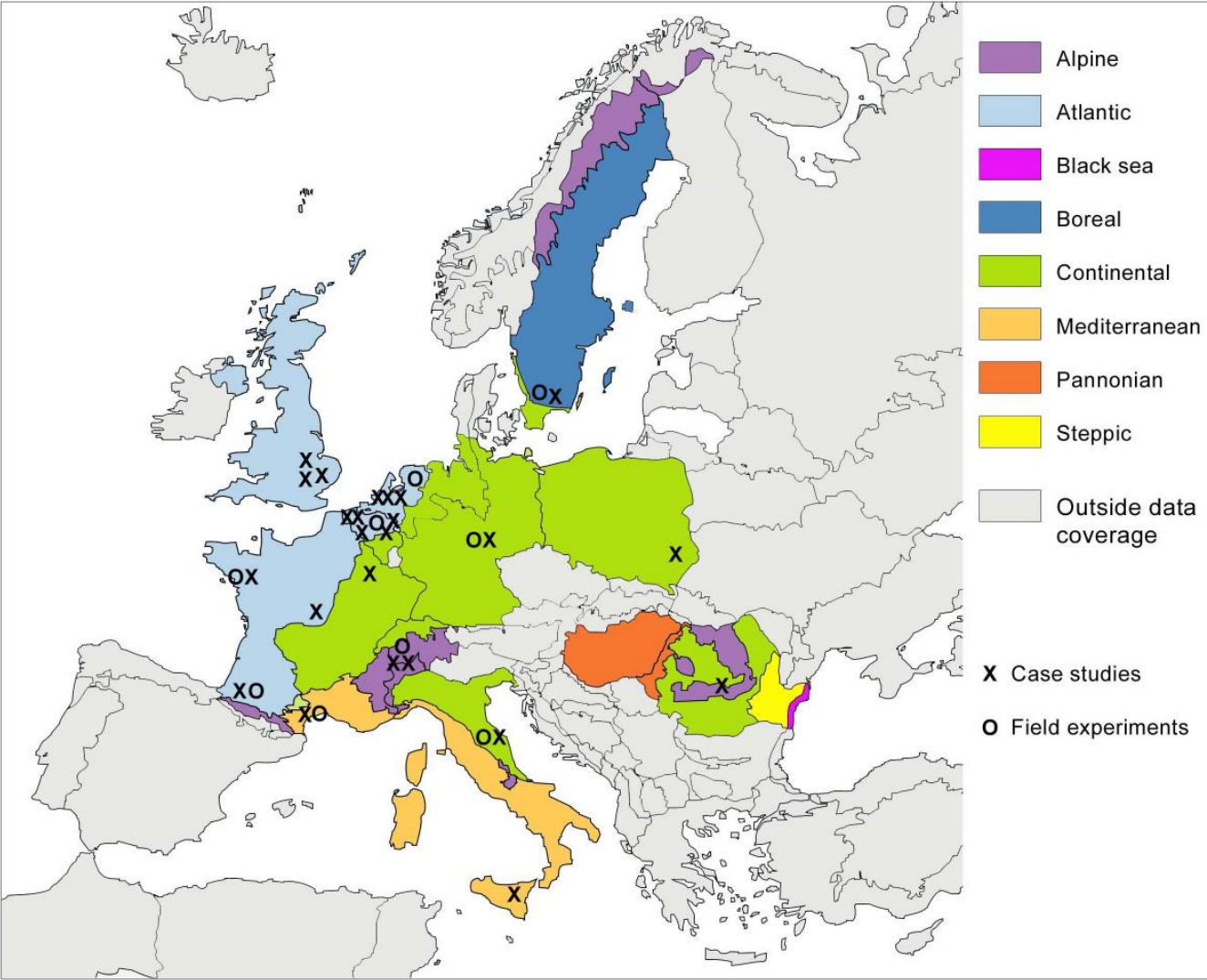
Intercropping:
increasing the number
of crops that are grown
in close proximity within
the same field



Combining crop
diversification strategies
on the same field and
over time



10 field experiments
(FE) and 25 case
studies (CS)



Description of crop diversification in DI FE network

- Explore different diversification strategies

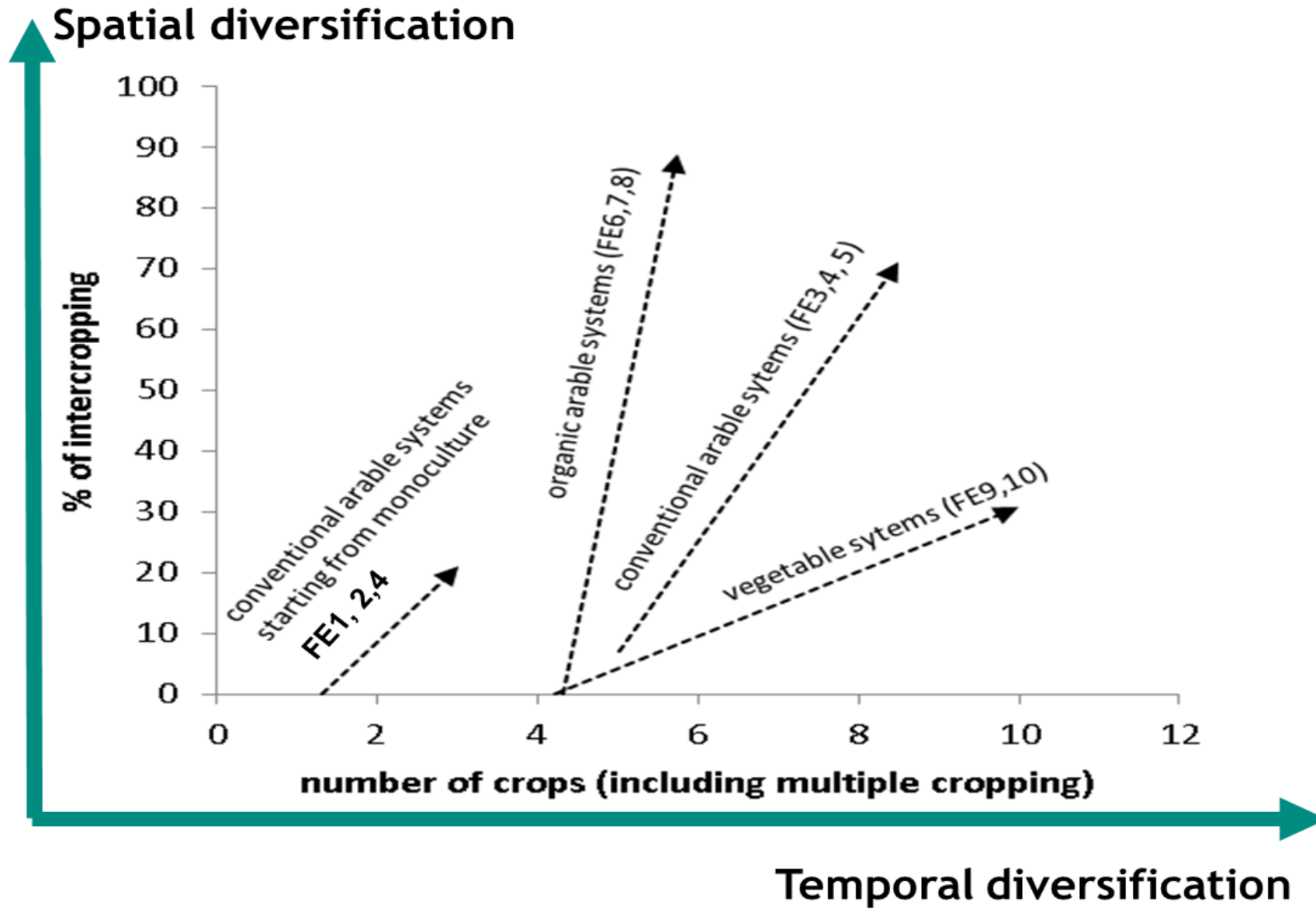
Rotation	legumes for their expected ecosystem services new markets (hemp, lentil, soybean, bionergy from silage)
Intercropping	cereal-grain legumes (pea-wheat, pea-barley, lupin-wheat) undersowing (maize-ray grass) oilseed rape-frost legumes strip cropping
Multiple cropping	cover crops, barley + soybean

CC = Cash Crop

MSCC = Multi-Services Cover Crops

System	Rotation duration (years)	Number of species		% of legumes in rotation		% intercrops		% soil cover by MSCC
		CC	CC + MSCC	CC	CC + MSCC	CC	CC + MSCC	
REF	3.6	3.5	3.8	7	8	3	3	4
DIV	4.3	4.9	7.1	15	22	37	40	20

Description of crop diversification in DI FE network



Intercropping is often used to help introduce legumes in rotations



- Both as CC or MSCC
 - Pea IC with wheat or barley
 - Oilseed rape or wheat IC with frost sensitive MSCC
- An efficient way to produce grains or silage rich in protein with a low use of N input and a low fossil energy consumption (FE3, FE5, FE6, FE8)
- A better aphid control is also observed (FE3)
- Positive effect of intercropping on weed regulation (FE2,FE5,FE6,FE8)
- Difficulties to combine intercropping and mechanical or chemical weeding
- Need of local adaptations, additional experiments (links with Remix and diversify)

Demonstration of the advantages to combine different strategies in time and space



Multiple cropping + intercropping (FE1, FE5):

- Improvement of yield both per ha and per year;
- Maintain dominant species;
- Increase soil cover and associated ES;
- Secure quality forage production before summer;
- Better use of resources (N niches complementarities)

Six H2020 projects joined efforts in 2017 to promote crop diversification



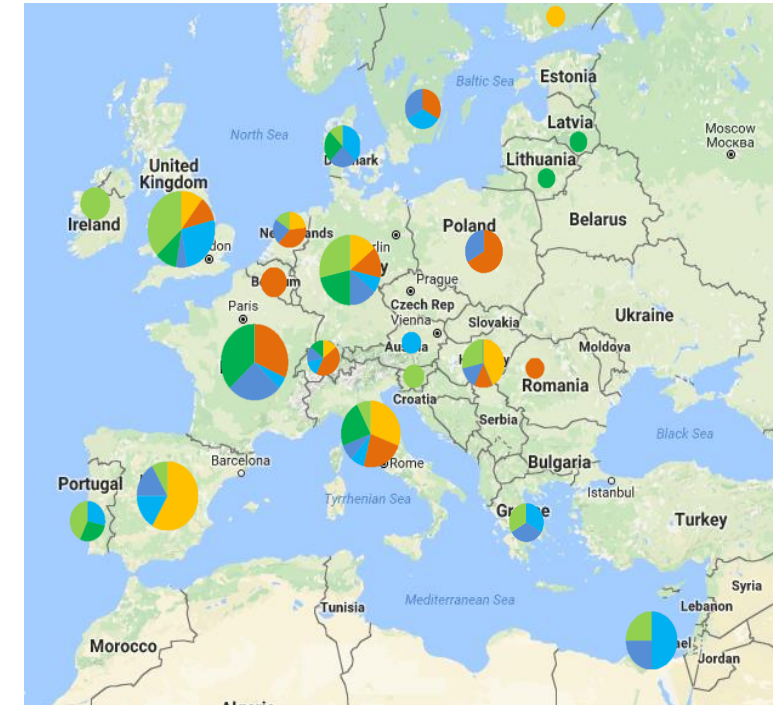
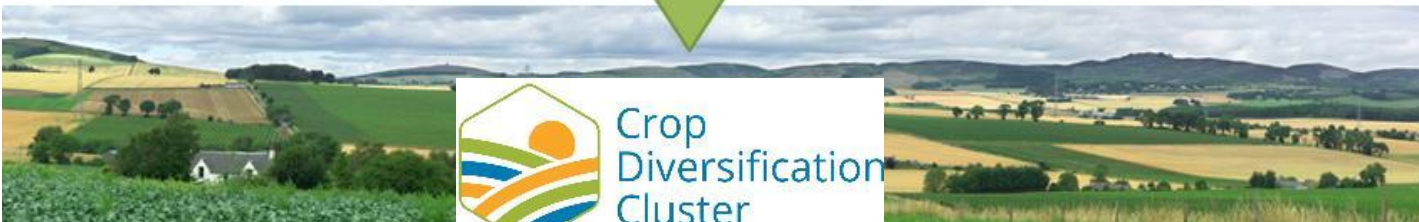
SFS-02-2016: Teaming up for good:
Exploiting the benefits of species
diversity in cropping systems



**SFS-26-2016: Legumes - transition
paths** to sustainable legume-based
farming systems and agri-feed and
food chains



RUR-06-2016: Crop diversification systems
for the delivery of food, feed, industrial
products and ecosystems services – from
farm benefits to value-chain organisation



DIVERFARMING
DIVERIMPACTS
DIVERSIFY
REMIX
LEGVALUE
TRUE

NB
AUT 1
BE 6
CH 3
DE 13
DK 6
ES 11
FL 3
FR 16
GR 3
HU 7
IRL 2
IT 11
LU 1
LV 1
NL 8
OTHER 4
PT 7
RO 2
SE 4
SL 1
UK 14

**Total Budget funded by EC:
40 million €**

Rationale

- No “one size fits all” solution
- New knowledge capacities to be built ;
- Novel regulatory systems and policies

Collaboration between projects

- share information, methods and results
- increase the overall impact on crop diversification uptake
- sustain activities and infrastructures into the future.

Five cluster working groups

- **Barriers to crop diversification**
- **Innovative decision tools**
- **Indicators**
- **Policy recommendations;**
- **Communication and dissemination**

Acknowledgments



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